



CCF is a Namibian non-profit incorporated association dedicated to the long-term survival of the cheetah and its ecosystems.

RESEARCH

CONSERVATION

EDUCATION

[cheetah.org](http://cheetah.org)



The cheetah, *Acinonyx jubatus*, is one of the oldest of the big cat species, with ancestors that can be traced back more than five million years to the Miocene era. The cheetah is also the world's fastest land mammal, a feline icon of nature. It is an animal built for speed, with all parts of its body having evolved for precision and agility. From their small, aerodynamic head, lean body and long legs, to a flexible backbone and tail that works like a boat's rudder, and semi-retractable claws like cleats on a running shoe, the cheetah can reach speeds of up to 70 mph and change direction in a split second. The cheetah also has the ability to accelerate from zero to 60 mph in just three seconds.

## CHEETAHS: BIG CATS BUILT FOR SPEED

### PHYSICAL TRAITS

Cheetahs have a thin frame with a narrow waist and deep chest. They have extra-large nostrils that allow for increased oxygen intake, with larger than normal heart and lungs and strong arteries and adrenals that work in tandem to circulate oxygen more efficiently. Their weight averages between 75 and 125 pounds and they can be anywhere from 40 to 60 inches in length, measured from the head to the hind quarters. The tail can add another 24 to 32 inches. Most cheetahs stand 28 to 36 inches tall at the shoulder. Males are slightly bigger with larger heads, but there is not much physical difference between the sexes. It is difficult to identify the cheetah's sex by appearance alone.

The cheetah's undercoat ranges in color from light tan to a deep gold and is marked by solid black spots. These spots are not open like the rosettes found on a leopard or jaguar's coat, which is one way to quickly identify the cheetah. Cheetahs are also recognized by their distinctive black "tear marks" that extend from the corners of both eyes along the sides of their noses to their mouths. The biological purpose for these markings is to keep the glare of the sun down so cheetahs can see more clearly across long distances. Their tail ends with a bushy tuft encircled by five or six dark rings. These markings provide them with excellent camouflage while hunting and make them more difficult for other predators to detect.

Unlike other big cats often grouped with the cheetah (i.e.- tiger, lion, leopard and jaguar), cheetahs do not roar. They growl when facing danger, and they vocalize with sounds more equivalent to a high-pitched chirp or bubble and bark when communicating with each other.

The cheetah can also purr while both inhaling and exhaling, which other big cats cannot.

### THE CHEETAH'S LIFE

There are three stages in the lifecycle of the cheetah: a cub's life, adolescence and adult life. The gestation period for the cheetah is 93 days, and litters range in size from one or two up to six cubs (the occasional litter of eight cubs has been recorded, but it is rare). At birth, the cubs weigh 8.5 to 15 ounces and are blind and helpless. Their mother will groom them patiently, purring quietly and providing them warmth and security. After a day or so, the mother will leave the cubs to hunt for herself, so she can continue to care for the cubs. This is the most vulnerable time for the cubs, as they are left unprotected. They will live in a secluded nest for the next six to eight weeks, being regularly moved by their mother from nest to nest to avoid detection by predators. The mother will care for her cubs on her own for the next year and a half.

At about six weeks of age, the cubs begin following their mother on her daily travels as she is looking for prey. During these first few months she cannot move far or fast and cub mortality is highest. Less than one in 10 will survive during this time, as they perish from predation by other large predators such as lions and hyenas, or from injuries. This is the time when life skills are taught. Their long mantle of hair on their backs serves the dual purpose of keeping them warm and helping hide them from predators who mistake them for the aggressive honey badger.

Between four to six months of age, cheetah cubs are very active and playful. Trees provide good observation points and allow for development of

skills in balancing. The cubs' semi non-retractable claws are sharper at this age and help them grip the tall 'playtrees' they climb with their siblings.

Learning to hunt is the most critical survival skill that the cubs will develop. At one year of age, cheetah cubs participate in hunts with their mother. The hunt has several components. It includes prey detection, stalking, the chase, tripping (or prey capture), and killing by means of a suffocation bite. At about 18 months of age, the mother and cubs will finally separate. Although not fully adept at hunting on their own, independent male and female cubs will stick together for a few more months to master their hunting skills. When the adolescent females begin cycling, dominant males will court them and drive their brothers away..

### **MALE COALITIONS**

Male cheetahs from the same litter remain together for the rest of their lives, forming a cheetah coalition. Coalitions increase hunting success and defense against predators. They become dispersal males, on the move for a few years after leaving their mother and sisters, until they can defend a territory. They will travel hundreds of miles, being moved out of one area to another, pushed by more dominant males. Eventually, they will find a place where they can settle. Cheetahs require huge home range territory, covering an average of 750 to 900 square miles.

Adult life for a cheetah is difficult. Cheetahs live fast and die young. There is competition between territorial males, which often results in death. The lifespan of an adult male is 8 years. Adult mortality is one of the most significant limiting factors for cheetah population growth and survival.

### **CHEETAH SURVIVAL**

Relatives of the modern cheetah had worldwide distribution until about 20,000 years ago, when the world's environment

underwent drastic changes in the Great Ice Age. Throughout North America, Europe, and Asia, about 75 percent of the mammal species vanished. Only a handful of the modern cheetah remained, having gone through a "genetic bottleneck" that resulted in inbreeding, which detrimentally impacts species survival.

