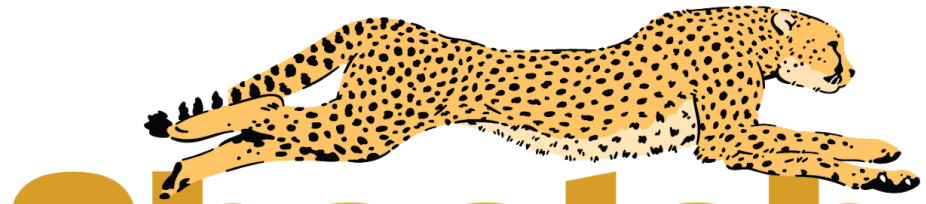

Cheetah
CONSERVATION FUND

2020 Annual Progress Report

Reporting Period

January-December 2020

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Executive Summary

This year has been the most challenging yet due to the COVID-19 pandemic. Nevertheless, CCF staff continued with research, education, conservation and capacity building programs. We celebrated CCF's 30th Anniversary, and I still cannot believe it has been 30 years already since I started this organisation. The CCF headquarters has expanded both in terms of its work and physical size. Most recently CCF acquired farm Otjenga, which is 7,300 hectares, adding to the eight farms, totalling 57,661 hectares.

We lost two of our long-term resident cheetahs, N'Dunge (also known as Blondeman) in October, and then Livingstone in November, at the ages of 12 and 14 respectively. They both will be missed dearly. The rewilding program continued, and we received 13 wild cheetahs in 2020, of which seven were released on CCF's farm Elandsvreugde in February and in June. Two of the 13 arrivals are siblings, Siyaya (female) and Kabaka (male), and the two of them together with Hans (male) have now become residents due to their young age when they were brought to CCF. In early May, our rewilding program reached yet another milestone with the birth of four cubs by Savanna, who was born to a CCF cheetah that was released in 2014. These four cubs are officially the third wild-born generation from a captive-raised, rehabilitated and released CCF cheetah.

In 2020, 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.

The Life Technologies Conservation Genetics Laboratory under Dr Anne Schmidt-Küntzel was presented with some major challenges linked to the COVID-19 pandemic, with the laboratory having to work on 75% capacity during May and June due to budgetary constraints. As a result, some work had to be put on hold for an additional two months due to the shortage of supplies. However, a major positive change for the laboratory was benefiting from funding to expand its biobank setup and overall equipment. 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), as well co-host workshops for UNAM students from the Katima Mulilo campus, who come to CCF with CCF collaborator, Dr Fabiano Ezekiel, and this year for the 5th year in a row. Three undergraduate students and five research interns were provided hands-on experience in conservation genetics, and were taught best laboratory practices. Furthermore, three collaborators were hosted; Juliette Erdtsieck and her student, Alanna Connor from Muller Stud, who visited for Alanna's thesis project on rhinoceros paternity, and Morgan Maly from the Smithsonian Institution who joined the laboratory to process scat collected on CCF resident cheetahs.

Following the first confirmed COVID-19 case in Namibia in March, CCF was registered as an essential service provider, and our HWC teams were able to go out into the communities as soon as the country-wide lockdown was lifted. Our Scat Detection team conducted searches onsite and on 21 farms in the Otjiwarongo and Gobabis, and the team was able to collect a total of 423 scat samples from 13 different carnivore species, of which 99 samples were identified as that of cheetah, in the field. In addition, the Scat Detection Dog team and staff from various departments hosted several farmers' trainings on practical exercises on human-wildlife conflict mitigation techniques. The Scat Team is very excited about the new equipment which include; storage glasses for training scat, camping gear and a new fully functional scat dog car with an installed custom built kennel system that allows safe and comfortable transport of dogs, a water tank and a big storage compartment.

The Ecology team continued to monitor the weather and game on CCF property. The wet season this year surpassed the median average of 416 mm for the last 10 years, at 596.40 mm, with the coming rainy season looking very promising. The annual waterhole count was conducted in August on two consecutive days,

instead of one day in July as per the tradition. This is due to the limited number of observers at CCF following travel restrictions due to the COVID-19 pandemic.

CCF continues to monitor the giraffe population on its property. By the end of the year, there were a total of 130 identified individuals, of which ten are new calves that are yet to be identified and sexed.

Due to the COVID-19 pandemic, all visiting researchers and scientists who were scheduled to visit CCF to continue their research work either cancelled or postponed their trip to next year. CCF hosted Dr Sliwa, a black footed cat researcher, who also gave a talk to CCF staff and interns on some of his work.

Five journal papers were published by CCF staff and collaborators during this reporting period, one of which is part of Senior Forest Steward, Matti Nghikembua's PhD requirements.

The Livestock Guarding Dog Programme continues to place dogs on Namibian farms to help ensure the survival of the cheetah in the wild. To date, the programme has placed 668 dogs on both commercial and communal farms in Namibia, and other parts of Africa. This year, 20 puppies were born to four of CCF's onsite breeding females, and 22 puppies (including those born the previous year and had not been placed) were placed on various farms.

Tourism was one of the hardest hit industries due to COVID-19, and CCF was no exception. CCF hosted a total of 1,926 visitors, which represents an 87.2% decrease from 15,048 visitors in 2019. This reporting period also saw a decrease in revenue of more than 80% on both 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, now known as CCF East Carnivore Conflict Field Station. Community outreach work in the communal conservancies mainly 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.

With the COVID-19 pandemic making it nearly impossible to conduct our Future Conservationist of Africa (FCA) and Future Farmers of Africa (FFA) programmes, CCF's Education Department shifted to distance learning on a platform called Edmodo. A total of 10,532 students and 221 teachers participated in the FCA programmes, whereas 544 community members participated in the FFA programmes.

Work in Somaliland has also continued and expanded. CCF built two new safehouses in the region and created a master plan for the 800-hectare sanctuary site and the surrounding area, which could become a national park in the future. With 60 cheetahs in our care on 31 December, CCF foresees a need for our long term presence in Somaliland.

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

Laurie Marker, DPhil.
Founder and Executive Director

Organisational Structure

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

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

The CCF Centre includes the farms Elandsvreugde, Osonanga, Boskop (Khayam's Kopje), Cheetah View, Bellebenno, Janhelpman, Bynadaar, Padberg , and Otjenga totalling 57,661 hectares. CCF's Centre is located in prime cheetah habitat and a wildlife-friendly area, with many neighbouring farmers who believe in conservation ethics. This ensures a large prey population, which is important for the cheetah population and serves to provide a model for farmers to demonstrate that they can live harmoniously with cheetahs.

CCF is an active member of the Waterberg Conservancy, which encompasses over 175,000 hectares of private farmland surrounding the Waterberg Plateau Park: a national game park dedicated to rare and endangered species. The conservancy's farmers cooperatively manage the land's wildlife for long-term sustainability that in turn provides habitat and prey base for the cheetah. CCF also sits on the Steering Committee of the Greater Waterberg Landscape, an area comprising 16,000 km2, or close to 2 million hectares, around the Plateau and in Hereroland.

Since 2011, CCF has been assisting the government of Somaliland care for cheetahs intercepted from traffickers. Up until 2016, CCF and its local associates transferred cheetahs confiscated in Somaliland to rescue facilities in neighbouring Ethiopia and Djibouti. In 2016, the government determined that confiscated cheetahs must remain in country. CCF began marshalling resources, and in April 2017, CCF created holding facilities to care for cubs in country known as the CCF Somaliland Cheetah Safe House.

Medical Examinations

Population Dynamics

As of December 2020, the number of CCF's resident captive cheetahs has increased to 40 individuals (24M, 16F), compared to December 2019, 39 individuals (22M, 17F).

Throughout 2020, there were two deaths (2M, 0F), 13 transfers in (8M, 5F), and 10 transfers out (4M, 6F).

The two (2M, 0F) deaths were:

- N'Dunge/Blondeman (AJU 1549), age 12 years 9 months, euthanised due to critical organ failure on 25 October 2020.
- Livingstone (AJU 1517), age 14 years 8 months, euthanised due to renal failure on 21 November 2020.

The 13 (8M, 5F) transfers in were:

- AJUs 1971-1975, an adult female with four, 7 month old cubs on 4 January 2020 from farm Horing #379
- AJUs 1977 and 1978, two adults males on 27 April 2020 from farm Audax #1082
- AJU 1991, an adult female on 8 June 2020 from farm Audax #1082
- AJU 1992, a 6month old male cub on 6 July 2020 from farm Fleur #827
- AJU 2010, an adult male on 31 August 2020 from farm Audax #1082
- AJU 2016 (Kabaka) and AJU 2017 (Siyaya), two 7 month old cubs on 16 September 2020 from farm Okanjesu #211
- AJU 2050, an adult male on 7 October 2020 from farm Lauwater East #252

The 10 (4M, 6F) transfers out were:

- AJUs 1971-1975, released onto CCF farm Elandsvreugde #367 on 2 February 2020
- AJUs 1977 and 1978, released onto CCF farm Elandsvreugde #367 on 21 June 2020
- AJUs 1785, 1899, and 1991, transferred to Erindi Private Game Reserve for release preparation on 21 July 2020

Medical Examinations

In 2020 CCF performed a total of 35 medical examinations on 29 individuals (21M, 8F). Thirty-three examinations were performed under anaesthesia (Table 1) and two examinations were performed under physical restraint.

Thirteen (12M, 1F) of the 29 individuals examined during this reporting period were captive individuals two cheetahs (0M, 2F) were either release cheetahs, offspring of release cheetahs, or received examinations in preparation of a release, and 14 (9M, 5F) cheetahs were of wild origin and were or will be released back into the wild as soon as their age and condition allow. Two (1M, 1F) of the wild cheetahs also received dental treatments before being released back into the wild.

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 2020 CCF performed a total of 33 examinations under anaesthesia on 27 individuals (20M, 7F; Table 1).

Table 1: Summary of exams performed on wild and captive cheetahs in 2020. 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	Date	Exam Type						
			Predator	Entry	Routine	EEJ	Dental	Medical	Detail / Reason for Exam
1971	F	8 Jan 20	X						Wild cheetah exam and collar placement
1972	M	8 Jan 20	X						Wild cheetah exam
1973	M	8 Jan 20	X						Wild cheetah exam
1974	F	8 Jan 20	X						Wild cheetah exam
1975	F	8 Jan 20	X						Wild cheetah exam
1971	F	27 Jan 20					X		Dental treatment
1778	M	30 Jan 20	X						Wild cheetah collar replacement
1977	M	5 May 20	X						Wild cheetah exam
1978	M	5 May 20	X						Wild cheetah exam
1548	M	19 May 20						X	Ataxia
1977	M	19 May 20			X	X			Collar placement and semen collection

1978	M	19 May 20			X	X			Collar placement and semen collection
1991	F	11 June 20	X						Wild cheetah exam and collar placement
1977	M	17 June 20					X		Dental treatment
1992	M	16 Jul 20	X						Wild cheetah exam
1785	F	20 Jul 20			X				Collar placement for release
1899	F	20 Jul 20			X				Collar placement for release
2010	M	01 Sep 20	X			X			Wild cheetah exam and semen collection
2010	M	21 Sep 20				X			Collar placement and semen collection
1646	M	21 Sep 20			X	X			Semen collection
1565	M	21 Sep 20			X	X			Semen collection
2010	M	05 Oct 20				X			Semen collection
1750	M	05 Oct 20				X			Semen collection
1749	M	05 Oct 20				X			Semen collection
2050	M	12 Oct 20	X			X			Wild cheetah exam and semen collection
1786	M	12 Oct 20				X			Semen collection
1783	M	12 Oct 20				X			Semen collection
1780	M	13 Oct 20				X			Semen collection
1779	M	13 Oct 20				X			Semen collection
1898	M	13 Oct 20				X			Semen collection
1549	M	25 Oct 20						X	Medical work up
1513	M	17 Nov 20						X	Medical work up
1910	F	04 Dec 20						X	Surgical procedure

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 2020 CCF performed two examinations without anaesthesia on two (1M, 1F) individuals (Table 2).

Table 2: Summary of examinations performed without anaesthesia on captive cheetahs between 1 January 2018 and 31 December 2018. 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); routine (routine health check); and medical (treatment of any injury or illness).

AJU	Sex	Date	Exam type				
			Predator	Entry	Routine	Medical	Detail / Reason for Exam
2016	M	17 Sep 20	X	X			Wild cheetah exam
2017	F	17 Sep 20	X	X			Wild cheetah exam

Health-Related Medical Examinations: Captive Cheetahs

In 2020, four captive cheetahs (3M, 1F) received a health-related medical examination. In addition, nine males were anaesthetised for sperm collection and received a routine health check at the time. Details of on- and off- site procedures are provided hereafter in order of ascending AJU numbers.

Resident male AJU 1548 (Ndunge) was examined on 19 May 2020, after he had been showing signs of ataxia for about 3 weeks. He was brought in for clinical examination and collection of blood samples. No specific condition could be diagnosed, and he was treated symptomatically with pain and nerve medication (Tramadol and Gabapentin).

In October 2020 Resident male AJU 1549 (Shunga) was lethargic for about one week accompanied by poor appetite, loss of weight, and salivation; he became recumbent for 2 days. Blood samples showed multisystemic organ failure. He was given fluids twice per day as well as antibiotics (Synulox). Pain relief medication (Tramadol) was given for a few days, until he refused food. An examination was performed on 26 October 2020. Radiographs taken during the examination showed a bolus in the large intestines, which was identified as intussusception during necropsy. After careful evaluation, it was concluded to put him down due to the poor prognosis of his condition.

Resident male AJU 1513 (Livingstone) was examined on 17 November 2020 due to laboured breathing, poor appetite, and lethargy for a week. During the clinical examination, radiographs of his chest were taken, and pneumonia was suspected. Upon examination, a tooth extraction was performed on a loose upper premolar. He was put on a course of antibiotics (Synulox) for a week to treat the possible lung infection. He was kept in a close space for monitoring but, unfortunately, was found deceased on the morning of 21 November 2020.

Males AJU 1565, 1646, 1749, 1750, 1779, 1780, 1783, 1786, and 1898 received a general work up and semen collection between 21 September and 13 October 2020.

Resident female AJU 1910 (Jaya) was brought in for a workup on 4 December 2020 after she had been showing signs of abdominal discomfort and inappetence for a few days. Upon clinical examination, radiographs were taken and showed distention of the stomach. An exploratory surgery (laparotomy) was performed and a possible blockage at the pyloric sphincter suspected occurred after she had injected a large piece of meat. Undigested meat (769g) was removed from the stomach, and she was put on a course of antibiotics (Ampicillin and Trichazol) for 3 days. She is currently doing well, and no complication post- surgery encountered.

Released Cheetah Examinations

In 2020, two release related examinations were performed.

Rehabilitated females (AJU 1785) and (AJU 1899) were anaesthetised on 20 July 2020 for collaring in preparation for release into Erindi.

Wild Cheetah Examinations

In 2020, CCF performed examinations on 14 (9M, 5F) wild cheetahs. Details of on- and off- site procedures are provided hereafter in order of ascending AJU numbers.

On 30 January 2020, a medical examination was performed on wild male AJU1778 in Erindi Private Game Reserve, to fit a new GPS/VHF tracking collar.

On 8 January 2020, wild female AJU 1971, with four cubs AJU 1972 (M), AJU 1973 (M), AJU 1974 (F) and AJU 1975 (F), who had been brought to CCF on 2 December 2019, received a full clinical workup. All five individuals were dewormed, received frontline for ectoparasite control. The mother was fitted with a collar. On 27 January 2020, the female was anaesthetized again for a dental treatment. They were all released on 2 February 2020 on farm Elandsvreugde.

On 25 April 2020 wild males AJU 1977 and AJU 1978 were brought to CCF. Routine wild predator examinations were performed on both on 5 May 2020, and both were vaccinated against rabies. On 19 May 2020 semen was collected from both for storage and collars were placed for future release. On 17 June 2020, a dental examination was done on AJU 1977. They were both released on 21 June 2020 onto farm Elandsvruegde.

On 11 June 2020, a general workup and collar placement was done on wild female AJU 1991. She was taken to Erindi on 21 July 2020.

On 16 July 2020, a wild cheetah examination was performed on wild male AJU 1992. He was vaccinated with Felovax and rabies, and ectoparasite control was applied.

On 01 September 2020, a routine wild predator examination was performed on wild male AJU 2010 who arrived at CCF on 31 August 2020. He was vaccinated with rabies and felovax and received ectoparasite control. On 21 September 2020, he was anaesthetized for collar placement and semen collection. Semen was collected from him again on 05 October 2020.

AJU 2016 (M) and AJU 2017 (F) were brought to CCF on 17 September 2020 from the Gobabis area. A general workup was done on the two cubs (4 weeks old) without anaesthesia. They were given vitamins, dewormed and given fluids for 3 days because they were malnourished and dehydrated as it appeared they lost their mother in the wild.

A wild cheetah exam was done on male AJU 2050 on 12 October 2020 who arrived at CCF on 07 October 2020. He was vaccinated against rabies and ectoparasite control was applied.

Dental Procedures on CCF's Wild and Captive Cheetahs

In 2020, a total of 2 dental treatments were performed. Wild female AJU 1971 underwent dental treatment at the dentist in Otjiwarongo on 27 January 2020. Wild male AJU 1977 was taken to the Otjiwarongo Dental Practice on 17 June for dental treatment of a root tooth abscess and closing of the root canal.

Deaths, Euthanasia, and Necropsies

In 2020 CCF performed two necropsies. At each necropsy, samples are taken for histopathology assessment and genetic research and skin and bones are preserved unless this is not possible due to missing parts or an extremely advanced state of decomposition. A set of necropsy samples was sent to long-term collaborator Dr Karen Terio for histopathological diagnostics.

AJU 1549 was euthanized after severe illness, and upon clinical examination, a decision was made to put him down on 25 October 2020. On post-mortem, AJU 1549 had intestinal intussusception and there was severe intestinal congestion.

AJU 1513 was found deceased in the morning after a few days of treatment for a suspected lung infection. On post-mortem, there was severe fluid accumulation in the abdominal cavity (ascites) as well as severe fluid accumulation in the thoracic cavity (hydrothorax). The spleen had multifocal nodular appearances which were consistent with tumoral growth. The cause of death has not been concluded yet.

Non-cheetah Carnivore Examinations and Necropsies

African Wild Dogs

No necropsies were performed on African wild dogs during this reporting period.

Other Non-Cheetah Carnivores

On 18 May 2020, a leopard cub NA-PPA 0090 was captured in Ohakoua and an entry exam was done on 3 June 2020.

On 19 May 2020, a necropsy was performed on one genet, and on 13 July 2020 another necropsy was performed on a brown hyena

Reproduction and Genetics

Genome Resource Bank

Since 2002 CCF has been collecting, evaluating, and freezing cheetah sperm. In 2020, collections were performed on 13 cheetahs, which produced 12 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.

Conservation Genetics

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.

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 both started as interns in the laboratory in the first half of 2017, remained part of the laboratory through 2020: Monika, who had accepted a position as the Laboratory Assistant in January 2018 and Hafeni is pursuing his MSc at the University of Namibia. Julia Zumbroich (MSc) and Francois Jenkins (MSc) started as Laboratory Technicians

in December 2018 and September 2019, respectively. Julia is planning to conduct her PhD research at CCF.

This reporting year presented some major challenges linked to the COVID-19 pandemic. The laboratory had to work on 75% capacity during the months of May and June due to budgetary constraints, and laboratory work had to be put on hold for an additional 2 months due to the shortage in some of the required supplies. The laboratory made its stock of p1000 tips available to Namibia's official task force responsible for the covid-19 tests for the country as they too were struggling with their supply. As of the end of 2020, we are hoping for the disposables to be back in stock soon so laboratory work can finally resume.

The year 2020 was also a year of major change with the laboratory benefiting from some significant funding to expand on its biobank setup and overall equipment. The first large order was placed, which includes a new genetic analyser to replace the current instrument which will no longer be serviced in 2021.

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 research internship programme. Throughout 2020, the laboratory hosted 3 undergraduate students and 5 research interns. All were provided hands-on experience with conservation genetics and taught best laboratory practices. NUST students, Rirapee Tjimune and Tareekuje Tjiriange joined the laboratory from 21 September – 17 October, and 01 September – 13 October 2020, respectively, and UNAM student, Maggy Nairenge joined the laboratory on 07 December 2020. Felicitas Fwanyanga, a UNAM B.Sc. Microbiology graduate, did a 1-week internship before leaving for a job opportunity, and Benny Munyandi from NUST, who had joined CCF as a rotation student at the end of 2019, started a 6-month internship in February, which he extended until the end of the year. In July, Foibe Kadenga from NUST and Allistair Witbooi from Pretoria University in South Africa, started their 6-month internships. Stan Nwodom from Nigeria joined the lab for a one-week internship in December as part of his MSc degree with UNAM.

Furthermore, the laboratory hosted three collaborators in 2020: Juliette Erdtsieck and her student, Alanna Connor, from Muller Stud, visited in January for Alanna's thesis project on rhinoceros paternity. In January and March, Morgan Maly from the Smithsonian Institution joined the laboratory to process scat collected from our resident cheetahs during her stay as well as wild cheetah samples from CCF's collection, to investigate the microbiome of the cheetah as part of her PhD research.

In September, CCF's Genetics and Ecology Departments co-hosted the 5th workshop for UNAM students from the Katima Mulilo campus (21 - 26 September). The workshop included hands-on experience on camera trapping, kill identification (human-wildlife conflict), and a variety of genetic techniques (sequencing for species ID and genotyping for individual ID). The students further were provided with lectures on how to apply the knowledge gained.

Genetics Projects

- Cheetah genotypes of known individuals (blood/tissue samples) - Namibia: 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 optimize time. Additionally, new markers were designed to extend the genotypes. Sample collection started in 1992, however, up until the setup of the genetics laboratory in 2008, cheetah samples were sent to Dr. Stephen O'Brien's laboratory at the National Cancer Institute, USA. Since 2008, blood and tissue samples from 190 Namibian cheetahs have been extracted and an extended genotype was obtained. During this reporting period, thirteen new cheetah samples were added to the sample collection.
- Cheetah genotypes of unknown individuals (scat samples) using non-invasive techniques - Namibia: 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 to date. Many of these scat samples were collected by the CCF ecology team or with the help of CCF's scat detection dogs, historically 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 optimized 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 finalized, of which 383 were successfully assigned to AJU1542, 1543, or another wild individual, 3 to captive cheetahs (found next to enclosure), and 14 identified as not being cheetah but other carnivores.

Other suspected cheetah samples: All other suspected cheetah samples are analysed so those 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, 99 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 in 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 631 samples from 166 individuals (mostly cubs rescued from the illegal wildlife trade) (See section xxx). 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 species ID and diet: In 2014, visiting student intern Alicia Walsh from the 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 CCF ecology research assistant, Samara Moreira.

Current Collaborative Genetics Projects

- Oxalate nephrosis in cheetahs: In March 2012 a collaboration on oxalate nephrosis was started with Dr. Karen Terio from the University of Illinois and Dr. Emily Lane from the National Zoological Gardens of South Africa. This collaborative project aims to investigate whether oxalate nephrosis in the cheetah is caused by mutations in the same genes as in humans and cats. A genetic component was supported by the preliminary analysis performed by Dr. Anne Schmidt-Küntzel. Primers were designed by Dr. Anne Schmidt-Küntzel and tested and optimized at the CCF genetics laboratory in 2013. In 2013 and 2014, diseased individuals were tested in the laboratory of the South African collaborators. In the first half of 2015, a second gene was investigated. To date, no candidate mutation was found. Results will be published once the results are 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 with 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 199 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 Hyaena Project in Lüderitz, carnivore hair samples obtained from rubbing stations and hair snares in southern Namibia were analysed at the genetics laboratory in 2014, to identify the species of the carnivore. This work was part of Sarah Edward's PhD (Royal Holloway, University of London). The genetic analysis was finalized in 2014, and the PhD successfully defended in October 2015.

Brown Hyaena: As part of the 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 paste marks. A total of 59 samples were genotyped with published markers. However, variability of the markers in the study population was insufficient, and additional markers are needed. The whole genome of the brown hyaena was mined by a joint collaborator and will allow for the design of additional markers for brown hyaena.

Caracal: Since 2016, caracal hair and tissue samples, collected from killer traps in South Africa, were brought to the genetics laboratory to assess relatedness. This study is a collaboration with Kristine Teichman (PhD student from British Columbia University, Canada). Most samples were processed in 2018, and the dataset is expected to be finalized in 2021.

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 the 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.

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 a scat dog researcher, his Weimaraner Ole, and CCF's two Belgian Malinoises Enyakwa and Gamena.

As of June 2019, Enyakwa continues to be the main scat detection dog at CCF, as her high toy drive and ability to correctly identify target species puts her ahead of the other two dogs. Her sister Gamena is improving too but shows a very different work style. She is a lot calmer and often more careful which can be a useful trait for a scat detection dog, depending on the given task. The future will show how to make the best use of the duo according to their individual traits. Ole is still very energetic which is outstanding given that he is over 8 years of age. His role in the pack is very important as he often sorts out little scruffs between Enyakwa and Gamena, which is very normal since they are reaching an age where they are testing their boundaries and establishing their rank. The two sisters also orient themselves after Ole, which facilitates basic obedience training such as recall, which is crucial in the bush.

Thanks to staying on site as international travel is limited, the scat dog team could expand on site searches and training at CCF and in Namibia. The team has now implemented a regular scent line-up to evaluate the dog's precision. 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 1). 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. Additionally, several training transects were implemented that are searched at consistent time intervals to document the team's development. Here target and non-target scats are hidden along road transects in different habitats to mimic real search conditions. The scent line-ups together with the assessment transects allow for a precise 'real time' evaluation of the team throughout the year.

Figure 1: 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 scats, 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 (Figure 2).

Figure 2: New scat dog car kennels.

This year the dogs covered a total of 745 km while the team collected 423 scat samples from potentially 13 different species, and 99 of those scat samples were identified as cheetah in the field.

While searching on CCF farms the scat dogs covered a total of 550 km to find 207 scat samples, of those, 16 were identified as potential cheetah, and 191 as general carnivore samples.

The scat dog team visited 21 farms in the surrounding of Otjiwarongo, and to the east of the country in the Gobabis region and collected a total of 214 scat samples found on a total of 195 km.

Here, 83 samples were identified as potential cheetah scat samples and 131 as other carnivores. While the samples are not yet confirmed genetically, the higher sample return from the Gobabis region suggests a higher cheetah density, which is consistent with expectations from other density studies.

Most of the scat samples are found around scent marking sites such as playtrees, which is a trend that we have found since the early stages of the program. Despite cheetah scat being easy to find, when it is on a tree (Figure 3, left) the dogs are still a huge help when it comes to the samples that were deposited under the tree or fell down. Many samples would therefore still go undetected without the dogs, as shown by Enya when she indicated a scat hidden in a large pile of grass (Figure 3, right).

Figure 3: Typical cheetah scat on a playtree (left). Enya indicating scat hidden under vegetation (right).

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 due 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. To reach more farmers from different areas and backgrounds, Tim and other CCF staff from various departments hosted several farmers' trainings. Here talks were given and practical exercises are implemented to gain hands on understanding of mitigation techniques.

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, all trips for 2020 had to be postponed until at least 2021 due to the global pandemic caused by covid-19.

Cheetah Releases and Monitoring

Savanna (AJU1648)

After Savanna's previous offspring ventured off on their own in December 2019, they remained independent and did not join back up with Savanna anytime during 2020.

In early May 2020, Savanna was found with a new litter of four cubs. Sadly, however, by September 2020 it appeared that Savanna had lost the cubs as they were no longer being seen with her.

On 22 October 2020, Savanna's collar was found. From the signs left it was impossible to say what happened to Savanna. Without the collar for tracking, the Erindi team hoped to spot her but by the end of 2020, she had not been seen in the reserve. It's possible that Savanna has passed, however, we still have hope that she will be spotted and recollared sometime in 2021.

Oban and Talisker (AJU1648)

Since leaving their mother, Savanna, this young coalition of males have been doing extremely well surviving on their own in Erindi. The Erindi team sees these males frequently and they are always in great condition.

Kamin (AJU1664)

During the first half of 2020, Kamin survived well on his own in Erindi Private Game Reserve, after having lost his coalition mate, Elwood, towards the end of 2019 (Figure 4). Sadly, Kamin was found dead on 26 July 2020. Strangely, after a necropsy, nothing could be found by CCF's veterinary team to explain Kamin's cause of death.

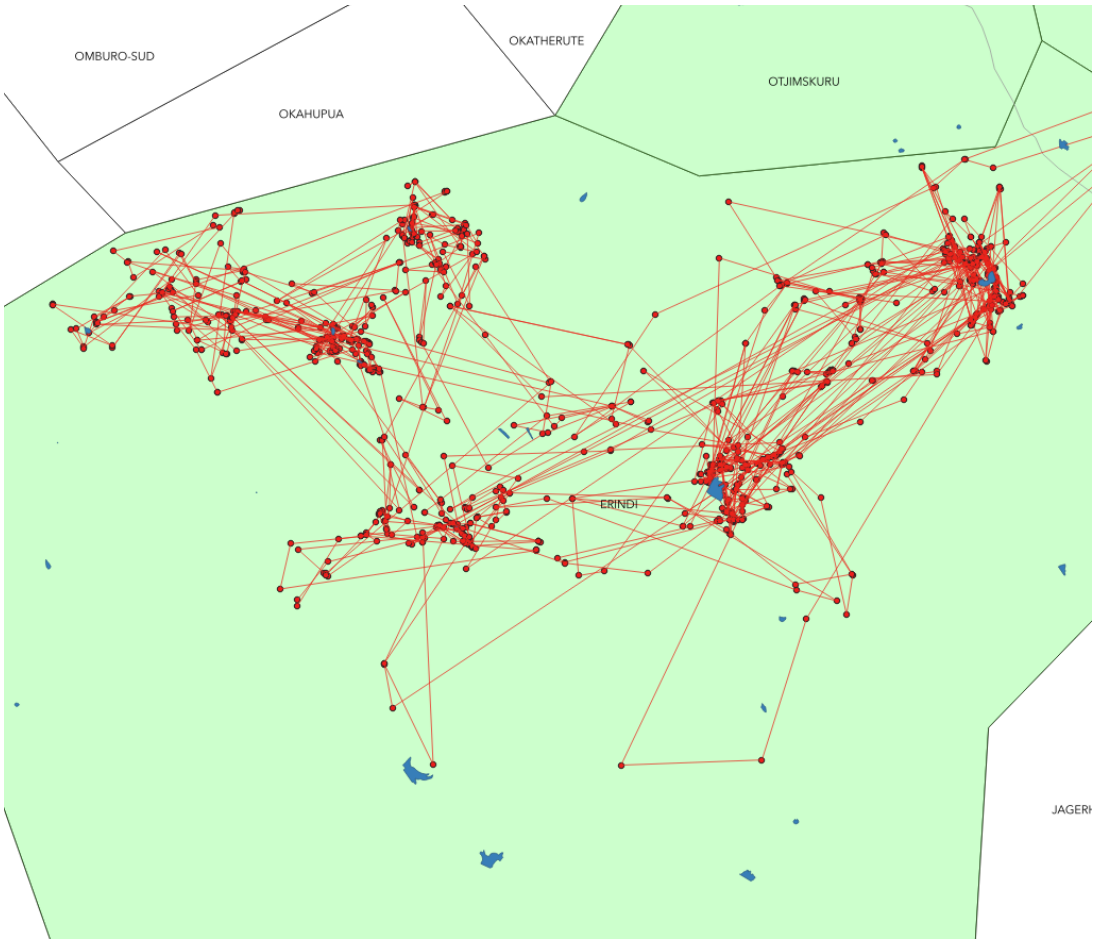


Figure 4: GPS collar data for Kamin from 1 January 2020 to his death on 26 July 2020.

Miers (AJU1778)

In September 2018, CCF released a single male cheetah, named 'Miers', into Erindi Private Game Reserve. Miers was rescued from a property south of CCF's headquarters as an adult, rehabilitated, then released after making a full recovery. From the time of release, Miers only required a single supplemental feeding before becoming fully self-sufficient.

At the beginning of 2020, Miers was still in a holding boma recovering from injuries he had sustained in late 2019. On 30 January 2020, the CCF team travelled to Erindi and fitted a new GPS collar on Miers in order to release him. By this time, he had made a full recovery and was ready for release.

On 2 February 2020, the Erindi team released Miers from his holding boma into the reserve. Everything appeared normal and Miers seemed to be doing well on his own in the reserve (Figure 5). Sadly, just 20 days later, Miers was found dead and it appeared as if he was killed by lions.

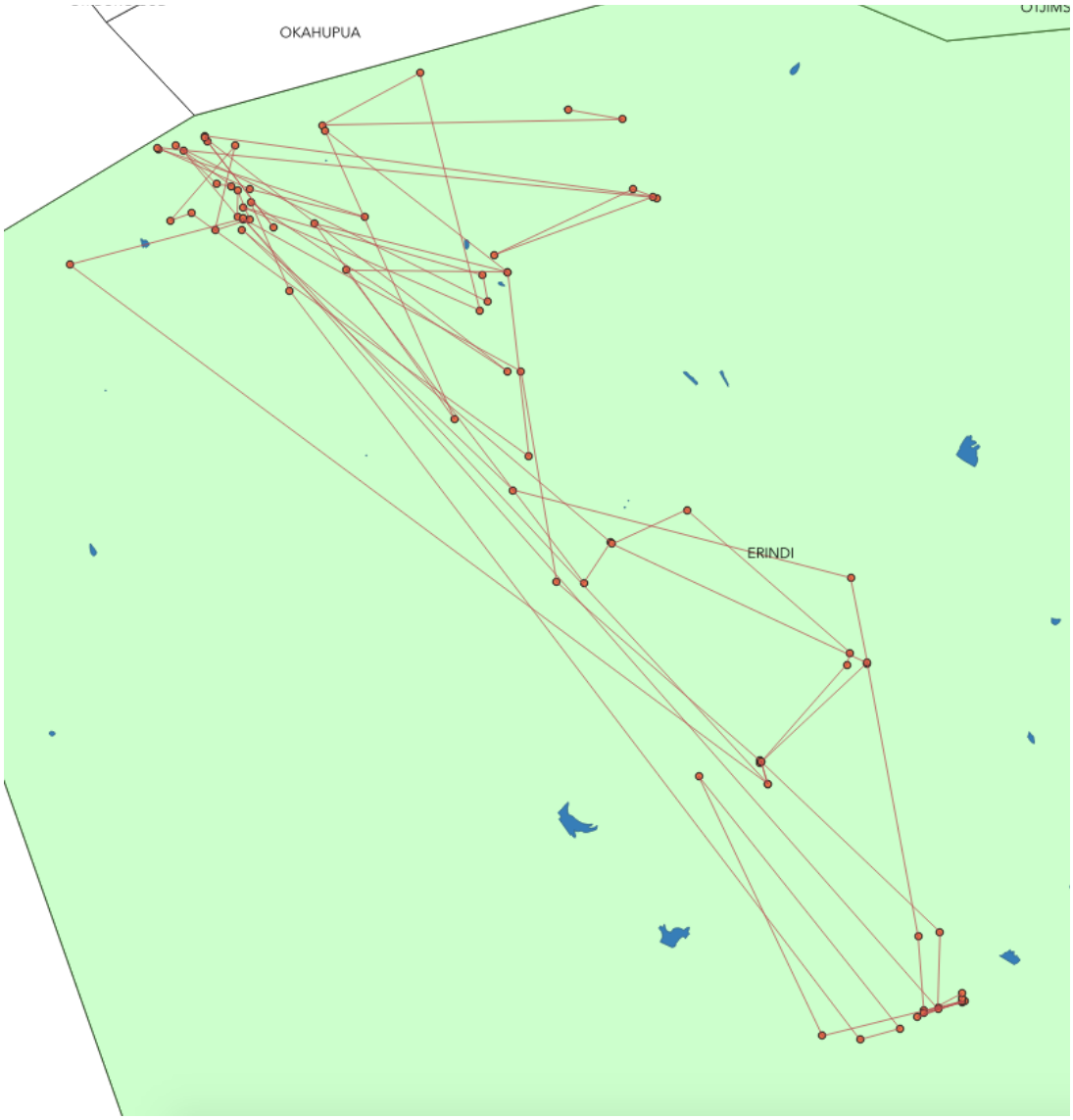


Figure 5: GPS Collar data from Miers from 2 February 2020 to 22 February 2020.

Daenerys, Georgia, and Tatjana (AJU1669, 1670, 1671)

Daenerys, Georgia, and Tatjana were doing well on their own in Erindi for most of 2020. All three females settled into the behavioural routine expected of a wild cheetah and did well hunting for themselves, not needing supplemental feeding as they were hunting for themselves successfully.

In late March 2020, Tatjana was found with four 2-week old cubs (Figure 6). Tatjana cared well for these cubs for several months. She lost two of these cubs but the other remaining cubs were doing well with her care. Sadly, in late October the Erindi team found Tatjana's collar and some of her remains. Her carcass was almost entirely eaten by hyenas and as such, it was impossible to determine her cause of death.

In early April, Georgia was found with three young cubs as well. Through the end of 2020, Georgia was doing extremely well caring for herself and her young cubs (Figure 7). By end of 2020, she only had two cubs remaining but they had reached 9 months of age with Georgia's care. We have high hopes for the success of this family in 2021. Unfortunately in early February 2020, the GPS functionality of Georgia's collar died, so the Erindi monitoring team have kept watch of her with the VHF function. On 12 December 2020, Georgia was recollared with a functioning GPS/VHF collar, so her movements in 2021 can be recorded.

Daenerys had not been spotted with cubs throughout 2020, but she had been surviving very well on her own in Erindi (Figure 8). In mid-January 2020, the GPS function on her collar also died, but the Erindi team have kept up with her using the VHF functionality. Hopefully, sometime in early 2021, Daenerys will be found and she can be recollared.

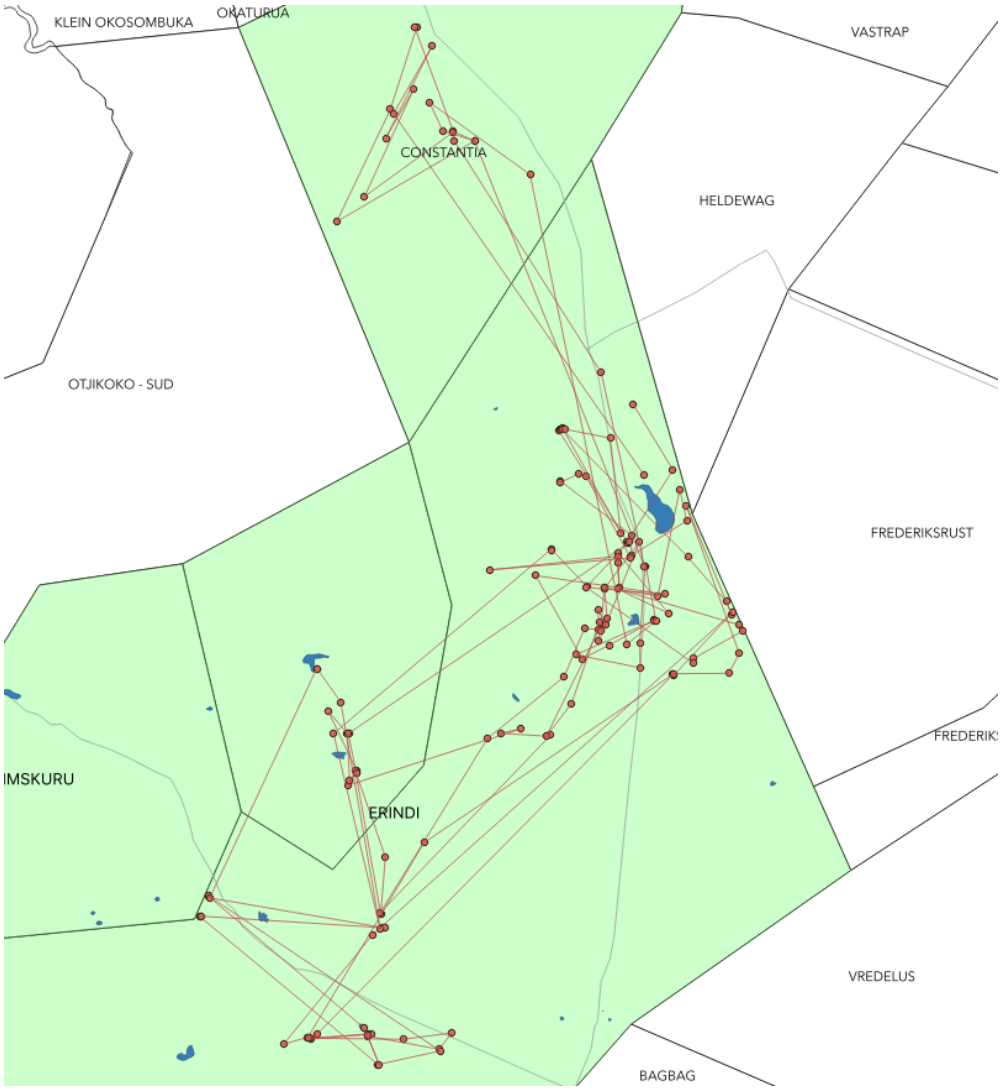


Figure 6: GPS collar data from Tatjana for 2020, until her GPS function died in mid-January

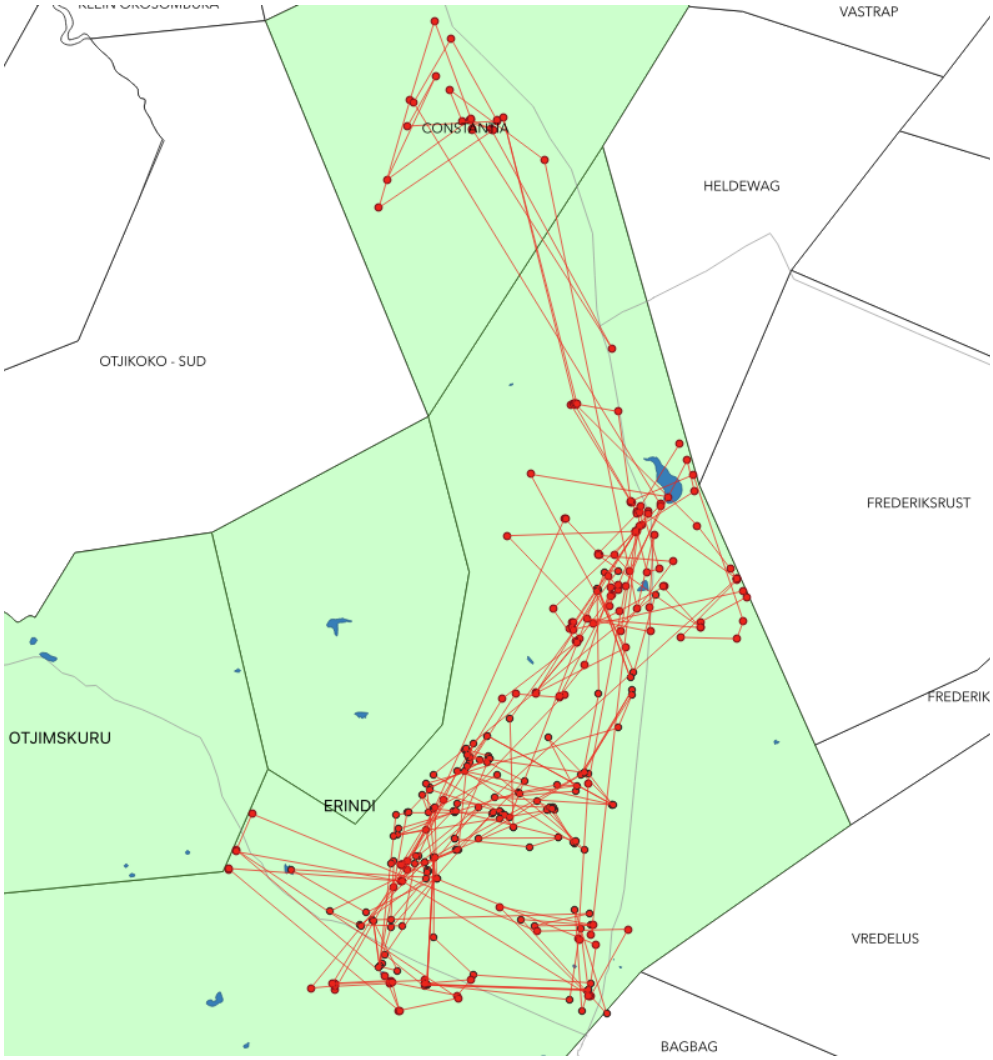


Figure 7: GPS collar data for Georgia in 2020 until the GPS function of her collar died in early February 2020.

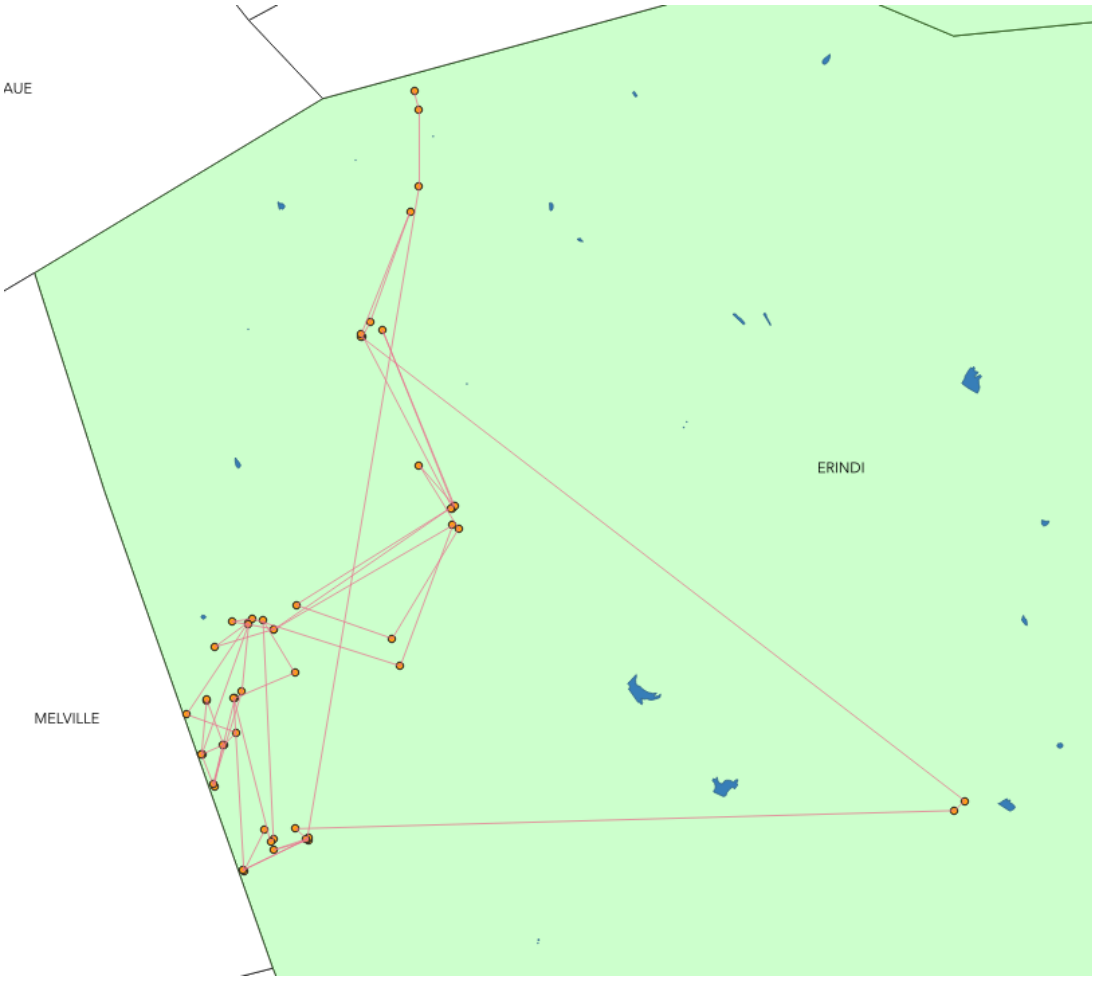


Figure 8: GPS collar data for Daenerys in 2020 until the GPS functionality of her collar died in mid-January 2020.

Gracie (AJU1970)

Gracie is a wild female cheetah that was transferred to Erindi for release in 2019 after having been caught in a trap in the Gobabis region of Namibia. On 1 April 2020, Gracie was released from her holding boma at Erindi into the reserve. Gracie was supported in the early days of her release, but being a wild cheetah she did not require much support from the monitoring teams.

Gracie spent much time exploring the reserve, but eventually settled in the northern section of Erindi and stuck to more mountainous habitat (Figure 9). Sadly, in late December 2020, while drinking at a waterhole Gracie was caught and killed by a crocodile.

