Maasai Steppe Carnivore Conservation Trust (MCCT)

WEBSITE CONTENT

"CREATING PARTNERSHIPS, USING APPLIED RESEARCH AND INNOVATIVE SOLUTIONS FOR CARNIVORE CONSERVATION AND SAFEGUARDING COMMUNITY LIVELIHOODS"

OVERVIEW

Challenges in Conservation Efforts for Large Carnivores in Africa

Conservation initiatives aimed at protecting large carnivores in Africa encounter considerable obstacles due to the persistent conflicts with humans. These conflicts often stem from the perceived or genuine threats carnivores pose to people and their livestock. The future survival of large carnivore populations in landscapes increasingly shaped by human activities heavily relies on effectively managing these conflicts and fostering harmonious coexistence between humans and wildlife. This necessitates the implementation of innovative and evidence-based scientific methodologies that also respect and align with local culture and traditions.

About us/home

Maasai Steppe Carnivore Conservation Trust

Maasai Steppe Carnivore Conservation Trust (MCCT) is a grass-root Non-Profit Organization working in the Maasai steppe of northern Tanzania famously also known as the Tarangire-Manyara Ecosystem (TME). The focus of MCCT is to support and promote programs that implement innovative research and conservation projects to mitigate human-carnivore conflicts and promoting coexistence between people and large carnivores.

Results from the applied research and adaptive management are used to inform the conflict mitigation strategies that we advocate and implement within the surrounding communities to maximize chances for carnivore conservation success.

The MCCT programs encompass various research and conservation initiatives, one of which involves the monitoring of large carnivore populations within the landscape. A significant component of this initiative is the Tarangire Lion Project (TLP), established in 2003. The TLP is devoted to the long-term research and monitoring of the lion population within the Tarangire-Manyara Ecosystem (TME). The project's focus is primarily on ecological studies and population demographics, along with assessing lion population abundance in core-protected areas (National Parks) and the neighboring game reserve, wildlife management areas, game controlled areas, as well as communal lands within this predominantly human-populated landscape. By employing individual recognition methodologies, TLP has managed to assemble a comprehensive dataset that provides valuable details about the demographic trends and life histories of these lions. This invaluable data has notably enhanced our existing knowledge about lion conservation in the Tarangire-Manyara Ecosystem. (Read more about population monitoring project here).

Another project is focusing **on human-carnivore conflicts and conflict mitigation**. Since 2004, this project started engagement with pastoralist communities to understand the human dimensions of human-carnivore interactions.

The objective of this project revolves around acquiring information on incidents of predation on livestock within pastoral communities. It established a network of data collectors from twelve pastoral communities. Their task was to document occurrences of livestock predation by primary predators within the TME, including lions, leopards, and spotted hyenas.

This project was eventually scaled up to cover 21 villages by the year 2009. One of the prominent outcomes of this project was a peer-reviewed scholarly paper, *"Livestock predation by lions, leopards, spotted hyenas, and their vulnerability to retaliatory killing in the Maasai steppe, Tanzania."* The project has been pivotal in providing foundational information that has significantly enhanced our understanding of the extent, patterns, causes, and impacts of human-carnivore conflicts. It has also facilitated formulation of informed strategies to mitigate conflicts in this particular landscape. (Read more about conflict mitigation project here).

Another project focuses on studying the **seasonal spatial- temporal range-use pattern and habitat utilization b**y lions to guide habitat protection and conservation strategies for lions (Read more about this project here).

Another project focuses **on community conservation Education Conservation and awareness** (Read more about this project here).

MISSION STATEMENT AND GOAL

MCCT is dedicated to the preservation of carnivores and their habitats, employing scientifically backed methods and pioneering strategies. Our main goal is to encourage the peaceful coexistence of humans and carnivores.

MCCT is committed to dedicating its efforts towards the protection of endangered apex predators, their habitats, and their prey. We achieve our goal through active collaboration with local communities, NGOs, and governmental conservation agencies. Through open dialogue and partnerships, we develop and implement conservation strategies that are both effective and sustainable, providing a future for these vital species.