Once found throughout Asia and Africa, today there are fewer than 7,100 adult and adolescent cheetahs in the wild. This number has dropped from 100,000 a century ago, indicating a rapid decline. Cheetahs are listed as *Vulnerable* on the IUCN Red List. In Namibia, they are a protected species. Under the Endangered Species Act in the United States, they are considered *Endangered*. The Convention on International Trade in Endangered Species (CITES) lists them as an Appendix 1 species.

Most wild cheetahs exist in fragmented populations in pockets of Africa, occupying a mere 9 percent of their historic range. In Iran, less than 50 Asiatic cheetahs (a sub-species) remain. The largest single population of cheetahs occupies a six-country polygon that spans Namibia, Botswana, South Africa, Angola, Mozambique and Zambia. Namibia has the largest number of individuals of any country, earning it the nickname, "The Cheetah Capital of the World."

More than 75 percent of remaining wild cheetahs live on rural farmlands alongside human communities. The small populations that live in national parks and wildlife reserves must compete with larger, more aggressive predators, which can kill cheetah cubs and often steal their prey.

Their main threats to survival include human-carnivore conflict, loss of habitat and loss of prey, poaching and illegal wildlife trafficking, with cubs being taken from the Horn of Africa and smuggled into the exotic pet trade, primarily in the Gulf States.





**CCF is a Namibian non-profit incorporated association dedicated to the long-term survival of the cheetah and its ecosystems.**

**RESEARCH**

**CONSERVATION**

**EDUCATION**

**cheetah.org**



The Cheetah Conservation Fund's (CCF) research focuses on the biology, ecology and genetics of the southern African cheetah. Its findings form the basis for CCF's education and conservation programs. CCF is notable for being the first predator research program conducted outside a protected area and the first working with people on whose land the cheetah is living.

## RESEARCH

### GENETICS, HEALTH AND REPRODUCTION

CCF's ongoing research activities include collecting and analyzing blood, skin, tissue, sperm and fecal samples from the southern African wild cheetah. To date, CCF has sampled nearly 1,000 of these cheetahs to study genetics and the relatedness of the population. Samples indicate the incidence of disease, stress hormone levels, and the reproductive health of the population.

Wild cheetahs providing samples simultaneously undergo comprehensive examinations ("cheetah work-ups") that involve weighing and measuring for morphometric studies, analysis of their dental structure and reproductive fitness. These exams contribute to the assessment of the overall health of the world's cheetah population.

### SCAT DETECTION DOGS

CCF pioneered the use of scat detection dogs to assist with cheetah census, genetic relatedness and demographic research. CCF ecologists employ dogs trained to sniff out cheetah scat with their sense of smell. The samples are processed in the laboratory, and DNA is extracted to identify individual cheetahs and gain insight into population structure.

### GENOME RESOURCE BANK

Sperm, tissue and blood samples are cryopreserved and stored in CCF's Genome Resource Bank (GRB) to provide additional insurance for species survival. Established in 1991, CCF's cheetah GRB is one of the most extensive for an endangered species. To date, CCF has banked more than 320 cheetah semen collections from more than 200 individuals and banked samples on nearly 1,000 cheetahs. CCF developed its best practices for storing samples and continues to refine cryopreservation methods with partners at the Smithsonian Institution. In 2007, in collaboration with Smithsonian researchers and those from University of California at Davis, CCF produced the first-ever *in vitro* cheetah embryos developed to the blastocyst stage. CCF's leadership in reproductive science also resulted in the first artificially-inseminated cheetah cub born from sperm frozen in Namibia.

### LIFE TECHNOLOGIES CONSERVATION

#### GENETICS LABORATORY

To address the challenge of effectively monitoring the wild cheetah population from a remote region in Namibia, CCF built and maintains the only fully capable conservation genetics laboratory at an *in situ* conservation site in Africa. The Life Technologies Conservation Genetics Laboratory is a state-of-the-art facility that produces analyses and results in house. The laboratory aims to address research questions involving cheetah gene flow and geographical patterns of genetic variation, as well as adaptive questions in relations to the cheetah's behavioral ecology in specific habitats. Open to researchers from other organizations, the lab benefits not only the cheetah but many other species, and it plays a key role in training the next generation of conservation geneticists

### BEHAVIOR DEMOGRAPHICS, HOME RANGE AND REINTRODUCTION

CCF researchers investigate the movement of cheetah to determine home ranges, habitat preference, territoriality and behaviors of populations critical to their survival. CCF has tagged and released more than 600 cheetahs back into the wild and placed VHF satellite radio-tracking collars on more than 60 during 25 years of study. Working with CCF conservationists, CCF researchers evaluate relocation, reintroduction and non-invasive monitoring methods to support viable wild cheetah populations.

### CHEETAH CENSUS RESEARCH

Cheetahs are notoriously difficult to count using conventional census techniques due to their secretive nature. CCF researchers have tested various census and monitoring techniques, including radio telemetry, spoor track counts and camera traps, while calibrating these to known density estimates. The data is used to identify potential "hot spots" for human-carnivore conflict and to persuade key stakeholders to adopt appropriate conservation measures to mitigate impact.

## COLLABORATIVE RESEARCH PARTNERSHIPS

CCF has long-term research partnerships with academic and research institutions around the world, encompassing a broad spectrum of subject matter pertaining to the cheetah. CCF also maintains close ties with zoos and wildlife parks to collaborate on projects involving captive cheetah populations and genetics.