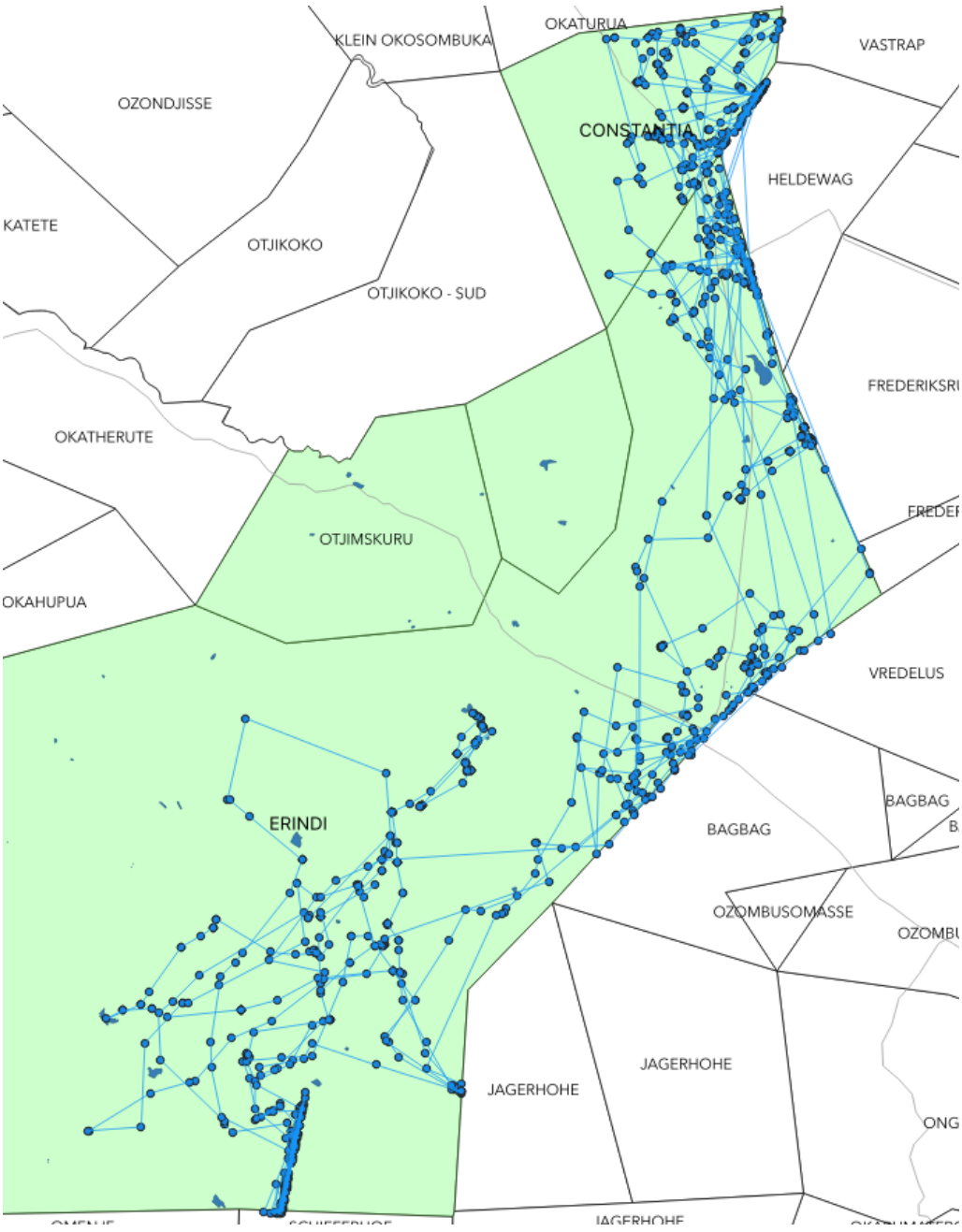


Figure 9: GPS collar data for Gracie in 2020, from her release in April to her death in December.

AJU 1977 & 1978

In late April 2020, the Ministry of Environment, Forestry and Tourism (MEFT) requested CCF house two adult male cheetahs captured in the Gobabis region of Namibia. MEFT delivered the two males to CCF and after a brief period in captivity for medical checks and collaring, the males were released onto CCF property on 21 June 2020.

These males showed high levels of exploratory behaviour in the area around CCF and Otjiwarongo but eventually began settling around the northern section of the Waterberg Plateau (Figure 10). Sadly, these two males were shot on a farm north of CCF's property on 30 September 2020.

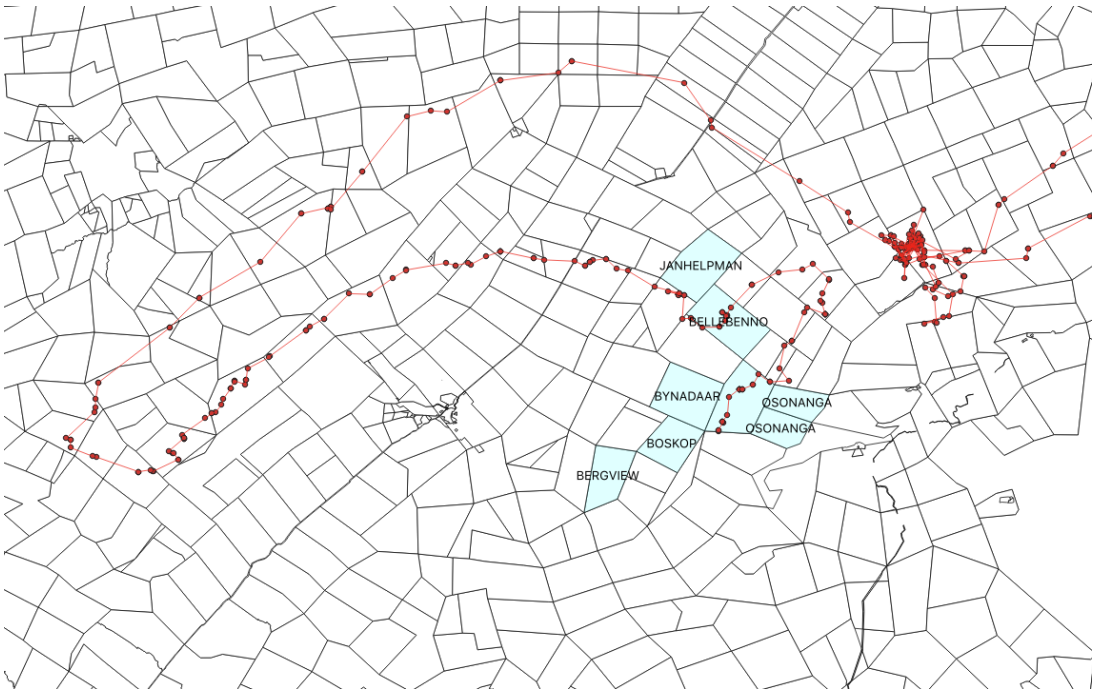


Figure 10: Collar data from AJU 1977 from release on 21 June 2020 to their death on 30 September 2020.

AJU 1971-1975

In early January 2020, MEFT requested that CCF collect a mother cheetah and her four cubs from a farm in the Gobabis region of Namibia that had been captured in a cage trap. CCF collected all five cheetahs and after a brief period in captivity for medical checks and for collaring, this mother cheetah and her four cubs were released onto CCF property.

This female explored the area around CCF lands before heading over 100 km south of CCF property where she seemed to settle down (Figure 11). As this cheetah was an entirely wild female, she has had no trouble surviving on her own and appears to be doing very well. While we are able to keep tabs on the mother cheetah from her GPS collar, it is impossible to determine the fate of her four cubs but we have high hopes that she has done well in taking care of them.

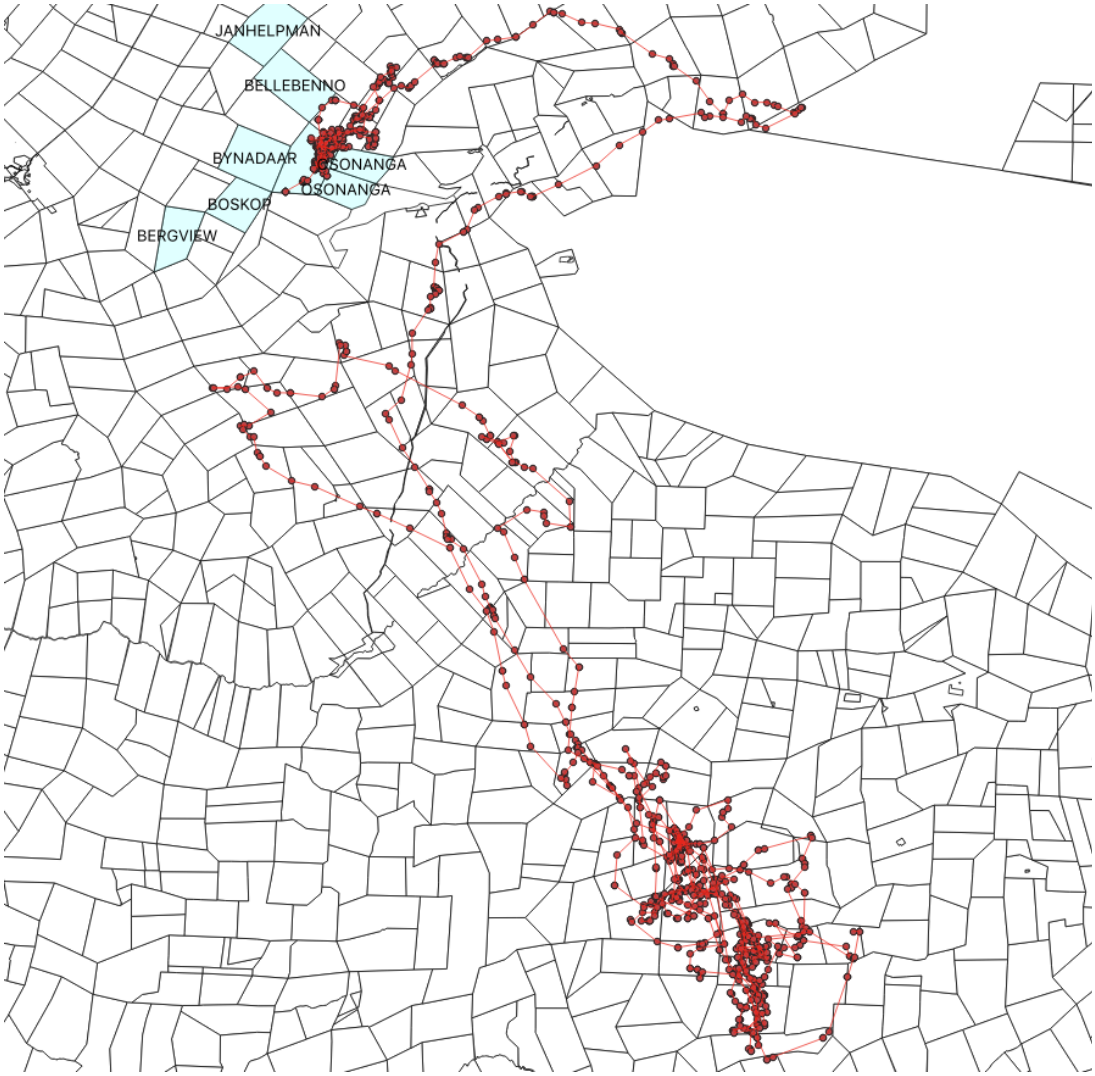


Figure 11: GPS collar data for AJU1971 from her release on 2 February 2020 through the end of 2020.

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.

Weather Monitoring

CCF staff continued collecting rainfall data on CCF farms and daily high and low-temperature readings at the CCF Centre throughout 2020 (Figure 12 & Figure 13). Between January and December 2020, CCF received a total of 549.57 mm. The first drops in the summer fell on 4 September 2020 (2mm). The first significant rain event was between 29 and 31 December 2020, receiving an average of 79 mm throughout CCF land and as high as 120 mm in the areas closer to the Waterberg. During the wet season 2019-2020 (October – April), CCF received 596.40 mm of rain, which is higher than the median (416mm) rainfall for the last 10 years.

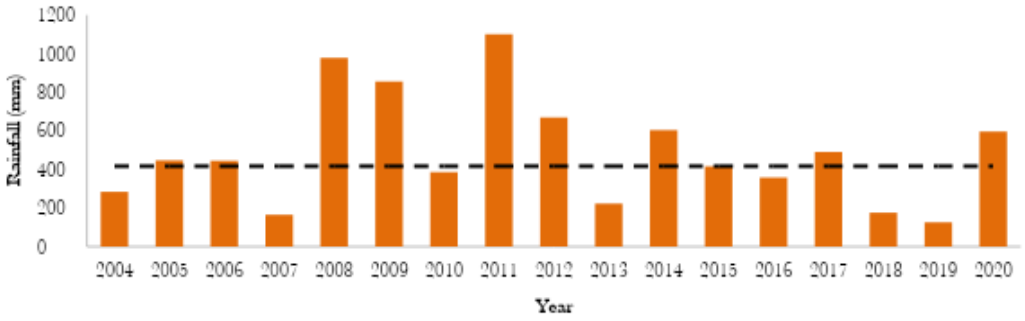


Figure 12: Annual seasonal rainfall from 2004 to 2020. Each rainy season comprises the precipitations occurring between October (previous year) and July (year shown). Dotted line represents the median of the last 10yrs (416mm).

The lowest temperature in 2020 was recorded on 19 August at 2°C, and the highest temperature was recorded on 24 September at 37°C. In comparison to 2019, the monthly minimum temperatures were slightly lower in 2020. The monthly maximum temperatures were considerably lower in 2020 compared to last year (Figure 13).

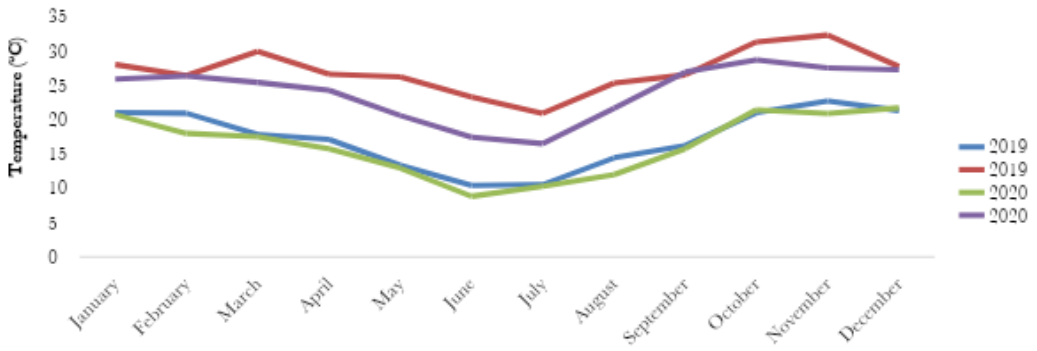


Figure 13: Monthly average minimum and maximum temperatures (°C) from January to December 2019 and 2020.

Game Monitoring

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

Big Field Game Counts

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

During this reporting period, a total of 36 replicate counts (3 routes sampled daily for 3 days) were conducted on the Big Field, resulting in a sampling effort covering 296.64 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 14). The total distance travelled by three teams is 16.48km per day and 49.44km per month.

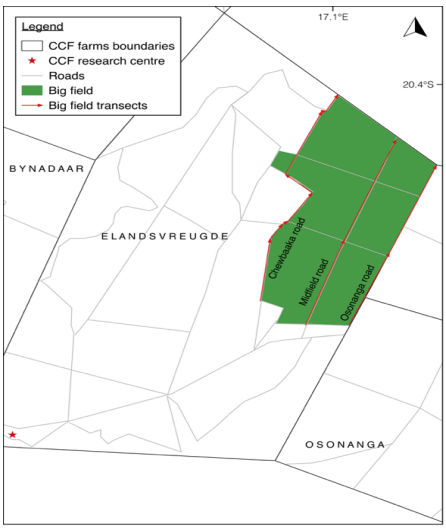


Figure 14: Map of CCF land and location of the Big Field showing the three transects driven monthly for game counts.

All data from these surveys were entered into the main database 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 2019, showing an increase in density estimates for warthog, springbok, red hartebeest, oryx, and eland, and a decrease in density estimates for kudu (Table 3).

Table 3: Density estimates (individual/km^2) with 95% confidence interval of the most common species seen on Big Field in 2019 and 2020.

	2019			2020		
Species	**Mean**	**Lower CI**	**Upper CI**	**Mean**	**Lower CI**	**Upper CI**
Warthog (Phacochoerus africanus)	3.84	3.11	4.73	6.41	1.98	20.74
Springbok (Antidorcas marsupialis)	8.18	0.47	141.7	12.06	0.63	231.64
Red hartebeest (Alcelaphus buselaphus caama)	1.99	0.87	4.51	2.51	0.72	8.73
Oryx (Oryx gazella)	5.9	1.91	18.23	8.17	3.31	20.12
Eland (Taurotragus oryx)	0.45	0.06	3.34	7.73	5.26	11.35
Kudu (Tragelaphus strepsiceros)	2.75	0.49	15.37	0.89	0.26	3.03

All other species are compared in Figure 15 and Figure 16, these show a significant increase in sightings of eland, kori bustard and duiker.

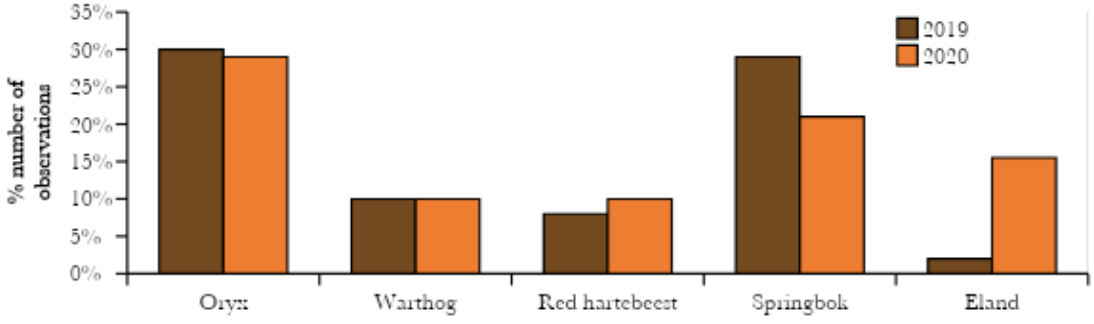


Figure 15: Number of sightings for the most common species during the Big Field counts in 2019 and 2020.

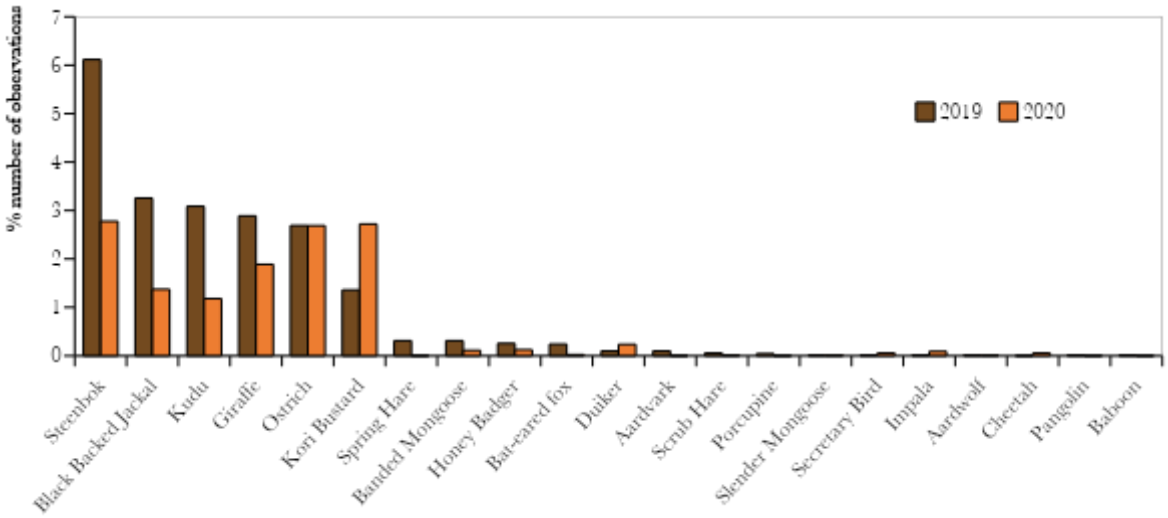


Figure 16: Distribution of species seen during the Big Field game counts in 2019 and 2020.

Night counts - Circuit B

The night count (also known as Circuit B) was also driven once a month (7 pm – 10 pm in winter, and 8 pm – 11 pm in summer) using spotlights on both sides of the vehicle (Figure 17). The night count focuses on nocturnal species. Therefore, while all species seen were recorded, we report here only the nocturnal species. The most frequently sighted species during the night count were black-backed jackal and scrub hair (Figure 18).

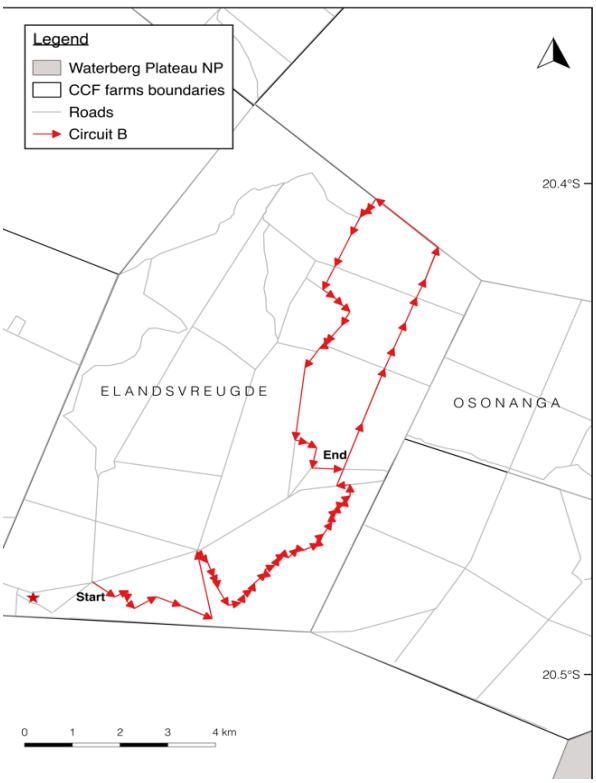


Figure 17: Location of Circuit B on farm Elandsvreugde.

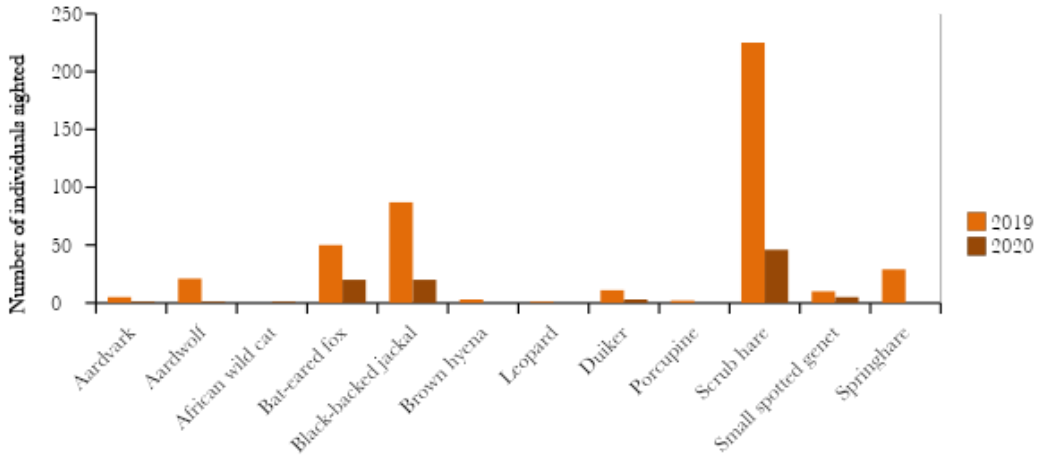


Figure 18: Sightings of nocturnal species during night counts in 2019 and 2020.

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 2020, waterhole counts were conducted on four different occasions due to the logistical constraints of the Covid-19 pandemic, compared to six conducted during 2019. A total of 763 animals were counted involving 16 different species. Here we show the most common species recorded during the waterhole counts in Figure 19 and their annual average densities (Figure 20). Compared to 2019, all species show a decrease in density, except giraffe with a slight increase. However, during 2020 part of Bellebenno's fence was knocked down which could have allowed movement outside of the game-fenced portion. This also shows the apparent decrease in eland density in Bellebenno, while the Big field count results show that the Eland have moved to Elandsvreugde.

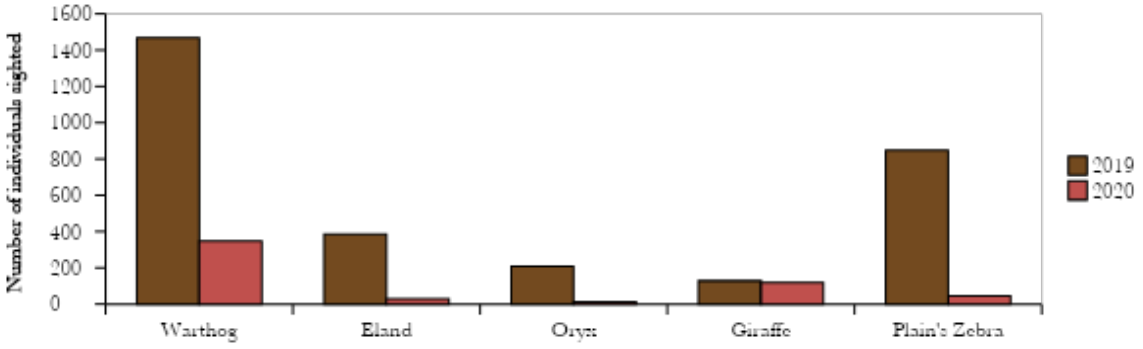


Figure 19: Frequently sighted species during the Bellebenno waterhole count.

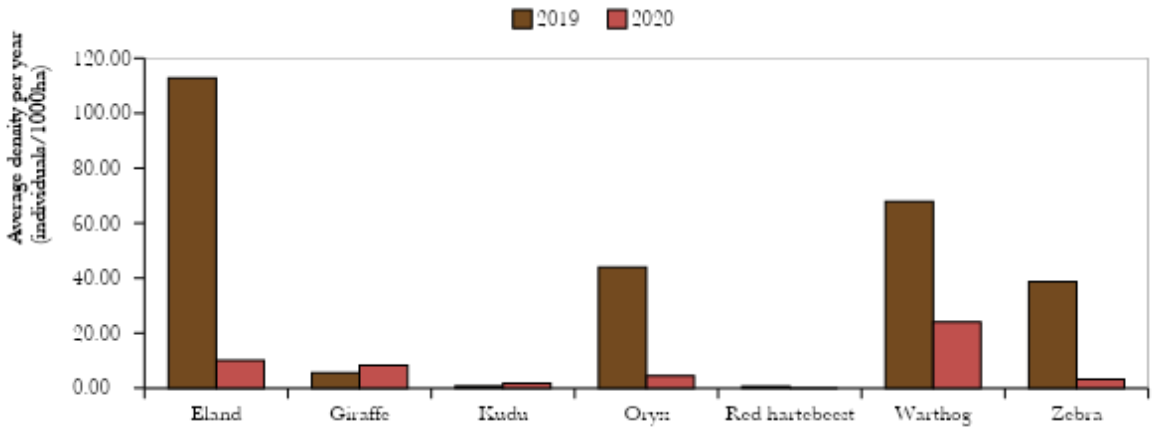


Figure 20: Average density estimates (individual/1000ha) per year of the most common species seen on the Bellebenno waterhole counts in 2019 and 2020.

Annual Waterhole Counts

In 2020 the annual 12h waterhole count was conducted on 19 August 2020 and 21 August 2020 (camera traps). A total of 35 waterholes were counted during a 12-hour period (7 am-7 pm) (Figure 21). These were surveyed in August by teams of two observers comprised of CCF volunteers/interns/staff and camera traps due to the low number of people at CCF headquarters in Namibia because of the COVID-19 pandemic.

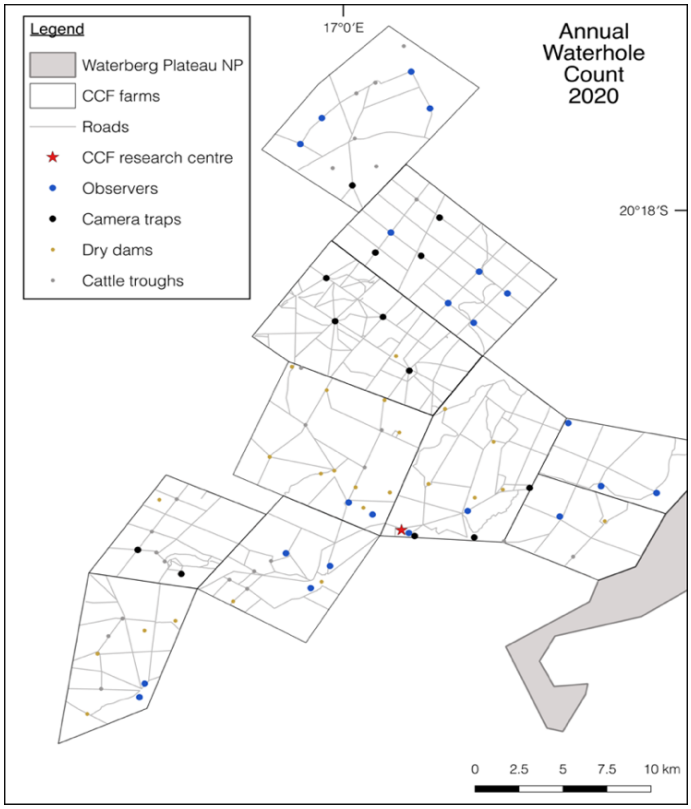


Figure 21: Location of waterholes surveyed during the annual 12-hour.

Density estimates for the most common species for both 2019 and 2020 surveys are shown in Figure 22. An overall decrease in density is observed for all main game species. This could be explained by good rains which fell during the 2020 rainy season, resulting in an availability of larger amounts of surface water, and therefore animals did not necessarily have to go to the waterholes to drink. Additionally, the constraints of having fewer observers at the respective water points due to the COVID-19 pandemic could have potentially caused some bias in the results shown.

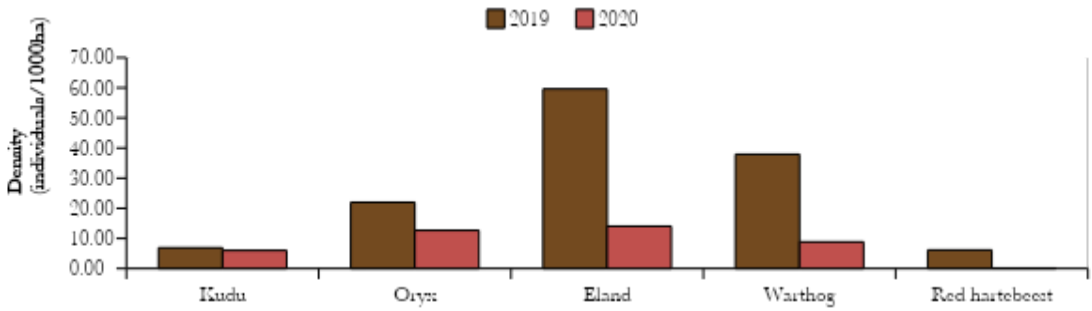


Figure 22: Density estimates for the most frequently sighted game species during the annual waterhole count in 2019 and 2020.

Seasonal Count Across CCF farms

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

The Otjenga transect was included in the seasonal count for the first time in October 2020, during the hot dry season. Densities for the most frequently sighted species were calculated using the 'Distance Sampling in R' package using R Studio.

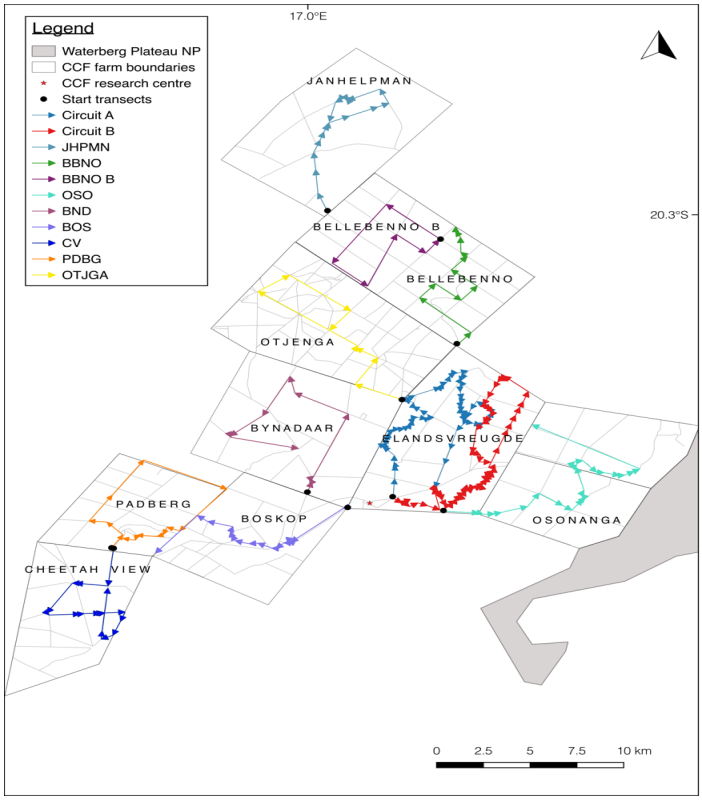


Figure 23: Map of seasonal strip count transects on CCF land.

Based on the density estimates in Table 4, steenbok, kudu, eland, warthog and oryx are the most abundant species on CCF land. Plains zebra are only found in the game fenced portion of Bellebenno and parts of Boskop and thus their densities are based on only these two farms. Red hartebeest and springbok have relatively low densities as they are largely restricted to Elandsvreugde and sightings are infrequent.

Compared to 2019 for all seasons in 2020, duiker giraffe, steenbok, warthog, kudu, springbok and oryx show an increase in densities, while zebra potentially shows a decrease, although due to fewer observations densities could not able estimated. Eland and red hartebeest show similar densities. Additionally, in 2019 all species showed higher densities in the wet season, compared to 2020 with most species showing higher densities in the late dry season. The differences could be explained by the good rainy season in 2020 as there were more resources available even at the very end of the dry season.

Table 4: Density estimates of main species counted during seasonal strip counts, by season during 2019 and 2020. Cells marked with * had fewer observations to run the Distance analysis.

Density estimate (individual/km2)						
	2019			2020		
Species	Wet (March)	Early Dry (July)	Late Dry (October)	Wet (April)	Early Dry (August)	Late Dry (October)
Duiker (Sylvicapra grimmia)	1.3 (0.68-2.42)	0.59 (0.04-0.87)	1.28 (0.68-2.42)	*	1.35 (1.04-1.75)	1.84 (1.42-2.4)

Eland (Taurotragus oryx)	7.8 (0.01 – 24)	0.2 (0.02-1.54)	0.1 (0.01 -0.62)	*	0.06 (0.0005-8.25)	0.12 (0.008-1.85)
Giraffe (Giraffa camelopardalis)	0.17 (0.03-1.33)	0.07 (0.01-0.59)	0.14 (0.07-0.28)	0.29 (0.14-0.6)	0.24 (0.07-0.78)	0.41 (0.12-1.45)
Kudu (Tragelaphus strepsiceros)	0.5 (0.19-1.3)	2.2 (0.9-5.5)	0.24 (0.13-0.42)	0.87 (0.41-1.84)	1.63 (0.78-3.37)	1.73 (1.08-2.77)
Oryx (Oryx gazella)	1.28 (0.01-218.3)	0.35 (0.11-1.08)	0.43 (0.08- 2.34)	1.59 (0.63-4.05)	0.92 (0.11-7.6)	1.98 (0.34-11.33)
Red hartebeest (Alcelaphus buselaphus caama)	0.32 (0.11-0.89)	0.44 (0.1-1.81)	0.33 (0.02-5.36)	0.23 (0.001-44.9)	0.46 (0.15-1.37)	0.23 (0.05-0.98)
Springbok (Antidorcas marsupialis)	0.44 (0.01-15.96)	0.12 (0.01-27.4)	0.41 (0.01 -3.2)	0.28 (0.001-73.8)	0.74 (0.01-62.03)	0.74 (0.001-76)
Steenbok (Raphicerus campestris)	4.43 (3.26 – 6.02)	3.22 (2.6-4)	4.57 (2.64 – 7.92)	1.18 (0.58-2.38)	7.97 (6.43-9.88)	10.94 (9.58-12.5)
Warthog (Phacochoerus africanus)	2.11 (0.43-103.94)	0.42 (0.19-0.94)	0.38 (0.21-0.68)	1.08 (0.36-3.27)	0.68 (0.02 - 22.49)	2.27 (0.11-44.75)
Plains zebra (Equus quagga)	1.02 (0.36-2.92)	0.27 (0.03-2.22)	0.07 (0 – 5)	*	*	*

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 2020. During this reporting period, a manuscript on the responses of wildlife towards bush harvesting was published in the journal of Forest Ecology and Management's special issue "Processes underlying restoration of temperate savanna and woodland ecosystem". Also, another manuscript titled: Restoration thinning reduces bush encroachment on freehold farmland in Namibia was submitted for peer review to the Forestry: An International Journal of Forest Research.

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, and the preparation of the manuscript. 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.

In 2020, as part of Johannes Kweyo's in-service training (Bachelor of Agriculture management, NUST) research, a project titled: Investigating the effects of bioreactor compost on the growth of radishes was carried out in the CCF Chewbacca Memorial Garden. The bioreactor compost was prepared and supplied by the CCF Biomass centre (Bushblok). The aim of the survey was to examine the effectiveness of bioreactor compost on crop growth, through improved soil fertility. Johannes successfully presented his research project at NUST, and he will be graduating in 2021.

Playtree Research

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

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

Since the first initial survey in 2005, CCF has been monitoring play trees on its land on a permanent basis. Between January and December 2020, 5 different individuals were identified (Figure 24), a coalition of 2 young males captured in July on two different occasions, a coalition of 2 adult males captured at the end of August and at the beginning of September on 7 different occasions, and a male that had first been captured in July 2019, he was captured in January and again in April.

Figure 24: A few camera trap photos of cheetahs at play trees during 2020.

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. Of the 130 Giraffes, 100 (56 males, 31 females and 13 unknown) were seen and recorded alive in 2020, which includes 10 new calves which are yet to be identified and recorded according to and sex (Table 5).

Table 5: Total number and percentage of individuals of each sex.

	Number of individuals (%)
Males	56 (56)
Females	31 (31)
Unknown	13 (13)
Total	100

Of the 100 seen and recorded individuals, 59 are adults, 31 sub-adults and 10 calves. This population was estimated using the number of individuals observed between 2015 and 2020 to account for individuals who may be present but not captured in photographs or those that may not have been observed. There were two individuals who had not been photographed or observed since 2015 but were re-photographed in late 2017. It is therefore likely that there are other individuals who are present but have not been documented in the last couple of years.

Calves are individuals estimated to have been born in 2019 and below two years, sub-adults are individuals between the estimated ages of two and four, and adults are individuals estimated five years or older. In Figure 25, the majority of individuals are adults (59%) followed by sub-adults (31%) and then calves (10%).

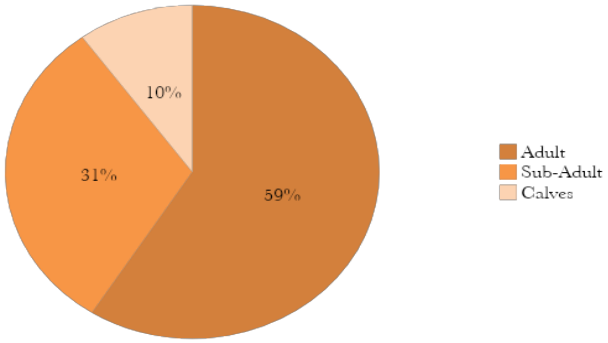


Figure 25: Percentages of giraffes per age group observed in 2020.

During 2020, 58 individuals have been observed in Bellebenno, 42 in the Reserve and no overlaps have been observed in 2020 (Table 6). Overall, the largest numbers of Giraffes have been observed in Bellebenno with 58 individuals compared to the Reserve. It is possible that since Bellebenno is a game-fenced farm, it is much easier to capture and identify new individuals whereas the Reserve is an open system that does not restrict giraffe movements in and out. Bellebenno's mostly-closed system could result in an acceleration of population growth that could reach carrying capacity much sooner than if it were an open system like the Reserve, and there may be more movement of adult animals from Bellebenno out into the Reserve. Further population modelling will need to be done to determine when that is most likely to occur.

Table 6: Total number and percentages of individual giraffes observed in 2020. Individuals observed in both Bellebenno and the Reserve are categorized under "Overlap".

Location	Number of individuals (%)
Bellebenno	58 (58)
Reserve	42 (42)
Overlap	0 (0)
Total	**100**

Within the current population, there are twelve individuals who were first identified in 2003. The oldest individuals from 2003 are at least 20 years old, and the youngest from 2003 is now 17 years old. The majority of individuals were first observed in 2010 (n=20), and the youngest individuals from that year are now adults (10 years old). The 14 individuals from 2013, the majority of whom were calves born that year have also reached adulthood (eight years old). Figure 26 shows new giraffe individuals observed per year, not just calves but other age groups as well (adults and sub-adults). The large decline in numbers of newly identified individuals between 2004 and 2010 may be due to lack of giraffe photos taken during that period and lack of camera trap photos.

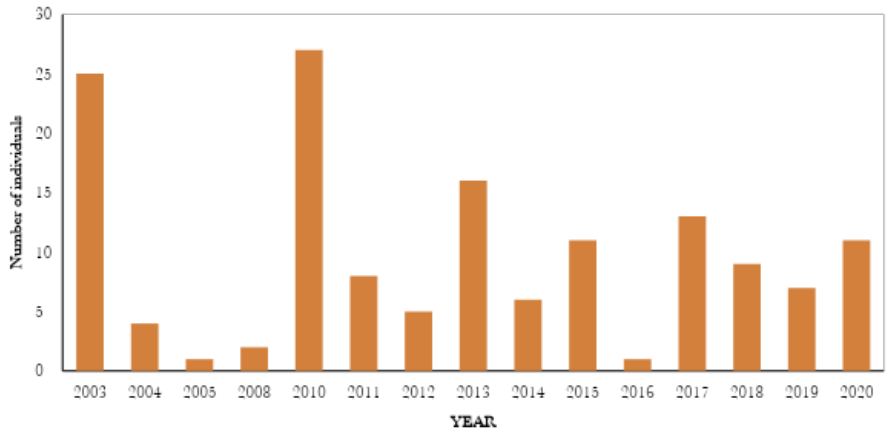


Figure 26: Years in which individuals were first observed.

CCF Rhino Reserve

CCF continues to monitor its 158 km^2 rhino reserve, where a small population of south-western black rhinos (Diceros bicornis occidentalis) resides. The rhinos are part of the Namibian Ministry of Environment, Forestry and Tourism's (MEFT) Black Rhino Custodian Programme. CCF monitors the rhinos by deploying camera traps across the reserve at key waterholes. Cameras are permanently running and checked each week for rhino pictures.

In August 2020 a new rhino calf was born at CCF to Ffyona, it is suspected that the new calf was fathered by Bruce given some older captures of the two together and the timing of birth. The new calf is a male and as of the time of writing this report he was growing strong and healthy (Figure 27).

Figure 27: Ffyona and her calf.

Research and Scientific Papers

Visiting Researchers

Dr. Alexander Sliwa: Black Footed Cat Researcher

Dr. Sliwa stopped by CCF's Research and Education Center to tour the facility and then gave a talk to CCF staff and interns on his black footed cat research on 8 December 2020.

Published Papers

Fabiano, E.C., Sutherland, C., Fuller, A., Nghikembua, M., Eizirik, E., Marker, L. (2020). Trends in cheetah Acinonyx jubatus density in north-central Namibia. Population Ecology, 62:233–243. POEC-2018-0014.R3.

Meachen J, Schmidt-Küntzel A, Marker L. (2020). Regional variation in the cheetah (Acinonyx jubatus) revisited: morphology of wild and captive populations. Zoo Biology, 39(2):83-96.

Nghikembua, M.T., Marker, L., Brewer, B., Mehtätalo, L., Appiah, M. and Pappinen, A. (2020). Response of wildlife to bush thinning on the north central freehold farmlands of Namibia. Forestry Ecology and Management, 473, 118330.

Verschueren, S., Briers-Louw, W.D., Torres-Uribe, C., Siyaya, A., and Marker, L. (2020). Assessing human conflicts with carnivores in Namibia's eastern communal conservancies. Human Dimensions of Wildlife, DOI: 10.1080/10871209.2020.1758253.

Accepted Papers

Marker, L., Pfeiffer, L., Siyaya, A., Seitz, P., Nikanor, G., Fry, B., O'Flaherty, C. and Verschueren, S. Twenty-five years of Livestock Guarding Dogs across Namibian farmlands. Journal of Vertebrate Biology.

Submitted Papers – In Revision

Siyaya, A., Hughes, C., Whiter, W.R., Nitsche, C.M. and Marker, L. Impacts of Human-Dimensions in Wildlife Training on Participants. Human Dimensions of Wildlife.

Walker, E., Verschueren, 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.

Hofmann, T., Marker, L. and Hondong, H. Factors influencing the detection success of cheetah scat by dog-human and human-only teams in a semi-arid thorn bush savannah (Waterberg Conservancy, Namibia). Namibian Journal of Environment.

Tricorache, P., Yashphe, S., Marker, L. Global dataset for seized and non-intercepted illegal cheetah trade (Acinonyx jubatus) 2010-2019.

Verschueren, S., Briers-Louw, W.D., Cristescu, B., Fabiano, E., Nghikembua, M., Torres-Uribe, C., Walker, E., Marker, L. Spatio-temporal interactions of cheetahs and leopards at scent-marking sites in north-central Namibia. African Journal of Ecology.

Submitted Papers

Marker, L., Honig, M., Pfeiffer, L., Kuypers, M., Gervais, K. Captive rearing of orphaned African wild dogs (Lycaon pictus) in Namibia: A case study. Zoo Biology.

Verschueren, 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.

Nghikembua, M.T., Marker, L.L., Brewer, B., Leinonen, A., Mehtätalo, L., Mark Appiah, M., Ari Pappinen, A. Restoration thinning reduces bush encroachment on freehold farmlands in north central Namibia.

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

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.

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. Applied Animal Behaviour Science.

McConnell, I. Marker, L. , Rooney, N. J. Personality and effectiveness of livestock guarding dogs in Namibia.

Cristescu, B., Traylor-Holzer, K. Fabiano, E., Leus, K., Nghikembua, M., Brewer, B., Schwartz, K. R., Traeholt, C., Marker, L., Schmidt-Küntzel, A,. Viability projection for cheetah populations predicts range-wide decline in the absence of conservation intervention.

Hannah Khwaja, H., Schmidt-Küntzel, A., Crosier, A., and Laurie Marker, L. Analysis of ovarian activity in group-housed captive female cheetahs (Acinonyx jubatus) using vaginal cytology.

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

Schmidt-Küntzel A., Hils, K. , O'Brien S., Marker, L. A molecular tool kit for genotyping low quality non-invasively collected cheetah (Acinonyx jubatus) samples. (in prep)

Lindenberg, M. T., Walker., E.H., Keenlance, P., Jacquot, J. J., Locher, A., Marker, L. Is the ecology of reintroduced, captive-raised female cheetahs the same as wild cheetahs? A study in north-central Namibia. (in prep)

Mhuulu, L., Marker, L., Naomab, E., Schmidt-Küntzel, A. Identification of individual cheetahs (Acinonyx jubatus) combining non-invasive genetic and camera-trapping techniques on Namibian farmland. (in prep)

Marker, L., Pfifer, L., David Fleury, G., Siyaya, A., Nghikembua, M. T. Human-Carnivore Conflict in the Eastern Communal Conservancies. (in prep)

Lindenberg, M. T., Walker., E.H., Keenlance, P., Jacquot, J. J., Locher, A., Marker, L. Is the ecology of reintroduced, captive-raised female cheetahs the same as wild cheetahs? A study in north-central Namibia.

Mangiaterra S., Marker L., Cerquetella. M., Galosi L., Marchegiani, A., Gavazza, A.and Rossi, G. The "Gastritis/Esophagitis/Chronic Wasting Complex" in cheetah (Acinonyx jubatus) and implications of gastric helicobacter-like organisms.

MSc. Papers

No Msc. Papers were written during this reporting period.

Livestock Guarding Dog Programme

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 668 (341M, 327F) Livestock Guarding Dogs with farmers throughout Namibia and other parts of Africa. As of 31 December 2020, there were 188 (92M, 96F) dogs alive in the programme (Table 7), of which 150 (75M, 75F) are working dogs and 38 (17M, 21F) are retired or housed as pets.

Table 7: Dogs alive as of 31 December 2020. The dogs in South Africa and one female in Tanzania are now pet dogs.

Location	M	F	Total
Commercial	30	30	60
Commercial (CCF Working)	6	11	17
Commercial (CCF Puppies)	2	0	2
Communal	23	20	43
Emerging Commercial	8	6	14
Resettled	5	7	12
Tanzania	1	1	2
Total Working	**75**	**75**	**150**
Retired/Pet (breeding)	17	21	38
Total dogs alive:	**92**	**96**	**188**

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

CCF has also donated numerous puppies over the years to Cheetah Outreach, another facility that works to save the wild cheetah in South Africa, to help form their own livestock guarding dog programme. Since the trial programme was so successful in 2005, they also began breeding and providing Anatolian shepherds to South African farmers after the CCF model. The programme is key to helping farmers protect their livestock and thus save more cheetahs.