WHAT WE DO

Research and conservation projects

Monitoring populations of large carnivores

MCCT supports monitoring of large carnivore populations across the landscape. The primary species for the long-term research and monitoring is the African lion (*Panthera leo*) under the Tarangire Lion Project, but the human-carnivore conflict mitigation efforts target additional sympatric large carnivores especially leopard and the spotted hyenas. The lion population in the Tarangire-Manyara ecosystem is important population for the future of the species across the African continent. Given its status as one of Tanzania's four major lion populations, it is critical that special conservation efforts are dedicated to this priority population. Therefore, the large carnivore guilds in this landscape and especially the African lion need continuous effort to address the factors threatening the future conservation prospects of the species including conflicts and retaliatory carnivore killings.

The long-term population monitoring provide useful data to measure age-specific mortality rate, recruitment rate as well as feeding and prey preferences of the lions. All this is critical information needed for long-term conservation strategies for lions as well as useful in evaluating the success of any lion conservation action in the landscape.

Human-carnivore conflicts and conflict mitigation

One of the major conservation challenges facing lion populations in many African ecosystems is conflicts with local communities leading to retaliatory lion killings. Thus, the long-term conservation prospects for lions in human-dominated ecosystems will depend on successful resolution of these conflicts. Tarangire-Manyara ecosystem (TME) in Northern Tanzania is harboring one of the major lion populations remaining in the African continent, making it a priority area for lion conservation. In the TME, conserving Lion population presents a considerable challenge due to the prevalent human presence and frequent human-wildlife encounters. Retaliatory lion killings due to livestock predation significantly affect the lion population, marking this as a significant threat to lion conservation. A strong correlation exists between the occurrence of livestock predation, retaliatory lion killings, and the overall number of lions killed. Additionally, we frequently encounter lion poisonings, another form of retaliation, making conflict the primary danger to lions in the landscape.

TME experiences seasonal migration of the key wildlife species from core protected areas such as Tarangire and Lake Manyara National Parks to dispersal areas in communal land, where migratory wildlife spends more than six months. This strong seasonal movement of wildlife influences the level and patterns of human-carnivore conflicts and exacerbate the effects of retaliatory carnivore killings. The conflicts are further influenced by the wide-spread anthropogenic activities such as increasing human settlements and expanding subsistence agriculture.

Our long-term dataset indicate that human-carnivore conflicts contribute 15-20% of lion mortality in the TME. On the other hand, local communities suffer considerable economic losses due to livestock

depredation by predators. Such high levels of conflict mortality could potentially drive the population to unsustainable low levels if left unmitigated. (map showing villages with high lion mortality rates?). Therefore, the importance of effective implementation and the success of conflict mitigation activities for the future of carnivore conservation in TME cannot be overstated.

MCCT supports conflict mitigation initiatives by working with pastoralists communities to implement the construction of predator-proof enclosures that improve livestock security at night thus directly reducing conflict through reduction of the incidences of livestock predation. More than three hundred predator-proof enclosures benefiting more than 100 households have benefited from predator-proof initiative. (Map showing distribution of predator-proof bomas?). The other conflict mitigation strategies being supported by MCCT involve the engagement of communities through community-based education and awareness projects (Read more about this project here).

Spatial-temporal lion movement studies for conflict mitigation

Conducting ecological research on the spatial-temporal dynamics, habitat usage, and movement patterns of carnivores in landscapes dominated by human activities is crucial to devise efficient conflict prevention measures tailored to specific regions and species.

Risks of carnivore attacks on livestock may vary seasonally, and may be influenced by variation in wild prey distribution and abundance, and changes in land use and landscape characteristics.

Using radio telemetry techniques, this project collects data to identify critical habitats for lions and other carnivores outside core protected areas and document the full extent to which carnivores depend on communal land. This is used to identify conflict hotspots and incorporate the information in land-use planning.

In addition to conflict mitigation, spatial movement studies provide information to monitor the movement of key species and determine viability of wildlife corridors and connectivity within the landscape. Delineating and protection of wildlife corridor crossings and connectivity is critical in promoting holistic approach in sustainable conservation of biodiversity at ecosystem level.

Education Conservation and Awareness

Our Community Conservation Education Project is designed to involve not only primary school children, but also the adult demographic within the communities we serve. It emphasizes the importance of a community that is well informed and aware of our individual and shared duties for protecting the environment. By highlighting the link between humans and the natural resources and biodiversity, it strongly promotes a sense of environmental stewardship among community members.

Schoolchildren are engaged through **wildlife and environment conservation clubs in primary** schools. The school environmental conservation clubs provide an avenue for young students to recognize and take personal interest on how to live in a sustainable manner and improve their environmental leadership skills. These clubs provide avenue for students to participate in activities to gain exposure to the environment and sustainable conservation, participate in eco-educational field trips to protected areas, academic competitions, and conservation films.