Beskee Bergen, Netherlands  
Bronx Zoo, USA  
Busch Gardens, USA  
Cat Specialist Group of IUCN  
Cheetah Species Survival Plan of AZA  
Cincinnati Zoo, USA  
Colorado State University, USA  
Columbus Zoo, USA  
Dallas Zoological Society, USA  
Disney's Animal Kingdom, USA  
Dvůr Králové Zoo, Czech Republic  
Earthwatch Institute  
European Endangered Species Plan (EEP)  
Indianapolis Zoo, USA  
Little Rock Zoo, USA  
Los Angeles Zoo, USA  
Maryland Zoological Society, USA  
Namibia Ministry of Environment and Tourism  
Namibia University of Science and Technology (NUST),  
Namibia

Naples Zoo, USA  
National Cancer Institute  
Oregon State University, USA  
Paradise Wildlife Park, UK  
Parc des Félines, France  
Zoo Safari de Thoiry, France  
Saint Louis Zoo, USA  
San Diego Zoo, USA  
San Francisco Zoo, USA  
Smithsonian Conservation Biology Institute, USA  
Smithsonian Institution's National Zoo, USA  
University of California at Davis, USA  
University of Florida, USA  
University of Namibia, Namibia  
University of North Carolina, USA  
Virginia Zoo, USA  
White Oak Conservation Centre, USA  
Wildlife World Zoo, USA

## ECOLOGICAL RESEARCH

CCF evaluates cheetah habitat and prey base and monitors carnivores in the cheetah's ecosystem. CCF identifies vegetation and growth patterns, designates land for ecological management and investigates how bush encroachment affects biodiversity. CCF monitors habitat use by game species and determines hunting practices and prey preferences for individual cheetah populations. CCF also collects data on predation and develops methodologies for prey species reintroduction in cheetah range countries.



## HUMAN-CARNIVORE CONFLICT

Research into human-carnivore conflict is critical for cheetah conservation, as more than 75 percent of cheetahs in Africa live outside protected areas and on lands shared with rural farming communities. CCF incorporates the needs of farmers in the development of agricultural management plans that benefit both farmers and cheetahs. CCF evaluates non-lethal predator control tools and livestock management techniques that reduce the number of cheetahs removed from the ecosystem by farmers.





CCF is a Namibian non-profit incorporated association dedicated to the long-term survival of the cheetah and its ecosystems.

RESEARCH

CONSERVATION

EDUCATION

cheetah.org



Ninety percent of Namibia's cheetahs live on farmlands in central Namibia, which also support 80% of the game species that are the cheetah's natural prey. Living on farmland puts cheetahs in contact with farmers, their livestock and game farming enterprises. To maintain ecosystem balance, it is critical that conservation strategies encourage sustainable land use while accommodating the coexistence with native predator species. It is equally important to educate people about the cheetah and its ecosystem from a young age and train the next generation of African biologists, geneticists and ecologists to ensure Cheetah Conservation Fund's (CCF) programs are sustainable.

## EDUCATION



### FUTURE FARMERS OF AFRICA

CCF developed **Future Farmers of Africa (FFA)** to teach integrated livestock and wildlife management techniques to land users and managers. FFA builds practical skills, enabling rural Namibians to engage in sustainable livestock farming that provides direct and indirect economic benefits. Training courses are conducted at CCF's Field Research and Education Centre using CCF's Model Farm and related agricultural enterprises as training facilities. In addition, FFA workshops are also held in communal conservancies to reach the most remote rural farming communities. Topics include livestock health and veterinary care, livestock husbandry, fire prevention and suppression, livestock valuation, predator spoor identification, differentiating predator kill techniques and best practices to reduce livestock losses. Tools for non-lethal predator control, such as the use of CCF Livestock Guarding Dogs, are also part of the training.

### FUTURE CONSERVATIONISTS OF AFRICA

Each year, CCF educators present programs for approximately 20,000 young learners in schools throughout Namibia. This initiative engages the nation's youth on the value of wildlife, Namibia's most precious natural resource, as well as the importance of maintaining healthy ecosystems. Since 1994, more than 500,000 students have participated in an outreach program. In addition, the CCF Field Research and Education Centre has hosted more than 20,000 young learners for an environmental course. Groups of up to 35 stay at CCF's overnight facility for students, **Camp Lightfoot**. Together, these activities comprise CCF's **Future Conservationists of Africa (FCA)** program.

### TRAINING FOR YOUNG PROFESSIONALS

With populations dwindling through most cheetah range countries, cheetah survival depends on people using an informed, integrated approach to conservation that incorporates humans, wildlife, and habitat. Since 2005, CCF has conducted month-long international courses to bring together conservation managers, scientists, and community representatives from cheetah range countries in Africa and Iran. More than 300 that have participated in CCF's training are now leaders managing cheetah conservation programs in their respective countries. The courses build capacity, with a goal of

establishing and increasing wild cheetah populations.

### INTERNSHIPS

CCF is an official fourth-year placement for students from Namibia's two major universities, University of Namibia and Namibia University of Science and Technology. In addition, CCF welcomes interns from undergraduate and graduate university programs all over the world. Aspiring biologists, geneticists and ecologists pursuing masters and Ph.D. degrees come to CCF to work on research and thesis projects year 'round.

### CCF PUBLICATIONS

CCF has publications and resources for people who want to learn more about the species.