Currently, there are 16 (5M, 11F) intact dogs in CCF's breeding programme (Table 8), of which 10 (2M, 8F) reside at CCF as working dogs, one (0M, 1F) works on commercial farms, and two (1M, 1F) reside in South Africa, two (1M, 1F) reside on a communal farm, and one (1M, 0F) resides on a commercial farm. Two dogs changed location, five were removed, and five dogs were added to (Table 8) in 2020. Koda (SB#772), a Lady (SB#535) puppy kept at CCF to become a breeding and working female.

- !Us (SB#498), an outside breeding female died from a snakebite on 2 January 2020.
- Lady (SB#487), an outside breeding female was returned to CCF on 25 February 2020, produced one litter and was then spayed during her emergency C-section on 7 September 2020. This was meant to be her only litter due to old age.
- Taya (SB#490), was euthanised on 25 February 2020 due to a severe decline in health.
- Firat (SB#431), was retired as a pet dog on a commercial farm on 29 May 2020.
- Lady (SB#535), was spayed on 10 November 2020 due to old age.
- Repet (SB#507), was spayed on 19 November 2020 due to old age.
- Kuvvet (SB#799), Lady's (SB#535) puppy was kept intact as an outside breeding female, and was donated to Mr. Stanley Njembo as a future breeding partnership. Mr. Njembo is a communal farmer from Otjituuo.
- Witvoet (SB#812), was added to CCF's programme to be used for future breeding with Kuvvet (SB#799) by Stanley Njembo as a future breeding partnership.
- Brooks (SB#814), was donated to CCF by Stanley Njembo as a future breeding partnership.
- Katira (SB#809) and Ana (SB#810), Lady (SB#801) were part of a litter donated to CCF and were kept in-tact as future breeding and working females on CCF's farms.

Table 8: Intact livestock guarding dogs as of 31 December 2020.

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	Pet	Communal	Namibia
809	Katira	6/15/2020	F	Working (CCF)	Commercial	Namibia
810	Ana	6/15/2020	F	Working (CCF)	Commercial	Namibia
812	Witvoet	9/1/2014	M	Pet	Communal	Namibia
814	Brooks	9/1/2017	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. Stella Emvula has assisted in managing the programme for 3 years.

Breeding and Puppy Placements

Since the programme's inception, 88 litters have been born at CCF for a total of 713 (348M, 350F, 15U) puppies. From January to December 2020, a total of 20 (13M, 7F) puppies were born to four of CCF's onsite breeding females. Of the 20 puppies born, one male was stillborn, one died from asphyxiation, four (3M, 1F) died from internal health issues. Seven (4M, 3F) puppies were donated by Gerhard Steyn, a commercial farmer from Otavi. The seven puppies originally came from a litter of 10 (5M, 5F) (Table 9).

Table 9: Puppies born and type of placement as of 31 December 2020 (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	**660/628**	**660/535**	**800/801**	**660/487**	**814/709**	**Totals**	
DOB:	**25Mar'20**	**07May'20**	**15Jun'20**	**07Sep'20**	**20Dec'20**		
Sex:	**M F**	**M F**	**M F**	**M F**	**M F**	**M**	**F**
K	0 0	0 0	2 4	1 1	0 0	3	5
C	1 0	4 1	2 1	0 1	0 0	7	3
EC	0 0	0 0	0 0	0 1	0 0	0	1
R	0 0	1 1	0 0	0 1	0 0	1	2
P/B	0 0	0 0	0 0	0 0	0 0	0	0
D	0 0	1 1	1 0	1 0	2 0	5	1
NP	0 0	0 0	0 0	0 0	2 0	2	0
Total	**1 0**	**6 3**	**5 5**	**2 4**	**4 0**	**18**	**12**
IP	0 0	0 0	1 4	0 0	2 0	3	4

- Susie (SB#628) was bred with our Kangal male, Bolt (SB#660), for the third time in January 2020. She gave birth to 1 (1M, 0F) puppy on 26 March 2020. This puppy was placed on a communal farm.
- Lady (SB#535) was bred with our Kangal male, Bolt (SB#660), for the fifth time in March 2020. She gave birth to 9 (6M, 3F) puppies on 7 May 2020. One male was stillborn. One female passed away due to internal health issues. Five puppies (4M, 1F) were placed on communal farms. Two puppies (1M, 1F) were placed on resettled farms.
- Lady (SB#801), the outside dam of the mongrel litter donated to CCF was bred with SB#800. She gave birth to 10 (5M, 5F) puppies on 15 June 2020. One male was kept by the owner, two females were kept by the farm managers. Seven puppies (4M, 3F) were donated to CCF. One male passed away from asphyxiation. Three puppies (2M, 1F) were placed on communal farms. One male was placed on a resettled farm, and two females remain at CCF to become working and future breeding dogs.
- Lady (SB#487), was bred with our Kangal male, Bolt (SB#660), for the first time in July 2020. She gave birth to 6 (2M, 4F) puppies on 7 September 2020. One male passed away due to internal issues. Lady underwent an emergency C-section due to delivery issues. She was spayed during the surgery. Two (1M, 1F) puppies were placed on commercial farms. One (0M, 1F) puppy was placed on an emerging commercial farm. One (0M, 1F) puppy was placed on a resettled farm. The last (0M, 1F) puppy was placed on a communal farm. See section, Dog Health, for more information.
- 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. The two remaining male puppies are due to be placed in March 2021.

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.

Follow-up on Prior Placements and Health Survey

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

In 2020, CCF staff visited 136 (71M, 65F) 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 136 dogs, 23 (11M, 12F) 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

- Pula (SB#758), a working dog on a commercial farm, died from a snakebite on 16 October 2019. CCF was only informed in January 2020 when scheduling their annual visit.
- Silver (SB#740), a working dog on a communal farm, is presumed dead as she never came back with her herd around October 2019. CCF was not informed until January 2020.
- Repet (SB#547), a working dog on a communal farm, died from a snakebite on 18 December 2019. CCF was only informed in January 2020 when scheduling their annual visit.
- !Us (SB#498), an outside working breeding female on a commercial farm, died from a snakebite on 2 January 2020.
- Tjakwata (SB#644), a working dog on a rural farm, was shot by their owners' neighbour on 9 January 2020.
- Totongwe (SB#580), a working dog on a communal farm, died from unknown causes on 15 January 2020.
- Sulie (SB#665), a working dog on a communal farm, died from a snakebite on 26 January 2020.
- Brenda (SB#602), a working dog on a commercial farm, died from snakebite in December 2019. CCF was not informed until 18 February 2020.
- Leeu (SB#770), a working dog on a communal farm, died from a car accident on 20 February 2020.
- Taya (SB#490), CCF's retired breeding female was euthanised due to a rapid decline in health on 25 February 2020. See section, Dog Health, for more information.
- Bonnie (SB#278), a working dog on a commercial farm, died from old age on 25 February 2020.
- Pota (SB#593), a pet dog in Windhoek, died from unknown causes on 4 March 2020.
- Rocky (SB#511), a working dog on a communal farm, died from a snakebite on 5 March 2020.
- Spike (SB#657), a working dog on a commercial farm, died from a snakebite on 17 March 2020.

- Danger (SB#626), a working dog on a commercial farm that was brought to CCF was euthanised due to the severity of injury on 24 March 2020. See section, Dog Health for more information.
- Susana (SB#784), a working dog on a communal farm, died from a car accident on 7 April 2020.
- Maria (SB#598), a working dog on a commercial farm, died from Squamous Cell Carcinoma (SCC) on 18 November 2019, CCF was only informed upon scheduling a visit in May 2020.
- Unnamed Dog (SB#794), was a stillborn puppy born to Lady (SB#535) at CCF.
- Unnamed Dog (SB#798), two-day old puppy born to Lady (SB#535) at CCF, died from unknown reasons on 9 May 2020.
- Wagter (SB#646), a working dog on a commercial farm, died from a snakebite on 12 May 2020.
- Unnamed Dog (SB#747), a working dog on a commercial farm, died from a snakebite on 22 August 2019, CCF was only informed upon scheduling a visit in June 2020.
- Leo (SB#443), a working dog on a commercial farm, died from unknown reasons on 2 June 2020.
- Kakadona (SB#733), a working dog on a communal farm, died from a snakebite on 12 June 2020.
- Spotty (SB#448), a working dog on an emerging commercial farm, died from snakebite in August 2019. CCF was only informed upon scheduling a visit in June 2020.
- Unnamed Dog (SB#779), a working dog on a commercial farm, died from a snakebite on 25 May 2020. CCF was only informed upon scheduling a visit in June 2020.
- Spotty (SB#730), a working dog on a resettled farm, died from a farm accident on 15 February 2020. CCF was only informed when scheduling a visit in July 2020.
- Blackie (SB#551), a working dog on a resettled farm, was euthanised after suffering from internal bleeding from being kicked by a horse on 20 July 2020.
- Thousand (SB#474), a pet dog was euthanised due to a severe decline in health on 21 July 2020. See section, Dog Health, for more information.
- Brave (SB#674), a working dog on a communal farm, died from unknown reasons on 1 August 2020.
- Olbeia (SB#722), a pet dog on a resettled farm, died from snakebite on 13 May 2020. CCF was only informed upon visiting other farms with working dogs on 6 August 2020.
- Wolf (SB#305), a working dog on an emerging commercial farm, died from old age on 24 June 2020. CCF was only informed upon scheduling a follow up visit in October 2020.

- Meisie (SB#629), a working dog on a commercial farm, died from a snakebite on 5 September 2020.
- Unnamed dog (SB#815), a day-old puppy born to Lady (SB#487) at CCF, died from internal issues on 7 September 2020.
- Unnamed dog (SB#806), a four month-old puppy born to Lady (SB#801), died from asphyxiation on 12 September 2020.
- Simba (SB#336), a working dog on a commercial farm, was presumed dead since the dog had gone missing on 16 September 2020.
- Sheperd (SB#691), a working dog on a communal farm, died from a snakebite on 11 November 2020.
- Kangaroo (SB#778), a working dog on a communal farm, died from a snakebite on 12 November 2020.
- Miracle (SB#518), a working dog on a commercial farm, died from poison on 29 November 2020.
- Lucky (SB#495), a pet dog in Otjiwarongo, was euthanised due to a decline in health on 4 December 2020.
- Wagter (SB#784), a working dog on a commercial farm, died from a car accident on 22 December 2020.
- Lapie (SB#666), a working dog on a resettled farm, died from a snakebite on 31 December 2020.
- Unnamed Dog (SB#824), one-day old puppy born to April (SB#709) at CCF, was euthanised due to internal issues on 20 December 2020.
- Unnamed Dog (SB#823), two-day old puppy born to April (SB#709) at CCF, died from internal issues on 22 December 2020.

Rehomed Dogs

- Kaspaas (SB#456), an outside breeding and working dog from a commercial farm, was returned to CCF on 23 January 2019 due to injuries sustained by baboon attacks. The farmer had notified us that the dog was at a neighbouring farm when this occurred. Upon arrival, the dog was in good condition aside from severe injuries along his neck. CCF's vet team treated and stitched him up. Upon our annual health checks and x-rays, CCF's vet team had noticed signs of hip dysplasia (HD) and arthritis and the decision was made to neuter him. During his stay at CCF the LSGD team had noticed he'd shown some odd sporadic aggression towards some men, it was unclear if something had happened in the past or whether it was a guarding behaviour as often times it would be when he was around females which made finding the appropriate home for him challenging, especially because of his age. He was finally re-homed as a pet dog on 3 November 2020.

- Spucky (SB#711), a working dog from a communal farm, was returned on 15 May 2019 as he was said to be roaming to neighbouring farms and nipping their livestock. He had also killed a lamb. Upon arrival at CCF, Spucky was in good condition but he is young, and all puppies go through a playful stage. Sometimes this playful stage is a bit rough for the small stock as the puppy is stronger than lambs/kids, but there are numerous tricks to reducing this behaviour. Spucky has been re-evaluated with CCF's herd and is working very well and not playing roughly with small stock anymore. He was rehomed as a working dog on 23 June 2020. Unfortunately, he was returned once again on 30 July 2020. Spucky is to remain at CCF as a resident working dog.
- Leeu (SB#701), a working dog from a communal farm, was confiscated on 4 October 2019 during a farm visit upon discovering that their owner had moved farms without contacting us, and due to the dog being in poor condition. Upon arrival, Leeu had a slight limp and stitches on his left thigh that had been left for too long and had gotten infected. They were removed and cleaned, but we noticed his limp persisted after being re-evaluated with CCF's herd. He was treated but because of his carpal circumstance, he was adopted as a pet dog on 25 February 2020. See section, Dog Health, for more information.
- Maya (SB#683), a working dog on a communal farm, was returned on 24 October 2019 due to roaming at night. Maya had been going to neighbouring farms and causing problems with other mongrels and Anatolians in the area. Upon arrival, the dog was in average condition. She had been re-evaluated with CCF's herd and was re-homed as a working dog on 19 January 2020.
- Bentley (SB#716), a working dog on a communal farm, was brought in for medical examination on 13 December 2019 for a limp issue that had been persisting on the farm. Due to her case, she was re-homed on 26 March 2020 as a pet dog at the SPCA in Windhoek and was adopted on 16 July 2020. See section, Dog Health, for more information.
- Cheetah (SB#720), a working dog on a communal farm, was confiscated on 24 December 2019 due to severe neglect. She had been re-evaluated with CCF's herd and was re-homed as a working dog on 5 February 2020. See section, Dog Health, for more information.
- Taliban (SB#572), a working dog on an emerging communal farm, was returned on 21 January 2020 due to their owner selling their livestock and no longer needing the dog. He was re-evaluated with CCF's herd and re-homed as a working dog on 14 February 2020.
- Hendrick (SB#611), a working dog on a communal farm, was confiscated on 22 January 2020 due to severe neglect. He had been re-evaluated with CCF's herd and was re-homed as a working dog on 26 March 2020.
- Danger (SB#626), a working dog on a commercial farm, was confiscated due to severe neglect. Unfortunately, due to his poor condition and snapped tendon the decision was made to euthanise him on 24 March 2020. See section, Dog Health, for more information.

- Rambo (SB#687), a working dog on one of CCF's farms was returned on 18 February 2020 due to hunting. He was re-homed as a pet dog on a resettled farm on 29 August 2020.
- Boethos (SB#539), a working dog on a commercial farm, was returned on 19 February 2020 due to new management and 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.
- 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. See section, Dog Health, for more information.
- Rex (SB#736), a working dog on a commercial farm, was confiscated due to neglect on 16 June 2020. Her condition was improved, and she had been re-evaluated with CCF's herd and was re-homed as a working dog on 3 August 2020.
- Babi (SB#775), a working dog on a communal farm, was returned due to roaming on 30 August 2020. He had been re-evaluated with CCF's herd and was re-homed as a working dog on a commercial farm on 12 September 2020.
- Bondera (SB#731), a working dog on a communal farm, was returned after killing two goats near his farm on 15 September 2020. Upon arrival at CCF, Bondera was in poor condition. It is believed that Bondera killed the goats defensively, as he was with his own herd when he encountered a separate herd out during the day. He was re-evaluated with CCF's herd and works extremely well; he was re-homed as a working dog on 28 October 2020.
- Meisie (SB#752), a working dog on a commercial farm, was confiscated due to continuous neglect on 18 October 2020. She was re-homed as a pet dog on 6 November 2020 due to her previous complications. See section, Dog Health, for more information.
- 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; he will be re-homed as a working dog once a suitable farm has been identified. See section, Dog Health, for more information.
- 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 will be rehomed as a pet dog once her condition has improved. See section, Dog Health, for more information.

- 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 will re-evaluate whether or not the dog can still work once the wound is healed, if not he will be rehomed as a pet dog in the future. See section, Dog Health, for more information.

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

Dog Health

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

- Taya (SB #490), a working dog at CCF, began having issues in January 2019. First identified through the swelling of her elbow joint and two abnormal heat cycles within a month of each other. From that date onwards several other issues occurred including lethargy, nausea, anorexia, depression, a bloody nose and recurring oedemas of the lower limbs. Blood tests were completed, and results were within normal reference ranges and specific tests for diseases and parasites were negative. X rays and ultrasounds were also completed and showed potential abnormalities of the spleen. At the beginning of April 2019, an exploratory surgery was completed to acquire samples of the spleen in order to do further diagnostics, however, the decision had to be made to remove the entire spleen due to its abnormal appearance and subsequent problems with controlling the bleeding after the biopsy was taken. The spleen was sent off for histopathology tests, but no conclusive diagnostics came back from it. Taya was monitored in the clinic post-surgery and started

on empirical antibiotic and corticosteroid treatments until her condition improved and with no definitive diagnosis. During the first week of February 2020, she had stopped eating well and had some problems with eye inflammation and was prescribed a course of prednisone and eye ointment. Two weeks had gone by and there was no significant sign of improvement, an x-ray was conducted followed by several blood tests and CCF's vet team had noticed signs of bone marrow cancer from pathology results. The decision was made to euthanise her due to a decline in health, on 25 February 2020.

- Leeu (SB#701), a working dog from a communal farm, was confiscated on 4 October 2019 during a farm visit when discovering that their owner had moved farms without contacting us and being in poor condition. Upon arrival, Leeu had a slight limp and stitches on his left thigh that had been left for too long and gotten infected. They were removed and cleaned, but we noticed his limp persisted after being re-evaluated with CCF's herd. He was x-rayed on 18 December, which revealed that a tendon on his left ankle had stretched and he would need a splint if he had to continue working, so the decision was made to re-home him as a pet dog on 25 February 2020.
- Bentley (SB#716), a working dog on a communal farm, was brought in for medical examination on 13 December 2019 due to her limp as it had persisted for a week and the farmer was worried. CCF's vet team x-rayed her and found a chip in her elbow, she was prescribed anti-inflammatories to be re-x-rayed later on. The problem still persisted after re-evaluation with CCF's herd, so the decision was made that she be re-homed as a pet dog. The Windhoek SPCA kindly offered to home her, and find a home for her, she left CCF on 26 March 2020.
- Kangaroo (SB#778), a working dog on a communal farm, was brought in for medical examination on 5 February 2020 due to suspected tick bite fever. She was treated with a course of doxycycline and sent back to her farm on 13 February 2020.
- Danger (SB#626), a working dog on a commercial farm was confiscated due to severe neglect on 8 February 2020. Around mid-December, he had returned back from the field with his herd one afternoon, with a wound on his leg but the worker was unable to contact his farm manager who had been away on leave. Once the farm manager had returned in January 2020, he assumed the problem would go away and did not feel the need to contact CCF. Over the course of three months, the dog had stopped eating as his leg got worse. Upon arrival at CCF, he was immediately x-rayed by CCF's vet team and received a split cast that would accommodate for the swelling and we would clean every other day. A few weeks passed, and although his wounds had healed and scabbed over there was no major improvement to his tendon. Unfortunately, CCF did not have the resources to conduct a tendon\ligament surgery, nor were there surgeons in the country able to due to his severe and complicated case and overall condition, the decision was made to euthanise him on 24 March 2020.
- Tasha (SB#676), a pet dog, showed signs of extreme lethargy and had no appetite around 8 April 2020. Her owner contacted CCF to notify us that they had taken her to a private vet and that she had splenomegaly (an enlarged spleen). She was prescribed a course of

antibiotics and cortisone, but nothing improved. On 22 April 2020, she was brought back to the private vet for exploratory surgery, her spleen was removed. It was unclear whether she had haemangiosarcoma. She has recovered since. CCF did not receive samples or results from the spleen.

- Cici (SB#790), a working dog on a commercial farm, had shown signs of early entropion before he was placed earlier this year in April 2020. He was started off with eye ointment treatment to help with this, but the problem still persisted. He underwent eye surgery in June 2020, a month before leaving CCF. He will be monitored closely during his dog visits to see if he will need surgery later on.
- Cheetah (SB#720), a working dog on a communal farm, was confiscated on 24 December 2019 due to severe neglect. She had been re-evaluated with CCF's herd and was re-homed as a working dog on 5 February 2020. On 7 March 2020, she was brought in for a medical examination as she had hurt her elbow on the farm by jumping a fence. She was treated on a course of antibiotics and anti-inflammatories and returned on 14 May 2020 (due to Covid-19 national lockdown, we were unable to return her sooner).
- Lady (SB#487), an outside breeding working dog on a commercial farm, was confiscated on 26 February 2020. Upon arrival she was in good condition but had an abscess on her neck and a lump in her eyelid – her abscess healed after a course of antibiotics and a period of flushing and cleaning. Her eyelid adenoma remained the same size until around 20 April 2020, it had increased and was causing irritation. CCF's vet team successfully removed the lump on 2 June 2020. She received a post-op treatment of eye ointment to reduce inflammation for a few weeks and has had no signs of irritation since. Lady was bred with CCF's breeding male Bolt (SB#660) and gave birth to 6 puppies on 7 September 2020. She underwent an emergency C-section as 24 hours had passed since her temperature drop, which is a cause for concern if no other delivery signs are seen. During the surgery, she was spayed since this was to be her only litter and a pyometra was found.
- Bella (SB#788), CCF's resident breeding dog, developed large fluid sacks on her front elbows on 8 April 2020. The lump was monitored and periodically drained over a few weeks and she received a course of antibiotics to help. Nothing had improved but it was deduced that she had hygroma's in both her front legs, since there is no real treatment for it, she is now kept in pens that do not have concrete, to help prevent further build-up. She will be monitored over time to see if any other problems occur.
- Babi (SB#775), a working dog on a communal farm, was brought in for eye surgery as he displayed signs of entropion, an abnormality in which the eyelid rolls inward which causes eyelashes to rub on the surface of their eye resulting in pain and irritation, sometimes corneal damage. He underwent eye surgery on 24 June 2020.
- Thousand (SB#474), a pet dog, was seen eating a bone that was thrown over his neighbours' fence and he started drooling and acted strangely a few days thereafter. Thousand was brought in for assessment on 13 July 2020, CCF's vet team checked him out and noticed there was a minor puncture in the back of his mouth, but the bone had been removed before he arrived. He returned home the next day but was brought in again

on 21 July 2020 as he was showing signs of lethargy and low appetite that grew worse, upon arrival. Thousand had a swollen leg and had severe bloat. His stomach was drained of the fluid and found to be blood, which was refilling at a very fast rate. Thousand was brought into a private vet practice in town (Northern Veterinary Practice), where blood was drawn for a diagnosis. It was confirmed that he had cancer of the vascular endothelium (Haemangiosarcoma). The decision was made to euthanise him that evening.

- Meisie (SB#752), a working dog on a commercial farm, was brought in on 13 August 2020 for medical attention as her foot was caught in a gin trap. Her wounds were cleaned with ointment applied for a few weeks, along with an antibiotic injection course. She was re-evaluated on 14 September 2020 which had gone well, she had a slight limp, but this is something her owners would have to take into account in the future once returned. On 29 September 2020, Meisie's owner had contacted CCF to say that she had been injured again, upon viewing photos she had degloved her toe – CCF advised the owners to take her to the state vet for treatment and we would check back in a few weeks. The owners had sent CCF photos of the wound's progression, but Meisie was confiscated on 18 October 2020 as it did not appear that anything had been done to help her. She was rehomed as a pet dog on 6 November 2020.
- Kiri (SB#451), CCF's retired breeding female and current ambassador, has had a lump on her right side just below her rib cage for the last few years but was not an issue until late 2020. The lump had grown in size in August 2020, showing tumorous cells after an aspiration was completed. Luckily, the cells were not metastases. The lump was removed on 11 September 2020.
- Sheperd (SB#599), CCF's resident working dog was bitten on his right thigh (behind) by a baboon while out working on 17 August 2020, with a deep puncture. He was stitched up and prescribed antibiotics and pain medication and the wound healed quite well until he reopened his site when it had scabbed over. He received antibiotic wound spray for a few days and started working again on 27 September 2020.
- April (SB#709), CCF's resident working and breeding female had a wound and hard lump on her right eye on 4 September 2020. CCF's LSGD team was unsure of what occurred when she was out with the herd the previous day. She was started on eye ointments and anti-inflammatories but soon changed to a course of antibiotics and anti-inflammatories since she did not enjoy receiving eye ointment. Unfortunately, she scratched her wound open, which appeared to have necrotic tissue, so she underwent surgery to stitch it up completely. April then received another course of antibiotics and anti-inflammatories and healed up very well. She started working again on 22 October 2020.
- Lady (SB#535), CCF's resident breeding dog was found with a hard teat on her right side that appeared to be a haematoma on 23 October 2020. A dark brown fluid was drained and she was given a long course of antibiotics and anti-inflammatories, but nothing had improved so the decision was made to spay and conduct a mastectomy to prevent the infection becoming systemic on 10 November 2020.

- Repet (SB#507), CCF's resident breeding and working dog was seen with green thick discharge coming from her vulva on 9 October 2020. She was monitored closely for a few weeks, as it is normal for breeding females to have a mild yeast or urinary infection 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 WBC count. She was placed on a strong course of antibiotics, but nothing improved so the decision was made to spay her on 19 November 2020.
- Bravo (SB#653), a pet dog in Windhoek, was confiscated due to neglect and an unreliable owner. She had gotten into a fight with baboons and sustained a large injury on her left thigh. Without informing CCF the owner had moved Bravo to their farm since no one was living at their house anymore. The owner instructed their kraal workers to take Bravo out to work during the mornings, even though they knew she had been taught to hunt at her previous farm. On arrival on 17 November 2020, it was clear the owner had been at the farm when it had happened and did not notify CCF or take the dog to the state vet. She was in very poor condition. The wound was extremely necrotic. CCF's vet team cleaned and stitched the wound up, and she was placed on a course of antibiotics and pain medication for the next week or so. She will be rehomed as a pet dog again in the future when she has put on more weight.
- 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. Once the wound eventually heals, we will re-evaluate his situation to see where he can be rehomed.

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. We will continue him on meloxicam and keep him on soaked pelleted food. 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.
- 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 9 treatments. Two of the biopsies from his 1st and 2nd treatment have been analysed and confirmed SCC and shows the cancer has worsened. However, his inflammation has since reduced, and he is eating much better and is in perfect condition again. He was brought into CCF once lockdown restrictions had been lifted on 11 July 2020. It was discovered that a mass from the previous treatment had fallen off and the tip of his tongue had hardened.
- 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 and biopsy procedure in March 2019. Since then she had not been prescribed medication, but underwent her second treatment on 28 October 2020, as her tongue has worsened. Two biopsies were taken for a diagnosis.
- Kaspaas (SB#456), a rehomed resident dog, had signs of sun damage on his tongue upon arrival in January 2019 but was permanently prescribed Previcox (firocoxib) for his severe hip and elbow dysplasia. In 2020 the condition of his tongue started to change into what appeared to be signs of tongue cancer. He underwent his first treatment on 28 October 2020, two biopsies were taken for a diagnosis.
- Mweneni (SB#713), a working dog on a communal farm, had signs of sun damage during his dog visit in 2019 that we were to monitor. In 2020, the condition of his tongue had worsened quite severely so the dog was brought in for treatment in November 2020. Two biopsies were taken for a diagnosis. The decision was made to retire him as a pet dog to give him the best care possible since his case is quite severe.
- 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. A small mass that was on his tongue at his first treatment had fallen off by the second treatment.

- Bully (SB#702), a working dog on a communal farm, appeared to show signs in 2019 as they had excessive signs of 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.

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 10 provides an overview of CCF's livestock.

Table 10: CCF livestock from January to December 2020.

	Stock Start	Born	Purchased	Sold	Died	Slaughtered/ CCF use	Stolen	Stock End
Cattle	**420**	135	4	51	7	1	0	**500**
Boer Goats	**106**	37	1	50	13	0	0	**81**
Damara Sheep	**127**	49	1	79	5	0	0	**93**
Dairy Goats	**234**	99	1	97	15	0	0	**222**
Donkeys	**7**	0	112	0	4	113	0	**2**
Horses	**15**	0	45	0	3	50	0	**7**

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

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

Cattle

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

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

By the end of December 2020, CCF had 500 cattle compared to 420 at the end of 2019. Total cattle production for 2020 included 135 calves born (75M, 60F), and 51 sold (36M, 1 cow, 15F) (Table 10). CCF also rents grazing land to two farmers for their cattle (approximately 700 herd total), thus providing an extra income.

Vaccination Programme

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

Other

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

Small Stock

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

In addition to the 17 adult Anatolian shepherd and Kangal dogs mentioned in the previous section, as of 31 December 2020, the kraal contains 222 (32M, 190F) Dairy goats, 81 (1M, 79F, 1W) Boer goats, and 93 (2M, 91F) Damara sheep.

In 2020, 226 small stock were sold, 97 (21M, 36F, 40W) Dairy goats, 50 (5M, 17F, 28W) Boer goats, and 79 (4M, 3F, 72W) Damara sheep bringing in a total of N$182, 610.

Boer Goats

The Boer goat herd stood at 81 (1M, 79F, 1W) at the end of this reporting period, down from 102 at the end of 2019. Out of the Boer goats that were bred between August and September 2019, 22 females gave birth between January and February 2020 to a total of 37 kids (Table 11) (*See asterisk for further information).

Table 11: Boer goat births from 1 January 2020 to 31 December 2020 (cM = castrated male, iM =intact male).

SB #	Tag #	Sex	Date of Birth	Dam	Sire	Alive or Dead
705	24-20	U	29-Dec-2019	65-15	14-197	Dead
706	25-20	U	29-Dec-2019	65-15	14-197	Dead
708	1-20	F	02-Jan-2020	19-17	14-197	Alive
709	2-20	iM	02-Jan-2020	54-17	14-197	Dead
710	9-20	F	02-Jan-2020	54-17	14-197	Alive
711	3-20	iM	04-Jan-2020	36-17	14-197	Dead
712	5-20	iM	04-Jan-2020	35-15	14-197	Dead
713	6-20	cM	04-Jan-2020	35-15	14-197	Alive
714	4-20	cM	05-Jan-2020	52-17	14-197	Alive
715	7-20	F	05-Jan-2020	52-17	14-197	Dead
716	8-20	F	05-Jan-2020	52-17	14-197	Alive
717	10-20	iM	07-Jan-2020	33-15	14-197	Dead
718	11-20	F	07-Jan-2020	33-15	14-197	Dead
719	12-20	F	07-Jan-2020	33-15	14-197	Alive
720	13-20	cM	09-Jan-2020	51-17	14-197	Alive
721	14-20	F	09-Jan-2020	35-17	14-197	Alive
722	15-20	F	09-Jan-2020	35-17	14-197	Alive
723	16-20	cM	09-Jan-2020	76-17	14-197	Alive
724	17-20	F	09-Jan-2020	44-17	14-197	Alive
725	18-20	iM	09-Jan-2020	58-15	14-197	Dead
726	19-20	F	09-Jan-2020	58-15	14-197	Alive
727	20-20	F	10-Jan-2020	2-16	14-197	Alive
728	21-20	F	10-Jan-2020	2-16	14-197	Alive
729	22-20	cM	10-Jan-2020	18-14	14-197	Alive
730	23-20	F	10-Jan-2020	18-14	14-197	Dead
731	26-20	F	11-Jan-2020	66-17	14-197	Dead
732	27-20	F	12-Jan-2020	23-17	14-197	Alive
733	28-20	F	12-Jan-2020	80-17	14-197	Alive
734	29-20	F	12-Jan-2020	80-17	14-197	Dead
735	30-20	iM	14-Jan-2020	10-16	14-197	Dead
736	31-20	F	14-Jan-2020	10-16	14-197	Alive
737	32-20	F	15-Jan-2020	47-17	4-197	Alive
738	33-20	F	15-Jan-2020	47-17	14-197	Alive

739	34-20	cM	16-Jan-2020	33-13	14-197	Alive
740	35-20	cM	16-Jan-2020	33-13	14-197	Alive
741	36-20	cM	19-Jan-2020	84-17	14-197	Alive
707	37-20	F	20-Jan-2020	62-15	14-197	Alive

* SB#705 and SB#706 were born prematurely at the end of the 2019 reporting period and were thus left off the 2019 end of year report. As they were supposed to be part of the 2020 kidding season, they have been included in this report.

In 2020, 15 Boer goats (8M, 5F, 2U) died due to causes listed in Table 12.

- 24-20 (SB#705) – was found born in the kraal on the 29 December 2019 to 65-15 and unfortunately never took its first breath. It was of unknown sex.
- 25-20 (SB#706) – was found born in the kraal on the 29 December 2019 to 65-15 and unfortunately never took its first breath. It was of unknown sex.
- 2-20 (SB#709) – was a male kid born on 2 January who was brought to the clinic on the 8th January 2020 and was found dead later that day. Necropsy results showed that the cause of death was clostridia bacterial infection.
- 5-20 (SB#712) - was a male kid born on 4 January who was found dead in the kraal on the 9th January 2020. Necropsy results showed that the cause of death was asphyxiation.
- 10-20 (SB#717) – was a male kid born on the 7 January and was brought to the clinic on the 9th January, he was found dead on the morning of the 11 January 2020. Necropsy results were inconclusive to the cause of death.
- 23-20 (SB#730) - was a female kid born on the 10 January who was found dead in the kraal on the 14 January 2020. Necropsy results showed that the cause of death was asphyxiation.
- 11-20 (SB#718) – was a female kid born on the 7 January who was brought to the clinic on the 16 January 2020 and was found dead later that day. Necropsy results showed that the cause of death was clostridia bacterial infection.
- 3-20 (SB#711) – was a male kid born on the 4 January who was brought to the clinic on the 21 January 2020 and was found dead later that day. Necropsy results showed that the cause of death was clostridia bacterial infection.
- 29-20 (SB#734) – was a female kid born on the 12 January who was found dead in the kraal on the 28 January 2020. Necropsy results showed that the cause of death was asphyxiation.
- 30-20 (SB#735) – was a male kid born on the 14 January who was brought to the clinic on the 30 January 2020 and was found dead later that day. Necropsy results showed that the cause of death was clostridia bacterial infection.
- 26-20 (SB#731) – was a male kid born on 11 January who was brought to the clinic on 3 February 2020 and was found dead later that day. Necropsy results showed that the cause of death was clostridia bacterial infection.

- 80-17 (SB#608) – was a female Boer goat who was found dead in the clinic on 3 February 2020. Necropsy results showed that the cause of death was clostridia bacterial infection.
- 52-17 (SB#577)– was a female Boer goat who had come back from the field with a swollen face around 3 February 2020. The clinic team tried treating the goat for the bite but unfortunately, the swelling worsened and the goat started to become weaker. The decision was taken to euthanise her on 10 February 2020.
- 18-20 (SB#725) – was a male kid born on 9 January who was brought to the clinic on 11 February 2020 and was found dead later that day. Necropsy results showed that the cause of death was clostridia bacterial infection
- 7-20 (SB#715) – was a female kid born on 5 January who was brought to the clinic on 12 February 2020 and was found dead later that day. Necropsy results showed that the cause of death was clostridia bacterial infection

Table 12: Boer goat deaths from 1 January 2020 to 31 December 2020

Studbook #	Sex	Date of Death	Cause of Death
705	Unknown	29-Dec-19	Stillborn
706	Unknown	29-Dec-19	Stillborn
709	Male	08-Jan-20	Bacterial infection
712	Male	09-Jan-20	Asphyxiation
717	Male	11-Jan-20	Inconclusive
730	Female	14-Jan-20	Asphyxiation
718	Female	16-Jan-20	Bacterial infection
711	Male	21-Jan-20	Bacterial infection
734	Female	28-Jan-20	Asphyxiation
735	Male	30-Jan-20	Bacterial infection
731	Male	03-Feb-20	Bacterial infection
608	Female	03-Feb-20	Bacterial infection
577	Female	10-Feb-20	Euthanasia
725	Male	11-Feb-20	Bacterial infection
715	Male	12-Feb-20	Bacterial infection

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 2020, 50 goats (5M, 17F, 28W) were sold, amounting to N$36,690. Table 13 provides an overview of CCF's Boer goat sales. One new Boer buck (SB#698) was purchased on 14 August 2020 for N$11,000. He is a 6-year-old male who was born in January 2014. He came from the Northern Boer Goat Show Auction (hosted by AGRA) and underwent a period of quarantine upon arrival at CCF. He will become an important part of CCF's Boer goat breeding program.

Table 13: Boer goat sales from 1 January to 31 December 2020 (M = male, F = female, U = wether).

SB#	Tag #	Sex	Date of Birth	Date of Sale	Price
579	54-17	F	13-Sep-2017	04-Dec-2020	N$1,540.00
642	28-18	M	9-Aug-2018	20-Feb-2020	N$1,450.00
645	30-18	M	9-Aug-2018	20-Feb-2020	N$1,400.00
656	36-18	M	20-Aug-2018	30-Jun-2020	N$2,500.00
651	37-18	M	15-Aug-2020	20-Feb-2020	N$1,400.00
665	2-19	W	03-Jan-2019	05-Mar-2020	N$860.00
672	9-19	W	05-Jan-2019	05-Mar-2020	N$860.00
674	11-19	W	07-Jan-2019	05-Mar-2020	N$860.00
675	12-19	W	08-Jan-2019	05-Mar-2020	N$860.00
677	14-19	W	09-Jan-2019	05-Mar-2020	N$940.00
678	15-19	W	09-Jan-2019	05-Mar-2020	N$940.00
679	16-19	W	09-Jan-2019	05-Mar 2020	N$940.00
681	18-19	W	09-Jan-2019	05-Mar-2020	N$940.00
682	19-19	W	09-Jan-2019	05-Mar-2020	N$940.00
683	20-19	W	09-Jan-2019	05-Mar-2020	N$940.00
684	21-19	W	09-Jan-2019	05-Mar-2020	N$940.00
690	27-19	W	10-Jan-2019	05-Mar-2020	N$940.00
692	29-19	W	12-Jan-2019	05-Mar-2020	N$860.00
697	30-19	M	14-Jan-2019	20-Feb-2020	N$1,400.00
693	31-19	W	13-Jan-2019	05-Mar-2020	N$860.00
698	35-19	W	14-Jan-2019	05-Mar-2020	N$860.00
699	36-19	W	14-Jan-2019	05-Mar-2020	N$860.00
703	37-19	W	20-Jan-2019	05-Mar-2020	N$940.00
704	38-19	W	22-Jan-2019	05-Mar-2020	N$940.00
701	40-19	W	17-Jan-2019	05-Mar-2020	N$860.00
702	41-19	W	17-Jan-2019	05-Mar-2020	N$860.00
708	1-20	F	02-Jan-2020	26-Jun-2020	N$500.00
714	4-20	W	05-Jan-2020	26-Jun-2020	N$500.00
713	6-20	W	04-Jan-2020	26-Jun-2020	N$500.00
716	8-20	F	05-Jan-2020	26-Jun-2020	N$500.00
710	9-20	F	02-Jan-2020	26-Jun-2020	N$500.00
719	12-20	F	07-Jan-2020	26-Jun-2020	N$500.00
720	13-20	W	09-Jan-2020	26-Jun-2020	N$500.00
721	14-20	F	09-Jan-2020	26-Jun-2020	N$500.00
722	15-20	F	09-Jan-2020	26-Jun-2020	N$500.00

723	16-20	W	09-Jan-2020	26-Jun-2020	N$500.00
724	17-20	F	09-Jan-2020	26-Jun-2020	N$500.00
726	19-20	F	09-Jan-2020	26-Jun-2020	N$500.00
727	20-20	F	10-Jan-2020	26-Jun-2020	N$500.00
728	21-20	F	10-Jan-2020	26-Jun-2020	N$500.00
729	22-20	W	10-Jan-2020	26-Jun-2020	N$500.00
732	27-20	F	12-Jan-2020	26-Jun-2020	N$500.00
733	28-20	F	13-Jan-2020	26-Jun-2020	N$500.00
736	31-20	F	14-Jan-2020	26-Jun-2020	N$500.00
737	32-20	F	15-Jan-2020	26-Jun-2020	N$500.00
738	33-20	F	15-Jan-2020	26-Jun-2020	N$500.00
739	34-20	W	16-Jan-2020	26-Jun-2020	N$500.00
740	35-20	W	16-Jan-2020	26-Jun-2020	N$500.00
741	36-20	W	19-Jan-2020	26-Jun-2020	N$500.00
707	37-20	F	20-Jan-2020	26-Jun-2020	N$500.00
				Total	**N$39,690**

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 93 (2M, 91F) at the end of this reporting period, down from 127 at the end of 2020.

Of the Damara sheep ewes that were bred between August and September 2019, 48 females gave birth from January to February 2020 to a total of 49 lambs (29M, 20F) (Table 14).

Table 14: Damara sheep births from January 2020 to December 2020 (cM = castrated male, iM = intact male).

SB#	Tag #	Sex	Date of Birth	Dam	Sire	Dead or Alive
569	1-20	F	09-Jan-2020	65-17	DS6204	Alive
570	2-20	cM	10-Jan-2020	54-17	DS6204	Alive
571	3-20	cM	12-Jan-2020	19-18	DS6204	Alive
572	4-20	cM	12-Jan-2020	11-15	DS6204	Alive
573	5-20	F	13-Jan-2020	68-16	DS6204	Alive
574	6-20	F	13-Jan-2020	4-16	DS6204	Alive
575	7-20	F	13-Jan-2020	17-15	DS6204	Alive
576	8-20	cM	14-Jan-2020	45-16	DS6204	Alive

577	9-20	cM	15-Ja-2020	33-14	DS6204	Alive
578	10-20	F	16-Jan-2020	10-18	DS6204	Alive
579	11-20	F	16-Jan, 2020	36-16	DS6204	Alive
580	12-20	cM	16-Jan-2020	24-16	DS6204	Alive
581	13-20	cM	17-Jan-2020	20-18	DS6204	Alive
582	14-20	cM	17-Jan-2020	33-16	DS6204	Alive
583	15-20	F	18-Jan-2020	36-18	DS6204	Alive
584	16-20	cM	19-Jan-2020	13-18	DS6204	Alive
585	17-20	cM	19-Jan-2020	39-17	DS6204	Alive
586	18-20	cM	20-Jan-2020	48-16	DS6204	Alive
587	19-20	F	21-Jan-2020	35-16	DS6204	Alive
588	20-20	cM	21-Jan-2020	9-16	DS6204	Alive
589	21-20	F	21-Jan-2020	65-16	DS6204	Alive
590	22-20	F	22-Jan-2020	25-15	DS6204	Alive
591	23-20	cM	23-Jan-2020	18-17	DS6204	Alive
592	24-20	F	24-Jan-2020	22-16	DS6204	Alive
593	25-20	F	25-Jan-2020	65-15	DS6204	Alive
594	26-20	cM	25-Jan-2020	23-13	DS6204	Alive
595	27-20	F	26-Jan-2020	46-16	DS6204	Alive
596	28-20	cM	26-Jan-2020	22-18	DS6204	Alive
597	29-20	F	26-Jan-2020	12-14	DS6204	Alive
598	30-20	F	26-Jan-2020	29-14	DS6204	Alive
599	31-20	cM	26-Jan-2020	39-16	DS6204	Alive
600	32-20	F	26-Jan-2020	23-18	DS6204	Alive
601	33-20	F	27-Jan-2020	1-18	DS6204	Dead
602	34-20	cM	27-Jan-2020	42-15	DS6204	Alive
603	35-20	cM	27-Jan-2020	12-16	DS6204	Alive
604	36-20	cM	28-Jan-2020	22-14	DS6204	Alive
605	37-20	F	29-Jan-2020	Unk	DS6204	Alive
606	38-20	cM	30-Jan-2020	13-16	DS6204	Alive
607	39-20	F	31-Jan-2020	25-12	DS6204	Alive
608	40-20	F	31-Jan-2020	25-14	DS6204	Alive
609	41-20	cM	02-Feb-2020	44-16	DS6204	Alive
610	42-20	cM	02-Feb-2020	15-16	DS6204	Alive
611	43-20	cM	02-Feb-2020	50-18	DS6204	Alive
612	44-20	cM	04-Feb-2020	27-16	DS6204	Alive

613	45-20	cM	04-Feb-2020	27-16	DS6204	Alive
614	46-20	cM	06-Feb-2020	49-15	DS6204	Alive
615	47-20	cM	07-Feb-2020	14-16	DS6204	Alive
616	48-20	cM	08-Feb-2020	6-17	DS6204	Alive
617	49-20	cM	08-Feb-2020	51-16	DS6204	Alive

In 2020, five sheep (0M, 4F, 1W) died due to causes listed in Table 15.

- 2-18 (SB#468) – was a female sheep who was found dead on morning goat checks on 1 January 2020. Necropsy results showed that the cause of death was pancreatitis.
- 1-18 (SB#467) – was a male sheep euthanized on 23 March 2020 due to displaying serious neurological problems. CCF is currently waiting on further results on samples taking during the necropsy.
- 65-17 (SB#464) – was a female sheep euthanized on 31 March 2020 due to displaying serious neurological problems. CCF is currently waiting on further results on samples taking during the necropsy
- 33-20 (SB#601) – was a female kid born on the 27 January and was brought to the clinic on the 1 May. Unfortunately, her health continued to decline, and she was found dead on 6 May 2020. Necropsy results showed that the cause of death was helminthiasis which led to anaemia.
- 6-17 (SB#405) – was a female sheep euthanized on 29 November 2020 due to displaying serious neurological problems. CCF is currently waiting on further results on samples taking during the necropsy

Table 15: Damara sheep deaths from 1 January 2020 to 31 December 2020.

Studbook #	Sex	Date of Death	Cause of Death
468	Female	01-Jan-0120	Pancreatitis
467	Male	23-Mar-20	Euthanasia
464	Female	31-Mar-20	Euthanasia
601	Female	06-May-20	Helminthiasis
405	Female	29-Nov-20	Euthanasia

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 2020, 79 sheep (4M, 3F, 72W) were sold, totalling N$65,020 in sales. Table 16 provides an overview of CCF's Damara sheep sales. One new Damara ram (SB#619) was purchased on 14 August 2020 for N$10,500. He is a 2-year-old male who was born in January 2018. He came from the Northern Boer Goat Show Auction (hosted by AGRA) and underwent a period of quarantine upon arrival at CCF. He will become an important part of CCF's Damara sheep breeding program.

Table 16: Damara sheep sales from 1 January to 31 December 2020 (M = male, F = female, U = wether).