Our Environmental Adult Education engages the community members through knowledge sharing in community assembly meetings, eco-educational field trips, and conservation films. The adult education project plays an important role by fostering the development of skills, attitudes, and motivations for environmental conservation. Over 300 pupils have benefited from this strategy, providing an avenue for students to gain knowledge and alter their perceptions regarding wildlife.

Capacity Building and Mentorship

Our Commitment to Capacity Building and Conservation

MCCT is dedicated to fostering the growth and development of the future generation of both local Tanzanian and international conservationists. Our organization endeavors to achieve this by offering structured field training and mentorship programs to students at different academic levels.

Our capacity building efforts include (i) Collaborating with students, which encompasses giving access to a platform for information exchange aimed at working on specific topics under long-term monitoring, ideal for capstone projects, (ii) Sharing our extensive knowledge and experience as part of our mentoring program to train and support MSc and PhD students for their research studies. With our unwavering commitment to the cause, we take pride in our role as an advisory body that fosters learning and nurturing new insights for the future generation of conservationists.

Read more here about the current and past students under MCCT (INCLUDE DESCRIPTION OF DIFFERENT PROJECTS CONDUCTED BY VARIOUS MSC AND PHD STUDENTS)

Research and Publications

MCCT is a key player in ongoing and upcoming efforts of conserving endangered carnivores in the Tarangire-Manyara ecosystem. This is achieved by dissemination of research findings and conservation facts through publications in reputable scientific publications. Our established partnerships and collaborations, both at the grassroots and global level with academic institutions and conservation scientists, have resulted in a diverse range of publications. Key topics covered include behavioral ecology, demography, the human aspect of carnivore conservation, spatial ecology, and recent developments in carnivore conservation.

Below is a list of selected peer reviewed publications:

Bernard M. Kissui, Elvis L. Kisimir, Laly L. Lichtenfeld, Elizabeth M. Naro, Robert A. Montgomery, and Christian Kiffner **2022** Human-Carnivore Coexistence in the Tarangire Ecosystem (BOOK CHAPTER) In Tarangire: Human-Wildlife Coexistence in a Fragmented Ecosystem; Christian Kiffner, Monica L. Bond, Derek E. Lee (Editors). Pg 295. Ecological Studies 243. https://doi.org/10.1007/978-3-030-93604-4. ISBN 978-3-030-93604-4 (eBook)

Kiffner, C., Foley, C.A.H., Foley, L.S., Montgomery, R.A., **Kissui, B.M.** (2022). Large Carnivores in the Tarangire Ecosystem. In: Kiffner, C., Bond, M.L., Lee, D.E. (editors). *Tarangire: Human-Wildlife Coexistence in a Fragmented Ecosystem*. Ecological Studies, 243. Springer, Cham. **TAN**

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Christian Kiffner, John Kioko, Jack Baylis, Camille Beckwith, Craig Brunner, Christine Burns, Vasco Chavez-Molina, Sara Cotton, Laura Glazik, Ellen Loftis, Megan Moran, Caitlin O'Neill, Ole Theisinger, **Bernard Kissui**, **2020**. Long-term persistence of wildlife populations in a pastoral area. Ecology and Evolution. https://DOI.10.1002/ece3.6658

K. Beattie, E. R. Olson, **B. Kissui, A**. Kirschbaum & C. Kiffner**. 2020**. Predicting livestock depredation risk by African lions (*Panthera leo*) in a multi-use area of northern Tanzania*. European Journal of Wildlife Research (2020) 66:11 https://doi.org/10.1007/s10344-019-1348-5*

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Where we work

The Masai Steppe of Northern Tanzania (sometimes synonymously refered to as Tarangire-Manyara Ecosystem) is a diverse, human-dominated ecosystem, and one of East Africa's important wildlife areas with teeming migratory ungulates and rich in biodiversity. It supports a range of endangered apex predators including the African lion (*Panthera leo*), leopard (*Panthera Pardus*), cheetah (*Acinonyx jubatus*), Spotted hyena (*Crocuta crocuta*) and wild dog (*Lycaon pictus*). The average human population growth is estimated to range between 4-8% over the past several years, with most of the growth being driven by immigration for economic opportunities including agro-pastoralism and ecotourism.