### BOOKS

Cheetahs: Biology and Conservation - 1st Edition 2018, published by Elsevier  
Chewbaaka: My Life at Cheetah Conservation Fund - Dr. Laurie Marker & Jessie Jordan  
A Future for Cheetahs - Dr. Laurie Marker & Suzi Eszterhas

### SCIENTIFIC PAPERS

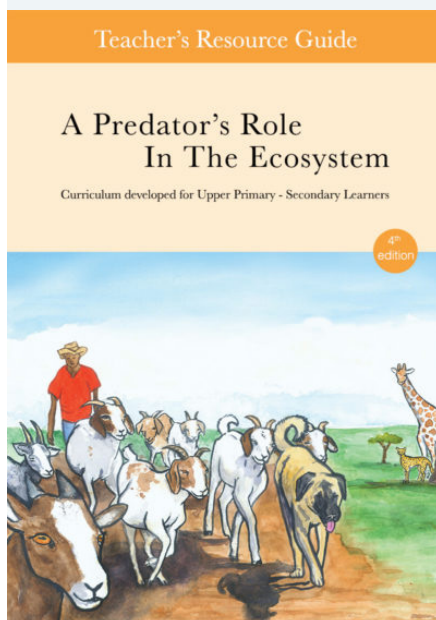
CCF's scientific papers are available online: [www.cheetah.org/research/by-type/scientific-papers/](http://www.cheetah.org/research/by-type/scientific-papers/)

### EDUCATION RESOURCES AND GUIDEBOOKS

Guide to Integrated Livestock and Predator Management  
A Predator's Role in the Ecosystem - CCF's Teachers Resource Guide, 4th Edition - revised in 2017  
International Cheetah Day Conservation Passport

### CHEETAH STUDBOOKS

North America: 1983 - 1987  
International: 1988 - present



Cheetah Conservation Fund  
P.O. Box 1755, Otjiwarongo, Namibia

Phone: +264 067 306 225  
Fax +264 067 306 247

E-mail: [ccfinfo@iway.na](mailto:ccfinfo@iway.na)  
[info@cheetah.org](mailto:info@cheetah.org)



CCF is a Namibian non-profit incorporated association dedicated to the long-term survival of the cheetah and its ecosystems.

RESEARCH

CONSERVATION

EDUCATION



# CONSERVATION



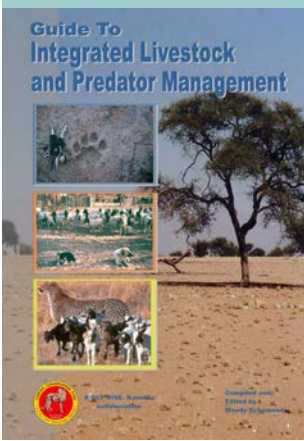
## HUMAN-WILDLIFE CONFLICT MITIGATION

Ninety percent of Namibia's cheetahs live on livestock and game farms, outside protected areas, alongside rural farming communities. Sharing farmlands makes cheetahs more visible to farmers and puts them in contact with livestock and game farming enterprises. Cheetahs and other predators have been traditionally looked upon as a threat and not as a valuable component of a thriving ecosystem. To farmers, especially communal farmers who may be very poor, the loss of even a single animal can be devastating.

During the 1980's, livestock and game farmers cut the Namibian cheetah population by half, removing over 8,000 cheetahs from the landscape. Dr. Marker understood that to maintain ecosystem balance, conservation strategies must be put in place to encourage sustainable land use while accommodating coexistence with native predator species. To prevent further cheetah population decline, CCF began conducting research into conflict mitigation in 1991, and from this emerged CCF's integrated livestock and wildlife management training, **Future Farmers of Africa (FFA)**. CCF researchers develop and test predator-friendly livestock management techniques and tools on CCF's Model Farm. CCF promotes these solutions in farmer publications and media, and at agricultural shows, meetings, and colleges and universities and through FFA training courses.

The single most-effective, non-lethal predator control tool CCF has developed for farmers is the CCF **Livestock Guarding Dog (LGD)**. CCF breeds, trains and places Anatolian shepherd and Kangal dogs with farmers, at little cost, to help guard small stock like goats and sheep. The presence of the large dogs with exceptionally loud barks is enough to keep most predators at bay. Farmers who use CCF LGDs to guard their herds report a drop in predation rates ranging over 80%, thus reducing pressure on farmers to kill or capture cheetahs. Since 1994, the LGD program has placed more than 650 dogs throughout Namibia and has helped launch similar programs in South Africa with Cheetah Outreach, in Botswana with Cheetah Conservation Botswana, and in Tanzania in collaboration with the Ruaha Carnivore Project.

**Conservancies** in Namibia are a systematic approach to managing the nation's wildlife. CCF has been instrumental in advancing this system, which have effectively curbed domestic poaching of endangered wildlife species and are now considered the African model. Namibia's conservancy system is successful because it joins the fate of the people to the fate of the local wildlife, enabling humans and animals to thrive together. CCF has been involved in the Waterberg Conservancy since its inception and is a founding member of the Greater Waterberg Landscape (GWL), a large landscape initiative, and sits on its steering committee.



### THE TOOLS FOR CONFLICT MITIGATION

CCF's farmer training book *Guide to Integrated Livestock and Predator Management* and teacher's resource book *A Predator's Role in the Ecosystem* are utilized in training to assist in Human-Wildlife Conflict Mitigation. The guide books give farmers and students the knowledge necessary to take non-lethal measures to prevent livestock losses. Activities like CCF's Kill ID chart (right) are used by CCF's education team. These resources are given to all CCF's coursework participants.