SB#	Tag#	Sex	Date of Birth	Date of Sale	Price
350	24-16	W	08-Feb-2016	20-Feb-2020	N$1,040.00
369	42-16	F	15-Feb-2016	20-Feb-2020	N$1,040.00
413	9-17	F	15-Feb-2017	20-Feb-2020	N$920.00
417	13-17	W	Unknown	05-Mar-2020	N$1,200.00
423	19-17	M	30-Jan-2017	07-Jun-2020	N$1,300.00
430	26-17	W	22-Feb-2017	05-Mar-2020	N$1,200.00
435	31-17	M	30-Jan-2017	07-Jun-2020	N$1,300.00
444	40-17	M	30-Jan-2017	07-Jun-2020	N$1,300.00
457	53-17	W	15-Mar-2017	05-Mar-2020	N$1,200.00
471	4-18	W	09-Jan-2018	05-Mar-2020	N$1,200.00
473	6-18	F	10-Jan-2018	20-Feb-2020	N$1,040.00
475	8-18	W	11-Jan-2018	05-Mar-2020	N$1,100.00
482	15-18	W	15-Jan-2018	05-Mar-2020	N$1,100.00
484	17-18	W	16-Jan-2018	05-Mar-2020	N$1,200.00
488	21-18	W	01-Jan-2018	05-Mar-2020	N$1,100.00
491	24-18	W	22-Jan-2018	05-Mar-2020	N$1,200.00
492	25-18	W	22-Jan-2018	05-Mar-2020	N$1,200.00
494	27-18	W	23-Jan-2018	20-Feb-2020	N$920.00
495	28-18	W	25-Jan-2018	05-Mar-2020	N$1,200.00
497	30-18	W	28-Jan-2018	05-Mar-2020	N$1,200.00
500	33-18	W	30-Jan-2018	05-Mar-2020	N$1,200.00
503	36-18	W	30-Jan-2018	08-Dec-2020	N$1,540.00
505	38-18	W	31-Jan-2018	05-Mar-2020	N$1,100.00
508	41-18	W	10-Feb-2018	05-Mar-2020	N$1,200.00
509	42-18	W	11-Feb-2018	05-Mar-2020	N$1,200.00
512	45-18	W	19-Mar-2018	05-Mar-2020	N$1,200.00
516	49-18	W	20-Mar-2018	05-Mar-2020	N$1,200.00
521	51-18	W	20-Mar-2018	05-Mar-2020	N$920.00
522	54-18	W	22-Mar-2018	05-Mar-2020	N$1,100.00
523	56-18	W	22-Mar-2018	20-Feb-2020	N$920.00
524	57-18	W	23-Mar-2018	05-Mar-2020	N$1,100.00
525	58-18	W	23-Mar-2018	05-Mar-2020	N$920.00
526	59-18	W	20-Mar-2018	05-Mar-2020	N$1,200.00
528	61-18	W	25-Mar-2018	05-Mar-2020	N$1,200.00
529	62-18	W	26-Mar-2018	05-Mar-2020	N$1,100.00

533	1-19	W	26-Mar-2019	05-Mar-2020	N$920.00
536	4-19	W	27-Mar-2019	05-Mar-2020	N$920.00
541	9-19	W	29-Mar-2020	05-Mar-2020	N$920.00
542	11-19	W	29-Mar-2019	05-Mar-2020	N$920.00
549	18-19	W	03-Apr-2019	05-Mar-2020	N$820.00
550	19-19	W	04-Apr-2019	05-Mar-2020	N$820.00
551	20-19	W	05-Apr-2019	05-Mar-2020	N$820.00
552	21-19	W	07-Apr-2019	05-Mar-2020	N$820.00
555	24-19	W	11-Apr-2019	05-Mar-2020	N$920.00
560	29-19	W	16-Apr-2019	05-Mar-2020	N$920.00
564	33-19	W	19-Apr-2019	05-Mar-2020	N$920.00
567	35-19	W	30-Apr-2019	08-Dec-2020	N$1,540.00
570	2-20	W	10-Jan-2020	16-Jul-2020	N$400.00
571	3-20	W	12-Jan-2020	16-Jul-2020	N$400.00
572	4-20	W	12-Jan-2020	16-Jul-2020	N$400.00
576	8-20	W	14-Jan-2020	16-Jul-2020	N$400.00
577	9-20	W	15-Jan-2020	16-Jul-2020	N$400.00
578	10-20	W	16-Jan-2020	16-Jul-2020	N$400.00
580	12-20	W	12-Jan-2020	16-Jul-2020	N$400.00
581	13-20	W	17-Jan-2020	16-Jul-2020	N$400.00
582	14-20	W	17-Jan-2020	16-Jul-2020	N$400.00
583	15-20	W	18-Jan-2020	16-Jul-2020	N$400.00
584	16-20	W	19-Jan-2020	16-Jul-2020	N$400.00
585	17-20	W	19-Jan-2020	16-Jul-2020	N$400.00
586	18-20	W	20-Jan-2020	16-Jul-2020	N$400.00
588	20-20	W	21-Jan-2020	16-Jul-2020	N$400.00
591	23-20	W	23-Jan-2020	16-Jul-2020	N$400.00
594	26-20	W	25-Jan-2020	16-Jul-2020	N$400.00
596	28-20	W	26-Jan-2020	16-Jul-2020	N$400.00
598	30-20	W	26-Jan-2020	16-Jul-2020	N$400.00
599	31-20	W	26-Jan-2020	16-Jul-2020	N$400.00
602	34-20	W	27-Jan-2020	16-Jul-2020	N$400.00
603	35-20	W	27-Jan-2020	16-Jul-2020	N$400.00
606	38-20	W	30-Jan-2020	16-Jul-2020	N$400.00
609	41-20	W	02-Feb-2020	16-Jul-2020	N$400.00
610	42-20	W	02-Feb-2020	16-Jul-2020	N$400.00
611	43-20	W	02-Feb-2020	16-Jul-2020	N$400.00

612	44-20	W	04-Feb-2020	16-Jul-2020	N$400.00
613	45-20	W	04-Feb-2020	16-Jul-2020	N$400.00
614	46-20	W	06-Feb-2020	16-Jul-2020	N$400.00
615	47-20	W	07-Feb-2020	16-Jul-2020	N$400.00
616	48-20	W	08-Feb-2020	16-Jul-2020	N$400.00
617	49-20	W	08-Feb-2020	16-Jul-2020	N$400.00
618	Untagged	M	10-Sep-2012	07-Jun-2020	N$1,300.00
				Total	N$65,020

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 222 (32M, 190F) at the end of this reporting period, down from 234 at the end of 2019.

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. Between March and April 2020, 50 does were bred with two breeding males; Monet (SB#255) and Zinfandels Boy (SB#139). Thirty-seven of the 50 does bred and gave birth to a total 55 kids (22M, 32F, 1U) between July and September. Another 34 does (including four who did not kid in August), were bred between July and August 2020 to breeding males; Michel (SB#580), Picasso (SB#256) and Zinfandel's Boy (SB#139). Twenty-four of the 34 does gave birth to a total of 44 kids (22M, 22F) in November and December 2020 (Table 17).

Table 17: Breeding and kidding months for 80 Dairy does from 1 January to 31 December 2020. (Abo = aborted, NP = not pregnant).

Goat	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Becky			Bred					NP				
Erin			Bred					Kid				
Henrietta			Bred					NP				
Lizzie			Bred			Abo	Bred					NP
Marigold			Bred					NP				
Zemba			Bred					Kid				

Marie-Antoinette			Bred					Kid				
Mary 2			Bred					Kid				
Hermoine			Bred					Kid				
Astrid			Bred				Kid					
Halali			Bred					Kid				
Diamond			Bred		Abo		Bred					Kid
Lolita			Bred					Kid				
Megan			Bred					Kid				
Onyx			Bred					Kid				
Ali			Bred					NP				
Bridget			Bred					Kid				
Brier			Bred					Kid				
Cayenne			Bred					Kid				
Fina			Bred					Kid				
Maggie			Bred					Kid				
Rose			Bred					Kid				
Snow			Bred					Kid				
Stella			Bred		Abo		Bred					Kid
Bianca			Bred					Kid				
Helena			Bred					Kid				
Hilma			Bred					Kid				
Katie			Bred					Kid				
Nigella			Bred					Kid				
Olifa			Bred					Kid				
Queen Elizabeth			Bred					Kid				
Syrah			Bred			Abo	Bred					
Wendy			Bred					Kid				
Anne-Bolyne			Bred					Kid				
Dahlia			Bred					NP				
Eleanor			Bred					Kid				
Emerald			Bred					Kid				

Glory			Bred					Kid				
Sophie			Bred					Kid				
Spinel			Bred					NP				
Violet			Bred					Kid				
Eve			Bred			Abo						
Pepper			Bred					Kid				
Tina 2			Bred					NP				
Princess Eugenie			Bred					Kid				
Malbec			Bred					Kid				
Lavender				Bred					Kid			
Daisy				Bred					Kid			
Petrina				Bred					Kid			
Mhlali				Bred					NP			
Camellia							Bred				Kid	
Omao							Bred				NP	
Pearl							Bred				Kid	
Burgandi							Bred				Kid	
Primrose							Bred				Kid	
Orchid							Bred					Kid
Marsala							Bred					Kid
Caitlin							Bred					Kid
Brenna							Bred					Kid
Raven							Bred					NP
Chloe							Bred					Kid
Joan							Bred					Kid
Nolana							Bred					Kid
Robin							Bred					Kid
Beulah							Bred					NP
Chianti							Bred				Abo	
Kir							Bred					Kid
Zinfandel							Bred					Kid

Denali (SA)							Bred				Kid	
Lina							Bred					NP
Trycolyn							Bred					NP
Barbera							Bred					Kid
Jade							Bred					Kid
Princess Adela							Bred					Kid
Yarrow							Bred					Kid
Matilda							Bred					Kid
Isla							Bred					NP
Ruacana							Bred					Kid
Blanc							Bred					Kid
Riita								Bred				Kid
Safire								Bred				NP

In 2020, 99 (44M, 54F, 1U) dairy kids were born (Table 18).

Table 18: Dairy goat births from January to December 2020 (M = male, F = female, U = unknown).

SB#	Name	Sex	Date of Birth	Dam	Sire	Alive or Dead
585		M	20-Jul-2020	Astrid	Zinfandel'sBoy	Dead
586	Moonstone	F	03-Aug-2020	Onyx	Zinfandel's Boy	Alive
587		F	03-Aug-2020	Onyx	Zinfandel's Boy	Dead
588	Maria	F	05-Aug-2020	Erin 2	Zinfandel's Boy	Alive
589	Elma	F	05-Aug-2020	Erin 2	Zinfandel's Boy	Alive
590	Leo	M	06-Aug-2020	Marie	Zinfandel's Boy	Alive
591	Amelia 2	F	06-Aug-2020	Marie	Zinfandel's Boy	Alive
592	Alice 2	F	06-Aug-2020	Marie	Zinfandel's Boy	Alive
593	Catherine	F	07-Aug-2020	Mary 2	Zinfandel's Boy	Alive
594	Cecelia	F	07-Aug-2020	Mary 2	Zinfandel's Boy	Alive
595	Isabel	F	07-Aug-2020	Mary 2	Zinfandel's Boy	Alive
596	Rue	F	07-Aug-2020	Violet	Zinfandel's Boy	Alive
597		M	7-Aug-2020	Snow	Monet	Sold/Alive
598	Belle	F	07-Aug-2020	Snow	Monet	Alive
599	Nala	F	07-Aug-2020	Snow	Monet	Alive
600	Lunda	F	07-Aug-2020	Zemba	Zinfandel's Boy	Alive

601		M	09-Aug-2020	Maggie	Monet	Sold/Alive
602		M	09-Aug-2020	Maggie	Monet	Sold/Alive
603		M	10-Aug-2020	Bridget	Monet	Sold/Alive
604		M	11-Aug-2020	Bianca	Zinfandel's Boy	Sold/Alive
605	Kaylee	F	11-Aug-2020	Bianca	Zinfandel's Boy	Alive
606		M	11-Aug-2020	Megan	Zinfandel's Boy	Sold/Alive
607	Ndahafa	F	11-Aug-2020	Megan	Zinfandel's Boy	Alive
608	Gabela	F	11-Aug-2020	Halali	Zinfandel's Boy	Alive
609	Kwando	F	11-Aug-2020	Halali	Zinfandel's Boy	Alive
610	Kei	F	11-Aug-2020	Halali	Zinfandel's Boy	Alive
611		M	12-Aug-2020	Brier	Zinfandel's Boy	Sold/Alive
612	Cosmos	F	12-Aug-2020	Brier	Zinfandel's Boy	Alive
613	Sage	F	12-Aug-2020	Cayenne	Zinfandel's Boy	Alive
614		M	12-Aug-2020	Hilma	Zinfandel's Boy	Sold/Alive
615	Shila	F	12-Aug-2020	Hilma	Zinfandel's Boy	Alive
616	Juniper 2	F	13-Aug-2020	Rose	Zinfandel's Boy	Alive
617	Clover	F	13-Aug-2020	Rose	Zinfandel's Boy	Alive
618		M	13-Aug-2020	Nigella	Monet	Dead
619	Foibe	F	13-Aug-2020	Katie	Zinfandel's Boy	Alive
620	Aurora	F	13-Aug-2020	Lolita	Monet	Alive
621	Carolina	F	14-Aug-2020	Wendy	Monet	Alive
622	Blackfoot	F	15-Aug-2020	Hermione	Zinfandel's Boy	Alive
623		M	15-Aug-2020	Helena	Zinfandel's Boy	Sold/Alive
624		M	15-Aug-2020	Glory	Zinfandel's Boy	Sold/Alive
625		F	15-Aug-2020	Pepper	Monet	Dead
626	Philippa	F	15-Aug-2020	Anne-Boleyn	Zinfandel's Boy	Alive
627		F	15-Aug-2020	Anne-Boleyn	Zinfandel's Boy	Dead
628	Khezi	F	16-Aug-2020	Olifa	Zinfandel's Boy	Alive
629	Kariba	F	16-Aug-2020	Olifa	Zinfandel's Boy	Alive
630		M	17-Aug-2020	Fina	Zinfandel's Boy	Sold/Alive
631		M	18-Aug-2020	Sophie	Zinfandel's Boy	Sold/Alive
632	Ryan	M	18-Aug-2020	Queen	Zinfandel's Boy	Dead
633		M	18-Aug-2020	Emerald	Zinfandel's Boy	Sold/Alive
634		M	19-Aug-2020	Malbec	Zinfandel's Boy	Sold/Alive

635		M	20-Aug-2020	Princess	Zinfandel's Boy	Sold/Alive
636		M	21-Aug-2020	Eleanor	Zinfandel's Boy	Sold/Alive
637		M	9-Sept-2020	Daisy 2	Zinfandel's Boy	Sold/Alive
638		M	11-Sept-2020	Petrina	Zinfandel's Boy	Sold/Alive
639		U	24-Sep-2020	Lavender	Zinfandel's Boy	Dead
645		F	27-Nov-2020	Primrose	Picasso	Alive
646		F	27-Nov-2020	Primrose	Picasso	Alive
647		M	27-Nov-2020	Pearl	Picasso	Alive
648		F	27-Nov-2020	Pearl	Picasso	Alive
649		F	29-Nov-2020	Cemellia	Picasso	Dead
650		M	29-Nov-2020	Burgandi	Michel	Alive
651		F	29-Nov-2020	Burgandi	Michel	Alive
652		F	1-Dec-2020	Orchid	Michel	Alive
653		M	1-Dec-2020	Blanc	Picasso	Alive
654		M	2-Dec-2020	Stella	Zinfandel's Boy	Alive
655		M	2-Dec-2020	Stella	Zinfandel's Boy	Alive
656		M	2-Dec-2020	Stella	Zinfandel's Boy	Alive
657		M	3-Dec-2020	Diamond	Michel	Alive
658		M	3-Dec-2020	Diamond	Michel	Alive
659		M	3-Dec-2020	Marsala	Picasso	Alive
660		M	3-Dec-2020	Marsala	Picasso	Alive
661		M	4-Dec-2020	Brenna	Michel	Alive
662		F	4-Dec-2020	Brenna	Michel	Alive
663		M	4-Dec-2020	Caitlin	Picasso	Alive
664		F	4-Dec-2020	Caitlin	Picasso	Alive
665		M	11-Dec-2020	Nolana	Michel	Alive
666		F	11-Dec-2020	Nolana	Picasso	Alive
667		M	11-Dec-2020	Chloe	Michel	Alive
668		M	12-Dec-2020	Robin	Michel	Alive
669		M	15-Dec-2020	Zinfandel	Picasso	Alive
670		F	15-Dec-2020	Zinfandel	Picasso	Alive
671		F	15-Dec-2020	Zinfandel	Picasso	Alive

672		F	16-Dec-2020	Joan	Michel	Alive
673		M	19-Dec-2020	Kir	Michel	Alive
674		F	19-Dec-2020	Kir	Michel	Alive
675		M	21-Dec-2020	Princess	Picasso	Alive
676		F	21-Dec-2020	Princess	Picasso	Alive
677		M	22-Dec-2020	Denali (SA)	Zinfandel's Boy	Alive
678		F	22-Dec-2020	Denali (SA)	Zinfandel's Boy	Alive
679		M	22-Dec-2020	Barbera	Michel	Alive
680		M	23-Dec-2020	Jade	Michel	Alive
681		F	24-Dec-2020	Yarrow	Michel	Alive
682		F	24-Dec-2020	Yarrow	Michel	Alive
683		F	24-Dec-2020	Matilda	Michel	Alive
684		M	25-Dec-2020	Riita	Michel	Alive
685		F	25-Dec-2020	Riita	Michel	Alive
686		F	26-Dec-2020	Ruacana	Picasso	Alive
687		F	26-Dec-2020	Ruacana	Picasso	Alive
688		F	26-Dec-2020	Ruacana	Picasso	Alive

In 2020, 15 (6M, 8F, 1U) Dairy goats died to causes listed in Table 19.

- Hansel (SB#66) – A male who was euthanized on 1 April 2020 due to succumbing to age related problems.
- Eveline (SB#555) – A female who was found dead on AM goat checks, died on 12 May 2020. Necropsy results showed it was either plant poisoning or trauma leading to Cyanosis.
- Tugela (SB#577) – A female was found dead within CCF's goat camps on 13 May 2020. She had been killed and eaten by jackals.
- Monet (SB#255) – A breeding male who was brought into the clinic on 15 May 2020 due to a persistent cough and displaying abnormal behaviour. Monet's health continued to decline even though the clinic team worked around the clock. It was suspected that Monet also had a blockage within his stomach, so the decision was made to perform an emergency rumenotomy on 25 May. No blockage was found, however, Monet passed away on the evening of 25 May 2020. Necropsy results showed the cause of death was a tapeworm cyst infestation as well as Pasteurella pneumonia.
- Opal (SB#47) – A female who was found weak at PM goat checks on 25 May, she was brought into the clinic straight away. However, her health declined rapidly and she passed

away on the evening of 25 May 2020. Necropsy results showed the cause of death was a tapeworm cyst infestation as well as Pasteurella pneumonia

- Rupey Bear (SB#110) – A breeding male who was brought into the clinic on 3 June 2020 due to being attacked by a leopard and having teeth incisions on his chest and neck. The clinic team helped to clean Rupey Bear up and put him on a course of antibiotics. Unfortunately, on 17 June, Rupey Bear succumbed to the injuries. Necropsy results showed that Rupey Bear had a damaged trachea which had compromised his immune system so that he eventually succumbed to severe distress.
- Daffodil (SB#46) - A female who was euthanized on 9 November 2020 due to succumbing to age related problems.
- Hermione (SB#469) – A female who was observed walking slowly with mucusy diarrhoea on the morning of 9 November 2020, was treated by the vet team with electrolytes, fluids and antibiotics and separated for the day. However, in the afternoon her health deteriorated rapidly, and she became very weak and sadly passed away later that evening. Necropsy results were inconclusive, but it is believed she ingested a poisonous plant.
- SB#585 – was a premature male kid born to Astrid (SB#293) on 20 July 2020, sadly, the kid was very weak and passed away later that day.
- SB#587 - was a stillborn male kid born to Astrid (SB#293) on 20 July 2020
- SB#618 – A male kid who was born via a dystocia to Nigella (SB#271) on 13 August 2020. Unfortunately, due to the dystocia, his neck was in an unnatural position which meant he could not stand or drink, thus the decision was made to euthanize him on 13 August 2020 as it could not be corrected.
- SB#625 – A female kid who was born to Pepper 2 (SB#413) on 15 August 2020. At birth, Pepper 2's udder was found to have mastitis and she had to go on antibiotics soon after kidding. SB#625 was then fostered to Helena (SB#433), however, after a positive introduction the kid was found dead on AM goat checks on 21 August 2020. The necropsy results were not conclusive.
- SB#627 - A stillborn female kid born to Anne-Boleyn (SB#300) on 15 August 2020.
- SB#639 – A stillborn kid born of unknown sex to Lavendar (SB#308) on 24 September 2020.
- SB#649 - A stillborn female kid born to Camellia (SB#535) on 29 November 2020.

Table 19: Dairy goats that died from January to December 2020.

Studbook #	Sex	Date of Death	Cause of Death
66	Male	01-Apr-20	Euthanasia
555	Female	12-May-20	Cyanosis
577	Female	13-May-20	Predation - Jackals
255	Male	25-May-20	Tapeworm Cyst
47	Female	25-May-20	Tapeworm Cyst

110	Male	17-Jun-20	Predation - Leopard
46	Female	09-Nov-20	Euthanasia
469	Female	09-Nov-20	Inconclusive
585	Male	20-Jul-20	Premature
587	Male	20-Jul-20	Stillborn
618	Male	13-Aug-20	Euthanasia
625	Female	21-Aug-20	Inconclusive
627	Female	15-Aug-20	Stillborn
639	Unknown	24-Sep-20	Stillborn
649	Female	29-Nov-20	Stillborn

CCF's Dairy goats are managed for milk production and castrated males and inferior bucks are sold at auction. Between January and December 2020, 97 Dairy goats (21M, 36F, 40W) were sold, amounting to sales of N$77,900.

Table 20 provides an overview of CCF's Dairy goat sales. One new dairy buck named Michel (SB#580) was purchased on 18 June 2020 for N$2,000. He is a nine-month-old male who was born on 28 September 2019. He came from a farm in Gobabis and underwent a period of quarantine upon arrival at CCF. He will become an important part of CCF's dairy goat breeding program.

Table 20: Dairy goat sales from 1 January to 31 December 2020 (M = male, F = female, U = wether).

SB#	Name	Sex	Date of Birth	Date of Sale	Price
42	Josaphine	F	12-Mar-2010	03-Jul-2020	N$1,500.00
44	Jasmin	F	24-Sep-2010	07-May-2020	N$2,000.00
50	Noir	F	31-Oct-2010	03-Jul-2020	N$1,500.00
64	Rosie	F	02-Aug-2011	03-Jul-2020	N$1,500.00
72	Margaret	F	15-Sep-2011	03-Jul-2020	N$1,500.00
99	Regina	F	24-Jul-2012	03-Jul-2020	N$1,500.00
103	Arial White	F	31-Jul-2012	03-Jul-2020	N$1,500.00
108	Ruby 2	F	20-Aug-2012	03-Jul-2020	N$1,500.00
115	Salt	F	12-Nov-2012	07-May-2020	N$2,000.00
130	Lil-Red	F	02-Jul-2013	03-Jul-2020	N$1,500.00
131	Caroline	F	02-Jul-2013	03-Jul-2020	N$1,500.00

142	Katrina	F	22-Jan-2014	03-Jul-2020	N$1,500.00
150	Blossom	F	04-Aug-2014	03-Jul-2020	N$1,500.00
176	Addie	F	16-Nov-2014	07-May-2020	N$2,000.00
187	Rapunzel	F	13-Dec-2014	07-May-2020	N$2,000.00
195	Nina	F	21-May-2015	02-Apr-2020	N$500.00
243	Emma	F	23-Sep-2015	03-Jul-2020	N$1,500.00
244	Meriam	F	23-Sep-2015	03-Jul-2020	N$1,500.00
253	Kyla	F	25-Dec-2015	28-Jan-2020	N$1,500.00
254	Monika	F	25-Dec-2015	12-Oct-2020	N$2,000.00
268	Mhlali	F	30-Aug-2016	12-Oct-2020	N$2,000.00
270	Becky	F	30-Aug-2016	13-Aug-2020	N$500.00
308	Lavendar	F	03-Nov-2016	21-Oct-2020	N$2,000.00
321	Eve	F	15-Nov-2016	12-Oct-2020	N$2,000.00
331	Rauna	F	15-Nov-2016	12-Oct-2020	N$2,000.00
340	Kristofina	F	22-Aug-2017	12-Oct-2020	N$2,000.00
358	Petulia	F	31-Aug-2017	21-Oct-2020	N$2,000.00
374	Cayenne	F	18-Sep-2017	02-Apr-2020	N$500.00
389	Mia	F	20-Oct-2017	03-Jul-2020	N$1,500.00
390	Noma	F	13-Sept-2017	28-Jan-2020	N$1,500.00
408	Oprah	F	01-Aug-2018	21-Oct-2020	N$2,000.00
423	Fina	F	07-Aug-2018	12-Oct-2020	N$2,000.00
472		W	11-Nov-2018	07-Jun-2020	N$200.00
477		W	04-Aug-2019	02-Mar-2020	N$200.00
479		W	05-Aug-2019	02-Mar-2020	N$200.00
480		W	05-Aug-2019	02-Mar-2020	N$200.00
481		W	05-Aug-2019	07-Jun-2020	N$200.00
483		W	06-Aug-2019	02-Mar-2020	N$200.00
485		W	07-Aug-2019	02-Mar-2020	N$200.00
486	Zinnia	F	07-Aug-2019	21-Oct-2020	N$2,000.00

488		W	09-Aug-2019	02-Mar-2020	N$200.00
490		W	09-Aug-2019	02-Mar-2020	N$200.00
491		W	09-Aug-2019	02-Mar-2020	N$200.00
493		W	09-Aug-2019	02-Mar-2020	N$200.00
494		W	10-Aug-2019	02-Mar-2020	N$200.00
495		W	10-Aug-2019	02-Mar-2020	N$200.00
496		W	10-Aug-2019	02-Mar-2020	N$200.00
497		W	10-Aug-2020	02-Mar-2020	N$200.00
499		W	10-Aug-2019	02-Mar-2020	N$200.00
500		W	10-Aug-2019	02-Mar-2020	N$200.00
501		W	09-Aug-2019	02-Mar-2020	N$200.00
502	Cameron	M	09-Aug-2019	12-Oct-2020	N$2,500.00
503		W	11-Aug-2019	02-Mar-2020	N$200.00
509		W	11-Aug-2019	02-Mar-2020	N$200.00
519		W	16-Aug-2019	02-Mar-2020	N$200.00
524		W	17-Aug-2019	02-Mar-2020	N$200.00
525		W	17-Aug-2019	02-Mar-2020	N$200.00
526		W	17-Aug-2019	02-Mar-2020	N$200.00
527		W	17-Aug-2019	02-Mar-2020	N$200.00
529		W	18-Aug-2019	02-Mar-2020	N$200.00
530	Bud	M	18-Aug-2019	03-Jul-2020	N$2,500.00
531		W	18-Aug-2019	02-Mar-2020	N$200.00
533	Cortese	F	22-Aug-2019	21-Oct-2020	N$2,000.00
534		W	22-Aug-2019	02-Mar-2020	N$200.00
535		W	22-Aug-2019	02-Mar-2020	N$200.00
538		W	27-Aug-2019	02-Mar-2020	N$200.00
540		W	27-Aug-2019	02-Mar-2020	N$200.00

544		W	30-Aug-2019	02-Mar-2020	N$200.00
549		W	3-Nov-2018	02-Mar-2020	N$200.00
550		W	27-Aug-2019	02-Mar-2020	N$200.00
551	Augusta	F	01-Dec-2019	21-Oct-2020	N$2,000.00
556		W	12-Dec-2019	07-Jun-2020	N$200.00
557		W	12-Dec-2019	07-Jun-2020	N$200.00
559		W	14-Dec-2019	07-Jun-2020	N$200.00
569	Antonio	M	19-Dec-2019	21-Oct-2020	N$2,500.00
571		W	20-Dec-2019	07-Jun-2020	N$200.00
573		W	21-Dec-2019	07-Jun-2020	N$200.00
575	Benitto	F	24-Dec-2019	21-Oct-2020	N$2,000.00
576		W	23-Dec-2019	07-Jun-2020	N$200.00
597		M	07-Aug-2020	04-Sep-2020	N$192.00
601		M	09-Aug-2020	13-Aug-2020	N$0.00
602		M	09-Aug-2020	13-Aug-2020	N$0.00
603		M	10-Aug-2020	04-Sep-2020	N$192.00
604		M	11-Aug-2020	04-Sep-2020	N$192.00
606		M	11-Aug-2020	04-Sep-2020	N$192.00
611		M	12-Aug-2020	04-Sep-2020	N$192.00
614		M	13-Aug-2020	13-Aug-2020	N$0.00
623		M	15-Aug-2020	04-Sep-2020	N$192.00
624		M	15-Aug-2020	04-Sep-2020	N$192.00
630		M	17-Aug-2020	04-Sep-2020	N$192.00
631		M	18-Aug-2020	04-Sep-2020	N$196.00
633		M	18-Aug-2020	04-Sep-2020	N$192.00
634		M	19-Aug-2020	04-Sep-2020	N$192.00
635		M	20-Aug-2020	04-Sep-2020	N$192.00

636		M	21-Aug-2020	04-Sep-2020	N$192.00
637		M	09-Sep-2020	12-Oct-2020	N$200.00
				Total	**N$77,900**

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 2020, up to 88 goats were milked every day for a total production of 53,344.2kg of milk. Of this milk, 4070.4kg was used to raise goat kids and 49,273.8kg was supplied to the creamery (Table 21).

Table 21: Goats milked, amount produced (kilograms), and how much allocated to kids and creamery in 2020.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Goats milked	88	86	86	84	80	64	40	49	72	72	53	52
Total Produced	7672.4	7020.6	6427.1	4964.5	4148.2	2923.2	2181.6	2899.3	3934.9	3709.9	3492.6	3969.9
Used to Raise Kids	1127.9	1431	878.5	493	113	0	0	0	0	27	0	0
To Creamery	6544.5	5589.6	5548.6	4471.5	4035.2	2923.2	2181.6	2899.3	3934.9	3682.9	3492.6	3969.9

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 22 shows the amount of milk production per goat per month.

Table 22: Milk production (kilograms) per goat per month for 2020.

Goat	SB#	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Addie	**176**	103.12	88.87	82.58	58.83	6.76	0	0	0	0	0	0	0

Anne-Bolyne	**300**	84.42	83.78	77.23	50.75	36.26	19.06	0	3.85	25.35	39.11	77.1	82.15
Astrid	**293**	93.63	88.61	87.75	74.9	62.94	26.83	25.33	102.15	83.32	95.52	94.88	100.06
Barbera	**474**	0	0	0	0	0	0	0	0	0	0	0	2.28
Becky	**270**	94.33	87.51	48.66	41.21	31.63	7.66	0	0	0	0	0	0
Beulah	**342**	92.38	91.94	89.61	67.51	58.82	65	71.53	80.88	82.42	56.53	0	0
Bianca	**341**	71.79	67.4	61.02	41.61	38.19	17.37	0	9.84	27.25	30.33	37.34	38.33
Blanc	**315**	79.47	90.95	84.95	46.9	47.91	59.89	77.538	86.539	85.028	79.38	70.32	68.399
Blossom	**150**	102.04	95.88	91.99	77.98	63.71	50.71	4.2	0	0	0	0	0
Brenna	**182**	139.03	128.29	128.15	107.16	77.54	76.34	86.59	94.52	73.73	27.55	0	0.85
Bridget	**277**	103.18	86.28	82.39	74.54	76.4	45.25	0	0	41.68	51.3	111.37	132.18
Brier	**364**	72	64.72	56.06	49.8	39.54	13.35	2.25	14.99	43.52	42.14	76.21	62.9
Burgandi	**354**	0	0	0	0	0	0	0	0	0	0	0	1.39
Caitlin	**132**	102.28	85.28	80.86	71.41	67.63	61.18	63.89	73	64	23.08	0	2.51
Camella	**386**	75	67.62	61.66	55.47	57.45	59.05	61.55	66	61.9	20.24	3.85	106.81
Caroline	**131**	89.84	87.98	84.11	65.56	58.05	48.9	3.88	0	0	0	0	0
Cayenne	**374**	82.45	70.81	65.78	1.81	0	0	0	0	0	0	0	0

Chenin Blanc	**100**	120.68	122.04	113.42	75.21	67.43	69.98	58.89	81.28	58.1	67.59	76.17	63.38
Chianti	**384**	81.62	72.05	69.73	68.42	61.08	40.72	74.61	84.16	79.22	62.61	70.86	92.14
Chloe	**434**	0	0	0	0	0	0	0	0	0	0	0	8.63
Claret	**383**	82.96	86.67	92.29	63.84	61.84	66.58	64.4	72.42	92.96	110.82	114.78	109.31
Daisy 2	**468**	0	0	0	0	0	0	0	0	6.9	63.02	84.86	85.61
Diamond	**291**	82.75	84.56	78.22	68.86	66.38	35.23	18.4	42.8	43.83	20.35	0	0
Diana	**59**	32.86	29.8	34.81	30.67	25.6	21.14	23.33	21.2	21.64	20.15	19.07	20.65
Edelweiss	**74**	86.93	73.42	69.79	61.91	50.36	47.94	57.65	62.43	59.39	61.55	56.4	61.5
Eleanor	**422**	0	0	0	0	0	0	0	0.2	38.47	47.55	50.17	69.8
Emerald	**405**	0	0	0	0	0	0	0	0	73.8	101.36	99.83	108.68
Emma	**243**	85.1	79.52	72.29	63.96	54.72	47.68	3.32	0	0	0	0	0
Erin 2	**344**	82.04	75.03	45.8	33.21	45.1	7.09	0	3.01	21.53	31.97	54.3	55.91
Eve	**321**	71.66	59.66	46.07	46.22	34.91	7.59	0	0	0	0	0	0
Fina	**423**	0	0	0	0	0	0	0	0.88	63.06	25.82	0	0
Glory	**370**	72.52	60.58	45.76	46.94	49.27	23.07	0	50.51	123.14	110.7	107.89	109.31
Halali	**279**	81.26	70.54	66.93	57.22	43.93	9.24	0	0	0	0	40.9	52.85

Hannah	**121**	92.82	90.94	80	63.29	44.15	33.31	32.35	40.2	38.42	34.59	33.75	38.61
Helena	**433**	0	0	0	0	0	0	0	0.13	76.4	94.78	82.27	94.39
Henrietta	**296**	113.41	95.28	85.91	65.27	45.8	8.09	0	0	0	0	0	0
Hermione	**469**	0	0	0	0	0	0	0	0.24	18.39	27.6	8.02	0
Hilma	**353**	53.57	68.46	67.7	58.9	39.71	6.41	0	3.38	26.14	36.06	58.44	71.56
Indira	**49**	71.06	73.37	74.48	31.11	32.63	38.9	47.5	54.44	41.34	47.29	56.03	54.86
Isla	**366**	53.13	47.64	46.22	37.29	38.02	44.23	40.21	51.65	57.51	50.67	0	0
Jade	**380**	101.44	90.32	92.03	63.3	64.86	67.72	71.73	86.28	88.47	71.84	2.78	2.6
Jasmin	**44**	81.91	78.35	57.85	54.87	12.47	0	0	0	0	0	0	0
Joan	**357**	77.03	78.3	54.37	54.27	54.39	54.68	59.57	67.68	71.99	44.61	0	5.1
Josaphine	**42**	38.61	41.99	45.51	40.7	39.22	35.02	1.99	0	0	0	0	0
Katie	**448**	0	0	0	0	0	0	0	0	10.61	21.89	36.02	44.24
Katrina	**142**	86.83	73.64	82.17	67.74	63.89	53.47	3.39	0	0	0	0	0
Kimberley	**56**	55.37	58.7	71.98	57.36	50.53	45.93	39.8	38.79	27.06	30.44	30.57	34.83
Kir	**346**	101.87	99.01	86.14	71.34	71.85	72.1	75.07	86.39	88.21	40.81	0	0.68
Kristofina	**340**	92.76	80.72	81.43	73.52	57.91	56.19	67.35	70.76	62.44	21.65	0	0

Kyla	**253**	38.98	0	0	0	0	0	0	0	0	0	0	0
Lavendar	**308**	0	0	0	0	0	0	0	0	2.71	17.62	0	0
Lil Red	**130**	59.59	54.53	54.31	49.56	44.7	37.84	2.06	0	0	0	0	0
Lizzie	**289**	107.62	99.44	79.73	78.23	63.34	5.47	0	0	0	0	0	0
Lolita	**265**	109.17	93.79	85.27	67.76	55.86	36.08	0	27.23	93.32	108.09	108.75	122.22
Maggie	**317**	129.02	115.95	83.33	49.3	38.9	13.16	0	74.08	90.89	105.53	102.03	103.43
Malbec	**473**	0	0	0	0	0	0	0	10.27	85.51	109.77	106.72	100.72
Marie-Antoinette	**301**	122.9	99.12	100.78	71.67	59.02	3.79	0	4.06	25.54	37.03	56.46	69.44
Marigold	**284**	97.51	88.11	74.84	67.93	59.88	12.55	0	0	0	0	0	0
Marsala	**356**	68.9	65.94	68.44	55.49	56.17	47.42	56.51	60.25	59.13	20.33	0	4.7
Mary 2	**295**	120.56	103.55	70.21	63.92	53.72	3.79	0	4.06	27.45	35.86	53.33	58.18
Megan	**407**	0	0	0	0	0	0	0	5.29	30.51	43.15	59.53	56.97
Meriam	**244**	53.68	48.23	50.37	31.7	27.4	30.12	1.75	0	0	0	0	0
Mhalali	**268**	65.56	55.55	50.48	39.93	30.5	20.51	1.82	0	0	0	0	0
Mia	**389**	45.01	48.52	58.01	42.27	33.76	27.65	1.25	0	0	0	0	0
Miribai	**105**	76.34	75.99	76.38	66.4	60.34	54.88	52.08	56.28	51.41	56.22	51.6	61.65

Nigella	**271**	97.9	83.63	71.86	61.04	59.06	21.61	0	40.5	84.56	87.16	87.04	92.24
Nina	**195**	87.48	73.17	59.63	1.81	0	0	0	0	0	0	0	0
Noir	**50**	30.33	33	38.43	32.23	22.55	12.48	0	0	0	0	0	0
Nolana	**371**	88.51	83.83	82.07	68.64	52.23	64.93	76.31	89.13	89.55	50.88	0	0.47
Noma	**390**	45.03	0	0	0	0	0	0	0	0	0	0	0
Olifa	**280**	113.26	98.85	76.38	69.81	39.9	6.25	0	0	35.41	51.79	60.68	74.44
Omao	**368**	76.33	59.47	56.19	47.36	40.68	41.47	45.2	48.09	47.23	22.86	0	0
Onyx	**303**	99.08	86.69	72.65	67.08	51.04	16.37	0	2.37	24.34	29.5	46.59	55.37
Opal	**47**	40.11	39.6	35.06	11.14	1.38	0	0	0	0	0	0	0
Orchid	**385**	81.14	72.19	65.88	53.47	56.13	59.58	61.63	69.39	65.49	21.5	0	0
Pearl	**186**	103.9	97.86	97.16	80.83	75.89	65.11	64.59	70.67	49.76	4.82	0	0
Pepper 2	**413**	0	0	0	0	0	0	0	28	94.77	108.46	104.56	118.1
Petrina	**336**	113.46	97.52	93.28	61.81	57.68	35.07	2.13	0	10.16	95.12	143.77	150.63
Poppy	**137**	107.13	107.88	103.86	61.54	56.24	43.65	49.61	60.92	70.39	84.44	88.54	102.91
Primrose	**138**	97.01	80.04	79.45	77.9	70.16	85.77	84.04	89.86	78.56	26.5	0	0
Princess Adela	**152**	96.28	85.33	78.88	55.48	86.32	51.78	54.76	52.02	44.53	30.53	1.69	4.23

Princess Beatrice	**158**	123.6	102.55	94.97	75.19	46.52	68.6	76.84	78.3	79.56	84.25	92.09	103.8
Princess Eugenie	**319**	81.78	71.5	73.75	67	57.67	24.43	0	0	30.32	40.48	71.37	73.99
Princess Saba	**107**	106.75	96.52	78.11	61.55	54.74	55.35	58.5	63.21	53.93	56.81	63.92	79.73
Queen Elizabeth	**417**	0	0	0	0	0	0	0	0.91	21.11	34.52	48.02	94.61
Rapunzel	**187**	69.26	74.37	79.26	74.68	14.17	0	0	0	0	0	0	0
Regina	**99**	55.94	56.23	50.22	39.69	43.48	35.63	0.5	0	0	0	0	0
Robin	**453**	0	0	0	0	0	0	0	0	0	0	0	2.48
Rose	**307**	126.52	104.01	77.13	68.24	46.01	8.68	0	3.47	26.54	41.68	82.98	65.37
Ruacana	**144**	96.43	99.79	99.49	75.64	59.38	56.49	57.68	68.91	65.3	43.254	0.47	0
Ruby 2	**108**	62.09	59.87	57.73	46.61	44.17	39.41	0.82	0	0	0	0	0
Salt	**115**	66.72	54.12	58.01	46.07	9.54	0	0	0	0	0	0	0
Snow	**275**	60.58	49.35	49.38	45.35	38.43	9.25	0	27.9	59.88	66.55	56.85	64.88
Sophie	**548**	0	0	0	0	0	0	0	0	59.26	81.97	75.73	86.9
Stella	**359**	65.61	57.12	57.55	54.34	43.33	27.52	29.01	57.16	54.99	13.37	0	0
Syrah	**226**	114.76	98.57	89.59	60.13	55.83	15.44	0	0	0	0	0	0

Tina 2	**124**	151.71	158.74	142.06	52.5	55.92	25.51	1.04	0	0	0	0	0
Trycolin	**181**	98.28	101.05	86.48	58.27	41.83	37.09	44.22	55.83	61.12	56.71	2.34	0
Tulip	**309**	104.77	94.61	72.27	75.25	82.84	80.1	78.44	90.32	85.79	78.34	84.24	94.73
Violet	**282**	84.54	100.85	86.94	64.78	49.29	22.29	0	0	17.59	34.72	60.38	87.61
Wendy	**266**	93.79	82.51	75.9	50.97	56.2	20.66	0	38.54	101.56	108	101.79	98.67
Whinnie	**109**	149.51	151.67	149.7	80.99	44.15	37.08	34.08	39.83	44.64	50.36	51.57	82.7
Yarrow	**45**	99.3	98.67	87.59	54.62	39.88	34.52	37.19	39.22	33.13	9.79	0	0
Zemba	**367**	91.5	78.56	57.4	49.27	36.13	10.24	0	12	44.41	46.81	75.41	75.88
Zinfandel	**52**	112.03	105.61	96.85	88.17	77.58	74.67	73.18	80.66	57.25	4.27	0	0.41
Total	**-**	**7672.4**	**7020.6**	**6427.1**	**4964.5**	**4148.9**	**2923.2**	**2181.55**	**2899.29**	**3934.88**	**3709.9**	**3492.62**	**3969.94**

Figure 28 displays the number of goats milked each month and the total milk production per month.

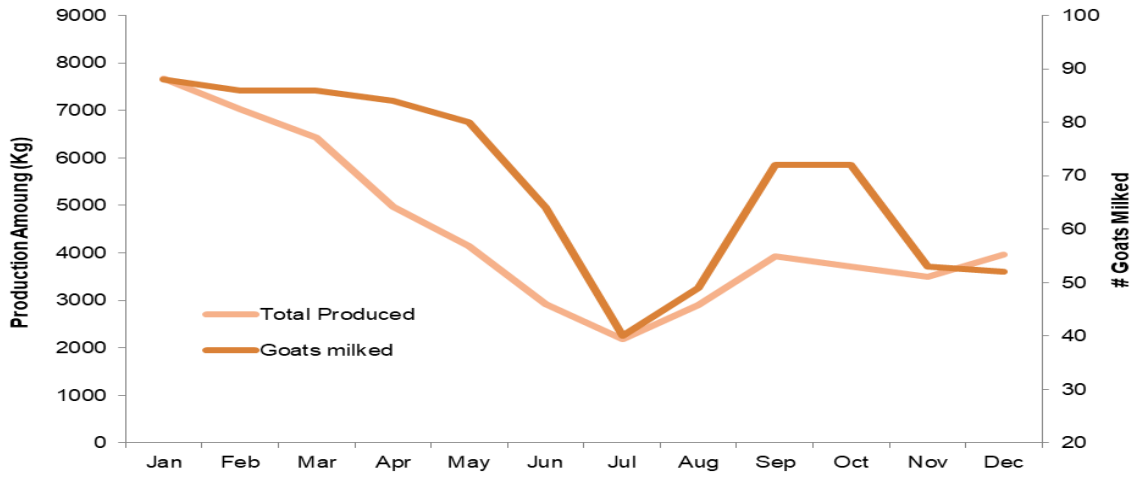


Figure 28: Milk production versus goats milked from January to December 2020.

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

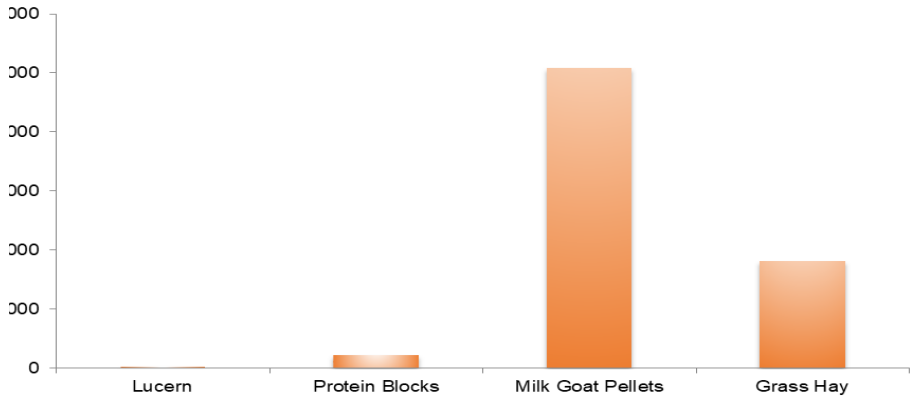


Figure 29: Amount of feed provided to CCF small stock in 2019.

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; antihelminthic 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.
    - All new-borns are vaccinated at two weeks old, three injections must be given 10 days apart and then one injection should be given every 6 months thereafter.
    - Adult animals are vaccinated every 6 months.
- MultiVax P Plus – for the control of dysentery, pulpy kidney disease (Clostridium perfringens Type D), tetanus (Clostridium tetani), Pasteurella (Pasteurella haemolytica)

respiratory infection, blackleg (Gangraena emphysematosa), clostridial metritis, blood gut, and infections.

  - All new-borns are vaccinated at four weeks old, then a booster after a month and then annually thereafter.
  - Adult animals are vaccinated annually.

- Brucellosis – for the control of Brucellaovis and Brucella melitensis, a bacterial infection of the reproductive tract.
  - This vaccine is given only once and provides life-long immunity; all young animals are vaccinated at four months of age.
- Enzootic Abortion – for the control of Chlamydophilapsittici, an organism that causes early and late-term abortions.
  - All of the 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.

Hay Production

In 2020, CCF produced 5,900 bales of hay.

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 30 below displays the amount of wild game removed for consumptive use for this reporting period

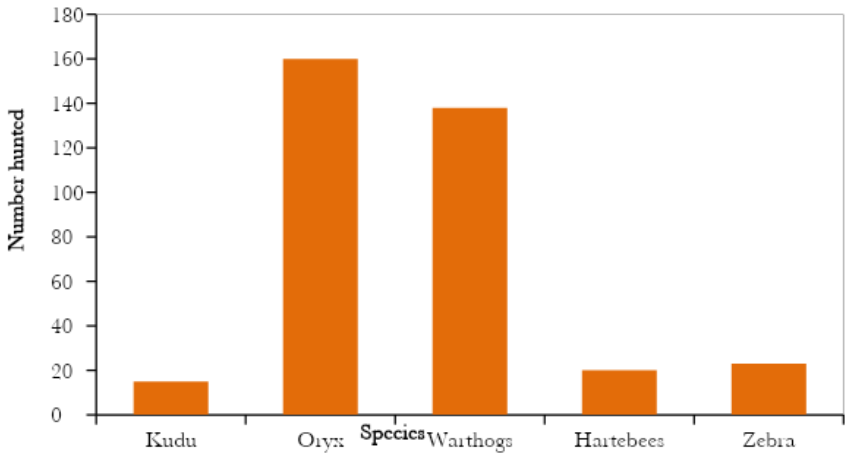


Figure 30: Amount of game utilised by CCF in 2020.

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.

Certified Wildlife Friendly

CCF is a co-founder of The Wildlife Friendly Enterprise Network (WFEN), which is a global community dedicated to the development and marketing of products that conserve threatened wildlife while contributing to the economic vitality of rural communities. The WFEN provides the 'Certified Wildlife Friendly' trademark (Figure 31) 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 31: Certified Wildlife Friendly logo.

Bushblok

Block Production

Processing of raw wood for export continued. BUSHBOLK production in 2020 amounted to 317 tonnes (88 tonnes up from production in 2019), with sales of 293.56 tonnes. Table 23 shows the monthly block production during this reporting period.

Table 23: Monthly block production January to December 2020.

Month	Amount (tonnes)
January	10
February	15
March	15
April	5
May	30
June	40
July	45
August	30
September	32
October	40
November	40
December	15
Total	**317**

Fuelwood Production

Fuelwood production in 2020 amounted to 216.85 tonnes with sales of 216.85 tonnes as well. Table 24 shows the fuelwood production during this reporting period.

Table 24: Monthly fuelwood production January to December 2020.

Month	Amount (tonnes)
January	0
February	7.96
March	4.75
April	0
May	33.86
June	78.23
July	18.89
August	5
September	3.75
October	6.25
November	29.91
December	28.25
Total	216.85

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 the 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).

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 2020, there were 222 dairy goats at CCF with up to 88 being milked daily for a daily average of 146.1 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 49,273.8 kg of milk, however, due to human error, spilling and different/faulty scales, only 47,199 kg of milk was actually used in the creamery. Of the total milk used for creamery products, 42.1% was used to produce two of the Creamery's original cheeses, feta and chèvre. Table 25 shows amounts of milk allocated to the production of each creamery product.

Table 25: Milk allocation per product from January to December 2020.

Product	Milk Used (kg)
Feta	9,838
Chevre	10,054
Ricotta	6,390
Mozzarella	70
Hard cheese	8,080
Yogurt	448
Fudge	3,057
Ice cream	286
Soap	1,276
Milk to farm staff	4,091
Cream cheese	2,363
Halloumi	1,013
Milk	233
Total	**47,199**

Table 26 shows the amounts of two of these varieties produced each month in 2020. In addition, the Creamery produced a total of 57.10 kg of fudge, 428.58 kg of ice cream, 375.58 kg of ricotta and 2.0 kg mozzarella cheeses, 11.25 hard cheese, 193.98 kg cream cheese, and 448.10 kg yoghurt. The creamery started producing a new semi-hard cheese called Halloumi, for which 91.18 kg of milk was used to produce and develop this cheese. All cheeses that were produced were used at the staff kitchen, Cheetah Café and the Cheetah View Lodge.

Table 26: Feta and Chèvre monthly production (kilograms) in 2020.

Month	Feta	Chèvre	Total
January	145.6	181.8	327.4
February	174.64	163	337.64
March	10.76	80.96	91.72
April	9.11	106.1	115.21
May	95.72	7.2	102.92
June	45.31	4.5	49.81
July	54.21	3.47	57.68
August	66.6	54.95	121.55
September	79.35	63.77	143.13
October	108.68	105.3	213.98
November	84.63	105.91	190.54
December	10.82	27.93	38.75
Total	**885.43**	**904.89**	**1790.33**

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$1.68 per kilogram of product. Total milk costs amounted to N$10.11. The average amount of milk required to produce a kilogram of cheese is 11.11kg, whereas ice cream required 0.67kg.