TME, having an estimated coverage of over 35,000 square kilometers, includes areas with distinctive utilization types and various protection levels. This includes National Parks such as Lake Manyara National Park and Tarangire National Park as key protected regions. Other significant zones under its umbrella are the Mkungunero Game Reserve and Manyara Ranch Conservancy. It also encompasses community managed wildlife management areas of Burunge & Randilen. Furthermore, TME includes game-controlled areas such as Mto wa mbu, Lake Natron, Simanjiro, Kitwai, Lolkisale, and Babati. These different forms of protected areas are interspersed by community village centers and various human development activities including agro-pastoralism, subsistence farming, fishing, and extraction of forest products.

Most wildlife including the endangered predators migrate seasonally between the core protected areas and the adjacent dispersal areas in communal village land, where lions and other predators are subject to retaliatory killing by pastoralists due to livestock predation. During the dry season (June–November) the migratory species spend more time inside protected areas but migrate into dispersal areas outside protected areas (in communal village lands) for most of the wet season (November–May.

Because of high levels of seasonal migration of the wildlife across the landscape, which leads to increased human-wildlife interactions, the TME experiences one of the highest levels of human-wildlife conflicts.

One of the major conservation challenges in the Tarangire-Manyara Ecosystem (TME) is the blockage and disappearance of wildlife migratory corridors and habitat fragmentation caused by land use changes due to increasing human population. Numerous studies on wildlife movement in the TME over the past six decades have all recommended more efforts to increase protection and conservation of wildlife migratory corridors in the TME.

Maasai is the predominant ethnic group in the TME mainly keeping livestock. Other ethnic groups are Waarusha and Barbaig. While Barbaig have been in the Maasai steppe for many decades, most Waarusha have immigrated into the area from nearby towns in recent decades and they mostly engage in small-scale agriculture and livestock keeping. The increasing immigration of different ethnic groups is leading to changes in traditions and socio-economic livelihoods, thus adding to the complexities of human-lion interactions and new conservation challenges.

Partners & Supporters

Over the past years, our research and conservation work has received generous support from various organizations. We would like to send our gratitude to previous and current partners and supporters for being crucial in fulfilling our mission for sustainable carnivore conservation:

African Wildlife Foundation, Tanzania People and Wildlife, Lion Recovery Fund
Asilia Giving, USAID, WILDAID, National Geographic Big Cat Initiative
Peoples Trust for Endangered Species (PTEs), School for Field Studies

MCCT Team

Bernard Kissui, Ph.D.
Founder/Principal Scientist

Bernard Kissui is immensely passionate about the conservation of African wildlife. His research and conservation work spans more than two decades and covers ecological, demographic, and behavioral studies of African wildlife, particularly focused on large predators. His work in the Ngorongoro Conservation Area utilized long-term data to investigate dynamics and population regulation of a top predator. His current work focuses on demographic studies, population monitoring, spatial-movement, human-carnivore conflicts, and promoting coexistence between pastoral communities and carnivores.

Bernard is currently serving as Center Director at the School for Field Studies - Center for Wildlife Management Studies, Tanzania. He received his undergraduate degree at the University of Dar es Salaam and gained experience working with the Serengeti Lion Project at the Serengeti National Park and Ngorongoro Conservation Area for several years. Kissui continued his education at the University of Minnesota where he obtained a Ph.D. in Ecology, Evolution, and Behavior, graduating in 2008. Prior to his commitment at the School for Field Studies, he held employment as a senior ecologist for the African Wildlife Foundation's Maasai steppe Heartland program.

Ifira G. Ukio
Co-founder
(PLEASE INCLUDE YOUR BIOGRAPHY HERE)

Frank Mushi
(PLEASE INCLUDE YOUR BIOGRAPHY HERE)

Zacharia Laizer
Community-based conservation liaison
(PLEASE INCLUDE YOUR BIOGRAPHY HERE)

Samson Njaraa Meijo
(PLEASE INCLUDE YOUR BIOGRAPHY HERE)

Meshaki A. Kissui
(PLEASE INCLUDE YOUR BIOGRAPHY HERE)

Sharif Juma
(PLEASE INCLUDE YOUR BIOGRAPHY HERE)

Contacts

Maasai Steppe Carnivore Conservation Trust
P.o. Box 12985,
Arusha,
Tanzania
+255 627 886 079
+255 784 466 997
info@mcct.or.tz