	Species	Tracks Front/Back	Prey Location	Prey Size	Claw Marks	Stomach	Fang Location	Parts Eaten	Bones	Other Evidence	cm	mm
A	Cheetah	Two paw prints	Anywhere	0-60kg	None	None	On the side of the jaw	None	None	None	1	10
B	Caracal	Two paw prints	Anywhere	10-20kg	1-1.5cm	None	On the side of the jaw	None	None	None	2	20
C	Black-backed Jackal	Two paw prints	Anywhere	0-50kg	None	None	On the side of the jaw	None	None	None	3	30
D	Spotted Hyena	Two paw prints	Anywhere	0-100kg	None	None	On the side of the jaw	None	None	None	4	40
E	Striped Hyena	Two paw prints	Anywhere	0-100kg	None	None	On the side of the jaw	None	None	None	5	50
F	Leopard	Two paw prints	Anywhere	0-100kg	None	None	On the side of the jaw	None	None	None	6	60
G	Red Fox	Two paw prints	Anywhere	0-10kg	None	None	On the side of the jaw	None	None	None	7	70
H	Wild Dog	Two paw prints	Anywhere	0-100kg	None	None	On the side of the jaw	None	None	None	8	80
I	Jackal	Two paw prints	Anywhere	0-50kg	None	None	On the side of the jaw	None	None	None	9	90
J	Caracal	Two paw prints	Anywhere	0-20kg	None	None	On the side of the jaw	None	None	None	10	100

### CCF BUSH AND BUSHBLOK

Cheetahs hunt using bursts of speed in open or semi-open savannah, however, because of unpredictable droughts, climate change, and certain livestock farming practices, native thorn bush species are encroaching on Namibian farmlands. Bush encroachment changes the habitat and the mix of prey species that can survive and it hurts the economy by reducing the amount of grazing lands.

In 2001, with the help of a USAID grant, **CCF Bush** was developed to encourage habitat restoration and to create a viable market for biomass products harvested in an environmentally and socially appropriate way. CCF Bush project has since selectively harvested thousands of hectares of bush to produce **Bushblok**, an award-winning low-emission, high-heat fuel log, from the harvested biomass. In 2008 CCF won the Tech Museum's Intel Prize for the Environment for the Bushblok innovation. CCF is developing ecological standards for ramping up bush harvesting with the goal of restoring landscape-scale tracts of cheetah habitat throughout Namibia. In 2006, CCF Bush obtained certification from the Forest Stewardship Council (FSC), confirming that it manages forest resources responsibly and sustainably. The Biomass Technology Demonstration Centre (BTDC) and Bushblok production operation provides 30 jobs for Namibians, with the potential to provide many more.



### ILLEGAL WILDLIFE TRADE

Although trade in wildlife species products is regulated by the Convention on International Trade in Endangered Species (CITES) both international and national laws, the Illegal Wildlife Trade is estimated to be worth between \$50-150 billion annually. Cheetahs, listed as an Appendix 1 species under CITES, are often removed from the wild for their body parts or, more so, the illegal pet trade.

CCF first became actively involved with issues involving the illegal trade in cheetahs in 2005. Since then, CCF has been monitoring cheetah trafficking and organizing confiscations through the proper authorities whenever possible. CCF collects genetic samples for analysis and trains staff at cheetah-holding facilities to ensure the proper care for confiscated animals.

CCF also works to educate the public about illegal trade. Even though the intrinsic nature of illegal wildlife trade makes it difficult to collect full or reliable information, CCF has recorded hundreds of cases involving nearly 2,000 cheetahs. Currently, CCF holds the most extensive database for cheetah trafficking worldwide. CCF takes every opportunity at national and international forums to ensure that the problem is not ignored. CCF participates in the Convention on International Trade in Endangered Species (CITES) inter-sessional working group on the illegal trade in cheetah and was instrumental in making recommendations unanimously adopted by CITES at CoP17.







CCF is a Namibian non-profit incorporated association dedicated to the long-term survival of the cheetah and its ecosystems.

RESEARCH

CONSERVATION

EDUCATION

[cheetah.org](http://cheetah.org)



# CCF FACILITIES



## CHEETAH CONSERVATION FUND FIELD RESEARCH AND EDUCATION CENTRE

CCF's Field Research and Education Centre (The Centre) is set on a 100,000-acre, private wildlife reserve at the base of the Waterberg Plateau in Otjiwarongo, Namibia. The Centre is open to the public 364 days a year from 8:00 a.m. to 5:00 p.m. (08:00 to 17:00), and closed on December 25. Visitors tour the facilities and engage in cheetah learning activities, like the Cheetah Run, Cheetah Feeding or Cheetah Drive. The Centre's facilities include a Visitor Centre, Cheetah Museum, Cheetah Sanctuary, Genetics Laboratory, Veterinary Clinic, Model Farm, Dancing Goat Creamery, Cheetah Cafe and Biomass Technology Demonstration Centre. Visitors may stay overnight at CCF's Babson Guesthouse or Cheetah View Lodge as well as housing and a dining hall for staff, interns and volunteers. The Centre also has Camp Lightfoot, a tented facility for school groups up to 35.

Being open to the public is central to CCF's mission. More than 85,000 people from all over the world have traveled to CCF's Centre to experience this iconic feline in its natural environment. CCF encourages every person who visits to become an ambassador for the species by carrying what they've learned back to their communities.

## VISITOR CENTRE

CCF's Visitor Centre is a modern, multi-purpose building that houses the main visitor reception area. Its facilities include the Cheetah Cafe, gift shop, classrooms, administrative offices, a large group instruction hall and the Life Technologies Conservation Genetics Laboratory. Currently, CCF receives approximately 12,000 visitors annually. Ecotourism dollars spent at the Centre help support cheetah conservation activities.

## CHEETAH MUSEUM

Exhibits detailing the history of cheetahs in Namibia and CCF's conservation activities fill the museum hall. Visitors can also walk through an outdoor predator "preyground," a playground that allows people to take the role of predator or prey and test their survival skills.