Table 27 shows the breakdown of costs for the various creamery products as well as the total cost per kilogram of product.

Table 27: Production costs (N$) of creamery products from January to December 2020.

Product	Production (kg)	Milk per kg	Total Milk Used (kg)	Total Milk Cost	Total Other Cost	Total Production Cost	Total cost per kg
Feta	885.42	11.11	9,837.97	99,461.88	1,489.81	100,951.69	114.02
Chevre	904.88	11.11	10,054.25	101,648.47	1,522.56	103,171.03	114.02
Ricotta	575.14	11.11	6,390.40	64,606.94	967.73	65,574.67	114.02
Mozzarella	6.3	11.11	70	707.7	10.6	718.3	114.02
Hard cheese	727.23	11.11	8,080.30	81,691.83	1,223.64	82,915.47	114.02
Yogurt	448.1	1	448.1	4,530.29	753.98	5,284.27	11.79
Fudge	274.38	11.14	3,057.25	30,908.80	461.67	31,370.47	114.33

Ice cream	428.58	0.67	285.72	2,888.63	721.13	3,609.76	8.42
Soap	1,914.56	0.67	1,276.37	12,904.10	3,221.45	16,125.55	8.42
Milk to farm staff	4,090.60	1	4,090.60	41,355.97	6,882.88	48,238.85	11.79
Cream cheese	199.36	11.11	2,215.06	22,394.26	335.44	22,729.69	114.02
Halloumi	91.18	11.11	1,013.10	10,242.44	153.42	10,395.86	114.01
Milk	233	1	233	2,355.63	392.05	2,747.68	11.79
Total	**10,778.73**		**47,052.12**	**475,696.90**	**18,136.36**	**493,833.30**	

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 2020 was N$54,300.51, which saw an 81% reduction from sales in 2019 at N$288,580.00. Creamery product amounts totalled 6,946.4 kg, while 24.55kg were distributed as promotional samples and gifts at events such as agricultural shows, farmer's markets, and tourism fairs (Table 28).

As shown in Table 28, during this period the Creamery supplied the Gift Shop with 107.75 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 6,921.85 kg of ice cream, fudge, cheese, yoghurt, milk and soap.

Table 28: Creamery product sales (N$) in 2020. Figures in red do not indicate profit from products.

Product	Kg	Cost/Kg	Total Cost	Revenue	Profit
Feta	53.95	114.02	6,151.16	8,670	2,518.84
Chevre	53.9	114.02	6,144.89	13,130	6,985.11
Ricotta	8.83	114.02	1,006.19	1,350	343.81
Mozzarella	0	114.02	0	0	0
Hard cheese	34.25	114.02	3,904.48	5,970	2,065.52
Yoghurt	0	11.79	0	0	0
Fudge	32.4	114.33	3,704.38	8,555	4,850.62
Ice cream	0	8.42	0	0	0
Soap	12.98	8.42	109.33	4,975	4,865.67
Milk to farm staff	0	11.79	0	0	0
Cream cheese	33	114.02	3,762.53	5,890	2,127.47

Halloumi	0	11.11	0	0	0
Milk	226	1	226	3485	3259
Total Stores and Lodges	**455.3**		**25,008.95**	**52,025**	**27,016.05**
Fudge (Gift Shop)	7.2	114.33	823.2	6,590	5,766.80
Soap (Gift Shop)	1.1	8.42	9.26	370	360.74
Cheese (Gift Shop)	67.05	114.02	7,644.77	3,092	-4,552.77
Yoghurt (Gift shop)	0.5	11.79	5.9	15	9.1
Ice cream (Gift Shop)	31.9	8.42	268.68	6590	6,321.32
Total CCF Gift Shop	**107.75**		**8,751.81**	**16,657**	**7,905.19**
Ice Cream (Babson)	9	8.42	75.8	1980	1,904.20
Soap (Babson)	0	8.42	0	0	0
Cheese (Babson)	42.5	114.02	4,845.68	6375	1,529.32
Yoghurt (Babson)	4	11.79	47.17	99.2	52.03
Fudge (Babson)	6	114.33	686	1,500	814
Total Babson	**61.5**		**5,654.65**	**9,954.20**	**4,299.55**
Ice Cream (Café)	24	8.42	202.14	5280	5077.86
Yogurt (Café)	22	11.79	259.44	545.6	286.16
Cheese (Café)	270	114.02	30,784.30	40,500	9,715.70
Total Café	**316**		**31,245.88**	**46,325.60**	**15,079.72**
Cheese (Hotspot)	1,108.41	114.02	126,376.41	126,376.41	0
Yogurt (Hotspot)	419.6	11.79	4,948.18	4,948.18	0
Ice Cream (Hotspot)	362.68	8.42	3,054.71	3,054.71	0
Total Hotspot	1,890.69		134,379.30	134,379.30	0
Milk (Farm staff)	4090.6	11.22	45,896.53	45,896.53	0
Total CCF Staff	5981.3		180,275.80	180,275.80	0
Total CCF	**6,921.85**	**0**	**250,937.10**	**305,237.60**	**54,300.51**
Cheese samples	18.05	114.02	2,057.99	0	-2,057.99
Fudge samples	3.5	114.33	400.16	0	-400.16
Yoghurt samples	2	11.79	23.59	0	-23.59

Ice cream samples	1	8.42	8.42	0	-8.42
Total Promotional samples	**24.55**		**2,490.16**	**0**	**-2,490.16**
Total All Products Sold	**6,946.40**	**0**	**253,427.30**	**305,237.60**	**54,300.51**

At the end of this period, the remaining inventory in CCF's freezers was 561 kg of cheese, 9.28 kg fudge, and 1,892.88 kg of soap, while 208 kg of fudge and 1,346.57 cheese spoiled (Table 29), due to the decrease in sales resulting from the COVID-19 pandemic.

Table 29: Amount of products left in inventory and those spoiled as of 31 December 2020.

Product	Kg	Kg spoiled
Fudge	9.28	208
Ice Cream	0	0
Yoghurt	0	0
Soap	1,892.88	0
Cheese	561	1,138.57
Total	**2,463.16**	**1,346.57**

Client Development

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

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

The Chewbaaka Memorial Garden

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

To counteract the heavy clay-sand soil, CCF uses aged manure from its farm animals 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 1,002.7kg of fresh produce was harvested from the garden between January and December 2020. Figure 32 shows the amounts of various produce harvested during the reporting period. Tomatoes, spinach and spring onion were the most harvested during this reporting with 183.7kg, 157.2kg and 110.5kg respectively.

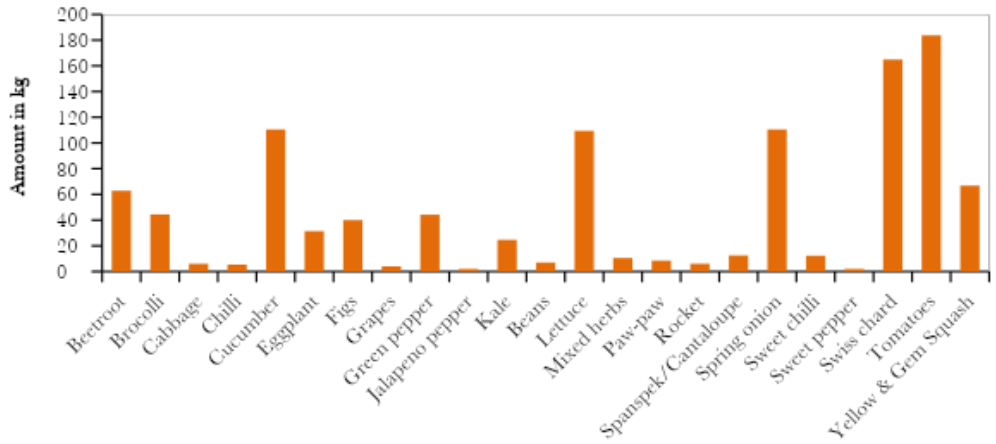


Figure 32: Vegetables/fruits and herbs harvested from the Chewbaaka Memorial Garden in 2020.

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 August 2020 and the new growth looks good, with lots of immature grapes forming. The grapes will be harvested in January 2021.

Eco-Tourism

Tourism has been one of Namibia's largest growing industries 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 stay and experience when visiting. CCF's eco-tourism potential continued to grow for the first three months of 2020 until the COVID-19 pandemic hit globally and the country together with the rest of the world came to a travel standstill. The economic impact has been devastating as shown below.

Visitors to CCF

By the end of 2020, CCF had only received a total of 1926 visiting tourists, of which 231 (Cheetah View Lodge & Babson) were overnight tourists. This represents an 87.2 % decrease from 15,048 in 2019. In terms of total revenue, this period saw an 83.7% decrease at N$ 1,823,257.58 compared with N$ 11,211,873.00 in 2019. In addition to school groups and film crews mentioned separately, CCF hosted many CCF friends, supporters, and collaborators in 2020, many of them on return visits.

CCF hosted friends, supporters, and collaborators in the first two and a half months of 2020 and then closed downed the end of March to May, due to the countrywide lockdown, opening to the local Namibian visitors the last weekend in May 2020. May to October and the beginning of November are usually our peak season for visiting guests, which was unfortunately not the case in 2020.

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

January

- Cora Ogle, Linnea Woodward and Shelby Wood from Cincinnati stayed at Babson House. Cora is on the Board of Directors at Cincinnati Zoo.
- We hosted an international CNN Film Crew led by production manager, Rachel Wood.
- We gladly hosted Christine and Dennis Busche with their daughter Hope Young, a family from the USA recommended and travel planned to CCF, by old time friends and colleagues Emily and Chris Liebenberg from Piper and Heath.
- We were honoured to receive a visit from the Turkish Ambassador H.E. Berin Makbule Tulun to Namibia, who did a tour around the centre and facilities that TIKA donated and visited the TIKA creamery.
- Hanna Rhodin from the Society for the Prevention of Cruelty to Animals (SPCA) in Windhoek had a tour of the centre and visited our various departments here at CCF, Namibia.

- Mr. Bill (William) Lytle and his partner Alyssa Aniks stayed at Babson house for a night to see CCF's work. Mr. Lytle is the Senior Vice President of Operations for B2Gold where his work is based between Namibia and Vancouver.

February

- Karine Batalla visited for four days. She is a French diplomat who was living in Johannesburg, South Africa at the time and returned to France just before the pandemic locked down Namibia. She is very fond of the work that Dr. Laurie Marker and CCF does. She gladly shared with us some nice pictures she took after her visit.
- Explore Travel came for a tour booked through Waterberg Guest farm. They did a cheetah drive, a full tour of the centre, Model Farm and met our livestock guarding dogs. One of the guests from this group was a good friend of Jane Galton our Chairperson of CCF UK.

March

- We welcomed professional wildlife photographer, Margot Raggett from the UK. Margot wrote a book called *Remembering Cheetahs* to benefit CCF and several other cheetahs organizations. Dr. Laurie Marker wrote the foreword. Margot was also accompanied by Donal Boyd (a professional American wildlife photographer) who took the cover picture of Remembering Cheetahs at Erindi, from one of CCF released cheetah offsprings.
- We welcomed long-time friend and supporter to CCF, Roswitha Smale, who was joined by 11 other guests and friends of hers, for three days and three nights of activities and conservation with us.
- Our last visiting guests at Babson house were CCF friends Mr. Serge Bednarczyk and his partner from Switzerland. They left just before we went into lockdown end of March 2020 due to the COVID-19 pandemic. Serge stayed at CCF Babson house before in 2018.

June

- Jeff Muntifering, an old friend and colleague of CCF visited with his family at the beginning of June for four days. They also celebrated his son Kanus', 8th birthday the last night of their stay. Jeff is an Adjunct Professor at Namibia University of Science and Technology and a Science Adviser at Save the Rhino Trust. He also showed CCF Staff and interns a presentation of the current work Save the Rhino Trust is doing.
- We hosted a two-man film crew in mid-June for Discovery Channel (UK) represented by FILMFIXERS from South Africa/Namibia.
- Former PhD student and long-time friend, Fabiano Ezequiel stayed for a night. He is currently a professor at UNAM in Katima-mulilo, working in collaboration with the CCF genetics laboratory.

July

- We hosted Tanya van As, the Reservation Manager at Sense of Africa for a sight inspection of the Center and the Accommodation Facilities in the hope of upholding and building on a long and loyal tourism bond with them.
- We had the pleasure of hosting Mr. A.R Nayak, from the Indian High Commissioner and three of his colleagues at Cheetah View Lodge for a hands-on experience of CCF.
- We also welcomed CCF Namibia board members Mary Kruger and Lynn Wertz to Cheetah View Lodge for 2 nights.

August

- CCF welcomed long-time friends and colleagues Emma Wells and Katie Ahl from the Giraffe Conservation Fund who collected DNA samples from our Giraffes here at CCF.

September

- We received our first international overnight guests in five months after the Government had announced the opening of international flight arrivals at the Hosea Kutako International Airport. They were; Mrs. Sandrine Hoette, Mr. Gilles Roustan, Mrs. Martine, and Mr. Jean Marie Collard from France who were booked by the well-known Damarana Safaris, a French-owned tour company based in Swakopmund, Namibia.

October

- Chris & Gudrun Weaver stayed at Cheetah View Lodge. Chris Weaver is the outgoing Managing Director of WWF in Namibia and has been the director of WWF's Namibia program since 1993, providing guidance and assistance to Namibian partner organizations in the development of one of the world's most highly regarded community conservation programs.
- The ENDANGERED Campaign which CCF entered into a partnership with earlier this year visited to inspire their artists. The ENDANGERED Campaign is an exciting campaign that should bring some attention to the work that CCF does for cheetahs as well as some desperately needed funding through the sale of prints from the campaign itself (the launch has been impacted by Covid19). Alex Paullin the Founder and CEO of Conservation for Music coordinated the section of the campaign that centres around visual media/music and has garnered the support of several local musicians such as Elemotho, Lioness and Suzy Eises who are in the process of composing an original song and filming a music video as part of the campaign.
- Alex Paullin the Founder and CEO of Conservation for Music came to experience CCF for himself.

November

- Former CCF Tourism Manager Anne Heimerdinger from France visited with a long-time friend of hers from Germany. They stayed at Cheetah View Lodge for one night and attended the cheetah run the next morning.

December

- CCF had the pleasure to host Dr Alex Sliwa, Chairman of the European Zoo Associations Field TAG and a Black-footed Cat specialist at Cheetah View Lodge, he then offered a talk/presentation about his research on the Black-footed Cat, this was very interesting and informative to both staff members and interns.

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 a strong decrease of 87.6% in day visiting tourists, from 13,636 in 2019 compared to 1,695 in 2020 (Figure 33). This significant decrease in day visiting guests is due to the COVID-19 pandemic.

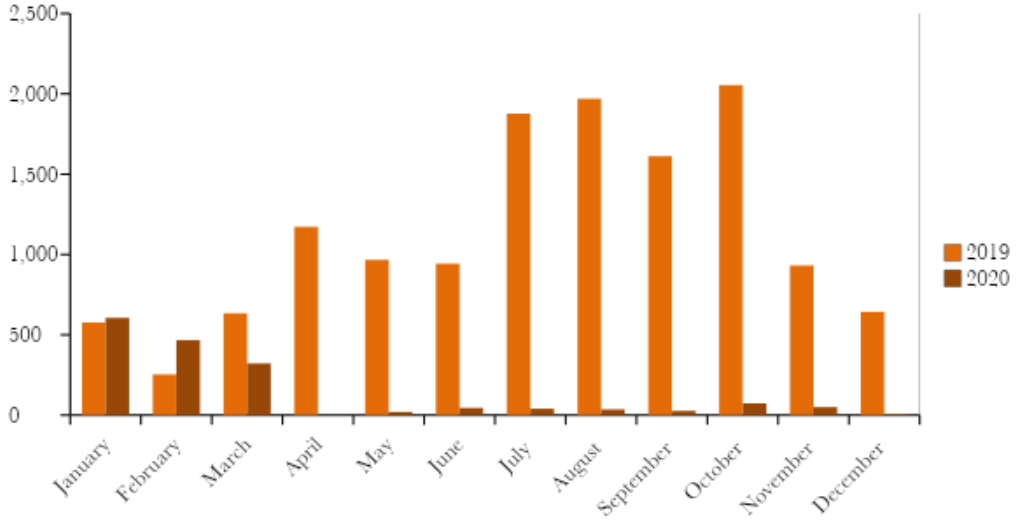


Figure 33: Number of visitors to CCF per month from January to December 2020.

The predominant language spoken by visitors during this period was English (22%), followed by German (20%), French (18%), Chinese (9%), and Italian (5%). During this reporting period, more local visitors were received who spoke local languages; Otjiherero, Afrikaans and Damara (Figure 34). The majority of day visitors were from the following nationalities; Germany (20%), France (18%), and Namibia (17%) (Figure 35).

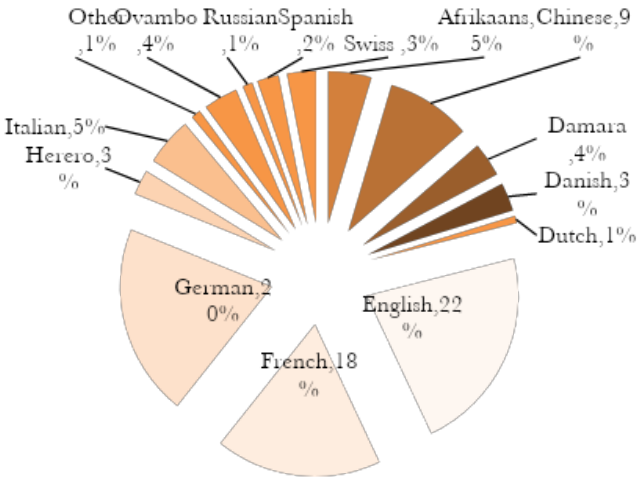


Figure 34: Languages spoken by visitors during January to December 2020.

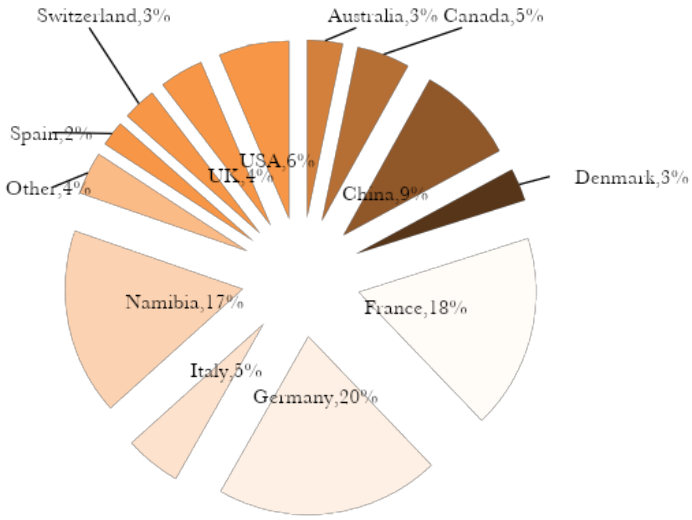


Figure 35: Percentage of visitors per country from January to December 2020.

Most visitors continue to be walk-ins at 65%, including direct bookings from our reservation office, Exclusive Reservations, who also represent 23% of bookings from tour operators (Figure 36). The number of visitors booked by Exclusive Reservations dropped from 5,817 in 2019 to 235 in 2020, representing a 96% decrease, due to the COVID-19 pandemic.

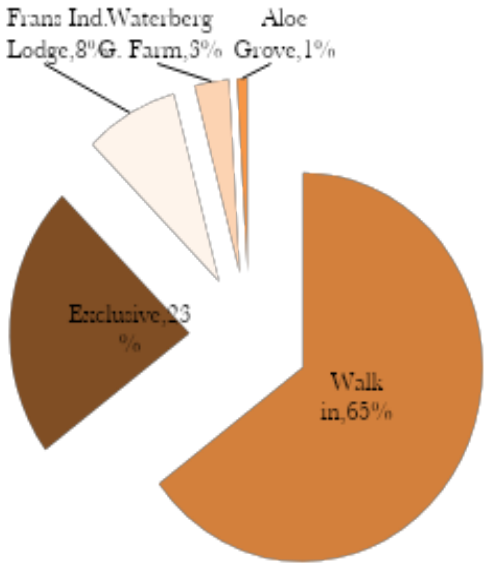


Figure 36: Source of Visitors from January to December 2020.

Financial

In terms of tourism revenue from day visiting guests, CCF saw an increase of 5.6% during the first three months of this reporting period, at N$936,317.00 compared to during the first three months in 2019 at N$890,756.32. The overall decrease in revenue for 2020 stands at 85.1%, at N$8,036,854.00 in 2019 compared to N$1,195,265.58 in 2020 (Figure 37).

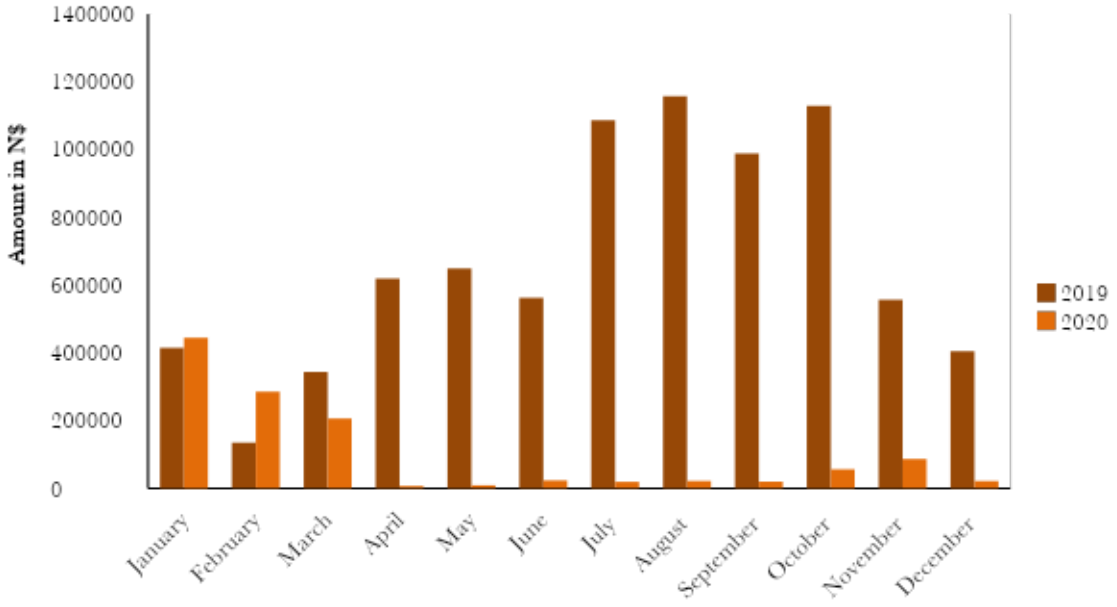


Figure 37: Tourism income (N$) comparison during 2019 versus 2020.

Table 30 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$2634.75 and the lowest month was April with N$0 with no visitors due to the country-wide lockdown. The average amount spent by visitors at CCF shows a 19.1% increase in 2020 with N$705.17 compared to N$592.03 in 2019. Cheetah Drives (Elands) still represented the highest income source during this period, at 32.83% of the total income of N$392,409. Gift Shop revenue showed an 83.9% decrease at N$297,434 compared to N$1,818,038 in 2019 and places Centre Tours/Entrance fees as the third-highest revenue driver at 11.51%.

Table 30: Breakdown of revenue in 2020 based on activity.

ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	%
CHEETAH DRIVE	139,603	126,219	81,067	0	2650	1600	1,600	2,830	2,700	12,160	20,770	1,210	392,409	32.8
GIFT SHOP	89,620	58,934	56,410	5182	1524	13565	9,568	9,770	6,195	21,916	17,758	6,992	297,434	24.9
ED CENTER	43,930	39,659	30,030	0	2085	3515	3,510	2,310	2,390	6,510	1,650	1,975	137,564	11.5
RUN	53,704	34,843	11,966	0	550	0	1,050	0	2,057	1,080	10,723	0	115,973	9.7
ACCOM	64,720	750	0	0	0	0	0	240	4350	7040	21,881	9840	108,821	9.1
CAFÉ	28,729	20,417	22,135	0	1084	1438	1,695	2,267	1,124	1,707	3,001	876	84,473	7.1
SERENGETI	2,618	3,715	1,309	0	0	0	0	600	0	0	4,319	0	12,561	1.1
BEHIND THE SCENES	9,600	0	2,250	0	0	0	0	0	0	3,375	2,995	0	18,220	1.5
DONATIONS	6,445	0	0	0	525	0	0	0	0	0	0	0	6,970	0.6
OTHER	4,818	35	270	602	0	1,896	415	2,992	201	1,150	1,628	0	14,007	1.2
CHEESE	595	260	245	730	230	880	906	315	330	795	1367	185	6,838	0.6
TOTAL	444,381	284,831	205,681	6,514	8,648	22,894	18,744	21,324	19,347	55,733	86,091	21,078	1,195,270	100
VISITORS	606	467	322	0	20	45	40	36	27	74	50	8	1695	
Avg Exp/ Visitor	733.3	609.92	638.76	-	432.4	508.76	468.6	592.33	716.56	753.15	1,721.84	2634.75	705.17	

Cheetah View Lodge

Cheetah View Lodge hosted 216 guests in 2020 compared to the 1,285 in 2019, an 83.2% decrease due to the COVID-19 pandemic. 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 is a low 317 beds compared to 1,856 in 2019, representing an 82.9% decrease (Figure 38).

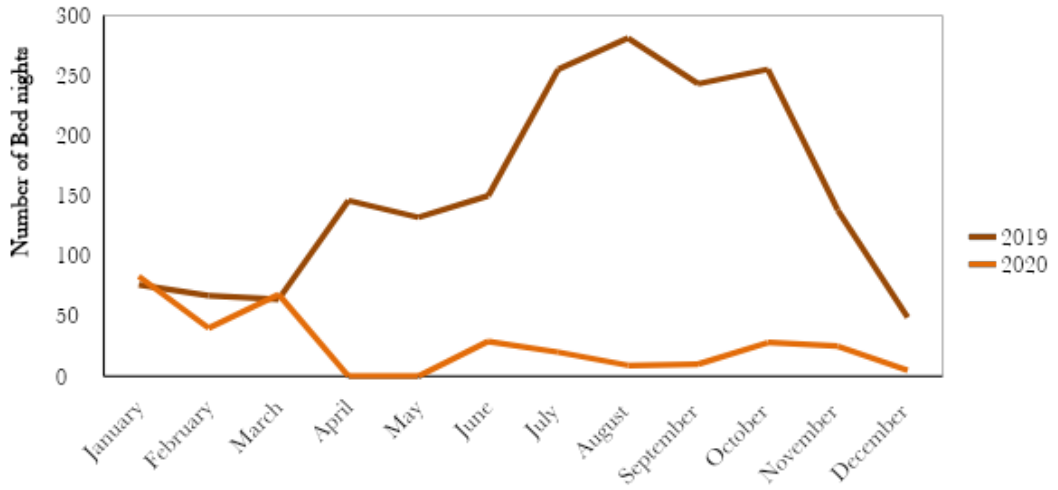


Figure 38: Number of bed nights at Cheetah View Lodge comparing 2019 vs. 2020.

Revenue from the Cheetah View Lodge saw a decrease of 80.5%, from N$2,570,271.00 in 2019 to N$502,440.00 in 2020 (Figure 39).

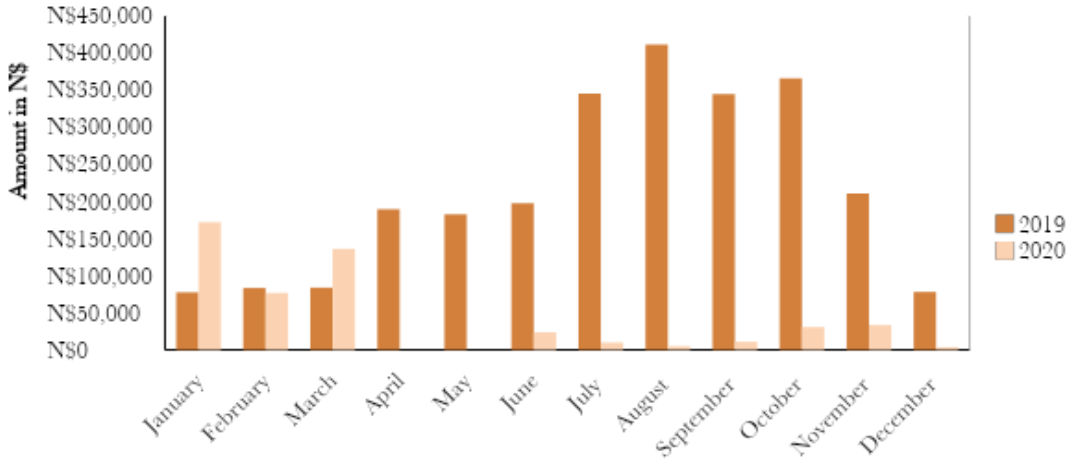


Figure 39: Revenue from the Cheetah View Lodge comparing 2019 vs. 2020.

Visitors were booked by various companies with the majority booking through our reservation office, Exclusive Reservations, representing 33% with 68 bookings. Booking.com represented 13% of all bookings for this reporting period at 25 bookings, while direct CCF bookings and from the CCF website, as well as private enquiries make up a total of 12% at 25 bookings, including donors, friends of CCF, and Board Members. CCF received a total of 204 confirmed bookings throughout this reporting period (Figure 40). There is an increase of 2.9% in tour operators and sources making use of CCF at 71 during this reporting period, compared to 69 in 2019. Exclusive Reservations also handles all of CCF's tour operator bookings such as Ultimate Safaris,

Wilderness Safaris, Abenteuer Afrika Safaris, Compass Travel, Cardboard box Travel Shop, Nam Click Natures Friend and Namibia Tracks and Trails.

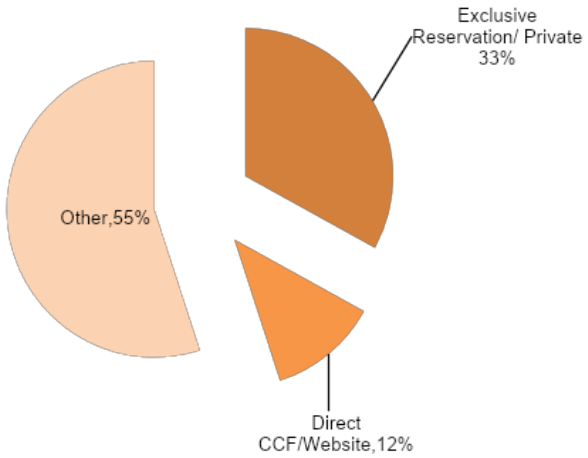


Figure 40: Booking sources for Cheetah View Lodge, 2020.

In terms of nationalities, most guests at Cheetah View Lodge were from German (28%), followed by Namibian (25%) and the USA (12%) (Figure 41). The increase in the number of Namibian guests was encouraged by the country-wide lockdown which allowed for CCF to promote the CVL to locals through the local-is-lekker initiative.

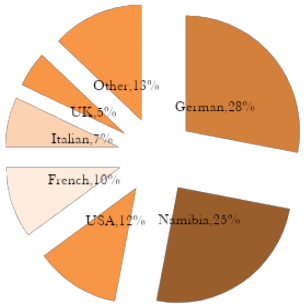


Figure 41: Nationalities of visitors staying at Cheetah View Lodge, January - December 2020.

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 three months of the year, with guests expected as of May to December 2020. However, due to the country-wide lockdown caused by the COVID-19 pandemic, this, unfortunately, did not become reality. We hosted a total of 15 guests at Babson House in 2020, compared to 127 guests in 2019 representing an 88.2% drop in guests. There was unsurprisingly a significant drop in bed nights and revenue during this reporting period. There was an 88.1% decrease at 28 Bed Nights in 2020, compared to 235 Bed Nights in 2019 (Figure 42).

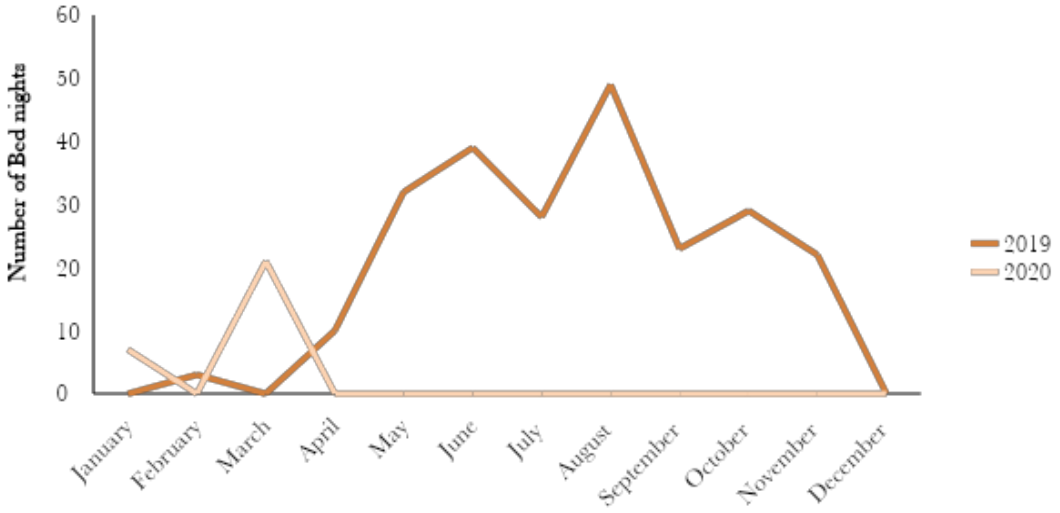


Figure 42: Number of bed nights for Babson House comparing 2019 vs. 2020.

Revenue from the Babson House saw a decrease of 87.6%, from N$1,009,087.50 in 2019 to N$125,552.00 in 2020 (Figure 43).

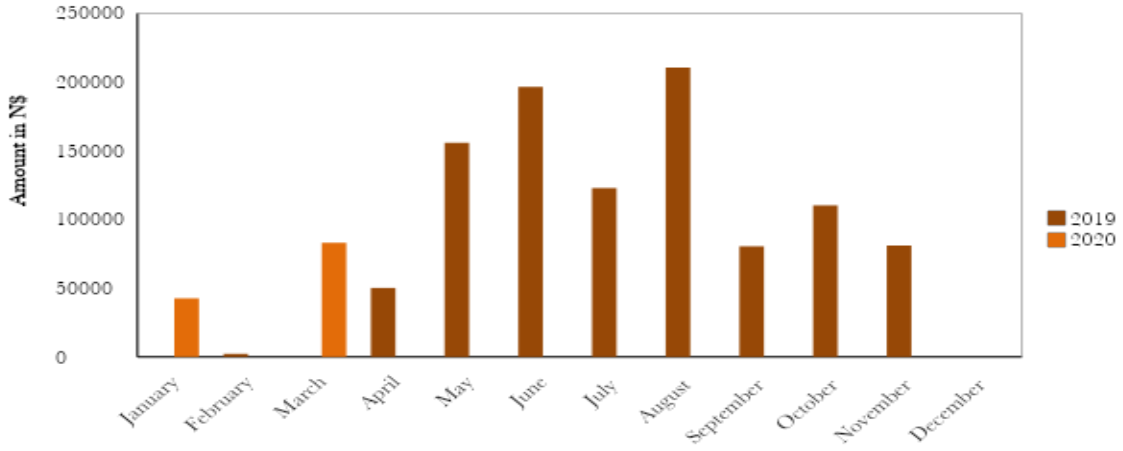


Figure 43: Revenue from Babson House comparing 2019 vs. 2020.

Most Babson House bookings were private Exclusive Reservations/CCF bookings at 47%. We received a total of seven bookings for this reporting period. The majority (47%) of Babson House guest bookings were private or were from Exclusive Reservations, followed by tour operator Piper & Heath through Wilderness Safaris at 27% (Figure 44).

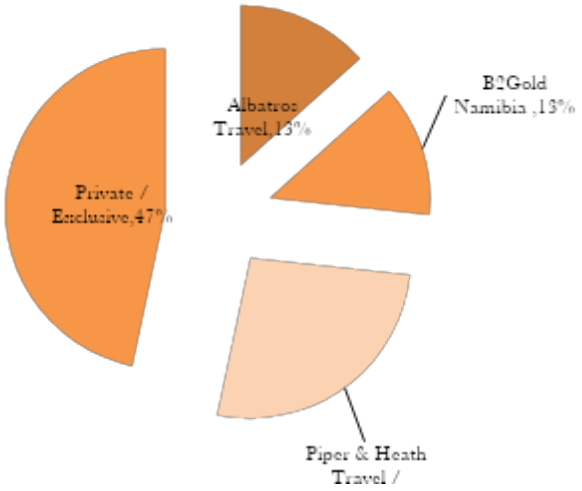


Figure 44: Sources of Babson House bookings, 2020.

Most overnight visitors at Babson House came from the USA (67%), followed by Switzerland and Britain (both 13%) and Canada (7%) (Figure 45).

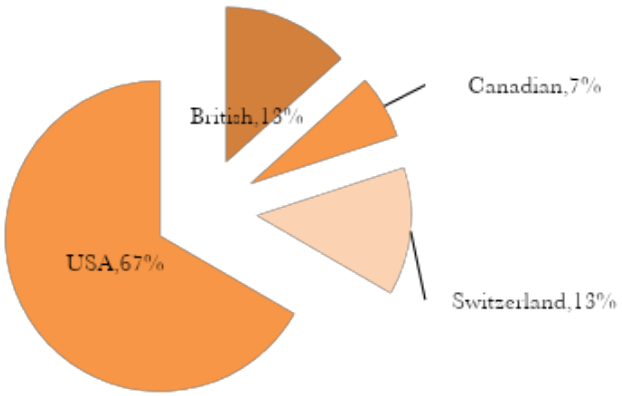


Figure 45: Nationalities of overnight visitors at the Babson, 2020.

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. Due to the break out of Covid-19, no international interns, working guests, volunteers or school groups were able to visit CCF. CCF was also on lockdown and only essential staff lived at CCF and had meals at the staff kitchen.

Table 31 shows the number of lunches and dinners that were cooked at CCF's community dining room, the Hot Spot, each month. A total of 14,801 meals were cooked during 2020 for an average of 55 meals per day.

Table 31: Number of meals served at CCF's Hot Spot from January to December 2019.

Meal	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lunch	1,165	1,055	899	621	606	634	807	787	943	900	700	648
Dinner	1,163	1,052	897	619	604	636	838	795	962	905	698	646
Total	**2,328**	**2,107**	**1,796**	**1,240**	**1,210**	**1,270**	**1,645**	**1,582**	**1,905**	**1,805**	**1,398**	**1,294**
Average/ day	85	71	77	75	99	99	95	96	87	84	84	90

A majority (77%) of the meals served at the Hot Spot were for CCF staff members. Volunteers and interns represented 21%, while Working Guests (WG) and other guests represented 2% (Figure 46).

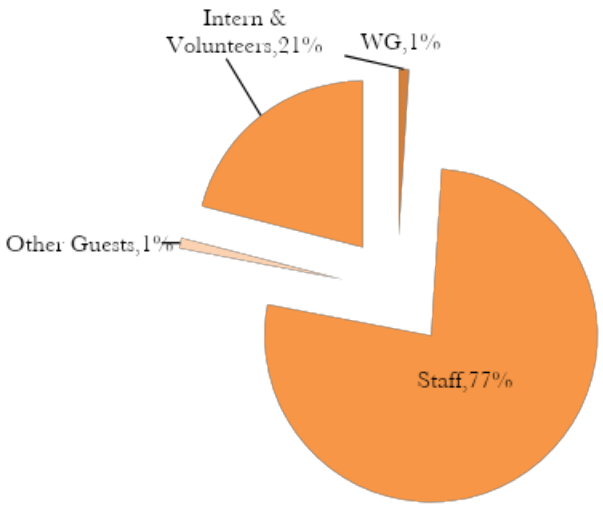


Figure 46: Overall categories of people served at the Hot Spot in 2020.

Marketing

For the eighth consecutive year, CCF received a Certificate of Excellence from TripAdvisor in December 2020. This award is given to tourism businesses that consistently receive high ratings from TripAdvisor travellers. Only the top 10% of businesses worldwide on TripAdvisor receive this award. It is our mission to strive for this achievement again in 2021.

Between January and December 2020, CCF had several site inspections from agents from Evelyn Schael, a Manager of a Swiss travel agency, who came for a cheetah run and a guided tour around the centre and lodges, guided by Bianca Jacobs. Mid-March, we hosted 10 Italian tour consultants from Katika Safaris just before the country-wide lockdown. Then again Tanya van As, the reservation manager of Sense of Africa, came to have a look at the centre and our lodges in July.

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 send out updated CCF 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 2020, we 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 2020. Also in June, we 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 June 2021, however, Dr. Laurie Maker & Bianca Jacobs got to attend a summary of it via a Zoom Meeting.

Throughout 2020, 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 and Explore Magazine.

We are trying extensively to boost the local advertising and marketing on social media through a campaign created by the Namibian Tourism Board and Ministry of Environment and Tourism called LOCAL-IS- LEKKER on Facebook. We also attended their expo from 1- 4 December 2020 in Windhoek at Droombos. We signed up with a local advertisement through Namibia Media Holdings which is called Tourismus Namibia 2020, this included a web banner, magazine and a stand at the Namibian Tourism Expo which we attended in Windhoek from the 3-8 November 2020. 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.

CCF Cheetah Café

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

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

The Cheetah Café had a promising beginning in 2020 with pre-booked lunch and orders from the A la carte menu. Unfortunately due to the Covid-19 outbreak, CCF had to close down for visitors and the Cheetah Café also closed. There was therefore a decrease in sales for 2020 compared to the same period in 2019.

Total revenues from the Cheetah Café during this period were N$84,473.00 down from N$655,711.08.00 during the same period in 2019.

Table 32: Cheetah Café sales from January to December 2020 (N$).

Month	Pre-Booked	A la Carte	Total
January	4,300.00	24,429.00	28,729.00
February	2,100.00	18,317.00	20,417.00
March	5,250.00	16,885.00	22,135.00
April	0	0	0
May	0	1,084.00	1,084.00
June	0	1,438.00	1,438.00
July	0	1,695.00	1,695.00
August	0	2,267.00	2,267.00
September	0	1,124.00	1,124.00
October	0	1,707.00	1,707.00

November	0	3,001.00	3,001.00
December	0	876	876
Total Sales	**11,650.00**	**72,823.00**	**84,473.00**

Association and Conservancy Relationships

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 2001 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 2020 on 13 March (in Windhoek), 5 June (virtually) and 2 December (in Windhoek and virtually). Each meeting had good representation from CCF and other LCMAN member organizations, including MEFT, where members shared technical reports from their organizations and discussed the on-going LCMAN project, the Red Data Book. LCMAN held its first virtual meeting this year due to the Covid-19 pandemic, which allowed for a greater number of members to attend the ordinary meeting including those members situated in remote parts of Namibia and other members who were overseas. LCMAN held its Annual General Meeting (AGM) on 2 December 2020 in a combined in-person meeting held in Windhoek and a virtual meeting. There are currently seven full member organizations and 6 affiliate organizations which are part of LCMAN. During the AGM, Dr. Laurie Marker was re-elected as Chair and Lauren Pfeiffer has continued as the Secretariat.

2020 LCMAN Focus Areas

Due to the restrictions of the Covid-19 pandemic, many social events (e.g., agriculture shows) within Namibia were either cancelled or postponed and as a result, LCMAN was unable to continue with the 2020 focus areas that were discussed during the 2019 AGM. One of the focus areas that was unable to be addressed during 2020 was the attendance of agricultural shows for LCMAN members to speak with farmers in efforts to mitigate human-wildlife conflict.

LCMAN continued working on the Namibian Carnivore Red Data Book, a compressive 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 being edited by John Pallett and is planned to be launched later in 2021 with support from the NCE.

The Ministry of Environment, Forestry and Tourism (MEFT)

In 2020, due to the COVID-19 pandemic, many sectors in conservation were in lockdown, leaving communities and wildlife at high risk of HWC and poaching. In April 2020 MEFT registered a select number of field staff with various organizations as essential service providers in HWC and anti-poaching, of which CCF's Community Coordinator and three Community Game Guards (CGG) were registered, allowing the team to continue activities and support in the field.

Communal Conservancy Development

Human-Wildlife Conflict in Eastern Communal Conservancies in Okakarara District

Since 2018 CCF field team have been looking at potential sites for a Satellite Camp, to ensure a more permanent and reliable presence and assistance to farmers. A site has been identified, strategically placed in a central area where the highest African wild dog (AWD) presence occurs. An MoU was signed with the landowner, who provided CCF with 10 hectares to initiate Phase One of development. This facility will allow for additional teams to carry out activities, as well as other stakeholders and partners. The facility will provide a base where CCF field staff can provide much needed training to CGGs in wildlife monitoring, anti-poaching and data collection. With a few basic developments like semi-permanent housing and electricity, the field team will have much needed facilities to keep up with reports, data entry and analysis, planning and communication.

In early 2020 the field team worked on identifying the focal area for activities for the next 6 months through consultations with farmers and investigating AWD and other key carnivore activity. The focal area (Figure 47) was identified after assessing the willingness and expression of commitment through discussions with the farmers and their family to work together with CCF and MEFT on seeing a season without persecution of carnivores, implementing HWC mitigations and livestock management tools as well as important joint monitoring of illegal hunting and wildlife presence. Strategically situated, the areas cover three known denning areas and current AWD activity; as a result, these farms are enduring higher levels of HWC. There are 41 farms within these zones (Table 33). Discussions with the farmers included following up on the topics covered in workshops in 2019 and information sharing on our planned intense activities for the next 6 months.

These 41 farms will receive CCF support through our ongoing activities of rapid response (RR) to HWC incidents, early warning of AWD movement, HWC mitigation activities and

implementation, wildlife monitoring, predator and kill identification, den investigations and anti-poaching patrols.

Through these consultations, it was identified by the farmers that they have a need for an integrated livestock management, land use and natural resource management (NRM) plan at the farm level. Through workshops, CCF can facilitate the development of these documents, holding a final workshop with representatives from each farm to come together, share their draft plans and finalize a landscape plan on joint management and cooperation.

Table 33: Focal farms for CCF activities in 2020

ZONE 1	
Otjiurutjokatjove	Ondjamo 1 & 2
Okaruvahona	Erindireue
Ondjombajomungondo	Otjihuze
Ehuaroukara	Ovindjuee
Otjitaazu	Okapandja
Otjikoto	Okaruvahona
Katjongo	
ZONE 2	
Omaundjiro	Otjikango
Ondjiripumua	Okomuparara
Omingerenjeu	Onderombapa
Elands Pan	Okapanda 1 & 2
Otjijere	Osakua
Okawarongo	Okakangorindi
Otjiuamutenja	
ZONE 3	
Otjovengi	Omuramboviruru
Homeland 1 & 2	Orui-Orupe 1 & 2
Otjiwapehuri	Boston
Otjekongo	Ondjoura
Omipandatjongo	Otjitemunua
Otjitazu	

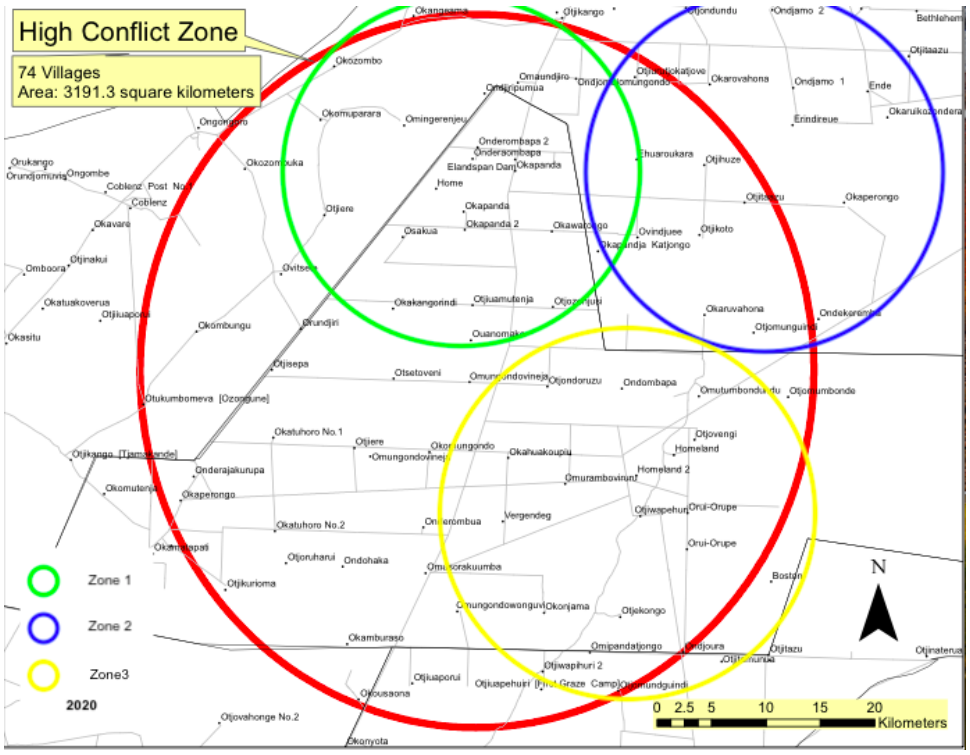


Figure 47: Focal activity zones

The field team responded to 45 separate cases of HWC during this reporting period, carrying out practical activities of predator and kill identification with farmers and workers. With each call, the team has helped the farmers follow the guidelines of the offset scheme governed by MEFT. Following 2019 surveys, where farmers expressed frustration at the lack of response from the MEFT to conflict reports, CCF met with the Grootfontein District Warden, who is a member of the Otjituuo Conservancy Offset Scheme Committee, to discuss roles and responsibilities between MEFT, the community game guards, the conservancy chairpersons and CCF.