## CHEETAH SANCTUARY

The Centre provides a permanent home for cheetahs that have been orphaned or injured and unable to fend for themselves in the wild. These cheetahs are known as CCF resident cheetahs. Their number fluctuates, but it is generally between 35 and 50. The cost of keeping each resident cheetah is approximately \$5,000 annually for food and veterinary care. Cheetah "adoptions" (sponsorships) help underwrite the costs of care.

## LIFE TECHNOLOGIES CONSERVATION GENETICS LABORATORY

CCF has built the only fully capable genetics laboratory located at an *in situ* conservation site in Africa. The Life Technologies Conservation Genetics Laboratory is used by CCF researchers studying the cheetah and by researchers from other organiza-

tions studying other species such as, African lion, brown hyena and plants. The lab is in the Visitor Centre, so visitors can easily meet the researchers and learn about their projects.

### HAAS FAMILY VETERINARY CLINIC

Having the Haas Family Veterinary Clinic at the Centre enables CCF staff enables the collection of samples from cheetahs taken in by CCF and allows for prompt veterinary care for the cheetahs, dogs, goats and other animals when in need. Dental procedures and surgery can also be performed on site, which is far less stressful to the animal.



### MODEL FARM AND DANCING GOAT CREAMERY

The Model Farm is a commercial venture that tests and deploys predator-friendly farming techniques on integrated livestock/wildlife farmlands within CCF's reserve. The Model Farm also serves as a training facility for community members and university students studying agriculture and food sciences. Profits generated by the Model Farm support CCF's conservation and education programs. The primary business on the Model Farm is livestock farming. CCF maintains herds of cattle, goats, and sheep. In 2005, CCF planted grapevines on the farm with an eye towards developing a cheetah-friendly Namibian wine label. In 2013, CCF added an apiary and beekeeping program. In 2009, the Dancing Goat Creamery began producing cheese, ice cream, and fudge made from milk supplied by CCF's Saanen and French Alpine dairy goats (farmed under the protection of CCF Livestock Guarding Dogs). In pioneering these types of small enterprises, CCF provides practical, hands-on training and demonstrates how additional income streams that compliment livestock farming can be created.

### CHEETAH CAFÉ

The Cheetah Cafe is located in the Visitor Centre and open daily from 8:00 a.m. – 5:00 p.m. (08:00 -17:00). The café serves locally grown and sourced vegetables, meats and cheeses. Several menu items are made at CCF's Dancing Goat Creamery including delicious ice cream, three cheeses -- feta, chevre and ricotta -- and fudge.

### BIOMASS TECHNOLOGY DEMONSTRATION CENTRE

CCF researches, tests and produces clean-burning energy products made from sustainably harvested thorn bush at its Biomass Technology Demonstration Centre (BTDC). BTDC research encompasses a wide range of biomass technologies, including pyrolysis-based electrical generation and the manufacturing of briquette logs, charcoal hex logs and lump charcoal.

### BABSON HOUSE

Babson House is a private, three-bedroom accommodation that sleeps up to six people in luxury style. The gated complex overlooks a wildlife habitat that is home to several resident cheetahs. A large veranda offers unparalleled views of the Wa-terberg Plateau.



### CHEETAH VIEW LODGE

The new, five-suite Cheetah View Lodge is built in modern bush chalet style a few minutes' walk from the Visitor Centre. The lodge's accommodations include four units with two beds and a larger "family suite" with two queen beds and a sleeper sofa. A private restaurant with an open-air veranda for lounging and wildlife watching provides full food and beverage services on site.

### CAMP LIGHTFOOT

Camp Lightfoot is a permanent tented camping facility for groups of up to 35 persons. It is most often used by school groups visiting CCF for a two-day, immersive, education experience.





CCF is a Namibian non-profit incorporated association dedicated to the long-term survival of the cheetah and its ecosystems.

RESEARCH

CONSERVATION

EDUCATION

[cheetah.org](http://cheetah.org)



Dr. Laurie Marker is a conservation biologist and research scientist recognized as one of the world's leading experts on the cheetah. As Founder and Executive Director of Cheetah Conservation Fund (CCF), Dr. Marker has pioneered research and developed conservation models and cooperative alliances credited with stabilizing the largest remaining population of wild cheetah. Under her leadership, CCF has grown into a world-class research, education and conservation institution situated near Otjiwarongo, Namibia, on a 100,000-acre private reserve.

## DR. LAURIE MARKER CCF FOUNDER AND EXECUTIVE DIRECTOR



Dr. Marker began working with cheetahs at Oregon's Wildlife Safari (1974-1988). While there, she developed one of the most successful captive cheetah breeding programs in the world and initiated a groundbreaking research project that brought her to Namibia for the first time in 1977. She hypothesized that a captive-born cub could be taught to hunt, and she tested this theory with Khayam, a young cheetah she had raised from birth. Dr. Marker successfully taught Khayam to hunt, but more importantly, she discovered livestock farmers in Namibia were killing hundreds of cheetahs each year because they viewed them as threats to their livestock and livelihoods. This prompted her to undertake the first of its kind *in situ* research into cheetah ecology, biology, demographics, genetics and home range. Using the findings of her research, she began developing conservation strategies to mitigate the conflict.

Already a species in peril due to habitat loss and lack of genetic diversity, the actions of Namibia's livestock farmers were driving the cheetah even closer toward extinction and at an accelerated pace. As the Executive Director of the New Opportunities in Animal Health Sciences (NOAHS) Center at the Smithsonian's National Zoo (1988-1991), Dr. Marker searched for an organization or an individual to champion the cheetah from her post in Washington, DC. She traveled back and forth to Namibia for the next 13 years, gathering data and networking with conservation biologists and researchers studying predators, and writing letters.