From this discussion, a document will be drafted outlining each partner's roles and responsibilities and chain of communication in order to ensure that reports and claims are addressed and responded to. Collaboration on implementing this scheme is vital in order to ensure that farmers do receive some financial remuneration for their losses and continue building trust and cooperation.

The CGGs have been conducting wildlife monitoring and anti-poaching patrols within the core area, recording wildlife presence, removing snares and conducting awareness on the farms. This presence also works as a deterrent to community members opportunistically hunting key small prey species. These activities are vital for the ongoing data capture of these conservancies through the event book system, which is audited nationally every year to track wildlife ecology and figures within the CBNRM program.

A "Community Conflict Network" is in place and active. Two members from each of the farms in Zone 1 were identified and together form a network of communication on carnivore presence on a daily basis. When the presence of AWDs is noted in an area, the network informs one

another and calf protection is encouraged. To date, there has not been any conflict, but we also cannot confirm that calves were actually brought into or kept in the kraals when farms were informed that the AWD were in their area. The network alone however has allowed farmers to take ownership and responsibility in working together as a community and with CCF on the start of a broader management approach.

Capacity building of the CGGs has continued with the rangers becoming more independent with setting up of camera traps, the use of GPS's, sample collections, record keeping, the HWC offset scheme guidelines, HWC mitigations and their competence in sharing some of CCFs tools and techniques with farmers independently. Including CGGs in all activities, and giving them responsibilities has built confidence in their knowledge, responsibilities as game guards and status.

Key Observations With Community Members

- Community members share information with CCF on AWD presence and movement, the communication network has proven to be very successful. Additionally, farmers are willing to participate in tracking.
- Children who are out of school due to COVID-19 are eager to know and learn about the work that CCF does, offering opportunities to practice EE.
- Most farmers understand why dens should not be destroyed and that to assist reduce conflict and find solutions CCF must find an undisturbed den, however, the hatred and ingrained practice of destroying dens seems to be what they still believe is the only solution.
- Community members are quick to contact us and let us know of any AWD presence and are willing to participate in tracking AWDs with us.
- Most farmers' livestock management practices have not changed, but the level of understanding is higher, and farmers are more open to changes and willing to learn, especially about wildlife ecology.
- Community members are curious about finding dens and are expressing understanding and willingness to cooperate in reporting active dens before destroying them.
- Farmers express understanding of why AWDs should not be killed, however, do not see any benefits directly affiliated with AWDs and so they do not feel the incentive to stop lethal solutions.
- There are very high levels of stigma regarding the spread of COVID-19, which is nationwide and the Namibian Government is struggling with.

Key observations with livestock management & HWC

- Many farmers have donkeys and horses in their camps and acknowledge the benefits.

- Farmers will keep their young calves and vulnerable cows in small camps closer to homesteads and kraal them at night as well as chase donkeys and horses into camps when informed through the CCN early warning system.
- Almost every farm surveyed provides supplementary feed to their cattle, especially the bulls, however, calves of vulnerable ages are going out into camps for grazing.
- The majority of the farmers have a livestock guarding mongrel with the small stock
- Farmers keep their livestock in the kraal or near the homestead when predators are in their area
- Kraal fences are in very good condition (Figure 48)

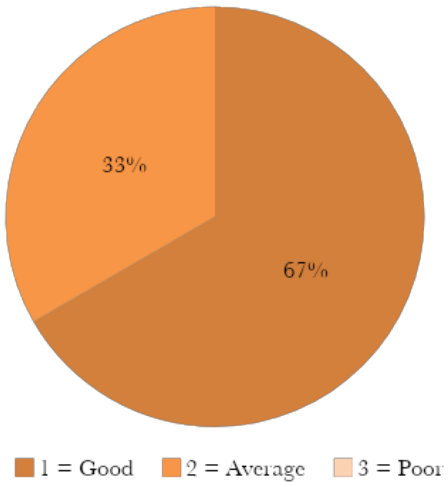


Figure 48: Rapid livestock management and health scorecards of 18 inspected farms to date.

African Wild Dogs (AWD)

Farmers kill the AWDs (and their pups) in retaliation, resulting in high conflict between farmers and AWDs. Once a den is located the farmers typically set snares around the den to catch adults which return to feed the pups. If an adult is captured in such a snare, that individual is killed and the den is burned with the pups inside it. Unfortunately, there is an emotional hatred of wild dogs. It will take much time to build trust in these communities and find ways to mitigate the conflict, hopefully before these animals are totally extirpated from this area.

Based on a combination of camera traps and local knowledge, CCF was able to identify areas of African wild dog activity and conflict (Figure 49). Opportunistic camera traps captured a total of six individual wild dog photos during the study period in 2019. These camera trap photos taken during 2018 and 2019, along with scat samples and local knowledge, provide some of the only data on these wild dogs in the area. To be able to conserve these packs, we must first gain a better understanding of their pack sizes, denning locations, movement, behaviour and diet. This study has provided vital information on the presence of wild dogs in the area, potentially the most persecuted population of wild dogs in Namibia.

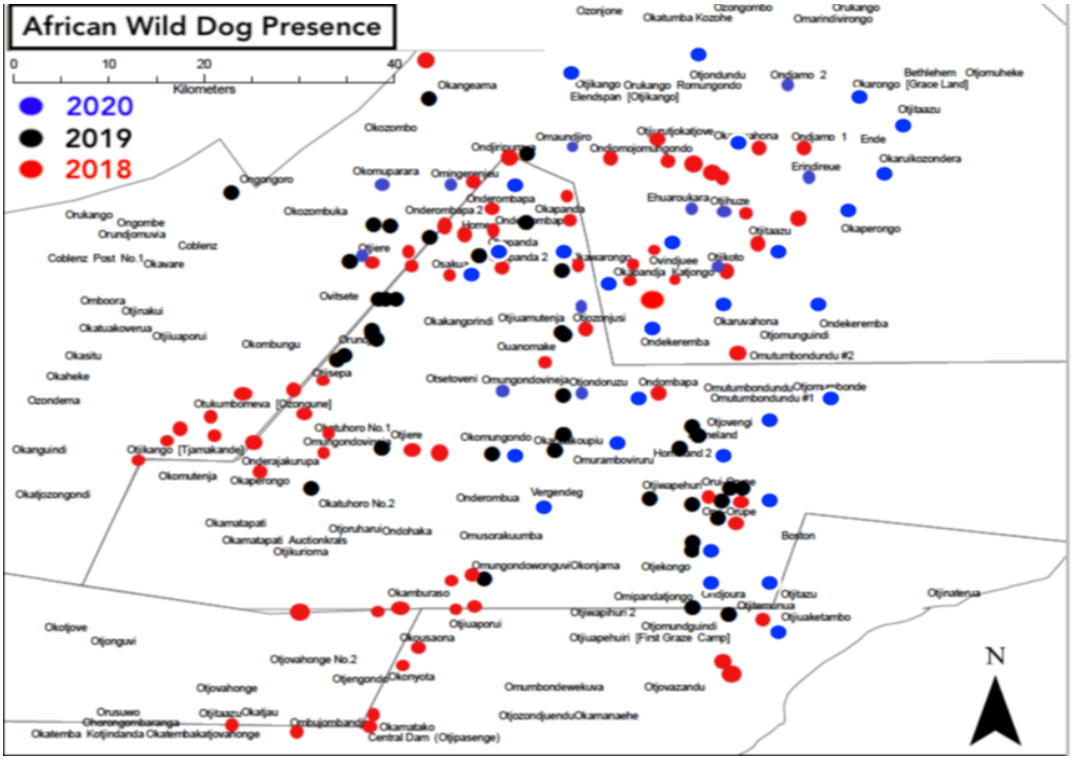


Figure 49: African wild dog presence & conflict areas in the Eastern Communal Conservancies of the Okakarara District, as of December 2020.

Figure 50: African wild dogs captured on camera traps during this reporting period.

Investigating historical and current dens, and mapping out the territorial areas where AWDs den in the Okakarara communal conservancies serves as integral data as AWDs den in the same area every year (Figure 51). In 2018 we estimated approximately 4 packs in the study area, based on

four dens located in 2017 and 2018 - all of which were destroyed. It is imperative that the area sees at least one successful denning season to sustain the population, however, this will only be possible by engaging with communities and other stakeholders.

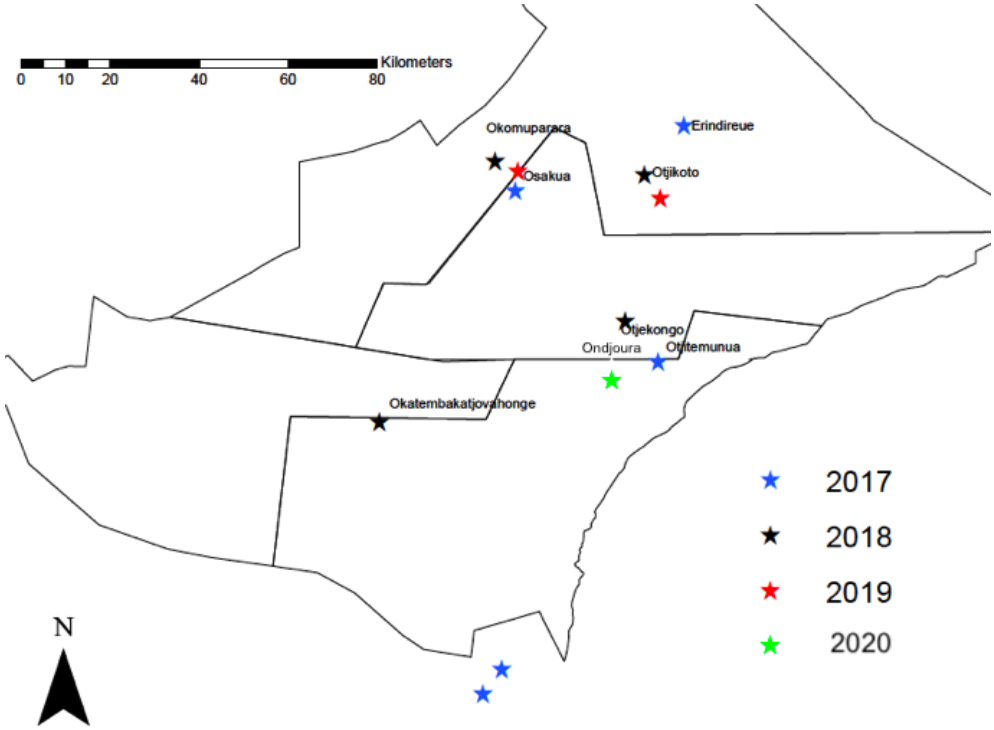


Figure 51: Consolidated locations of African wild dog dens as of December 2020.

Pack Update & Presence

Known Packs

- One pack of ± 5 Dogs in Zone 1, which has recorded losses of dens in 2017, 2018 and 2019 are present with ongoing conflict. Using coat pattern ID, one female from 2019 was captured on camera trap photo, however, no indication of pregnancy was observed (Figure 52).
- Two lone Dogs in Zone 2 with reports of high levels of conflict coming in from this single dog as it attacks and fatally injured several livestock at a time. Initially thought to be a dispersal dog, we now believe it is a pair that are denning (very unusual) with only the male hunting from time to time.

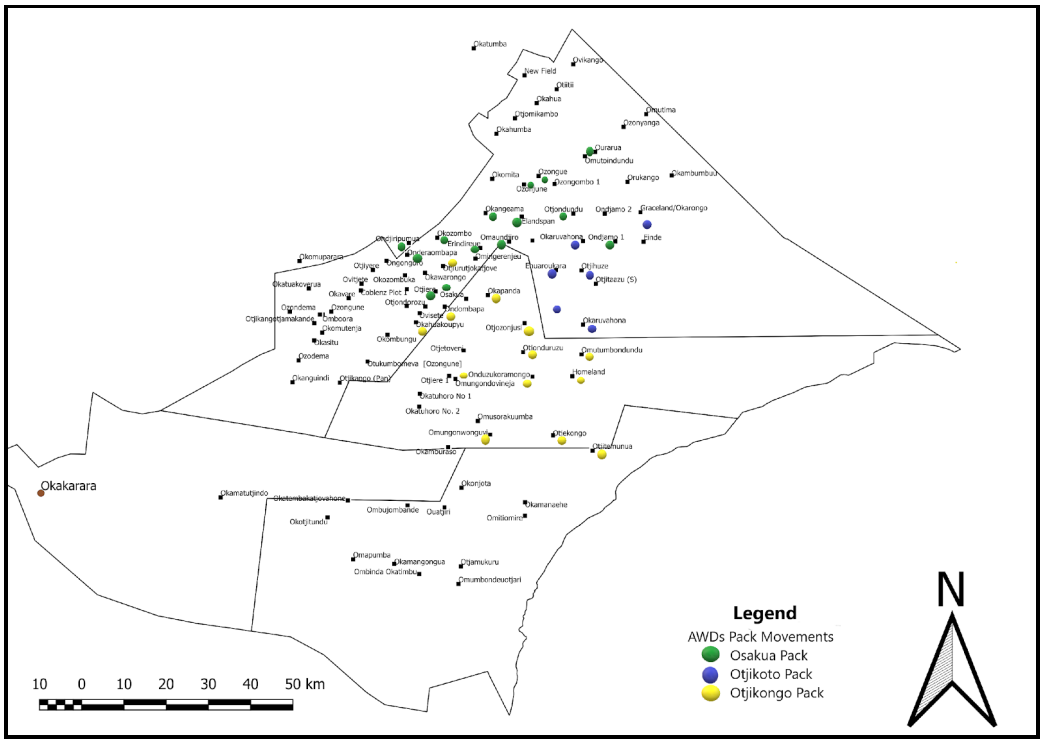


Figure 52: Known pack denning territories.

Reports in Zone 3 were minimal in the first five months of the pack known to reside there, however, presence picked up again of a reported ± 6 adult Dogs. In late June, the team discovered a destroyed den with six pup mortalities (Table 34).

Table 34: Population and mortalities of AWDs recorded as of December 2020.

Year	Total packs identified	Total adults estimated	Total sub adults estimated	Total pup estimated	Total adult mortalities confirmed	Total sub adult mortalities confirmed	Total pup mortalities confirmed	Total confirmed Dens destroyed
2020	3	± 13	-	8	-	-	8	1

Unknown AWDs Packs

- The presence of one group of four AWDs was picked up that came up from south of Okamatapati and moving on the western side of our focal area, moving north.
- The presence of one pack of four AWDs, with four pups, was picked up on Sandveld, a freehold game farm, which borders Otjituuo and N#a Jaqna. The AWDs sporadically pass through the farm, coming from Otjituuo and moving east into N#a Jaqna. Camera traps

have been set up along the fence lines of Sandveld, along with monitoring from the owner's cameras set at water points.

AWD Known Mortalities

Below are four separate confirmed incidents of AWD mortalities as of December 2020 (Figure 53).

- #1: A single adult caught in a gin trap laid by farmers at a fresh calf kill in Feb/Mar 2020. Pack returned after they were disturbed by workers, who had laid a gin trap in their absence.
- #2: One pup estimated between 2 and 3 months old, hit by a vehicle on the D3805 on 23 August 2020.
- #3: Six pups estimated at 6 weeks old, killed when the den was destroyed on 4 May 2020.
- #4: One pup estimated between 4 and 5 months old, hit by a vehicle on the D3805 on 26 September 2020.

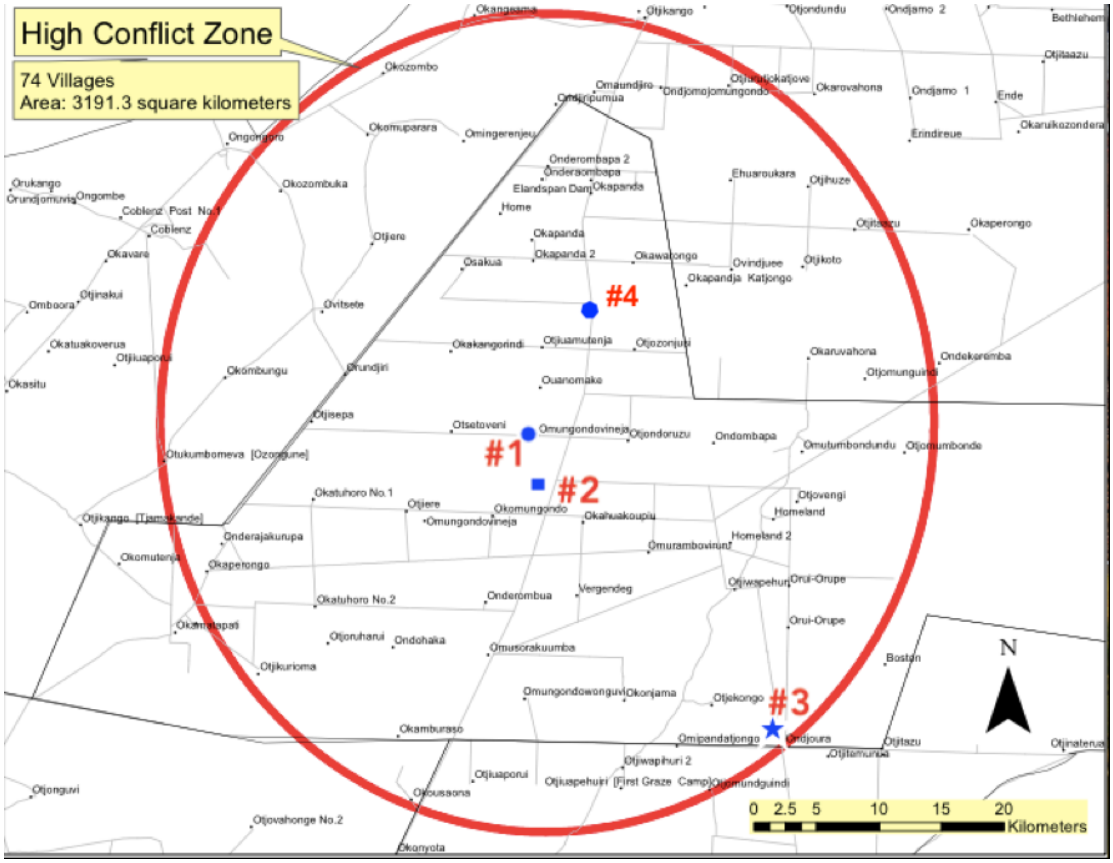


Figure 53: Known African wild dog mortalities as of December 2020.

Pup Rescue

On 27 September 2020, the CCF field team was called out to an incident where two AWD pups and adults had been bumped by a vehicle at a well-used water point. The driver reported the incident to a neighbouring farmer, who contacted CCF to inform us of the incident. What was unique about this incident is that one pup was still alive (Figure 54), and the second unfortunately died. In cases of intended persecution of AWDs on roads, any AWD still alive would be killed.

After a health check, treatment for shock and consultations with the MEFT Wildlife Veterinarian, Dr. Janine Sharpe, we determined the second pup had come out unscathed and were authorized by the MEFT to attempt to reunite the pup with the pack. The pack was located, approximately 15km from the site. The pack was lured in by using a call, 300m into the bush off the road. As soon as it was clear that the pup could hear the pack it was released and was successfully reunited with his pack.

The report indicated that two adults had also been "hit" by the vehicle but ran off. There was no confirmed visual to determine the extent of the reported injury however, even though the accident site was covered thoroughly by the CCF field team at a 200m radius, there was no indication of dragging or struggling to walk.

Figure 54: Rescued AWD pup.

Wildlife Monitoring, Management & Awareness

Based on CCF's surveys in 2019, 67% of farmers interviewed in the High Conflict Zone (HCZ) said that wildlife numbers in their area had decreased, and 71% of farmers interviewed said that they believe they can benefit from wildlife, and interestingly enough 25% of farmers identified that benefits of wildlife could be through reducing conflict, the other categories being tourism, own use and other. Farmers believe wildlife is a positive, and they do make the connection that it will reduce conflict. Farmers have expressed that they do not know enough about wildlife ecology, and this is a topic that the CCF field team addresses with all community members it engages with. Poaching for bushmeat however is still a big issue. Wildlife numbers will not increase naturally if this practice continues. CCF field team have investigated an attempt at wildlife reintroductions, identifying why the reintroductions in 2008 and 2009 failed. A new strategy has been identified for a successful reintroduction to boost prey species numbers.

A lot more groundwork needs to be done to prepare for any wildlife reintroductions with the farmers. Conducting anti-poaching patrols as an activity with CGGs this year is putting in the first steps to this process. Farmers and workers see that action is being taken. The CCF field team has observed that as a result of assisting CGGs in conducting these activities through operational support, the CGGs feel a sense of pride and achievement, which has led to CGGs continuing the removal of snares even without CCF's assistance. At the end of this reporting period, 89 snares were removed. Below are some wildlife species captured on camera trap photos (Figure 55 - Figure 57)

Figure 55: Vultures at a sheep carcass.

Figure 56: Sub-adult Brown hyena.

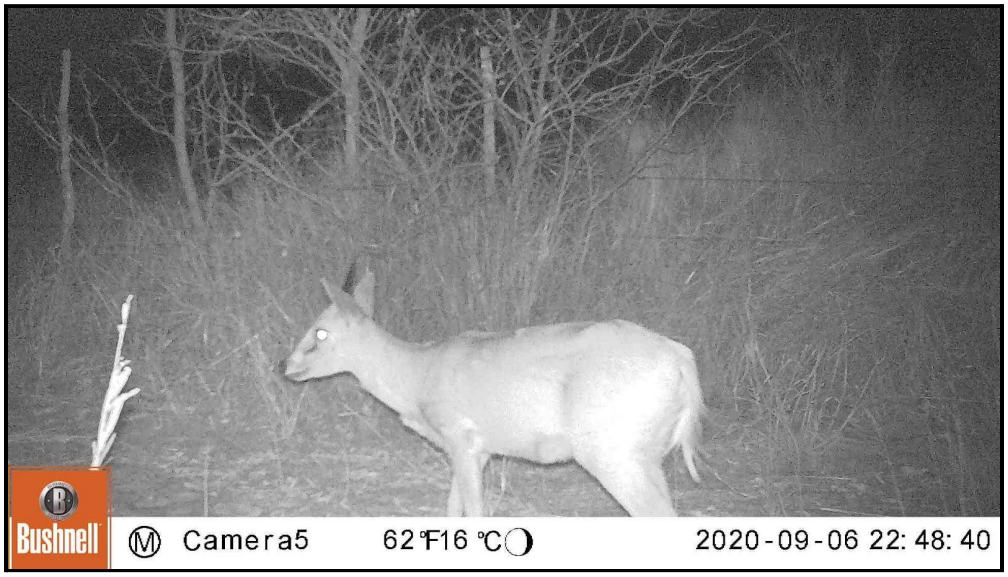


Figure 57: Duiker - a common source of natural prey for carnivores.

The team has been investigating the options and likelihood of wildlife reintroductions to the area. Consulting with participants in wildlife reintroductions (hartebeest and gemsbok) in 2008 and 2009, some key points have come out, which resulted in the operation failing. Towards the end of this reporting period, the field team investigated solutions and new strategies to the challenges incurred from the 2008 and 2009 wildlife reintroductions.

Workshops, Trade Fairs & Conferences

Community Based Natural Resource Management TOT

Veisy Kasaona, CCFs Community Development Officer was invited to Okatjikona Environmental Educational Centre to help facilitate a workshop on Community Based Nature Resource Management (CBNRM). The workshop was a collaboration between the Ministry of Environment and Tourism (MET) and EduVentures.

The aim of the workshop was to train teachers on how they can integrate Environmental Education into the school curriculum, especially in agriculture. Another objective was to share information on Community Based Natural Resource Management (CBNRM) to widen the teachers' knowledge of conservancies and natural resource management.

Teachers have the most ability to spread information throughout the education system. By training teachers, CCF will reach more learners using fewer resources. CCF's education and outreach emphasizes the importance of establishing functional and sustainable environmental clubs.

The Wild Dog Advisory Group of South Africa

In February 2020, Nadja le Roux was invited to attend and present at one of the quarterly meetings, hosted at the Endangered Wildlife Trust in Johannesburg South Africa, to share the status of AWDs in Namibia, and in particular the population being monitored in the Okakarara Communal Conservancies.

WAG-SA acts as a platform for all partners in AWD conservation to present and discuss AWD meta-population problems and issues, recommend solutions, collaborate and share scientific findings of various research projects on the species.

Addressing African Wild Dog HWC in the Eastern Communal Conservancies

In December 2020, Nadja le Roux and Petoorua Mberirua were invited to attend a meeting hosted by MEFT at Otjiwa Lodge, to share information on AWDs of eastern Okakarara, together with chairpersons of the four Okakarara communal and Ondjou conservancies and CGGs, were they also raised concerns and challenges they face in their conservancies. Possible solutions and the way forward for the AWDs and communal conservancies were also discussed. The Communal Conservation Fund of Namibia (CCFN) presented on CCFN and how it can help these conservancies and mitigate HWC.

CCF East Carnivore Conflict Field Station

Driven by the need to serve remote communities far from its International Field Research & Education Centre in Otjiwarongo, CCF established a field base in March 2020 in the eastern part

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

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 will provide 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). An intern, Eveline Iikondja, was stationed at the CCF East office for two months but had to return to CCF Otjiwarongo to help with the LGD program.

Visibility is critical to any organization; 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

Farmer Association (FA) meetings were mostly cancelled during the first half of 2020, or attendance was restricted to a low number of attendees. CCF East could thus not attend any FA meetings during this time. The first FA meeting CCF East was able to attend was on 20 Oct 2020 in Summerdown. The meeting was small, but CCF East received back six completed questionnaires and the Summerdown FA HWC report for 19 August – 20 October 2020.

With Veisy Kasaona joining the CCF East team, it became possible to reach out and connect with the broader spectrum of commercial and resettlement/communal farmers as she is fluent in Otjiherero. Veisy has therefore started a contact list of farmers and farmer associations to contact in 2021. She has also made contact with Mr Abedi Kaiko, chairperson of Otjombinde

Conservancy, who requested CCF East to assist the Conservancy in their conservation efforts. This will begin in 2021.

CCF East has also been added on the Black Nossob Conservancy WhatsApp group since 2018, as well as the C30 WhatsApp group in 2019, which is run by a group of farmers from Gobabis to the Steinhausen area. By being on these groups, CCF East can stay informed on the problems experienced by the farmers, especially regarding the poaching of wildlife, and also give encouragement, support or advice to the groups.

Ministry of Environment, Forestry and Tourism (MEFT)

CCF East has built a very good relationship with the Regional Warden for the Omaheke District, Mr Eben Nowaseb, and his staff at the MEFT Gobabis office, and keeps in regular communication with them (Figure 58). Communication is two-way; MEFT Gobabis at times refers the HWC incidents reported to their offices to CCF East, either to investigate and advise the farmer or to collect samples of a killed carnivore, while HWC incidents reported to CCF East are referred to MEFT Gobabis with the consent of the reporting farmer.

All reports received from farmers by CCF East regarding trapped carnivores due to HWC are reported to the MEFT Gobabis office and removal of such animals are done according to their guidance. In addition, all Carnivore Incident Reports are sent to Mr E Nowaseb.

CCF East and MEFT Gobabis also collaborate in some cases on investigating HWC incidents reported by a farmer by visiting the particular farm to identify carnivore tracks and advise farmer on livestock management strategies. CCF East is also assisting MEFT Gobabis in the translocation of five captive cheetahs from a farm to a suitable facility.

Figure 58: Members of CCF East team and MEFT.

Large Carnivore Management Association of Namibia (LCMAN)

CCF East participated in the LCMAN meetings during 2020 via Zoom, to engage in collaborative thinking on the best practices for carnivore conservation strategies across Namibia, exchange information and provide updates on the CCF East activities.

Brown Hyena Research Project

HWC incident reports on brown hyenas done by CCF East are sent to Dr. Ingrid Wiesel for accurate age estimations and sharing of information, and hair samples for DNA analyses are collected for the project.

CCF East, together with Dr. Laurie Marker, and Dr. Ingrid Wiesel are in discussions regarding a potential student project for 2021 on HWC with brown hyenas on farmland in the Gobabis area. Some livestock farmers in the Omaheke District are adamant that brown hyenas do kill livestock from new-born to 4-days old, and, from personal communications with farmers, this species seems to be heavily persecuted on some farms, even as far as dens with cubs being set on fire. The proposed project will concentrate on a questionnaire survey to determine the perception of farmers towards brown hyenas and the extent and level of their persecution.

Leibniz Institute for Zoo and Wildlife Research (IZW)

CCF East maintains good relations with IZW's cheetah research team in Namibia. In May 2020, MEFT Gobabis informed CCF East of an adult male cheetah that was killed due to HWC. The cheetah was fitted with a radio-collar by IZW. After failing to get hold of the IZW team, CCF East retrieved the adult male cheetah and provided IZW with a set of necropsy samples and the radio collar.

Light for the Children (https://www.lightforthechildren.com/)

Light for the Children is an NGO in Gobabis that cares for the needs of orphaned or vulnerable children, providing nutrition, care, and education. They aim to provide a safe haven for these children where learning and playing can continue.

In 2020, CCF East introduced the NGO to the Bushblok logs, as Light for the Children were feeding around 300 children per day and fuel costs for cooking were high (Figure 59). The outcome was that the NGO was so impressed with the efficiency and low cost of the Bushbloks, that they decided to change their stoves to use the Bushbloks permanently. CCF East brought back their first order from Otjiwarongo and delivered it to the staff.

Figure 59: CCF East team and The Light for the Children staff (left), and the use of fuel efficient Bushblok (right).

National and International press releases and articles

An article was prepared and edited by Dr. Hanlie Winterbach and Dr. Laurie Marker for publication in the Farmers' Weekly magazine, in collaboration with Annelie Coleman, on Cheetah Conservation Fund and their collaboration with Namibian farmers.

Presentations

CCF East gave a presentation on the complexity of HWC and the procedures to follow when investigating a HWC incident to veterinary students of the University of Namibia in 2020, while Dr. Paul Set, CCF's veterinarian, gave a presentation on CCF and the work of its veterinary clinic.

Integrated Livestock and Wildlife Management to Reduce and Mitigate against HWC

HWC Incidents

Table 35 below provides a summary of the HWC incidents reported to CCF East and the actions that were taken.

Table 35: Summary of HWC reports to the CCF East office.

Date	Location	Species	Type of HWC	Reporter to CCF East	Outcome
Predator Rescues					
04-Jan-20	Farm Horing	Cheetah	Trap cage	CCF Otjiwarongo	One adult female and four cubs - translocated to CCF Otjiwarongo
07-Mar-20	Farm St. Elmo	Cheetah	Gin trap	CCF Otjiwarongo	3-mnth cub - wounds treated, released close to fresh adult tracks
06-Jul-20	Farm Fleur	Cheetah	Trap cage	Direct - Farmer	6-mnth cub - translocated to CCF Otjiwarongo
31-Aug-20	Farm Audax	Cheetah	Trap cage	LCMAN Hotline	Male, 4-5 yrs old - translocated to CCF Otjiwarongo
16-Aug-20	Farm Okanjesu	Cheetah	Found at waterhole	Direct - Farmer	Two small cubs - translocated to CCF Otjiwarongo

17-Oct-20	Farm Lauwater East	Cheetah	Trap cage	Direct - Farmer	Adult female - translocated to CCF Otjiwarong
Date	**Location**	**Species**	**Type of HWC**	**Reporter to CCF East**	**Outcome**
Predators Killed					
06-Apr-20	Farm Fortuna	Cheetah	Shot	Direct - Farmer	Adult Male (4yrs) - collected data and samples
10-May-20	Farm Marigold	Cheetah	Shot	MET Gobabis	Adult male (4-5 yrs) - collected data and necropsy samples
21-May-20	C30	Cheetah	Road kill	Direct- truck driver	Young - search for carcass unsuccessful
05-Jun-20	Farm Waterloo	Cheetah	Shot	Direct - farmer	Farmer uncertain ifthe animal was wounded or killed - time lapse of report too long to investigate
13-Jul-20	Gobabis East	Brown Hyaena	Shot	Direct - farmer	Adult male - necropsy samples collected
11-Sep-20	Farm Fiesta	Leopard	Shot	Direct - farmer	Adult female - necropsy samples collected
28-Sep-20	M119	Cheetah	Road kill	Direct-farmer	Female (1yrs) - necropsy samples collected
22-Oct-20	Farm Fulma	Leopard	Shot	MET Gobabis	Cub (3 mnths) -necropsy samples collected
24-Oct-20	Farm Fulma	Leopard	Shot	MET Gobabis	Adult female - necropsy samples collected
20-Nov-20	Farm Fulma	Leopard	Shot	Direct- farmer	Cub (3 mnths) -necropsy samples collected
24-Nov-20	Farm Fulma	Leopard	Shot	Direct - farmer	Cub (3 mnths) -necropsy samples collected

07-Dec-20	Farm Fulma	Leopard	Shot	Direct - farmer	Adult male -necropsy samples collected
Date	**Location**	**Species**	**Type of HWC**	**Reporter to CCF East**	**Outcome**
Predator Presence Reported					
13-Apr-20	Farm Fortuna	AWD	Presence	Direct - farmer	Advised farmer on livestock protection, AWDs moved off
18-May-20	Farm Reuter	Cheetah	Livestock losses	MET Gobabis	Visited farm, provided information on LGD training, scat survey, farm owner and worker visited CCF East office for more information
11-Jun-20	Farm Kaukurus	Brown Hyaena	Livestock losses	MET Gobabis	CCF East + MET Gobabis visited farm - Brown hyaena positively identified by tracks, advised farmer on livestock protection methods
24-Jun-20	Farm Okatjosonjiwa	Lion	Presence	Direct - farmer	Report referred to MET Gobabis
29-Jun-20	Okamatapati	AWD	Livestock losses	LCMAN Hotline	Report referred to N le Roux (CCF)
01-Jul-20	Hereroland East	AWD	Livestock losses	LCMAN Hotline	Report referred to N le Roux (CCF)
20-Jul-20	Elandsberg	Lion	Presences	Direct - farmer	Report referred to MET Gobabis
03-Aug-20	East Gobabis	Lion	Presence	Direct - farmer	Advised farmer on correct procedure if wanting animal removed

The two cheetah cubs that were rescued at Farm Okanjesu were emaciated, dehydrated and weak. However, they recovered extremely well in the care of CCF Otjiwarongo (Figure 60).

The two cheetah cubs at the time of capture

The two cheetah cubs, Siyaya (female) and Kabaka (male) recovered well.

Figure 60: The two rescued cheetah cubs at capture (left) and after the care by CCF (right).

CCF East was also contacted by a farmer in possession of five captive cheetahs to assist in finding a new home for the cheetahs. CCF East is still collaborating with MET Gobabis in this case.

LGD Program

In 2020, CCF East undertook responsibility for the LGD program in the Omaheke District. This enables CCF East to reach more farmers and share knowledge on HWC mitigation. LGD application received by CCF East is sent to the LGD program at CCF Otjiwarongo, as well as all visitation reports. In 2020, the CCF East team visited nine of the 10 LGDs in the Omaheke District and placed two LGD puppies with new farms. The dogs were vaccinated and dewormed, and the reports completed.

Most of the dog's general body conditions were good and reported to be working very well. All but one farmer said the LGDs were the best livestock guarding method, and their good views of these dogs were apparent in their relationship with their respective dogs; the dogs were stress-free, greeted their owners with wagging tails but always remaining close to their herd of livestock. Only at one farm, a 7-month LGD puppy (SB# 795) was afraid of the herders and did not stay with the herd when out in the field during the whole of November 2020. The CCF East team gave advice and the guidelines of training LGDs to the herders, and also discussed the problem with the owner. This LGD will be visited again in January 2021 to assess the situation. The two LGD puppies that were placed are progressing well and bonding very well with their herds.

A big challenge with the LGDs is that most dogs are left in the care of farmworkers and the owners are not regularly present on the farms. This is not a problem per se, except that when these workers change, they are not always informed by the owners on the correct treatment and training of the dogs, and it is difficult to get the correct information about the dog's behaviour from new workers.

Environmental Education

Before the Covid-19 virus pandemic resulted in the lockdown, the CCF East Environmental Education team visited three primary schools (PS); Drimiopsis PS, Hippo PS and Ernst Meyer PS (please see the Education section). Pre-survey evaluation forms were handed to learners at the beginning of the outreach program in order to evaluate their level of knowledge, and the post-survey forms were to assess the success of the outreach program.

Research

Data Collection

Table 36 below gives a summary of the opportunistic samples collected for the Namibian BioBank.

Table 36: Opportunistic samples collected by CCF East during this reporting period.

Date	Species	Sex	Age	How obtained
09-Aug-18	Bat-eared Fox	U	Ad	Roadkill
26-Nov-18	Caracal	U	Ad	Roadkill
14-Jan-19	Caracal	F	Ad	Roadkill
15-Mar-19	Bat-eared Fox	U	Ad	Roadkill
26-Mar-19	Cheetah	F	Ad	Illegal trade
10-Apr-19	Warthog	U	Young	Roadkill

05-Jun-19	Cheetah	U	U	Scat collected by farmer
21-Jun-19	Slender Mongoose	M	Ad	HWC
21-Jun-19	Springhare	F	Ad	Roadkill
22-Jun-19	Scrub hare	U	Ad	Roadkill
05-Jul-19	Porcupine	M	Ad	HWC
17-Jul-19	Suricate	F	Ad	Roadkill
20-Jul-19	Bat-eared Fox	M	Ad	Roadkill
20-Jul-19	Genet Small-spotted	F	Ad	Roadkill
20-Jul-19	Caracal	U	Ad	Roadkill
28-Aug-19	Bat-eared Fox	U	Ad	Roadkill
03-Sep-19	Scrub hare	U	Ad	Roadkill
07-Oct-19	Scrub hare	U	Ad	Roadkill
01-Nov-19	Caracal	NA	NA	HWC
15-Feb-20	Honey badger	M	Ad	HWC killed
03-Mar-20	Aardwolf	U	Ad	Roadkill
07-Mar-20	Leopard tortoise	U	Juv	Roadkill
13-Mar-20	Black-backed jackal	U	Ad	Roadkill
15-May-20	Bat-eared Fox	U	U	Unknown
20-Jul-20	African wild cat	U	Ad	HWC killed
22-Jul-20	Scrub hare	U	Ad	Roadkill
22-Jul-20	African savanna hare?	U	Ad	Roadkill
22-Jul-20	Monitor lizard	U	Ad	Roadkill
14-Sep-20	Leopard	U	Ad	Scat
08-Oct-20	Bat-eared Fox	U	Ad	Roadkill
08-Oct-20	Warthog	U	Young	Roadkill
09-Oct-20	Bat-eared Fox	U	Ad	Roadkill
16-Oct-20	Nightjar	U	Ad	Roadkill
20-Oct-20	Banded Mongoose	U	Ad	Roadkill
22-Oct-20	Leopard	F	Cub (~1 y)	HWC shot
24-Oct-20	Lizard	U	Ad	Roadkill
12-Nov-20	Black-backed	U	Ad	Roadkill

	jackal			
03-Dec-20	Bat-eared Fox	U	Ad	Roadkill

Scat Surveys

The scat surveys serve to 1) collect data on cheetah genetics for the BioBank, 2) collect hair samples to identify cheetah diet and livestock predation, 3) identify cheetah playtrees, 4) collect data on cheetah occurrence, and 5) add to the knowledge base for cheetah ecology in Gobabis District and provide farmers with scientific information.

In February 2020, three farms (Farm Herberg #381, Farm Bosruigte, and Farm Tokat #343, were visited by CCF East to introduce Tim Hoffman and the scat survey project to the farmers. The farmers were given questionnaires, kill IDs, and sample request forms, and two questionnaires (Farms Herberg and Tokat) were received back. The scat survey team found one cheetah playtree on Farm Tokat, with two cheetah scats at the tree, and three playtrees on Farm Bosruigte with a total of eight cheetah scats.

In May 2020, CCF East assisted Tim Hoffman by organizing with five farmers for him and his scat detection dog to visit and conduct surveys: Farm Jagdfarm Stoetzer #195, Farm Tweeling #276B, and Farm Reuter #114.

Integrating Students & Interns into the Projects

One of CCF's aims is to develop the skills and knowledge base of Namibian students to build capacity. CCF East had one student in 2020, Eveline Ikondja, from the University of Namibia. Her activities are summarized below:

a) LGD Program – Omaheke District

- Responsible for preparing a file with all LGD SB numbers located in Omaheke District and the histories of the respective dogs, prepared copies of the different forms needed for a farm visit, and organized visits with LGD owners.
- Attended Pre-approval farm visit at Omurambawondjombo.
- Trained to send LGD Application Forms to farmers on request (x3) with the appropriate message.

b) Research and Data Collection

- Training to collect, handle and label BioBank and necropsy samples.
- Accompanied the CCF Team to collect predators killed by farmers, assisted in measuring animal, collecting hair samples, and attended necropsy samplings at Gobabis Veterinary Practice where she received training from the veterinarian on identifying organs.

c) Outreach

- Accompanied the CCF East team to the Light for the Children NGO in Epako, Gobabis, to deliver their consignment of Bushbloks.
- Was introduced to the MET Gobabis Regional Warden, Mr Eben Nowaseb, and his staff.
- Attended Summerdown FA meeting

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 is currently in preparation. The 2019 studbook was completed and distributed in October 2020 with the assistance of Becky Johnston. In 2019, 275 (115.123.37) 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 2019 but had not been reported until after the publication of the 2018 Studbook. Captive-born cubs from known breeding facilities totalled 198 (83.84.31) born in 60 litters in 30 facilities in 12 countries. The captive cheetah population on 31 December 2019 was 1,820 (925.886.9) animals in 281 known facilities in 46 countries (Figure 61).

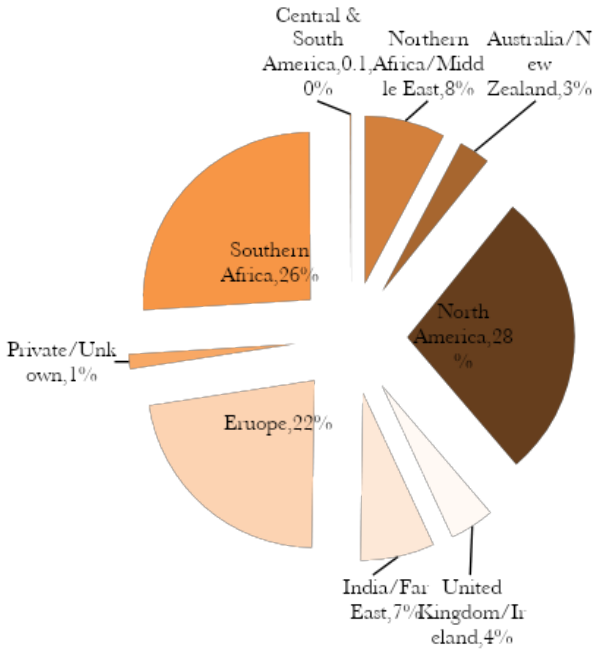


Figure 61: Captive cheetah populations by region, 2019: 1820 (925.886.9).

Illegal Wildlife Trade

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 EWCA. CCF is also investigating opportunities to genetically sequence the Feline Coronavirus which affects the Somaliland cheetahs.

Isotope Research

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

Cheetah Trade Data

The Cheetah Conservation Fund (CCF) began tracking cheetah trafficking in 2005 and assisting with confiscations whenever possible. Since that time, CCF staff, volunteers and interns have collected data online, and through confiscating authorities and during rescue operations. In 2020, CCF compiled a decade's worth of this data to form the most extensive database worldwide on the illegal cheetah trade. The 2010-2019 CCF Cheetah IWT Database was submitted for publication along with a detailed description of the data collection methodology. The database is expected to be published in early 2021.

Confiscated Cubs

In 2020, CCF registered 21 IWT events, of which three were reports only, where no confiscation occurred.

Of the 18 confiscation cases, 14 occurred in Somaliland, with 39 cheetah cubs confiscated overall and an additional 2 reported to have been poached but not recovered by authorities. These 39 cubs were added to existing cheetahs already at the Safe House, and include 16 males, 23 females. They were all screened for the Feline Corona Virus on arrival and quarantined when feasible pending results, to support virus containment efforts.

One incident involved a leopard cub being confiscated from a farmer in rural Somaliland, with a second cub reported to have run away while being held captive by the same farmer. The leopard cub was brought to the CCF Safe House in Hargeisa, where it remained through 2020.

Another three confiscations occurred in the Arabian Peninsula: in Saudi Arabia, the UAE, and Yemen. Cubs in these events, nine in total, were placed in zoos in the countries of seizure. Three cubs at a reserve in Saudi Arabia, four in the Al Ain Zoo in the UAE, and two in the Sana'a Zoo in Yemen (Figure 1). The 18th confiscation event occurred in Ethiopia, with Somali Regional State officials confiscating three cubs. Unfortunately, one cub died prior to the surviving two being transferred to the Born Free facility in Ensessa Kotteh, Ethiopia. CCF learned of these events through monitoring of open-source media and its relationships with the Ethiopian and Yemen governments built through the LICIT (Legal Intelligence/Cheetah Illicit Trade) project.

The first of the non-confiscation reports was of 20 cheetahs smuggled out of Somaliland, a report from the Ministry of Environment and Rural Development, CCF did not manage to independently corroborate the movement of these animals. The second was of three cheetahs held at a private residence in Borama, Somaliland, associated with Ray's Hotel, a place that has been of interest to CCF for its possible involvement in the trade. CCF visited the cheetahs held by Ray's Hotel twice in 2020; once in January with a member of the Somali Ecological Society, and again in August, with Tomas Maul of Torrid Analytics and National Geographic Magazine photographer Nichole Sobeki. The third reported trafficking incident was of two cubs held in the east of Somaliland. Unfortunately, confiscation by authorities was not possible.

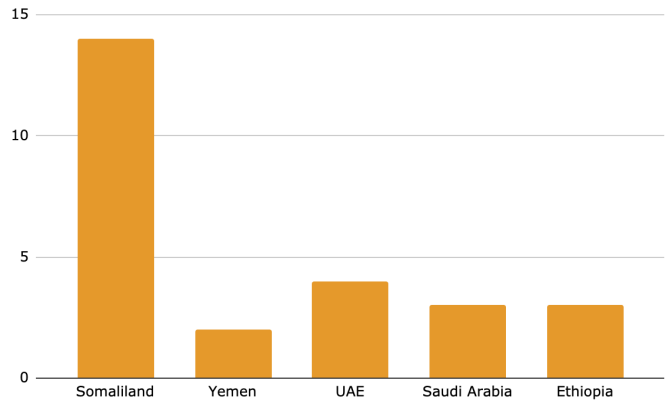


Figure 1: Geographic Distribution of Cheetah 2020 Confiscations

In total, the reports and confiscations involved 78 cubs either confirmed or suspected to have been trafficked during 2020 (17M; 24F; 35UNK). Only 51 of those, or 65%, were confiscated by authorities, with three more in a known location but not confiscated.

All confiscations of live cubs in Somaliland were conducted by the Ministry of Environment and Rural Development (MOERD) and a local CCF SL veterinarian that went along to provide emergency care from the time of confiscation. Upon arrival at the safe house, CCF vets received the cubs to continue treatment, stabilize when possible, and offer long-term care from CCF staff caretakers. Treatment is given by on-site doctors with international consultants providing advice to help guide treatment.

Table 2. Overview of IWT in Cheetahs for 2020

2020 Annual Analysis	
Total IWT events	21
Total confiscation events	18
Total "reports only" events	3
Total cheetahs confirmed to be in trade (confiscated/location known)	54
Total cheetahs confirmed/suspected to be in trade	78
Confiscations	
Total cheetahs confiscated by authorities	51
Confiscation location	
Somaliland	39
Ethiopia	3
Yemen	2
UAE	4
Saudi Arabia	3
Total/gender	
M	17
F	24
UNK	35
Total/status on arrival	
Alive	51
Dead on Arrival	0
Total/status as of December 2020	
Alive	39
Dead	5
UNK	7
Mortality Rate(Total)-note:7 of unknown fate	9.80%
Mortality for Somaliland confiscations (housed at CCF)	
Total (note:one death was in an Ethiopian confiscation)	4
in the 1st 72 hours	1(25% of deaths)
in the 1st two weeks	2(50% of deaths)

As of 31 December 2020, 60 cheetahs were housed at the CCF Safe House in Hargeisa, twice the number housed at the end of June 2020.

COVID-19 Impact on Cheetah IWT

With the COVID-19 pandemic reaching Somaliland in March 2020, work on-the-ground was met with additional challenges. International travel by CCF's Founder and Executive Director was halted in March 2020. CCF's experience in remote management of projects as well the connections built in Somaliland since its involvement in the area proved to be invaluable in managing the Safe House and CCF's IWT Programs remotely.