After an exhaustive but fruitless search, Dr. Marker decided to take on the role herself and dedicate her life to the long-term sustainability of the cheetah. Dr. Marker established the Cheetah Conservation Fund in 1990, and a year later, she permanently relocated to Namibia, establishing a research base in a borrowed farmhouse outside Otjiwarongo. For the first few years, she drove door-to-door in an old Land Rover and surveyed local farmers. These early interactions inspired Dr. Marker to develop the highly effective, non-lethal predator control methods that CCF employs today. Her innovative strategies that balance the needs of people and wildlife sharing land have not only stabilized the cheetah population in Namibia, but have also helped mitigate human-wildlife conflict with large carnivore species in many regions around the globe.

Initially rebuffed by Namibians fearing change, Dr. Marker's rigorous scientific research and holistic conservation programs that consider all stakeholders have gained her the respect of an entire nation. The vital information she has assembled on cheetah health, reproduction, ecology and genetics has proven invaluable in the management of both wild and captive cheetah populations around the world.

Dr. Marker earned her DPhil in Zoology from the University of Oxford in the UK. She has published more than 120 scientific papers in peer-reviewed journals. She is a Steering Committee member for the Natural Resource Department of Namibia University of Science and Technology and an Adjunct Professor at the University of Omaha and Purdue University. In 2013, Dr. Marker was named an A. D. White Professor-at-Large at Cornell University, where she spends one week as a guest lecturer-in-residence every other year.

In 2015, Dr. Marker was recognized with an Eleanor Roosevelt Val-Kill Medal Award, an E.O. Wilson Biodiversity Technology

## AWARDS

2015 Ulysses S. Seal Award for Innovation in Conservation  
2015 E.O. Wilson Biodiversity Technology Pioneer Award  
2015 Eleanor Roosevelt Val-Kill Medal Award  
2013 International Conservation Caucus Foundation Good Steward Award  
2013 Andrew D. White Professor-at-Large, Cornell University  
2013 Distinguished Alumni, Eastern Oregon State University  
2011 Rainer Arnhold Fellow  
2010 The Explorers Club Lowell Thomas Award  
2010 Indianapolis Prize Finalist  
2010 Tyler Prize for the Environmental Achievement Laureate  
2009 BBC World Challenge Finalist  
2009 St Andrews Prize for the Environment Finalist  
2009 International Wildlife Film Festival Lifetime Achievement Award  
2008 Tech Museum Intel Environmental Award  
2008 San Diego Zoo Lifetime Achievement Conservation Award  
2008 Society of Women Geographers' Gold Medal

Pioneer Award, and the Ulysses S. Seal Award for Innovation in Conservation. Dr. Marker has been awarded the Tyler Prize for Environmental Achievement (2010), The Tech Museum of Innovation's Intel Environmental Prize (2008), and is a two-time finalist for the prestigious Indianapolis Prize. She was named a Hero for the Planet by TIME Magazine and has been featured in the page of *Smithsonian*, *National Geographic*, *Discover* and *The New York Times*, and appeared on numerous television shows, including *The Tonight Show*, *Good Morning America*, *The Charlie Rose Show* and *Today*.

Dr. Marker is the author of *A Future for Cheetahs*, a book detailing the plight of the species and the efforts to save them (with photos by wildlife photographer Suzi Eszterhas) and *Chew-baaka*, an illustrated children's book about CCF's most famous cheetah ambassador. She is the head co-editor of *CHEETAHS: Biology and Conservation*, a comprehensive textbook weaving together the work 150 conservationists and researchers fighting to save Africa's most endangered big cat and the co-author of numerous chapters.

2008 Indianapolis Prize Finalist  
2005 Living Desert Tracks in the Sand - Conservationist of the Year  
2003 Chevron-Texaco Conservationist of the Year  
2002 Audi Terra Nova Awards Finalist, Southern Africa  
2001 Humanitarian of the Year, Marin County Humane Society  
2001 Paul Harris Fellowship, Rotary Club International, Windhoek, Namibia  
2000 Burrows Conservation Award, Cincinnati Zoo  
2000 Hero for the Planet, Time Magazine  
1997 Distinguished Leadership Award, American Biographical Institute  
1992 Conservationist of the Year, African Safari Club, Washington, DC  
1988 White Rose Award, Oregon's Top Ten Women  
1985 Outstanding Young Women of America  
1981 Oregon's Young Careerist, Business and Professional Women, Southern Oregon Division



Dr. Laurie Marker performs a cheetah workup in the Haas Family Veterinary Clinic



Dr. Laurie Marker and CCF staff prepare an anaesthetized cheetah for transport and relocation.

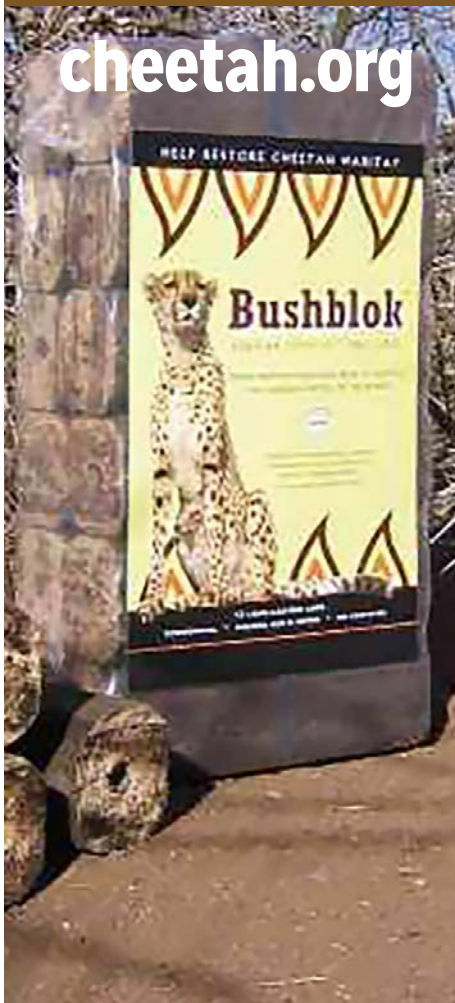


CCF is a Namibian non-profit incorporated association dedicated to the long-term survival of the cheetah and its ecosystems.

RESEARCH

CONSERVATION

EDUCATION



The Cheetah Conservation Fund (CCF) maintains the Biomass Technology Demonstration Centre (BTDC) at its Field Research and Education Centre to test, develop and produce clean-burning energy products made from sustainably harvested thorn bush. The objectives of having this facility are to catalyze a biomass industry while restoring encroached habitat and farmlands for wildlife and livestock grazing. With up to seven tons of woody thorn bush per acre, the central Namibia region is an ideal location to demonstrate the full economic potential of biomass and to research sustainable harvest methodologies. Bringing commercial enterprises to central Namibia has the combined benefits of creating much needed employment, generating power for areas that do not have electricity, reducing conflict between carnivores and farmers, and improving farmland productivity.

## BIOMASS TECHNOLOGY DEMONSTRATION CENTRE

### RESEARCH & EVALUATION

BTDC research encompasses a wide range of biomass technologies with an emphasis on those capable of generating sustained economic enterprises. Initial technology includes manufacturing of briquette logs, charcoal hex logs, lump charcoal, and for pyrolysis-based electrical generation. Phase two will include other promising technology, such as wood pellet production, alternative chipping power trains and Stirling engines.

CCF ecologists conduct long-term monitoring of harvested areas to provide detailed information on habitat recovery. The BTDC team evaluates new machinery and considers how harvest methods can be efficiently and cost-effectively scaled. Commercial biomass operations require large quantities of raw wood delivered at predictable intervals throughout the year, so matching input needs to harvesting equipment, methods and transportation is vital.

Other forms of renewable energy technologies that will be evaluated at the BTDC include photo voltaic (solar) systems, alternative battery and energy storage systems, and micro-grid deployments. As biomass industries expand in central Namibia, the absence of electrical power will be a barrier to success for many villages. It is likely that biomass-based electricity and solar electricity will both be important sources of energy for rural biomass industry, so the BTDC will investigate how to best implement small grids in rural areas.

### BIOMASS AS A VIABLE BUSINESS

The BTDC draws on academics, researchers, and engineers to implement, evaluate and validate each technology, determining its suitability for the type of biomass available in the region. As required, equipment and processes are customized. Regular evaluations are made on the overall economic potential of specific industries to assure that cost of production is low enough to result in profitable end sales of biomass products.

Over the past decade, CCF has been leading the way in thorn bush harvest methods. CCF's bush project production of Bushblok is certified by the Forestry Stewardship Council (FSC), a standard that ensures products come from responsibly managed lands and provide environmental, social and economic benefits. This certification indicates the highest standard in forestry management.

With a wide range of installed operating equipment, tuned methods of operation, and a detailed understanding of cost economics and wood harvest methods, the BTDC is the ideal location to demonstrate biomass technologies. The BTDC attracts entrepreneurs, existing companies, international grant foundations, NGOs, and investors from all over the world. By connecting investment capital to businesses and sharing knowledge, the BTDC seeks to catalyze a new growth of biomass industry in central Namibia. With millions of acres of invasive bush, biomass will become a regional economic powerhouse, creating much needed jobs, new tax revenue, and improved livelihoods.



CCF's General Manager Dr. Bruce Brewer manages the CCF Bushblok project. Here he demonstrates CCF's Bushblok making process to representatives from Namibia's biomass industry, the Ambassador of the European Union to Namibia, local farmers and media.

### A TEACHING FACILITY

The final role of the BTDC is education and training. The production floor and nearby classrooms at CCF are used to train workers on equipment operation, safety procedures, use of personal protective equipment, employment laws and other relevant topics. Live field training covers planning a harvest, safety in the environment, harvest equipment operation, and implementation of FSC-compliant methods. Community based businesses and entrepreneurs receive additional education on the economics of biomass businesses, distribution and transportation alternatives, and access to local and international capital. Additionally, the BTDC welcomes international and Namibia academic institutions for student education and as a base for continued research.

### OUTLOOK FOR THE FUTURE OF BIOMASS

The potential of biomass is huge. With millions of tons of available thorn bush located in a region with high unemployment and little electricity, no other idea could have such an impact on central Namibia. CCF has studied the region for more than a decade. A sustainable, responsible harvest of excess thorn bush is not only possible, but highly desirable. CCF coordinates international donors and investors to fund and support the BTDC. Through continued research, demonstration of related technology and training, CCF intends to catalyze a new wave economic activity in Namibia focused on biomass.



Before harvest: CCF's habitat restoration efforts focus on clearing thickened thorn bush from cheetah habitat. While thorn bush is a native plant, due to the decline of large grazers, the plants become overgrown, clogging the landscape.



After harvest: The cheetah needs open landscape like this to successfully hunt. Research is being conducted on the effects thorn bush removal has on the soil composition and wildlife density.