Confiscation events continued to occur in the face of the pandemic. In fact, an upsurge of illegal trade cases was seen from July to September 2020, with 24 cheetahs confiscated in 10 confiscation events. Although Somaliland declared all COVID restrictions void in June 2020, the increase in confiscation cases seen during the summer months is thought to be a direct result of work conducted by Torrid Analytics, an IWT research consultant executing a project with National Geographic under an MoU with the MoERD. Torrid operators were offering cash bounties for cubs in rural areas of Somaliland, which produced a variety of confiscation situations. Some indicted trade, while others revealed a motivation based on avoiding predation of livestock, a human-wildlife conflict indicator.

LICIT – Legal Intelligence/Cheetah Illicit Trade

Launched in July 2019, the UK DEFRA-funded LICIT project continued in 2020. LICIT ("Legal Intelligence/ 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 a 33-month project 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 & Rural Development (MoERD), and the Ministry of Water and Environment, Environmental Protection Authority, of Yemen.

Legal Atlas, CCF's LICIT partner, completed desk research on international and national laws that pertain to cheetahs and trafficking in the four project countries by the end of March 2020 with the collection of 81 documents, including 46 general bibliographic resources on cheetahs, CITES, sharia law and wildlife crime, plus 35 country resources. The analysis also included regional instruments related to IGAD. Four national frameworks of IWT laws were created by Legal Atlas and uploaded to their open online intelligence platform (www.legal-atlas.com), as well as four country reports focused on the Legal protection of cheetahs and gazelles, containing both descriptions of current frameworks and guidelines to enhance these frameworks to further deter illegal trade. CCF facilitated Legal Atlas' work through the identification of in-country lawyers and legislators. Country reports were sent to be reviewed and validated by country representatives, with the delivery of Yemen and Somalia's documents taking place on October 21 and Ethiopia's on November 18. CCF has no record of the documents being shared with Somaliland, however, and CCF intends to remedy

this oversight in early 2021. The next steps include providing countries with legal training and support for any editing or drafting of new legislation based on the guidelines.

Two training workshops for wildlife enforcement officers and the judiciary were planned to take place during 2020 as part of the original LICIT project timeline. Due to COVID-19 travel restrictions, these are now postponed to 2021, potentially post-Ethiopian election (planned for July 2021). This change in LICIT activities was coordinated with the grantor, UK DEFRA.

In the meantime, LICIT partners are engaging project beneficiaries remotely until face-to-face meetings can be held. The plan involves a series of online training sessions. The first, an introduction to the Legal Atlas online intelligence platform has been delivered to the four project jurisdictions. Presentation of Legal Atlas' legal analyses will be the next online engagement opportunity, planned for the first half of 2021.

Visits to the Somali Regional State of Ethiopia

Inception of the Somali Regional State Wildlife Trafficking Task Force

To build partnerships under LICIT and engage local stakeholders in the fight to stop trafficking, Drs Marker and Yashphe, accompanied by representatives of EWCA and IFAW, conducted two visits to Jigjiga, the capital of the Somali Region of Ethiopia, during 2020. In February, they met with members of the Somali Regional State Wildlife Trafficking Task Force (SRS Task Force), an entity created by the Ethiopian government to promote an integrated approach to wildlife trafficking in the area most affected by the illegal cheetah trade. The creation of the SRS Task Force is supported as part of a larger project, the 'Enhanced Management and Enforcement of Ethiopia's Protected Area Estate' Project, funded by the Global Environment Facility (GEF) and the United Nations Development Program (UNDP). The meeting was arranged through EWCA and was the first time the Task Force had ever convened. Dr. Marker presented on the issue of cheetah trafficking in the region, the unique nature of the cheetah and its importance, and discussed the LICIT project. At the meeting's conclusion, the Task Force issued a statement declaring that "involvement and consideration of communities living in areas impacted by wildlife crime is key to any successful action against wildlife trafficking," and resolving that action on community involvement should be pursued through a network of cooperation among EWCA, Somali Regional State authorities in affected communities, the LICIT partners, and other partners and stakeholders.

Somaliland-Ethiopia Border Meeting Nov 11

While on-the-ground work was disrupted due to COVID-19 from March to October, Drs Marker and Yashphe travelled to Jijiga for the second time in November 2020 for a bilateral Ethiopia-Somaliland meeting on cheetah trafficking. The aim of this event was to bring together authorities from both sides of the Ethiopia-Somaliland border and promote coordination on anti-trafficking efforts and any future confiscation events. This was prompted by the upsurge in confiscation cases seen on the Somaliland side during the summer months, most of which were unknown to the Ethiopian authorities. The meeting was a success, bringing together the Somali Regional State Task Force for a second time and

introducing its members to their Somaliland counterparts. The result was the creation of informal cross-border ties and a resolution to enhance cross-border collaboration through more formal means.

The event was hosted by the Somali Regional State Bureau of Environment, Forest, and Climate Change and its newly appointed Head, Mr Hassan Farah, and the Ethiopian Wildlife Conservation Authority (EWCA), bringing together wildlife and enforcement officials from all levels: federal, regional, and zonal. H.E. Mr Kumara Wakjira, EWCA's Director-General, and H.E. Mr Abdinasir Hersi, Director General of Somaliland's Ministry of Environment and Rural Development (MoERD) were joined by the Vice President of the Somali Regional State of Ethiopia, H.E Mr Ibrahim Osman, giving opening remarks before presentations and discussions commenced.

Following the meeting, the Ethiopian and Somaliland delegations were invited to a meeting with the Somali Regional State President, H.E Mr Mustafa Muhummed Omer, at his presidential palace. The commitment to environmental issues in general and wildlife protection was emphasized by the President.

The two delegations then travelled to the border town of Wajale for lunch and a final meeting, seeing off the Somaliland delegation as it travelled back to Hargeisa with Dr. Marker and the CCF team.

CCF, the International Fund for Animal Welfare (IFAW), and the Ethiopia GEF program "Enhanced Management and Enforcement of Ethiopia's Protected Areas Estate" participated and provided support for the event. The United Nations Office on Drugs and Crime (UNODC) also contributed its support to the meeting.

HAWEN Meetingand Cheetah Trade Workshop at the African Union in Addis Ababa, Ethiopia

HAWEN meeting March 3-4

After travelling to India for the Convention on Migratory Species in late February, Drs Marker and Yashphe returned to Ethiopia in March 2020 to join LICIT Project Manager Edwin Brown at the third Meeting of the HAWEN Executive Committee on March 3 and 4. The HAWEN is a key component in LICIT regional network building activity. Fetene Buta, the LICIT Project Regional Coordinator based in Ethiopia, assisted IGAD with planning and organizing the HAWEN meeting. IGAD is the sub-regional organization for political and development cooperation among countries in the Horn of Africa region. The HAWEN is a specialized network of IGAD established in 2017 to strengthen regional governance and cooperation on wildlife trafficking and wildlife enforcement. LICIT Project countries Ethiopia and Somalia are among the HAWEN members. Both participated in the meeting along with delegates from IGAD/HAWEN members Djibouti, Kenya, Sudan, South Sudan, and Uganda. In addition to IGAD and the HAWEN member states, observer participants included the LICIT partners, the African Union Commission (AUC), the United Nations Office on Drugs and Crime (UNODC), the U.S. Embassy in Ethiopia, the U.S. Fish and Wildlife Service (USFWS), African Wildlife Foundation, and TRAFFIC, the Wildlife Trade Monitoring Network. Partners presented the LICIT project to the Executive Committee,

which agreed that the LICIT regional network could be built around the HAWEN and made other recommendations to increase its cooperation on cheetah trafficking issues. The meeting concluded with a presentation by TRAFFIC on the Trade in Wildlife Information eXchange (TWIX) platform as a possible vehicle for information exchange and assistance on wildlife enforcement issues in the region. The members of the HAWEN Executive Committee supported the concept and agreed to seek the necessary approvals and formal requests to participate from their governments.

Cheetah Trade Workshop March 5

To promote cheetah conservation and LICIT priorities further, CCF worked with the Regional Environment Office of the United States Embassy in Addis Ababa, Ethiopia, to organize a Cheetah Trade workshop held immediately following the HAWEN meeting. This allowed leveraging of resources invested in the HAWEN meeting to facilitate a meeting of regional country representatives and stakeholders to discuss cheetah-specific issues.

During this one-day workshop, Dr. Laurie Marker presented on CCF's efforts in Somaliland including advances made in rebuilding the CCF Safe House. Dr. Yashphe presented an overview of the illegal trade in cheetahs. Edwin Brown presented the goals and progress of the LICIT project. Participants discussed strategies to end the trade and protect the species, focusing on three themes: sources of cheetah trafficking, trafficking routes, and demand. Participants synthesized their inputs into priority topics that cut across the three themes and identified key activities related to each topic. This new plan is built upon prior strategies but provides an updated and revised framework to inform current and future projects. The new plan offers priority actions in areas of community engagement, mapping of trafficking networks, strengthening laws and law enforcement, and providing welfare-focused outcomes for live, confiscated animals.

For LICIT project purposes, the workshop also provided an opportunity to strengthen relationships among government partners in the project countries. Despite their political differences, participants from Somalia and Somaliland took part actively and constructively in workshop proceedings and engaged with each other on a cordial and professional basis.

In addition to the work conducted under LICIT, a new legal initiative by CCF was developed and launched in December 2020. Partnering with the Convention on Migratory Species (CMS) and Legal Atlas, CCF set out to analyze legal frameworks for all IGAD jurisdictions as they relate to transboundary wildlife protection, (except for Eritrea which is covered by a sister project).

This project will support IGAD member states in harmonizing legal frameworks related to wildlife conservation and crime across the Horn of Africa region. The project was developed in cooperation with IGAD and is consistent with recommendations made by the HAWEN Executive Committee at its Third Meeting on 3 March 2020. It is part of an EU-funded 'Action Plan Against Wildlife Trafficking,' aimed at addressing the poaching and trafficking crisis in Africa. To implement it, the EU is investing €30 million to support strategic interventions at local, national and regional levels.

Three main objectives guide this work: i) the strengthening of wildlife law enforcement capacity and cross- border collaboration in selected transboundary ecosystems; ii) the enhancing of anti-trafficking efforts, and iii) the establishment/strengthening of sustainable

management of Trans-frontier Conservation Areas (TFCAs). The CCF-LA-CMS project aligns with objective (iii).

The initial phase of this project runs for six months and is focused on the analysis of existing legislation. Phase II, expected to be funded by CMS in early 2021, will work towards implementing recommendations, collaborating closely with the HAWEN Secretariat and country representatives.

Dr. Laurie Marker visits the United Arab Emirates

In February, Dr. Laurie Marker visited Dubai, United Arab Emirates, for a series of meetings and presentations on the illegal cheetah trade. Dr. Marker was escorted by Corina Berens from Central Veterinary Labs (CVL) and past CCF-veterinarian Dr. Hollis Stewart. Dr. Marker gave a presentation on wildlife crime in the Horn of Africa, the illegal trade in cheetahs, and updates on Coronavirus and FIP in cheetahs. The audience included researchers and veterinary professionals at CVL. This was followed by a public presentation about cheetah conservation at The Surf House. Dr. Marker met with members of WWF Emirates for Nature to update them on each other's activities since they were last together in 2015. Nick Webster from The National attended the CVL presentation and wrote a media story about Dr. Marker's talk: https://www.thenational.ae/uae/environment/viruses-and-trafficking-driving-cheetahs-to-extinction-expert-claims-1.979532

Dr. Marker went on to meet with Elsayed Mohammed, IFAW's Middle East Regional Director to discuss the LICIT project and other points of common interest; and with the CEO of Daalo Airlines, Mohamed Ibrahim Yassin (aka Mr Olad), to talk about conservation in Somaliland and the development of national parks and protected areas.

During the rest of the year, Dr. Marker has continued connecting with potential influencers in the UAE to devise a strategy for demand reduction.

Cheetah Public Policy

Multilateral Environmental Conventions: CITES and CMS

At the 18th CITES Conference of the Parties (CoP18) in Geneva in August 2019, Dr. Marker and CCF supported range states in their effort to keep cheetah conservation and illegal trade issues on the international agenda. It was a crucial meeting as cheetah-related decisions agreed upon at CITES in past conferences were now proposed for deletion due to an erroneous perception that the trade is limited and of no major impact on the species' survival. Unfortunately, the proposed deletions were adopted and cheetahs remained outside of species-specific actionable resolutions at CITES.

Recognizing the importance of reviving the discussion on the illegal cheetah trade, CCF led an NGO-coordinated strategy to put the matter on the agenda of the newly established Joint CITES-CMS African Carnivores Initiative. This strategy was formulated in collaboration with the Wildlife Conservation Society (WCS), Born Free Foundation (BFF), the Zoological Society of London (ZSL), and the World Wildlife Fund (WWF). 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 recognize the live trade in cheetahs and mobilize resources to combat it. The Scientific Council approved all NGO cheetah coalition proposals.

In February 2020, Drs. Marker and Yashphe travelled to Gandhinagar, India, to attend the 13th CMS Conference of the Parties (CoP). The adoption of Resolution 13.4 on the African Carnivores Initiative (ACI)[1] containing the proposed additions from the Scientific Council means that the ACI now needs to include all threats to cheetah survival, including illegal take and trade, in its program of work. The CMS and CITES secretariats are currently developing this program.

To galvanize Parties into action and support of the ACI, CCF, WCS and ZSL hosted a side event aimed to highlight the plight of cheetahs and the importance of the joint CMS/CITES ACI. Dr. Sarah Durant of ZSL presented a global overview of the cheetah and its conservation status. Dr. Marker moderated a panel discussion, during which Mr Kumara Wakjira, Director General of the Ethiopian Wildlife Conservation Authority, highlighted the problems his country faces in combating a substantial illegal trade in cheetah cubs. HE Mr Hany Muhammed Ali Tatwany, representing Saudi Arabia, went on to stress the role that non-range states can play in protecting cheetah, including joining efforts with range states to combat illegal trade. Ms Patience Gandiwa, representing Zimbabwe, highlighted the critical importance of involving communities in cheetah conservation. Mr Soumitra Dasgupta, representing India, discussed his country's hopes of restoring the cheetah. In summary, Dr. Sue Lieberman (WCS) noted the importance of the African Carnivores Initiative in preventing the extinction of cheetahs and facilitating synergy between CITES and CMS implementation by range states.

On the margins of the main conference meetings, Dr. Marker connected with country representatives from demand countries, including Saudi Arabia, one-on-one as well as conservationists working on other big cat priorities. Dr. Marker also took the opportunity of visiting India to discuss potential reintroduction of the cheetah in India with local authorities. CCF is finalizing its recommendations on reintroduction and will share them with authorities in the coming months.

Building on the success at the CMS CoP13, CCF and the Cheetah NGO Coalition began supporting Parties in preparing documents for submission at the 73rd Standing Committee (SC73) of CITES intended to be held in October, 2020. A document on the illegal trade in cheetahs was finalized with Somalia, Ethiopia, Yemen, and Kenya as co-sponsors. This is the first time that African countries collaborated with a country from the Middle East on a joint document for CITES. Unfortunately, due to the COVID-19 pandemic, the CITES Standing Committee meeting was postponed indefinitely. CCF and the NGO coalition await a new date for the meeting.

CCF enrolled in two CITES Working Groups (WG), with Dr. Yashphe representing the organization in both the Appropriate and Acceptable Destinations WG and the Lions WG. Discussions are expected to commence remotely in February 2021.

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

IUCN

Drs Marker and Yashphe attended the IUCN East and South Africa region (ESARO) meeting in Johannesburg, South Africa in July 2019 to take part in the ESARO planning process for the next IUCN World Congress. Due to COVID-19, the next regional meeting was held virtually in July 2020 with both Drs Marker and Yashphe attending.

In addition, Drs Marker and Yashphe took part in two thematic groups for IUCN ESARO members, with Dr. Marker covering the Green Infrastructure and Nature-Based Solutions group and Dr. Yashphe attending the Conservation Finance one.

Originally set for June 2020, IUCN's next World Congress was postponed due to COVID-19 and is currently planned to take place in September, 2021. As an active member, CCF co-sponsored two motions focusing on the illegal trade in cheetahs: Motion 45, Treating organized crime having an impact on the environment as a serious crime[2] and Motion 50, Implementing international efforts to combat the sale of illegal wildlife products online[3]. The two motions were accepted through an online voting mechanism.

[2] https://www.iucncongress2020.org/motion/047
[3] https://www.iucncongress2020.org/motion/050

Annex: Confiscated Cubs 2020

Date of Confiscation	Type of Event	Country of confiscations	Number of animals involved	Species	Sex	Age
16-Jan-2020	confiscation	Saudi Arabia	3	Cheetah	N/A	3m
28-Jan-2020	report (location known and observed)	Somaliland	3	Cheetah	M:2F	4yr
31-Jan-2020	confiscation	Somaliland	2	Cheetah	2M	1w
1-Feb-2020	confiscation	Ethiopia	3	Cheetah	M, F, UNK	3m
3-Feb-2020	confiscation	UAE	4	Cheetah	UNK	8w
8-Feb-2020	confiscation	Somaliland	1	Cheetah	F	6m
26-Feb-2020	report	Somaliland	20	Cheetah	UNK	UNK
18-Mar-2020	confiscation	Yemen	2	Cheetah	UNK	UNK
17-Apr-2020	confiscation	Somaliland	2	Cheetah	2M	4m
18-Jul-2020	confiscation	Somaliland	5	Cheetah	2M; 3F	3w
24-Jul-2020	confiscation	Somaliland	2	Cheetah	2F	7w
27-Jul-2020	confiscation	Somaliland	1	Cheetah	1F	8m
5-Aug-2020	confiscation	Somaliland	4	Cheetah	4F	2m; 7m
5-Aug-2020	confiscation	Somaliland	1	Cheetah	1F	7m
14-Aug-2020	confiscation	Somaliland	1	Cheetah	1F	7m
22-Aug-2020	confiscation	Somaliland	2	Cheetah	1M; 1F	9w
14-Sep-2020	confiscation	Somaliland	2	Cheetah	2F	8m, 4w
18-Sep-2020	confiscation	Somaliland	3	Cheetah	2M; F	4m
23-Sep-2020	confiscation	Somaliland	3	Cheetah	2M; 1F	5m
17-Oct-2020	confiscation	Somaliland	10	Cheetah	5M; 5F	7w, 9w, 4.5m, 8m

CCF Somaliland

CCF expanded its knowledge about the illegal cheetah trade in Somaliland during 2020 through its rescue mission activities and the relationships the team has formed with local Somaliland entities and the international community. CCF now has solid evidence the trade exists, both in a professional, organized form and in an ad-hoc manner driven by community necessity and the desire to mitigate livestock predation. Despite initially thinking all cubs being confiscated in Somaliland are taken to supply the illegal pet trade, CCF now sees a new layer to this threat. Cheetahs and leopards in Somaliland and Ethiopia's border regions are threatened by conflict with rural farmers seeking to mitigate livestock predation. Removing predators is not the answer. Other animals will take their place, and the cycle will continue until there are no more cheetahs on the landscape. To mitigate, CCF will blend law enforcement with wildlife education, community awareness, and livestock husbandry training in our next phase of work. This will take place in Somaliland where we see farmer-predator conflict issues, like the border regions of Ethiopia and Somaliland, with particular attention paid to cross-border points between Xariirad, Somaliland and Wajale, Ethiopia.

CCF's cheetah census grew from 30 cheetahs in June to 60 in December. With the increase, CCF built two new Safe House facilities in the same neighbourhood, acquired a five-bedroom compound for staff and to give trainings, and CCF hired more local and international veterinarians to care for the animals. In October, CCF launched its SL Education program by hiring an Education Manager and forming a team with CCF staff based in the USA and Namibia. CCF also laid the foundation for its Future Farmers of Africa livestock husbandry training course by surveying farmers in the areas where cubs were confiscated or where conflict is known to occur.

With an eye on building the cheetah sanctuary and rescue centre at Geed-Deeble, CCF engaged longtime friend and design consultant Matt Renninger to create a master plan for the 800-hectare sanctuary site and the surrounding area, which could become a national park in the future. CCF engaged with African Parks Foundation in 2020 in hopes of developing Geed-Deeble in partnership, both for the sanctuary and national park, and this conversation will continue in 2021.

With 60 cheetahs in our care on 31 December, CCF foresees a need for our presence in Somaliland for the long term.

CCF SL Facilities

COVID-19 reached Somaliland in March 2020. Despite the challenges arising from the pandemic, work continued to improve both facilities and cheetah care. On 1 March 2020, CCF opened its second Cheetah Safe House facility with an event for government and media. Dr. Laurie Marker, CCF's Founder and Executive Director, Ms Shukri Haji Ismail Bandare, Somaliland's Minister of Environment and Rural Development (MoERD), and special guest of

honour Abdirahman Saylici, Vice President of Somaliland, gave remarks. With its larger outdoor enclosures, Safe House 2 allows more room for exercise, play, and space to hold cheetahs in lower densities. The move was significant as CCF was adopting new quarantine and environmental decontamination measures in response to the Feline Coronavirus being detected in cats at the Safe House facilities.

The event featured speeches by several dignitaries plus a tour of the facilities. VP Saylici emphasised the need to stop the illegal wildlife trade and, after touring the facility, thanked all those whose efforts had made it possible and pledged the government's continued support. Local media crews and a team representing NBC News and the Today Show from the UK covered the event.

Over the summer, the team rebuilt the outdoor enclosures at Safe House 1, and by November, it had completed its third temporary care facility, Safe House 3. To house the additional staff required to operate all three facilities, CCF rented a five-bedroom compound in the same neighbourhood, which can also double as a training facility or small conference location.

The total capacity of the three facilities is 64 cats, and the cheetah census on 31 December 2020 is 60 cats. CCF is mindful that it must either build the sanctuary at Geed-Deeble posthaste, or it must consider building yet another temporary facility to house any new animals that come in.

Geed-Deeble

In January, CCF Project Manager James Young prepared to receive Jean-Marc Froment from African Parks Network, who was planning to visit Somaliland at the invitation of MoERD, which CCF had arranged. Jean-Marc did come to Somaliland, and he visited the Geed-Deeble site as well as others with Minister Shukri of MoERD and with Dr. Marker. But due to COVID-19, his report did not emerge until July, and because no one could travel at this time, the project was slowed. CCF picked up conversations with African Parks in the last two quarters of 2020, with the goal of bringing the team back to Somaliland for another visit in 2021.

Some site visits and attempts to survey and demarcate were attempted in 2020, and drone footage of the site was recorded revealing a troop of baboons and a water hole. Pending some administrative duties by the Somaliland government, CCF is poised to break ground on its cheetah sanctuary and cheetah rescue & education centre at Geed-Deeble in 2021.

CCF SL 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 2020, CCF also was forced to replace one of its rotating CCF Somaliland Project Managers due to an untimely natural death.

Veterinarians

From January to May, UK-based Dr. Karina Flores Pineda was the international veterinarian for the project. In May, Dr. Anna Ciezarek, also from the United Kingdom, came to Hargeisa which enabled Dr. Pineda to take a few months' leave. In September, Bristol University graduate Dr. Mahesh Bhatt and Dr. Laura Ryan joined the safe house veterinary team, coinciding with Dr. Ciezarek's departure. Finally, in late November, Dr. Pineda returned to the facility and resumed work.

Somaliland veterinarians Neju Jimmy and Muse Saed worked with CCF for the first four months of the year, but both left at the end of April. In July 2020, CCF hired local veterinarians Dr. Asma Bileh and Dr. Ahmed Yusuuf to travel with the MOERD-CCF Cheetah Rescue Team to confiscations.

CCF also continued to expand the volunteer program, through the Veterinaires Sans Frontieres program, with two new veterinary student volunteers arriving at the facility in February and June 2020. It is hoped that more volunteers can arrive next year, once global COVID restrictions loosen.

Project Managers

In January and February, Chris Wade and Karlene Parrish from Australia came aboard to manage the CCF Somaliland project, allowing James Young to tend to family matters in the UK. On March 15, James returned to Hargeisa to take up his post, coming in on one of the last flights before the COVID-19 travel lockdowns began, along with new Cheetahkeeper Giuseppe "Joe" Bottiglieri.

Sadly, on 5 May, James Young passed away in Hargeisa, his death was due to a congenital heart condition. CCF, working with the UK Foreign and Commonwealth Office and Halo Trust, arranged for James' remains to be transported back to the UK. Due to the pandemic, CCF was required to meet additional safety standards for transport, including COVID19 testing. Dr. Pineda escorted James to the UK for interment and met with his family.

Due to this untimely death, Joe Botteglieri was promoted to Project Manager while still maintaining his Head Cheetahkeeper responsibilities. Joe remained in his dual positions with CCF Somaliland through the end of 2020.

Cheetahkeepers

In addition to Joe Bottiglieri, CCF hired Yoana Martin from Spain and Kaita Ivan from Uganda (who doubles as CCF Somaliland Education Manager) to help with cheetah management

Volunteers

Despite the challenges of travel during the pandemic, CCF Somaliland still had four volunteers in 2020:
Linda Mouyabi and Tereza Zahalkova - Czech Vet students

Lydia Strangeways – volunteer
Emma Bihan-Poudec - Volunteer from NGO 'Consilient' doing social research

Local Staff

Cheetahkeeper - Jamal Wali
Cheetahkeeper - Farah Abdi Wali
Cheetahkeeper – Ladan Abdillahi
Handyman - Ibrahim
Handyman - Nimo
Assistant Project Manager - Hamse Ahmed Yusuf
Housekeeper/Cook - Hamda Mahamed
Housekeeper/Cook for new compound - Faisa Xassan Yusuf
Bookkeeper - Kaltun Qasim
SPU 1 - Abdi Wahab
SPU 2 - Farxen Maxud Axmed
SPU 3 - Ahmed Xirsi Yusuf
Driver - Khalid

Cheetah Rescues

Beginning in April 2020, CCF SL local veterinarians have accompanied the MoERD Wildlife Officer on rescue missions involving intercepted cheetah cubs. The purpose of them being along is to provide emergency care to animals from the point of confiscation.

April

Working under the most difficult circumstances due to the COVID-19 pandemic, the MoERD-CCF Cheetah Rescue Team completed its first joint mission in the southeastern region of Somaliland near Las Anod on April 19 and 20. CCF Somaliland veterinarian Muse Saed Jama and MoERD Wildlife Officer Abdinasir went on a 1,000-kilometer round-trip to recover two young male cheetah cubs in the possession of the Somaliland military. The origin of the cubs is unknown. They arrived with coccidiosis due to internal parasites as well as a variety of external parasites covering their tiny bodies. Both were severely malnourished and dehydrated. One of the cubs was very sick with diarrhoea. Despite the team's best efforts to help the weakened little cub, he died overnight.

July-August-September

The MoERD-CCF Cheetah Rescue Team was not called upon in May or June, but they conducted eight rescue missions between July 18 and September 19, 2020, resulting in confiscations of 21 cheetah cubs and one leopard cub. Five of these missions were launched on information provided by Torrid Analytics, a Kenya-based "social enterprise" that has an MoU with MoERD to conduct cheetah trade research inside Somaliland. Torrid field teams were

offering nomads and community members $100 USD for information leading to cubs, and it was suggested to CCF by locals that these bounties were incentivizing people to take cubs. CCF refuses to pay for cubs or information as a standard policy. In Somaliland, $100 is more than poachers earn who take cubs from their cheetah dens. CCF voiced their objection to paying cub bounties to Torrid Analytics and to MoERD.

TORRID #1 Rescue Mission – July 18/19 – Xariirad – Five cheetah cubs

Xariirad community members holding the cubs claimed to have recovered the cubs from a nomad coming up from Ethiopia who took them in retaliation for livestock predation. The nomad wanted to sell them to a trader to make up for his lost goats. But the Nomad story does not make sense. According to the timeline established by CCF veterinarians in a Health Report dated August 28, the nomad would have taken the cubs from their mother when they were only 10 days old. He would have kept all five alive for six days while he moved north on camelback in search of a buyer. But the cubs were rescued in a condition indicating they were separated from their mother no more than 2-3 days before their rescue. It is CCF's opinion the villagers were not truthful about the reason these cubs were taken, or where they came from. Because CCF does not believe the story told by the community members, there is no reliable evidence indicating where the cubs originated. The cubs may have been born in Somaliland, or they may have been taken from the landscape in Ethiopia.

TORRID #2 Rescue Mission – July 24 – Borama – Two cheetah cubs

According to the statement made by the man holding these two cubs, a community member named Ibrahim, he got them from a trader coming up from Ethiopia on camel-back. The trader had the cubs for 25 days while he was looking around for a buyer. The trader is unknown; Ibrahim claimed he escaped. Although the cubs were both very

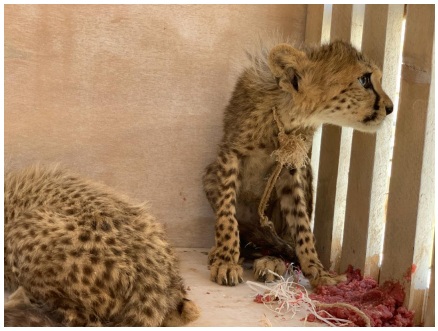
skinny and suffering from some skin abrasions, they were otherwise in very good condition, which makes the scenario of them being held for 25 days by a travelling nomad unlikely. CCF also questions the cage Ibrahim used to hold the cubs. It appears to have already been installed in the outbuilding, and it is not like the other temporary enclosures seen on other missions for holding baby cheetahs, which are made from rocks, twigs, and other things found in nature.

TORRID #3 Rescue Mission – July 27/28 – Xariirad – One cheetah cub

The cub, now named Shamsi, is one of the older cats CCF has received. We estimate her to be between six to nine months, but it is impossible to tell because of her stunted growth. Shamsi was in the company of a nomad who lives on both sides of the Ethiopia-Somaliland border, depending on the season. He also told CCF a story of livestock predation and a misguided attempt to control it by taking cheetah cubs. Because the nomad moves so frequently and he does not recall details, it is not possible to ascertain where the cheetah originated. But according to him, it was sourced on the Somaliland side of the border.

TORRID #4 Rescue Mission – Aug 5 – Xariirad – Five cheetah cubs

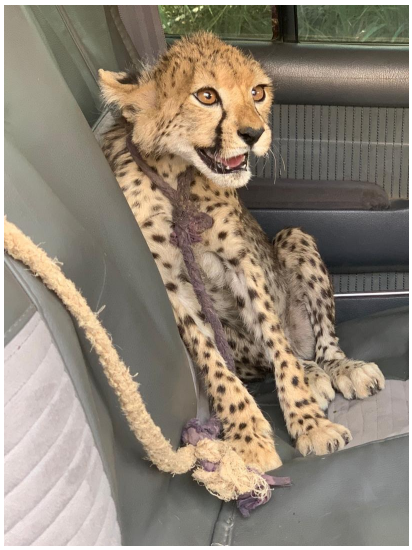
During this mission, CCF received cubs from two community members. The first was in possession of four cubs, and the second had one. According to the nomads, two of the cubs in the possession of Nomad #1 were sourced from Somaliland, while the other two were taken from Ethiopia. Nomad #2's cheetah was sourced in Somaliland. If we take these nomads at their word, three cubs are from Somaliland, while two are from Ethiopia, the specific location unknown. If we consider that the veracity of the nomad statements is at issue, then it is not possible to determine the origin based on current evidence.



TORRID #5 Rescue Mission – Aug 14 – Xariirad – One leopard cub, One cheetah cub

During this mission, the MoERD-CCF Rescue Team met a nomad in possession of a leopard cub. The man claimed he came upon the mother leopard and her two cubs eating one of his goats. He was so angry he wanted to kill the mother but ended up just running her off. He took the two cubs and built an enclosure of rocks and sticks and kept the cubs there for a couple of weeks. During this time, one of the cubs escaped. The man voluntarily relinquished the leopard cub, and he did not seek compensation. The man was arrested for violating the Somaliland wildlife law, but he was not booked at the jail, and he was released with a warning. The cheetah cub was in the possession of a nomad who ran

from Xariirad, Somaliland after he heard about the arrest of the man with the leopard. We do not know if the cheetah was sourced in Somaliland or Ethiopia.

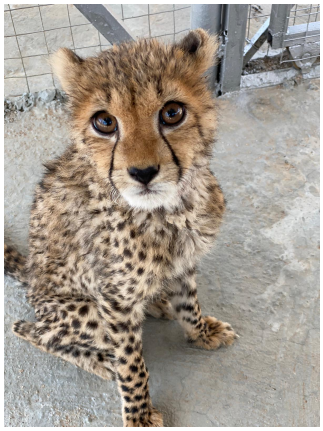


#6 Rescue Mission – Aug 22 – Erigavo (Adin Boole) – Two cheetah cubs

The sibling cubs in this instance were in the possession of rural nomadic livestock farmers who claimed to be experiencing conflict with cheetahs. They had found the cubs hidden in a cave after they ran the mother off. The farmers cared for the cubs for about a month before MoERD was notified and the Rescue Team picked up the animals.

#7 Rescue Mission – Sept 14-15 – Kalabaydh, Sool – Two cheetah cubs

The MoERD-CCF Rescue Team confiscated two cheetah cubs in the eastern region of Sool from a village near the Kalabaydh district. One cub is just weeks-old, the other is at least six months. Community members indicate cubs were taken in retaliation because the two mother cheetahs preyed on goats.



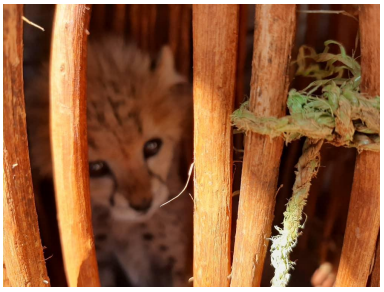
#8 Rescue Mission – Sept 18-19 –Xariirad – Three cheetah cubs

The MoERD-CCF Rescue Team confiscated three cheetah cubs from community members near Xariirad. The community members who had the cubs say they were taken to prevent predation of their livestock. Two are reported to be male siblings, while the female cub is about the same age, but unrelated. One of the cubs did not survive. CCF veterinarians assessed the age and status of the two remaining cubs, but their health seemed to be good.

Two Arrests, Six Suspects, Three Cubs

On September 23, six men were taken into police custody in Hargeisa attempting to sell three young cheetah cubs to the highest bidder. In the first arrest, four men were caught in an undercover sting when they attempted to sell three cheetahs cubs to a local Hargeisa resident. The men were arrested by Somaliland Police and taken to jail. Hours later, unaware of the arrest, the boss of the four men contacted the Hargeisa resident to collect his money for the cubs. In a similar fashion, the Somaliland Police and MoERD moved in to make the arrest, and instead of money, the boss and his accomplice were arrested, too.





Arrest of Abdi Heyawan Gang

On 17 October, MoERD arrested four persons in a northern suburb of Hargeisa after being caught in possession of 10 cheetah cubs. The animals were discovered with zip ties binding their front legs, and all were being transported in wooded crates familiar to Somaliland Wildlife Officers because of their use by a local smuggling ring. One of the suspects was Abdi Heyawan, a known Somalilander who had been arrested two or three times before and served time in jail for cheetah trafficking in 2018-2019. The cubs, in this case, were in poor condition when recovered. All 10 were underweight and dehydrated and infected with parasites. Most suffer some form of hair loss or have an exceptionally poor coat due to improper nutrition. Two had injuries to their tails, two had ulcerated noses, and one had an abscess on a hind leg. The two cubs that had their front legs bound with zip ties also had ropes around their necks, along with many of the others. The ropes are believed to have caused the minor abrasions found on their bodies. All are timid or friendly, indicating an extended period of captivity.



Conclusion

While the two arrests were related to a professional smuggling ring that transports cubs through Somaliland to Yemen by boat, CCF initially believed all cubs taken in the region were to supply the pet trade. However, it was subsequently determined the primary motivator of the community members who took the cubs in the eight rescue missions was a desire to mitigate conflict with predators. No trade of the animals was ever considered. Nomadic herders in Somaliland are experiencing intense conflict with predators (primarily cheetahs, leopards, hyenas), and they resort to taking cheetahs cubs from their mothers in a misguided effort to domesticate them, to reduce conflict and spare their livestock.

The rural community members interviewed by CCF at the sites of the confiscations reveal they steal the cubs and chase the mother cheetahs away, thinking they will go elsewhere to reproduce. Then they attempt to domesticate the cubs so they will grow up to not prey on livestock. The rural people who are keeping the cubs captive feed them very little milk or food, so the older cubs CCF has received are suffering from stunted growth due to poor nutrition. Dr. Marker, who has personally raised hundreds of cubs over the course of her 40+ year career, says that many of the cubs CCF has recovered during these missions are much smaller in size than they should be for their ages. She refers to them as 'miniature cheetahs.'

The scenario that CCF sees is one that is similar to what CCF encountered in Namibia 30 years ago, with goat farmers eliminating cheetahs as competition. Only instead of shooting cheetahs or trapping and removing them from the landscape, Somaliland farmers are turning their cheetah cubs into pets and running mother cheetahs off their land. The result is the same – a devastating blow to the species in its fight to survive. Cheetah numbers are already on the decline, and human interference is the main reason.

MoERD and CCF have assembled a joint Education & Community Outreach team to devise a follow-up strategy for the communities where the 2020 rescue missions took place. The plans include working with MoERD's Regional Coordinators, and the regional elders and regional mayors of Awdal, Sool and Sanaag. CCF developed a livestock/predator survey and flyer, and CCF is exploring creative concepts to deliver information to the rural audiences, many of whom are illiterate. These include using drama, poetry and social media videos as part of a campaign.

Somaliland Resident Cheetah Health

Survival and Mortality

The 38 cubs arriving at the CCF Safe House in Hargeisa during 2020 were from one week to eight months of age. All but three survived through the end of 2020. The first death was a six-month-old female cub, Vicki, who died three months from her confiscation date due to gastrointestinal obstruction. The second was a four-month-old male cub, Vader, who died three days after confiscation due to poor health condition on arrival. Vader was severely dehydrated, infected with gastrointestinal parasites, fleas and ticks. He also suffered from wounds that had

been neglected as revealed by the presence of maggots. While given emergency treatment by the CCF staff including fluids and cleaning of wounds, he, unfortunately, did not survive. Such a situation, in which trafficked cubs arrive in conditions beyond saving, is common and was the cause of death for 10 out of 22 cubs that died in 2019 at the CCF facility. The third death was of a yet-to-be-named cub arriving in the last confiscation, that of October 2020. One of 10 cubs arriving at the facility that day, the 7-week old cub presented with diarrhoea and vomiting upon arrival and was the weakest of the lot. He died within 10 days of the arrival of an unknown cause (post mortem was inconclusive).

Veterinary Medicine and Research: The CCF FIP Project

The COVID-19 pandemic brought Coronaviruses to the forefront of international concern. Interestingly, veterinary doctors have been battling a different Coronavirus affecting cats for decades, with the virus known since the 1980s to affect cheetahs.

In 2019, a case of FIP was suspected among the rescued cheetahs at the CCF facility in Somaliland. The initial suspicion of FIP was based on clinical signs. The suspicion was further supported by post-mortem findings, and could later be confirmed by RT-PCR tests on peritoneal fluid. By the end of 2019, one additional individual was confirmed with FIP post-mortem, based on pathological findings and immunohistochemistry. An additional eight cheetahs were suspected to have died at CCF Safe House 1 due to FIP based on clinical symptoms in 2019 and early 2020. Exposure to FCoV was confirmed in 31 out of 43 individuals housed at the CCF facility based on serological samples in 2019. In March 2020, 19 out of 27 cheetahs tested had detectable FCoV in faeces using RT PCR.

Cats typically become infected with FCoV through the faecal-oral route, with approximately 33% of infected cats shedding the virus in their faeces. In most cases, shedding ceases and immunity is lost, rendering the cat susceptible to recurrent infections. Most stop shedding the virus after a few months, yet, up to 13% of shedders become lifelong carriers, continuously infecting the environment. The presence of the virus in the CCF Safe House cheetahs' faeces, therefore necessitated the adoption of stronger decontamination and quarantine practices at the facility.

Beyond CCF's immediate response of quarantining newcomers, isolating shedders, and adopting decontamination protocols, CCF decided to undertake a new project focusing on the latest diagnosis, prevention, and treatment protocols for FIP. Until recently, FIP was considered incurable, however, two anti-viral medications have recently been developed that show promise in curing this disease. In the first half of 2020, CCF set out to investigate possible applications in cheetahs.

Led by Dr. Laurie Marker and Drs. Yashphe and Schmidt-Kuntzel, the CCF FIP Project team include Dr. Karina Flores Pineda, Dr. Monique Kuypers, Dr. Liesbeth Ellinger, and two new volunteers: Dr. Julie Hermansen and Aurora Lambrecht, co-founder FIP Advisory and Care Group and Founder of Project Fight FIP (South Africa) and FIP Advisory and Care Group.

Through this project, the team reviewed current literature as well as interviewed experts from UC Davis, University of Tennessee, University of Kansas, University of Glasgow (UK), Bristol University (UK), Cornell University, and the WINN Foundation. In addition, the team connected

and built relationships with private companies working on therapeutics and diagnostics of interest: Anivive Lifesciences - a veterinary pharmaceutical company developing the novel anti-viral GC-376; Gilead Sciences Inc. - a biopharmaceutical company developing a second novel anti-viral, GS-445124; and Biogal Galed Labs - a veterinary diagnostics company which later donated point-of-care antibody testing kits to the CCF Safe House.

Biogal's donated ImmunoComb kits used to screen for Feline Enteric Corona Virus (FeCV) all arriving cubs and existing ones in case of disease

With the understanding of viral disease constantly evolving, these contacts allowed the CCF team to learn of current thinking on FIP and of new treatment options available, including their benefits and risks.

The FIP project resulted in new FIP diagnostic algorithms for CCF as well as protocols for environmental decontamination and viral containment. On the therapeutic side, CCF managed to initially put the Safe House cheetahs on a trial with one of the new antiviral drugs. Unfortunately, this trial was postponed due to appropriation of the drug for human use to treat COVID-19. One of the drugs was later abandoned by pharmaceutical companies after realizing it was not a good fit for COVID-19, but a final decision regarding its use for the CCF cheetahs is still pending. On a more positive note, connections with Cornell University researcher Dr. Gary Whittaker revealed potential benefits of a commonly used antibiotic, Doxycycline, for FIP patients, and this antibiotic was included in protocols moving forward in cases of potential FIP. The diagnosis of FIP, especially the dry form, is very difficult as the disease mimics many others.

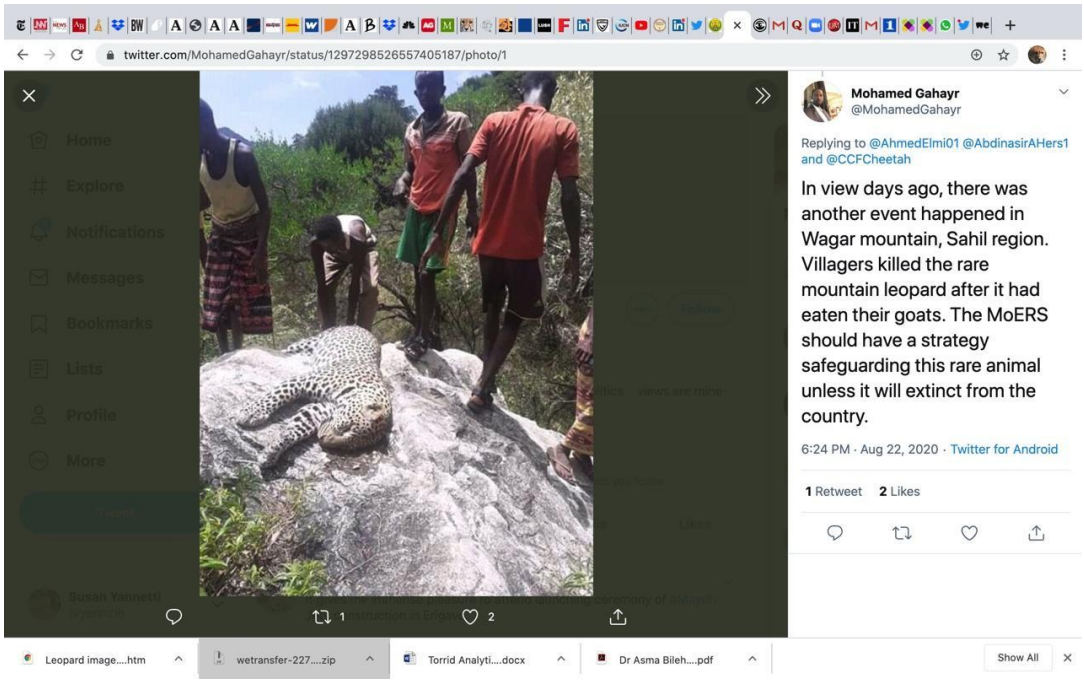
CCF continues to explore other treatment opportunities and is focusing on quarantine of new cubs and reducing virus shedding by existing, infected ones to reduce the likelihood of FIP disease occurring in the facility.

Human-wildlife conflict

CCF documented two instances of human-wildlife conflict in Somaliland during 2020.

During the July 18-19 cheetah rescue mission in Xariirad, the MoERD-CCF Rescue Team spotted a dead cheetah on the side of the road on the way to rescue the cubs. It had been shot. CCF recovered the dead body with Torrid field teams bringing it to Hargeisa for examination, so CCF could determine if the cheetah was related to the five cubs. However, CCF SL veterinarians examined the body and determined this cheetah was a male and likely not related to the five cubs. Torrid Analytics' field team interviewed the man who shot the animal and learned the reason was he despised cheetahs.

On July 27, community members in the hills about Shiik on Wagar Mountain killed a leopard accused of preying on the community's goats. The community members reportedly baited the leopard with poisoned meat, waited until it was disabled, then shot it to death. The incident was reported widely in Somaliland media because it was posted on Facebook.



Developing capacity in Somaliland veterinarians

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 learn more about the skills and training of local veterinarians in 2020. Supported by Dr. Flores Pinedas, Dr. Marker developed questionnaires to share with two Somaliland veterinary organizations, the Somaliland Veterinarians Association (SOVA) and the Somaliland Women Veterinarians Association (SOWVET).

CCF received answers from veterinarians working both in Hargeisa and in rural areas, gaining insights on their level of veterinary expertise and access to the internet and computers. Learning of the high penetration of the internet in Somaliland, even in rural areas, CCF began preparing a remote outreach program which can be implemented both during and after the pandemic to broaden the skills of the veterinarians, most of whom are livestock vets and know nothing or very little about wildlife.

CCF Somaliland Education

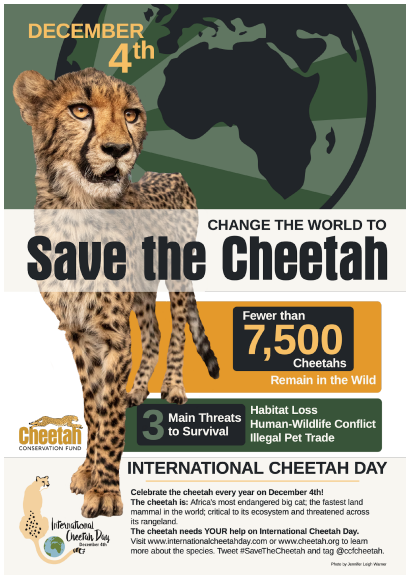
With the hiring of Kaita Ivan to head the CCF Somaliland Education Team in Hargeisa in October, and the addition of Jessica Sorrentino from San Diego, a CCF volunteer and cheetah keeper who spent time in Hargeisa caring for cubs in 2018, the efforts to develop a wildlife curriculum for Somaliland schools is now underway. So far the team produced a survey and a leave-behind document for middle-school students, and in November, the team gave its first presentations at Pharo Middle School and the British Academy in Hargeisa.

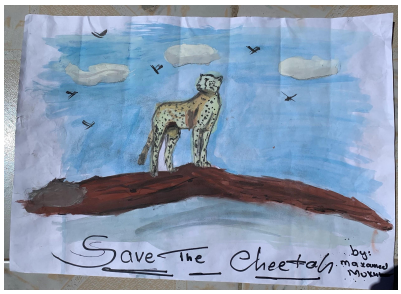
The team also produced a survey and a leave-behind document for farmers and rural community members to let them know taking wildlife is illegal, and trading cubs has serious consequences if

you are caught. The team has plans to deploy a unit to tour the rural areas of Somaliland to raise awareness for wildlife issues. The materials will be used during this tour in early 2021.

International Cheetah Day

On December 4, CCF held its second annual International Cheetah Day Celebration at the Hargeysa Cultural Centre. CCF UK sponsored the posters and the facilities fees for the event, which featured an original play about wildlife trafficking written and acted by CCF Somaliland staff and volunteers and a cheetah art contest. Some of the winning entries are displayed at the new CCF Staff House in Somaliland.





Major International Media Stories

NBC News travelled to Somaliland in February to cover the opening of Safe House 2. The story they shot in Hargeisa about the cheetah project aired on the Today Show and NBC News on July 30.

https://www.today.com/video/meet-the-woman-fighting-to-save-endangered-cheetahs-from-extinction-88898117713

https://www.nbcnews.com/news/world/demand-cheetahs-pets-leading-their-extinction-n1235462

CCF cooperated with a photographer from National Geographic, Nichole Sobeki, who visited the project in August to photograph portraits of the cubs. She returned in November with writer/editor Rachel Bale to work on their story, which will run in the pages of National Geographic sometime in mid-2021.

On October 7, Mongabay published an in-depth story and made a video to communicate CCF's experience countering the trade of cheetahs:

https://news.mongabay.com/2020/10/in-the-horn-of-africa-conflict-and-illegal-trade-create-a-cheetah-hell/

In early November, a journalist from France 24 came to Hargeisa to cover the trial of the eight cheetah traffickers accused in the September and October busts by MoERD. The story will air in early 2021.

Education Programs

Future Conservationists of Africa

During this reporting period, CCF's Education department engaged 10 532 Namibian students from primary and secondary school levels, as well as 221 teachers in both its outreach and centre-based programmes. This saw a reduction of 32% students and 8% teachers reached compared to 15 526 students and 245 teachers reached in 2019. The reduction in the number of students and teachers engaged was due to travel and gathering restrictions following the COVID-19 pandemic.

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 January 2020. The Education Department visited a total of 65 schools in six regions, reaching a total of 10 426 students and 189 teachers (Table 40, Figure 67).

Table 40: Namibian schools reached with CCF's school outreach program, January - December 2020.

Date	Namibian School Outreach Groups	Students	Adults	Total
27 Jan 20	Vooruit Primary School	120	5	125
28 Jan 20	Spes Bona Primary School	130	3	133
30 Jan 20	Spes Bona Primary School	700	4	704
30 Jan 20	Karundu Secondary School	800	10	810
31 Jan 20	Orwetoveni Primary School	130	2	132
31 Jan 20	Tsaraxa-Aibes Primary School	129	4	133
31 Jan 20	Rogate Primary School	186	2	188
31 Jan 20	Paresis Secondary School	200	1	201
03 Feb 20	Jack Francis Primary School	220	7	227
03 Feb 20	Otjikondo Primary School	34	1	35
04 Feb 20	Outjo Secondary School	220	1	221
04 Feb 20	Maarssen Primary School	170	4	174
04 Feb 20	Etoshapoort Junior Secondary School	276	6	282
04 Feb 20	Outjo Primary School	115	1	116

05 Feb 20	Ubasen Primary School	217	5	222
05 Feb 20	Deutsche Privat schule	17	1	18
05 Feb 20	Paheye Primary school	97	2	99
06 Feb 20	Omaruru Christelik Afrikaans. P. S	20	2	22
06 Feb 20	Omaruru Primary School	146	3	149
06 Feb 20	S I Gobs Secondary School	135	1	136
07 Feb 20	G.K.Wahl Combined School	94	3	97
07 Feb 20	Kalkfeld Primary School	78	1	79
12 Feb 20	Kombat Combined School	285	5	290
12 Feb 20	Khorab Secondary School	663	10	673
13 Feb 20	Deutsche Private Schule Otavi	10	3	13
13 Feb 20	Shalom Primary School	75	2	77
13 Feb 20	Otavi Primary School	234	5	239
24 Feb 20	Nomtsoub Primary School	820	12	832
24 Feb 20	Opawa Senior Secondary School	203	2	205
24 Feb 20	St. Francis Primary School	190	5	195
24 Feb 20	Francis Galton Primary School	320	5	325
25 Feb 20	Etosha Secondary School	175	0	175
25 Feb 20	Ondundu Combined School	99	3	102
26 Feb 20	Tsumeb Gymnasium Private School	189	4	193
26 Feb 20	Ludwigshafen Primary School	39	1	40
26 Feb 20	Otjikoto Seniro Secondary School	240	1	241
05 Mar 20	Hippo Primary School	73	3	76
05 Mar 20	Drimiopsis Primary School	472	10	482
10 Mar 20	Ernst Meyer Primary School	92	4	96
15 – 16 Oct 20	Karundu Secondary School	112	2	114
15 – 16 Oct 20	Monica Geingos Secondary School	109	1	110
19 Oct 20	Osire Secondary School	17	3	20
19 – 20 Oct 20	Okakarara Secondary School	98	1	99
20 Oct 20	Waterberg Secondary School	77	1	78
21 Oct 20	S.I. Gobs Secondary School	160	2	162
22 Oct 20	Okahandja Secondary School	123	4	127
22 – 23 Oct 20	J.G. van der Wath Secondary School	210	5	215
26 Oct 20	Moria Private School	17	1	18
26 Oct 20	Outjo Secondary School	0	1	1
27 Oct 20	Swakopmund Secondary School	78	4	82

27 – 28 Oct 20	Namib High School	138	1	139
28 Oct 20	Kuisebmond Secondary School	23	3	26
28 Oct 20	International School of Walvis Bay	0	1	1
02 Nov 20	Jan Mohr Secondary School	217	1	218
02 Nov 20	Hochland High School	0	1	1
2 – 3 Nov 20	Hage Geingob High School	160	1	161
03 Nov 20	Windhoek International School	32	2	34
04 Nov 20	Academia Secondary School	0	2	2
05 Nov 20	Wennie Du Plessis Secondary School	37	1	38
05 Nov 20	Johannes Dohren Roman Catholic High School	84	1	85
06 Nov 20	Epako High School	148	1	149
06 Nov 20	Gobabis Gymnasium	17	1	18
10 Nov 20	Tsumeb Gymnasium	0	1	1
10 Nov 20	Tsumeb Senior Secondary School	28	1	29
10 Nov 20	Otjikoto Senior Secondary School	112	1	113
12 Nov 20	Edugate Academy	16	1	17
Total Namibian School Outreach Groups:		10426	189	10615

Figure 67: Dr. Laurie Marker and the CCF's Education Team with some of the students and teachers who participated in the school outreach programme in the first half of 2020.

During 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.

Centre-based Programme

Organised education programmes at CCF during this reporting period involved three Namibian groups totalling 76 students and eight teachers. Of these, two groups consisting of 33 students and four teachers participated in overnight programmes at CCF's Camp Lightfoot (Table 41).

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

Namibian Overnight School Groups							
Date In	**Date Out**	**School**		**Students**	**Adults**	**Total**	
06 Mar 20	08 Mar 20	Monica Geingos Secondary School		15	2	**17**	
13 Mar 20	15 Mar 20	Otjiwarongo Secondary School		18	2	**20**	
		Total Namibian Overnight School Groups:		**33**	**4**	**37**	
Namibian Day Visit School Groups							
Date		**School**		Students	Adults	Total	
08 Mar 20	08 Mar 20	Hochland High School		43	4	**47**	
		Total Day Visit:		**43**	**4**	**47**	
		Total Namibian School Groups:		**76**	**8**	**84**	

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. CCF created an online learning account on a platform called Edmodo. With this platform, CCF educators were able to engage and share lessons with learners and teachers. By 30 Jun 2020, CCF had engaged 30 learners and 24 teachers on Edmodo.

In October, 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, 2 013 students and 45 teachers were reached (see Table 40 above). As of 31 December 2020, 357 students were actively participating in this project which will end in January 2021.

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 68). 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 68: Kiri meeting some of the young students during an outreach school visit.

Camp Lightfoot

CCF continued to host both local and international groups 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.

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 MET.

Two Bachelor's Degree (in Agriculture) students from the NUST conducted and completed their projects at CCF. 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. From January to June 2020, due to the COVID19 pandemic, CCF cancelled all groups that were scheduled to visit during that period. CCF welcomed its first overnight university group from the University of Namibia – Katima Mulilo Campus on 22 September, as part of the university's Department of Wildlife and Ecotourism annual visit to CCF. The group was made up of four students and three lecturers/technicians on 22 September (Table 42). The group stayed for four nights.

Table 42: Namibian higher-education groups participating in education programmes at CCF, January to December 2020.

Namibian Overnight Higher Education Groups					
Date In	**Date Out**	**School**	**Students**	**Adults**	**Total**
22 Sept 20	26 Sept 20	UNAM – Katima Mulilo Campus	4	3	7
Total Namibian Overnight Higher Education Groups:			**4**	**3**	**7**
Total Namibian Higher Education Groups:			**4**	**3**	**7**

Other Collaboration with Educational Institutions

During this reporting period, CCF Centre did not host any international group. All bookings were cancelled due to the COVID-19 pandemic. Visiting groups usually participate in educational programmes, including lectures on HWC, cheetah runs, and tours of CCF's Centre.

Working Guests and International Interns

Working Guests are the backbone of CCF and vital in daily operations. Although CCF did not host any Working Guests, 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.

In addition to 24 Namibian student interns, CCF welcomed eight international student interns from the USA, South Africa, Canada and Germany. The interns were trained in veterinary medicine, zoology, ecology, wildlife science, animal science, environmental studies, international development, and genetics. One of these students, Morgan Maly, collaborated with the Genetics Department on a project on microbiome found in the gastrointestinal tract of captive cheetah at the Smithsonian Zoo and those in wild born cheetah.

Due to the COVID-19 pandemic, other working guests and interns who were scheduled to arrive during the first half of the year cancelled their trips.

Future Farmers of Africa

During this reporting period, CCF engaged a total of 544 farmers, community members, community game guards and rangers in the Future Farmers of Africa (FCA) from the Okakarara town, Otjituuo and Okamatapati conservancies in the Okakarara District, as well as farmers and community members from the Queen Sofia Resettlement Farm in the Outjo District.

Conferences and Other Activities

Namibia Environmental Education Network (NEEN)

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

Earth Day

CCF core staff celebrated Earth Day on 22 April 2020, with brief messages about what this day means to them. Check these messages out on this link
https://www.youtube.com/watch?v=g5KybqL3zkU

International Cheetah Day

After the easing of gathering restrictions, CCF staff and interns were able to celebrate International Cheetah Day with residents of Otjiwarongo on 4 December 2020. CCF engaged over 150 members of the public through fun educational activities such as quizzes, face-painting, and colouring-in.

Other Conferences, Workshops & etc.

Teacher Training Workshop (20 – 24 January 2020)

Annetjie attended and participated in a workshop organised by a consortium of EduVentures and the Ministry of Environment and Tourism (MET) at the Okatjikona Environmental Education Centre, Waterberg Plateau Park. Annetjie gave the attending teachers, education and culture officers from the Otjozondjupa Region a workshop on how to use CCF's Teacher's Resource Guide. The overall workshop aimed to expose participants to ways they can deliver lessons on environmental issues, and how to link ecosystem protection and sustainable human livelihoods.

Pathways Conference (16 – 19 February 2020)

Annetjie Siyaya attended and participated in the Pathways Kenya Conference, held at Brackenhurst Conference and Training Center in Limuru, Kenya. The four day conference was themed "Open the door to diverse voices", and started with a three day Woman Leadership Training, a few days prior to the actual conference. Other training sessions included; Human Dimensions Capacity Building, Communicating for Impact, and Demystifying Monitoring and Evaluating for Conservation, all of which Annetjie attended and participated in (Figure 70).

Annetjie also gave a talk on a study that focused on livestock loss to predators and other factors in the communal conservancies of the Okakarara District, in which she highlighted CCF's LSGD Programme as an effective mitigation that allows for farmers to co-exist with cheetah and other predators. Mary Waykstra of Action for Cheetah in Kenya (ACK) and her staff were also part of this session, in which they shared their HWC mitigation tool-kit.

Figure 70: Annetjie Siyaya along with some of the Pathways Kenya 2020 Conference attendees and participants.

Foodservice Training (25 – 26 May 2020)

University of Namibia's Dr. Hemberger visited CCF and gave a training session on hygiene and food safety. The training also served as a refresher for staff who attended last years' training. Dr. Hemberger talked about the nine Pre-requisite Procedures (PRPs) in dairy production, from when goats are milked to when the final product is made and handled. The food safety training also highlighted the Hazard – Analysis – Critical – Control – Point (HACCP) model. Dr. Marker and Dr. Hemberger, along with staff and interns who attended the training are shown in Figure 71.

Figure 71: Dr. Marker and Dr. Hemberger, along with staff and interns who attended the Foodservice Training.

Farmer Training (27 May 2020)

CCF's David Shipingana and Matti Ngikembua conducted induction training for CCF's livestock herders (Figure 72). The herders were introduced to CCF's goals and programs. The training covered the following;

- Importance of a herder
- Roles and responsibilities of a herder
- Methods to minimise risk and livestock loss
- Health and safety, and Ignatius Davids led everyone through the Kill ID activity, the practical activity that CCF uses to train farmers on how to identify which predator is responsible for a livestock kill.

Figure 72: Matti Ngikembua and David Shipingana giving a lecture during the Farmer Training.

NaDEET ESD Resource Design Workshop (27 May 2020)

Annetjie Siyaya and Ignatius Davids were invited and attended a workshop hosted by the Namibia Desert Environmental Education Trust (NaDEET), to provide input on how to design Education for Sustainable Development (ESD) resources. The one-day workshop held at NaDEET's Swakopmund Centre included environmental educators from seven different non-governmental organisations (including CCF). Annetjie and Ignatius shared their experiences on CCF's Future Conservationist of Africa programme.

Namibian Facilities and Staff

Existing Structural Projects and New Projects

This reporting period saw continued investment in the CCF Namibia infrastructure. Improvements include:

- Concluded purchase of Farm Otjenga to regularize our western border.
- Began work on a multi-purpose administration annexe.
- Installation of another 25KW solar system, for a total of 150 KW.
- Completion of a multipurpose shed with classroom and laboratories at the Biomass Technology Demonstration Center.
- Completion of four cabins and new meal house at the Lightfoot Camp.
- Major investments in road maintenance and farm equipment.
- On-going staff training included discussions of general worker safety and chemical use, and another first aid course.
- Road and fence maintenance continued throughout the farms.

Automotive

Vehicles and tyre repair continue to be an expensive and time-consuming problem at CCF. Table 43 lists CCF's vehicles and their condition at the end of December 2020.

Table 43: CCF's vehicle fleet and each vehicle's status at the end of December 2020.

Vehicle	Status
Nissan4x4(4349)	Broken
Old Toyota4x4(dogs)	Running
Toyota4x4(feeding)	Running
Quantum Old(2131)	Running
Quantum New(3878)	Broken
Green safari cruiser	Running
GWM	Running
Toyota 4x4 Farm	Running
Nissan N5947OT	Running
Nissan N4456OT	Running

Nissan N7025OT	Running
Nissan N7032OT	Running
Pajero Bruce N1198OT	Broken
Toyota Laurie	Broken
1997 Tracking Toyota	Running
1987 Toyota ecology 1	Running
1987 Toyota ecology 2	Running
Big trekker	Running
New small trekker	Running
Ford game view	Running
Bynadaar trekker	Running
New Cruiser, Game view	Running
New Cruiser double cab	Running
New Cruiser (Farm Manager)	Running
New Toyota (Laurie and Bruce)	Running
New Cruiser (APU)	Running
Old farm Cruiser (Estate Manager)	Running
Old white Toyota (Petrol)	Running
New dog Toyota	Running

Staffing

CCF Namibia Staff

As of 31 December 2020, CCF Namibia employs 47 technical staff as follows. Additionally, CCF employs five cooks, 39 farmhands and domestic workers, and 30 Bushblok project workers.

- Laurie Marker, DPhil – Founder and CEO
- Laura Allen – Head Carnivore Keeper
- Anne-Marie Bekker – Business Manager
- Vincent Bellwoar – Facility Engineer
- Bruce Brewer, PhD - General Manager
- Johan Britz – Farms Manager
- Tanya Britz - CCF Bush Accountant
- Ignatius Davids – Education and Tourism Officer

- Karin Falk – CCF Accountant
- Raul Carlos – Executive Chef
- Tim Hofmann – Scat Detection Dogs
- Job Iyambo – Tour Guide & Cook
- Bianca Jacobs – Tourism Manager
- Ruan Jacobs – Tourism Assistant
- Becky Johnston – Studbook Keeper and Cheetah keeper
- Himee Kuhango – Tour Guide & Tourism Assistant
- Nadja le Roux - Community Coordinator
- 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
- Bessie Simon – Assistant Farm Manager
- Max Simon – Mechanic
- Heike Stackmann - Volunteer Co-ordinator and Public Relations Officer
- Carolina Torres - Ecologist
- Hanlie Visser – Hospitality Manager
- Paul Visser – Estate Manager
- Eli Walker – Curator
- Annetjie Siyaya – Research and Education Manager
- Elizabeth Pius – Research and Education Technician
- Stella Emvula – Community Programs Assistant
- Monika Nanghama – Assistant Geneticist
- Dolly Hamundjebo– Tourism Assistant
- Johan Gibson - Assistant Farm Manager
- Sara Gotlieb – Veterinarian
- Paul Set – Veterinarian

- Calum O'Flaherty – Livestock Guarding Dog Program Manager
- Veisy Kasaona - Community Programs Assistant
- Tayla Green - Guest Experience Coordinator
- Vistoria Tushemwe – Veterinary Technician
- Francois Jenkins – Laboratory Technician
- David Shipingana - Forestry and Safety Officer
- Hanlie Winterbach – Carnivore Research
- Mike Mikael– Small Stock Assistant
- Emma Reasoner – Ecology Assistant

Fundraising and International Activities

Namibia

Board of Governance

CCF Namibia underwent its annual financial audit in March 2020 by the Namibian auditing firm of Grant Thornton and Neuhaus. CCF Namibia, a section 21 registered not-for-profit, held its Annual General Meeting on 23 July 2020. A regular Board meeting followed immediately.

Fundraising

Annual Gala Dinner

The Annual Gala Dinner was cancelled following the nation-wide lockdown imposed due to the COVID-19 pandemic.

Grants

There were no significant locally-awarded grants during 2020.

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 four meetings via teleconference: 21 February, 6 June, 11 September and 19 December. Seven resolutions were passed during these meetings. Four were quarterly resolutions to recognise restricted and designated funds. One resolution was passed to accept the 2019 audited financial statement, one to establish a gift acceptance policy and one to amend the 401K.

In March of 2020, Covid-19 halted most travel and in person business practices. The economy was uncertain, and Dr. Marker's spring tour was cancelled. The Executive Committee (EXCO) met periodically to review CCF's financial position and approved a revised budget. The EXCO also approved CCF to apply for the Payroll Protection Plan loan which was part of the Coronavirus Cares Act. The loan, if staff is maintained through June of 2019 can be used for

payroll, rent and utility expenses. If staff is maintained and at least 80% of the funds are used for payroll, the loan will be forgiven.

Operations

CCF continues to rent an office at 200 Daingerfield Rd., Suite 200, Alexandria, VA 22314. Covid-19 has halted most in-office work. All employees have been working remotely since mid-March and only one staff member has been coming to the office at a time on a very limited basis. Despite the challenges of Covid-19 and restricted travel and personal interactions, the 2020 US income budget exceeded all expectations.

Beth Leonard, a professional analyst volunteered to analyze our donor data in efforts to map out a comprehensive development plan with measurable benchmarks and deliverables for all staff in 2020. Four opportunities were presented as areas to develop:

- Expand Digital and Social Media Strategy
- Extend Major Giving Focus
- Build Additional Regions
- Establish Corporate Giving Program

During the early part of 2020, we have been keenly focused on our Major Giving strategy and building Additional regions. We have more clearly defined each development manager's geographical area of focus, and chapters have been more active and better supported. We developed a corporate deck for the fall tour and look forward to developing this more fully with our international affiliates to develop corporate sponsorship with a global reach.

CCF continues to use Blackbaud Raisers Edge NXT and Research Point. We are currently reviewing software requirements and researching the best ROI for a designated grant that was gifted for software. Needs include; a volunteer management platform, virtual events platform, expansion of Blackbaud offerings and AI development software. An additional grant was received to strategically evaluate our software needs, so an outside consultant will begin work on the analysis in January 2021 before additional software is purchased.

As of 31 December 2020, no new staff had been hired and all staff had been retained. Brian Badger moved from a contract position to a full time as a Broadcast Media Specialist. He will work with Heather Ravenscroft to expand our digital reach through video.

CCF USA Staff

- Justin Birkhoff – Donor Relations Coordinator
- Brian Badger – Director of Conservation and Outreach
- Beth Fellenstein - Director of Operations and Finance
- Susan Kaufmann - Constituent Relationship Manager
- Paula Martin – Executive and Development Assistant

- Jj Muehlhausen – Development Manager (Grants and Designated Giving)
- Heather Ravenscroft - Chapter Coordinator
- Dionne Stein – Development Manager (Events and Special Projects)

Finance

CCF's annual 2019 audit was completed in March by GRF CPAs and Advisors. The investment committee is monitoring the investment portfolio closely in light of the current economic uncertainty.

Fundraising

CCF USA set the goal of raising US$3,625,000 for 2020 including revenue from all sources. The total revenue raised towards reaching that goal for Year-End 2020 was US$1,307,660 (unaudited - Table 44).

Table 44: Fundraising goals versus actual funds (USD) raised in 2020.

Campaign	2020 Goal	Actual	Difference
Spring Tour	$250,000	$53,920	-$196,080
Fall Tour	$400,000	$11,500	-$388,500
Designated	$425,000	$41,657	-$383,343
Volunteer Initiatives	$215,000		-$215,000
Volunteer Fees to Namibia	$40,000	$9,017	-$30,983
Brian/Zoo and Community Talks	$70,000	$600	-$69,400
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	$2,161	-$839
Chapter Events (Other)	$25,000	$2,161	-$22,839
NY Chapter	$25,000	$1,243	-$23,757
Nor Cal Chapter	$25,000		-$25,000
Cheetah Strides/Newsletter	$25,000	$25,405	$405
Notes from the Field	$5,000		-$5,000

Chewbaaka	$475,000	$183,625	-$291,375
Year End	$700,000	$87,500	-$612,500
White Mail	$110,000	$160,937	$50,937
Sponsorships	$120,000	$35,712	-$84,288
Book Sales (not in tour)	$10,000	$1,000	-$9,000
Recurring	$120,000	$58,509	$178,509
Interest	$5,000		-$5,000
Fall Campaign	$60,000		$60,000
Spring Campaign	$80,000	$253,747	$173,747
Bequest		$377,359	$377,359
Founders	$300,000		-$300,000
Total			**-$1,848,947**
Additional Campaigns			
Gift in Kinds		$933	$933
ILWLT			
Last Year Campaigns counted in 2019			

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 15,674 USA subscribers was sent on 23 March 2020 that included various levels of the high, medium, low and non-donors segmentations. Two versions of the Spring Campaign letter were sent and targeted to annual and recurring donors. The campaign raised US$253,747.

Chewbaaka Memorial Challenge

An initial mailing to 15,672 USA subscribers was sent on 1 July 2020 that included high, medium, low and non-donors. A second effort was mailed to 3,814 USA subscribers and sent on 9 August 2020. The campaign raised US$509,190.

Fall Appeal

An initial mailing to 15,647 USA subscribers was sent on 4 October 2020 that included high, medium, low and non-donors. The campaign raised US$62,24.

Year-End Challenge

An initial mailing to 12,500 USA subscribers was sent on 14 November 2020 that included high, medium, low and non-donors. A second effort was mailed to 4,723 USA subscribers on 15 December 2020 that included high, medium, low and non-donors. The campaign raised $1,001,432.

Year-End Gifts

The total donation amounts received from 1 January 2020 and 31 December 2020 was US$3,800,904. This revenue consisted of US$580,443 received through online donations, US$3,189,107 was received by in-house mail, wires, and third-party donations. US$31,354 of the total amount raised was received from in-kind donations (Table 45).

Table 45: Number of donors giving year-end in each stage in 2019 versus 2020.

Donation Amount in US Dollars	Number of Donors Year-End 2019	Number of Donors Year-End 2020
1 - 49	2508	1533
50 - 99	1014	943
100 - 249	1240	1156
250 - 499	490	443
500 - 999	304	297
1,000 - 2,499	270	263
2,500 - 4,999	73	55
5,000 - 9,999	74	49
10,000 - 19,999	41	42
20,000 - 49,999	25	17
50,000 - 74,999	4	2

75,000 - 99,999	1	1
100,000 and above	3	5

Cheetah Sponsorships

Total revenue from cheetah sponsorships in the USA for 2020 Year-End was US$94,252. 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 2020. 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 2020. Issue no. 19 was mailed on 1 March 2020 to 11,487 people in the USA, generating $26,954. Issue no. 20 was mailed on 14 September 2020 to 14,606 people in the USA, generating $27,033. Both generating $53,987 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.

Chapter Events

Complementing Dr. Marker's visits to the US, regional chapters have been encouraged to support events. This includes events and speaking tours under Brian Badger. These are events that support CCF in communities. In 2020 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 2020 totalled $9,768, which includes Brian Badger speaking tours. Note that numbers are not as high due to the country being on lockdown due to the COVID-19 pandemic. Most of the Chapter Events and speaking engagements were conducted through video webinars.

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 Programing at CCF, Human-Wildlife Conflict Solutions and Research Program at CCF.

Management of Constituent Information

CCF continues to track more information on each constituent record in our donor database system, Raiser's Edge. All email blasts, mailing campaigns, and phone calling campaigns are tracked through Raiser's Edge. Each individual record shows the communications sent and the responses received from that constituent. All web donations, events registration and Email marketing are processed and managed now through Blackbaud's Online Express (OLX) that fully integrates with the Raiser's Edge. There are 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

Designated Giving/Grants/Awards

CCF has been faced with a shift in grants and designated gifts in 2020 due to the COVID-19 global pandemic that is affecting the economy in an adverse manner. Many of the funding organizations that we generally apply for grants and designated gifts have suspended their grant programs at this time.

Other granting foundations have redirected their giving to accommodate needs related to the pandemic. The pandemic is also affecting the completion of grant projects that were funded in 2019. Several projects are on hold due to restrictions in place because of COVID-19 including travel. These delays put a strain on the possibility of getting additional funding until the current projects are completed.

The bright side is that CCF is fortunate that we have many loyal donors who have agreed to provide additional gifts for general operating and capital expenses. We appreciate this flexibility and are pleased that we were able to exceed our projected revenue (Table 46). CCF donor's generosity along with the secured designated giving and grants provided resources even during lockdown for the research, education and conservation programs that are essential to save the cheetah from extinction.

Throughout the year, CCF grant writers continued to submit several proposals and strategic asks to increase support for CCF's expanding programs. The strategic asks resulted in a container full of equipment and supplies that were shipped to the Namibia Research and Education Centre. Proposals were well received and most successfully funded increasing income for CCF programs by close to $400,000 (excludes large capital improvements).

CCF is also happy to report that the anonymous donor that funded capital improvements in 2019 approved a new proposal and increased their giving for another round to expand development for both our Namibia and Somaliland Research Centers in 2020-2021.

As 2020 ends with a vaccine available for COVID-19 there is hope that restrictions will lessen in 2021, which will open new funding opportunities. We appreciate the generosity of everyone who supported CCF during this global pandemic and look forward to your continued support in 2021.

Table 46: Awarded Strategic Ask/Designated Giving and Awarded Grants/Proposals 2020.

Recipient	Donor	Designation/Notes	Value	Date Notified/Received
CCF USA	Individual Donor	Endowment	$3,000	2/3/2020
CCF USA	Individual Donor	Research and development of programs to re-wild the cheetahs	$2,250	4/14/2020
CCF USA	FHREE	CCF General Operating Expenses	$10,000	4/28/2020
CCF USA	Individual Donor	Naming Rights for a Rondavel	$15,000	4/28/2020
CCF NA	Wilhelma Zoo	Livestock Guarding Dog Expansion Program	$23,000	10/8/2020
CCF USA	Individual Donor	Namibian Internship	$3,000	9/22/2020
CCF USA	Individual Donor	Somaliland IWT Program	$3,000	9/15/2020
CCF USA	FHREE	Rabies Prevention Education and Vaccination Program	$5,000	9/3/2020
CCF USA	Individual Donor	Namibian Internship	$3,000	8/31/2020
CCF USA	Individual Donor	Shipping Container	$500	8/5/2020
CCF USA	Individual Donor	BushBlok Project	$5,000	8/7/2020
CCF USA	Family Foundation	Namibian Internship	$2,000	8/3/2020
CCF USA	Individual Donor	Other	$5,110	7/29/2020
CCF USA	Individual Donor	CCF East Project	$4,000	7/11/2020
CCF USA	Anonymous Donor	Capital Improvements		6/23/2020
CCF USA	Individual	Somaliland Project	$15,000	4/28/2020

	Donor			
CCF USA	Lee-Kahn Foundation	Fullpower AI-pod Project	$5,000	3/25/2020
CCF USA	FHREE	General Operating Expenses	$5,000	10/23/2020

Dr. Laurie Marker's Tours

Spring Tour e-blasts

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 2020 was cancelled due to the COVID-19 pandemic and alternatively, CCF held webinars with Dr. Laurie Maker to keep donors updated on CCF projects. There were multiple targeted e-blasts inviting partners to attend these webinars with Dr. Marker. There is no accurate way to identify revenue received as a direct result of those webinars. Alternately, for the Fall Tour 2020, CCF held an all-day 40th Anniversary Celebration Webcast, generating $199,151 in revenue.

Dr. Laurie Marker's Virtual Spring/Fall Tour 2020: Celebrating 30 Years of Cheetah Conservation

Cheetah Conservation Fund celebrated its 30th Anniversary this 2020. We were unable to celebrate this milestone the way we had originally anticipated due to the lockdown of the coronavirus pandemic, so we decided to join everyone with virtual gatherings to celebrate 30 years of CCF with Dr. Laurie Marker from Namibia. Fortunately, we were able to catch up with Dr. Laurie Marker, Founder and Executive Director and Dr. Bruce Brewer via Zoom webinars and to have them both highlight what was happening at the CCF Centre during the spring lockdown.

This year was the first time that Dr. Marker missed travelling through the USA in 15 years to do fundraising for CCF, and since we had already had her 2020 USA Spring Tour in place, CCF decided to continue on with her tour schedule through our new virtual format which proved to be very exciting and informative for our cheetah friends and supporters.

The spring tour kicked off in New York on March 21st with Dr. Marker to be honoured at the Explorers Club Annual Dinner, ECAD, with the President's Award for Conservation (rescheduled for 2021) and ended on June 14th. Within this time period, CCF presented over 20 Zoom webinars in 20 different cities and in four countries as well as three cheetah podcasts in the US, Germany and the UK. Some of the virtual events were set during the dates of our original CCF parties such as Afternoon in Africa in San Diego and Champagne for Cheetahs in San Francisco hosted by CCF Chair Susan Janin. Dr. Marker also hosted a Brown Bag luncheon for the Indianapolis Zoo as well as a 30th Anniversary virtual dinner in Washington, DC hosted by CCF Director Sally Davidson and CCF Trustees. Many of the cities Dr. Marker visited via Zoom

were the following: Tampa, Detroit, Santa Barbara, Los Angeles, New York, Tucson, St. Louis, Dallas, Portland, Denver as well as major cities in the Southeast and Southwest areas. Due to the popularity of the presentations hosted by CCF staff and the assistance of Brian Badger, CCF Director of Conservation and Outreach, we also offered national Zoom webinars on May 13 and May 16 to cover all areas and cheetah supporters that we may have missed during the spring tour.

Besides the USA, Zoom presentations were hosted in Canada, the United Kingdom, and Australia. This was the best way for CCF to touch as many cheetah supporters, friends, board members and children during this major shutdown while fundraising for the endangered cheetah.

CCF's Spring Tour Virtual fundraising and Spring Appeal raised $245,634.13 to support the endangered cheetah.

Dr. Marker's North American fundraising travel tour for Fall 2020 was replaced by CCF's first-ever Virtual Celebration fundraiser in honour of CCF's 30th Anniversary. Dr. Marker participated in the 12- hours, live-stream event, Cheetah 2020 - Focus on the Future, on October 3, 2020, from Namibia with the support of CCF Director of Conservation and Outreach, Brian Badger. Through Brian's expertise, he showcased 30 years of cheetah conservation via Cheetah TV with Dr. Marker's Keynote speech, special guests and numerous video highlights from the Namibian staff.

The special Better Unite platform helped the CCF staff to successfully create a virtual fundraiser filled with Live and Silent Auction events with CCF donors celebrating 30 years of cheetah conservation.

- 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 (Table 47).

Table 47: Event Revenue - Focus on the Future.

Funding Source	Amount
Matching Funds	$45,000
Live Auction	$22,650
Silent Auction	$24,283
Fund A Need	$19,700
Ticket Sales	$14,800
Total Event	$117,539

Corporate Sponsorship	$97,000
Event Funds Raised	$214,539
VIP	$75,821

VIP Events

In addition to CCF's Virtual 30th Anniversary fundraiser, Dr. Marker hosted her VIP Zoomfari guests from Namibia in December with three days of meetings for three hours each day totalling nine Zoomfari meetings. A total of 66 guests attended the three-day VIP Zoomfari increasing donations to $75,821 with the fall tour revenue adding up to $290,360 (Table 48).

Table 48: VIP Meeting Donations for 2020.

Date	Time	Co-hosts	Number of Participants	Amount Raised
12/9/2020	12:00	Co-hosts Dionne Stein and Brian Badger	9	
12/9/2020	1:00	Co-hosts Dionne Stein and Brian Badger	6	
12/9/2020	2:00	Co-hosts Dionne Stein and Brian Badger	6	
Total				**$51,221**
12/12/2020	12:00	Co-hosts Justin Birkhoff and Brian Badger	10	
12/12/2020	1:00	Co-hosts Justin Birkhoff and Brian Badger	6	
12/12/2020	2:00	Co-hosts Justin Birkhoff and Brian Badger	5	
Total				**$15,000**
12/13/2020	12:00	Co-hosts Dionne Stein and Brian Badger	11	
12/13/2020	1:00	Co-hosts Dionne Stein and Brian Badger	8	
12/13/2020	2:00	Co-hosts Dionne Stein and Brian Badger	5	
Total				**$9,600**

Chapter Events

Supplementing Dr. Marker's visits to the US, regional chapters are encouraged to organize events that support CCF in US communities. During this period, CCF Chapters from New York, Denver, and the Southern California and Northern California areas participated in cultivation and fundraising events outside of Dr. Marker's Spring and Fall Tours organized over 34 events including zoo talks, Cheetah Runs, International Cheetah Day celebrations, and participation in Earth Day and other community events.

In 2019 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 during 2019 was $123,655.28, including Brian Badger's Outreach and Education Events.

Aktionsgemeinschaft Artenschutz (AGA) e.V.

Due to the outbreak of COVID-19 early this year, it was not possible for AGA to set up various information booths at fairs and festivals throughout Germany. Venues, fairs and Zoos have mostly been closed for the larger part of the year. It was possible to inform AGA´s work and endangered species at a few Autarkia - Green World Tour exhibitions in August and September, before the second lockdown closed events like these again.

AGA developed a new cooperation with Europe's largest online auction platform called United Charity. AGA has been able to hold the first auctions between June and August. With the help of Katja Brandis, author of the novel "Gepardensommer" (means "cheetah summer") it was possible to raise 4410 EUR for cheetahs and CCF.

As these auctions have shown good success, AGA organized several other auctions for the endangered cheetahs on and around December 4th, the international day of the cheetahs. Several German celebrities (like actor Hannes Jaenicke, author Katja Brandis, and so on) support these auctions with special items to auction off and inform their fans and their community via social media or their homepages. Money raised via these auctions will be donated for cheetahs and CCF as well.

Besides the auctions, AGA organized a charity stream via betterplace.org, an online donation platform, where author Katja Brandis holds a reading session of the novel "Gepardensommer" (means "cheetah summer"). The video of the reading and an additional video from CCF about the feeding of two resident cheetahs at CCF started to be streamed on Dec. 4th with information about how to donate to help cheetahs.

Further AGA developed a new cooperation with an online runner's platform called Runny´s. The platform offers virtual runs for everyone who likes running. They "sell" these runs (like an entry fee) and each runner absolves his run on his own and sends his time and route to Runny´s with the proof of an app. Runny´s offered a virtual run for cheetahs for Dec. 4th. They will donate 2.00 € for each entry to AGA for cheetahs/CCF.

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.

Cheetah Conservation Canada (CCFC)

Cheetah Conservation Fund plans for 2020 had included Laurie visiting Vancouver, Canada in the spring, and sponsored by two Vancouver-based companies. When the pandemic lockdown occurred in mid-March, a Zoom event for Canadians was quickly arranged in April. There were more than 60 people on the call from across Canada, including Clive Johnson, CEO of B2Gold, a major supporter of CCF.

Clive and Laurie met virtually in August and agreed that the company would provide $50K to support CCF's human-wildlife conflict resolution efforts in Hereroland (CCF East). B2Gold was also a platinum sponsor at CCF's first virtual event in early October. Below are other activities CCFC undertook;

- Fundraising efforts yielded support from two wildlife protection foundations in Canada, one of which has supported the cabin built for Lightfoot Camp. We also have a major new donor: that individual covered the purchase of the large lawn mower shipped by container to Namibia this fall.
- Joined efforts with Vanier College (Montreal) so that two students would intern at CCF Namibia, for six week periods. Kéliane and Annie were the first two students to go in January-February 2020.
- Partnered with Nicerr, a social platform for entrepreneurs to deliver two video sessions featuring Laurie meeting with key supporter groups, and two sessions for professional wildlife photographers. These highly interactive sessions were very well received by our donors. 90% of proceeds were donated.
- Partnered with a European-based company, Papercraft World, to create a buildable 3D Cheetah, which was used as a fundraiser in Canada, and the US.

Overall, Canada raised $150,000 (CDN) in support of CCF Namibia.

Cheetah Conservation Fund United Kingdom (CCFUK)

CCF UK grew the value and number of donations in 2020, with a net gain of 18.5% individual donors, 46% increase in subscription payments, and over £5,000 donated from Conservation Circle members. These gains were underpinned by a series of virtual events that were launched from May to November: raising over £12,000

- Run for Cheetahs
- 2.6 Challenge
- Crafty Cheetahs

- Tour de Cheetah and Paws for Claws.

Below are other fundraising and awareness activities CCFUK undertook;

- Volunteers increased from 20 in 2019 to 49 in 2020, some organized into geographically distinct Cheetah Communities, were, along with the SMT, phenomenal in creating and delivering these events. CCF UK also increased members of its Young Ambassadors programme to 9, which will feed into our planned school education project in 2021.
- Increased awareness of the plight of the cheetah and gained more followers across all social media channels, with an increase of 37% on Facebook, 21% on Instagram and 20% on Twitter. Social media has also been instrumental in recruiting new volunteers and participants for the virtual events and supporting donor engagement and growth.
- Won £18,500 in grants from UK Trusts & Foundations, including £6,000 from the Rufford Foundation for genetics research to identify the country source of cubs confiscated from the illegal wildlife trade (IWT) in Somaliland and £5,000 from the Anglo-American Foundation through their "Ambassadors for Good" programme. This funded the development of a virtual classroom that engaged over 2,000 students in conservation and ecology workshops. CCF UK supported the Remembering Cheetahs event in October which raised £40,000 for the Livestock Guarding Dog programmed and built partnerships with small corporates to be developed further in 2021.
- Welcomed 4 new engaged board members and one new Ambassador, re-constituted the charity to a Charitable Incorporated Organisation, implemented much needed board and financial policies and began the move towards a membership organisation with new donors badged as "Friends of Cheetah Conservation Fund UK".

CCFUK Is an integral member of the international CCF IWT team and the DEFRA IWT Challenge Fund project team, and a member of the DEFRA CITES Liaison Group which includes the Big Cat Task Force. CCF UK delivered a media pack to all 650 MPs of the UK government on International Cheetah Day, in partnership with the International Conservation Caucus Foundation UK with the targeted ask for increased funding to fight IWT.

Despite being a very different year than envisaged, CCF UK gained valuable experience, engaged more with international affiliates, raised over £140,000 and with legacies from 2019 and 2020, were able to send £190,000 to CCF Namibia and CCF Somaliland and £11,000 of in-kind products.

CCF France

CCF France held several presentations during 2020:

- In a Globetrotters'Club (Aventure du Bout du Monde – ABM), about Cheetahs and CCF Programs of actions, showing Namibia and inviting the participants to visit Namibia and CCF's Centre.

- In a school of Le Pecq (Yvelines), with 30 children aged 8-9, enthusiastic and fascinated by photos of cheetahs and of CCF's actions.
- In a Club with very young children in Puteaux, 4 to 6 years old, a new and quite interesting experience.
- In "Ferme Souchinet", preparing in 1 year the future caretakers in animal parks, a 4-hour presentation to the students.
- A partnership agreement was signed between CCF FRANCE and the School of Philanthropy

CCF Italy

The Covid-19 pandemic hit Northern Italy strongly during this reporting period. All events including a CCF Namibia Conservation Tour, had to pe postponed to 2021. CCF Italy however successfully organized events on the Zoom platform hosted by:

- a journalist from the Food and Agriculture Association, ARGAV
- the Zookeepers Association AIG

CC Italy who also organized an International CCF Italy Auction beginning in May and ending at the end of July, so as to keep people interested in CCF while fund raising at the same time. Thanks to the CCF Italy members 7,000 Euros and more than 1,000 Euros were successfully raised on Facebook Fundraising.

On 14 July 2020, CCF Italy hosted a big online conference with the LE CORNELLE Park titled: 'Humans and Animals: Encounters and Clashes', and later during the year organized a conference on Intelligence and Wildlife Trafficking which was hosted by Andrea Crosta, the founder of Earth League International. Both were very successful.

The CCF Italy has grown its membership to more than 110 members, and have started to cooperate with the NGO, TERRESOLIDALI.org for Somaliland, asking for technical aid from engineers of the organisation as well as IFAD (Rome), many thanks to their contacts. More highlights from this year are reported below:

- entered into a partnership with the German NAMSOP.DE site, with a cheetah run for enrichment at the La Torbiera Park Zoo in September
- were aired on national TV with a 10-minute presentation by the President of CCF Italy, and two presentation on the Canale 5 Channel
- had an interview on Swiss Radio Channel 2 during the "House of Animals" with journalist Lara Montagna in October
- raised funds by selling 150 Cheetah Calendars and were sold out!

Below are links to pictures and movies by CCF Italy:

https://ccf-italia.org/grazie-ai-nostri-amici/
https://ccf-italia.org/animali-e-uomo-incontri-e-scontri

https://ccf-italia.org/opera-di-artista-a-favore-del-ccf

https://ccf-italia.org/prenota-il-tuo-calendario-2021/

https://ccf-italia.org/rete-uno-la-casa-degli-animali-intervista-a-betty-von-hoenning-presidente-del-cheetah-conservation-fund-italia/

PR, Marketing and Media

Social Media

CCF Facebook

@CCFCheetah: As of 31 December, CCF's Facebook page has 253,361 likes, down from 256,483 on 1 January 2020. Also during the same time-period, CCF's Facebook page saw a decrease in followers to 249,996, down from 252,694 on 1 January 2020.

@Chewbaaka's CheetahFriends Fan Page: CCF's purring cheetah sales initiative fan page Chewbaaka's Cheetah Friends. The initiative was developed by CCF's Southern California chapter leadership and co-managed by CCF USA staff. Updates are posted to the page showing the CCF purring cheetah and his travels. This aims to promote the purchase of purring cheetahs for participation. Facebook users can like the fan page and share photos of their own CCF purring cheetahs. As of 30 June, Chewbaaka's Cheetah Friends fan page has 869 likes.

@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 2020, Dr. Laurie Marker's Facebook page has 4,926 likes, up from 4,731 likes on 1 January 2020. Also during the same time period, Dr. Marker's page saw an increase in followers to 4,961, up from 4,731 on 1 January 2020.

@CCFKeepCheetahsWild: CCF's Facebook page dedicated to the illegal pet trade in cheetahs was created in 2018. As of January 2020, So You Want A Pet Cheetah has been unpublished. The content from CCF's base of operations in Somaliland is published to CCF's largest Facebook audience @CCFCheetah alongside the content from CCF's other programming.

Twitter

@CCFCheetah is CCF's Twitter feed, managed by volunteers with guidance from CCF staff. @CCFCheetah currently has 21,900 followers and CCF's content had 1,349,800 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 2020, CCF's Instagram has 40,000 followers up from 36,322 followers 1 January 2020. The most liked post received 18,689 likes and was a video of cheetahs confiscated in Namibia and exploring their new enclosures.

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 2020, CCF's Pinterest page has an audience of 114,630 users. CCF's pins had 154,310 impressions and 6,730 engagements during this reporting period.

YouTube

YouTube is a media platform that allows users to post and view video content. As of 3 December 2020, CCF's YouTube Channel has 29,126 subscribers and CCF's content has gotten 5,724,712 views during this reporting period.

Website

Mobile responsive

Monetizing CCF's most valuable online asset - interesting and educational content - to increase funding for CCF's programs. Cheetah.org is now mobile responsive and Google Search Console is updated with a new sitemap.

SEO by device from 1 January 2020 - 31 December 2020:

- 118 thousand Clicks on CCF's content from Google's search engine results across all platforms (desktop, mobile, and tablet)
- 17.3 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 12.3.
    - Mobile position is 9
    - Tablet position is 6.5

Site traffic by device from 1 January 2020 - 31 December 2020:

- 46,501 Mobile users to CCF's site
- 65,902 Desktop users to CCF's site
- 5,339 Tablet users to CCF's site decreased by 797 users

Bounce Rate from 1 January - 30 June is 69.50%

For nonprofit 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:

- Minimize volunteer time in the recreation of content from Namibia
- Ensure accuracy of CCF's news and messaging
- Increase user confidence in the overall organization
- 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 the 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 2020 - 456,581 pageviews

- /learn/about-cheetahs: 1 January - 31 December 2020 - 59,229 pageviews
- /kids/cheetah-facts: 1 January - 31 December 2020 - 32,948 pageviews
- /donate: 1 January - 31 December 2020 - 11,723 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 2020 – 31 December 2020

- Donate Once: 11,723 unique pageviews
- Donate Sponsor: 7,777 unique pageviews
- Recurring: 777 unique pageviews

Media

CCF issued 16 press releases between 1 January - December 2020.

Media Monitoring

Table 49 below shows media coverage of CCF from 1 January - 31 December 2020.

Table 49: News stories featuring Cheetah Conservation Fund from 1 January - December 2020.

Date	Name of outlet	Title	Author	Link
9-Jan-2020	How Stuff Works	Cheetahs: The Big Cats That Can Totally Pass You on the Interstate	JESSLYN SHIELDS	https://animals.howstuffworks.com/mammals/cheetah.htm
10-Jan-2020	Relief Web	On visit to Hargeisa, UN envoy highlights benefits of cooperation and world body's broad support	UN Assistance Mission in Somalia	https://reliefweb.int/report/somalia/visit-hargeisa-un-envoy-highlights-benefits-cooperation-and-world-body-s-broad
16-Jan-2020	Middle East Monitor	Saudi Arabia arrests cheetah smugglers		https://www.middleeastmonitor.com/20200116-saudi-arabia-arrests-cheetah-smugglers/
17-Jan-2020	MENAFN	Somaliland is Transit Route for Poached Ethiopian Leopard Cubs		https://menafn.com/1099567140/Somaliland-is-Transit-Route-for-Poached-Ethiopian-Leopard-Cubs
29-Jan-2020	Deccan Herald	Cheetahs might roar in MP after 70 years	Rakesh Dixit	https://www.deccanherald.com/national/north-and-central/cheetahs-might-roar-in-mp-after-70-years-799374.html
30-Jan-2020	Namibia Economist	CHEETAH CONSERVATION FUND TO PLAY A PIVOTAL ROLE IN REINTRODUCING THE EXTINCT CHEETAH IN INDIA	Musa Carter	https://economist.com.na/50399/headlines/cheetah-conservation-fund-to-play-a-pivotal-role-in-reintroducing-the-extinct-asiatic-cheetah-in-india/
30-Jan-2020	News Ghana	Namibia to assist India on cheetah project	xinhuanet.com	https://www.newsghana.com.gh/namibia-to-assist-india-on-cheetah-project/
31-Jan-2020	The Telegraph	Namibia wind in cheetah sail		https://www.telegraphindia.com/india/namibia-wind-in-cheetah-sail/cid/1740948
4-Feb-2020	Gulf Today	India awaits the return of the cheetah	Meena Janardhan	https://www.gulftoday.ae/opinion/2020/02/04/india-awaits-the-return-of-the-cheetah
5-Feb-2020	India Today	Big plans for big cats	Rahul Noronha	https://www.indiatoday.in/india-today-insight/story/big-plans-for-big-cats-1643441-2020-02-05
3-Feb-2020	The Indian Express	Explained: To import cheetahs, or not to	Jay Mazoomdaar	https://indianexpress.com/article/explained/india-import-african-cheetah-supreme-court-6248033/

3-Feb-2020	Hindustan Times	Introduce the cheetah, with caution and guidelines | Opinion	Neha Sinha	https://www.hindustantimes.com/analysis/introduce-the-cheetah-with-caution-and-guidelines-opinion/story-gLVnikkRMwbR3zVU4tOfQK.html
4-Feb-2020	The Wire	Why Bringing Cheetahs Back Is India's Best Bet to Protect Its Threatened Drylands	Akshay Surendra	https://thewire.in/environment/asiatic-cheetah-african-cheetah-reintroduction-india-grasslands-drylands
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22-Feb-2020	Patch	Working To Stop Illegal Wildlife Trade Of Cheetahs In Somaliland		https://patch.com/tennessee/nashville/working-stop-illegal-wildlife-trade-cheetahs-somaliland
24-Feb-2020	Unilad	Wildlife Photographer Shocked To Find Seagulls Fighting Over A Dildo	Julia Banim	https://www.unilad.co.uk/animals/wildlife-photographer-shocked-to-find-seagulls-fighting-over-a-dildo/
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