# ESERIAN

## The One Health (*Biotisho*) Magazine

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MOSAIC

# *Youth and One Health (Biotisho)*

We live in very interesting times. As youths, we have a powerful opportunity to tell stories through fashion, data, images, and nature itself.

*Biotisho*, a Maasai word meaning One Health, the interconnected health of people, their livestock, wildlife, and the environment that sustains them, captures the MOSAIC project's core aim (Multisite Application of Open Science Involving Local Communities). This multi-site project, spanning the Amazon region and the East African savannas, offers a unique contrast between ecosystems while creating opportunities for us, the youth, to explore and understand these connections, integrating local community knowledge along the way.

My most transformative journey has been right here, with the Maasai. In a world where the ultimate measure of success pays little attention to well-being *(Eseriani)*, this community has shown me another way where happiness is rooted in the rhythm of the land, the health of livestock, and the falling of rain.

My role in MOSAIC is managing the ONE Health Database-a collaborative project with stakeholders and consortium partners.

Chricencia Odhach: MOSAIC Health Database Manager and *Eseriani* designer.
Email: winnyodhachc@gmail.com

# Away from Livestock keeping...

For decades, the Maasai community has been known for livestock farming and large herd ownership. But away from cattle herding, Maasai women have found another way to sustain their families—beadwork.  They craft beautiful necklaces, bracelets, earrings, and other ornaments, turning tradition into a thriving business.

"Every bead we string carries our story. Every sale means food for our children." Maasai artisan

When the droughts hit hard or the livestock markets slow down, these tiny beads become more than just decorations—they put food on the table, pay school fees, and keep households running.

Lucile, the MOSAIC project manager (above) and Chricencia (below) admiring the beadwork by local Maasai women during the field mission in East Africa.

# “Voices from the community and MOSAIC stakeholders in East Africa...

“One health is three things in one, the well-being of animals, people, and the environment.
**Jackson Mwato, Amboseli Ecosystem Trust & MOSAIC stakeholder council member.**

“We live closely with animals and the environment—they are part of us. Our goal is to coexist with nature. As women in the community, we’ve come together to learn about the well-being of ourselves, our animals, and our environment.
**Ninayiai Kareri, Chairlady, Noonkotiak Women Group.**

“Just like one would get sick because of not eating well, livestock conditions would be poor as a result of poor grass quality. The MOSAIC team want to understand the relationship between animals, people and the environment.
**Daniel Karinga, Herders’ forum**

*Over the years, we have noticed that bead market was saturated, so we have been exploring other activities such as bee keeping and hay production since we now have our own land where we can plant grass*

***~Joyce Lemomo,the Secretary of the Noonkotiak's Centre women group***

The women in the community have played a key role in taking care of livestock and assessing their body condition when milking, as part of early warning on disease outbreak, tick infestation, among other well-being indicators.

# The MOSAIC Project

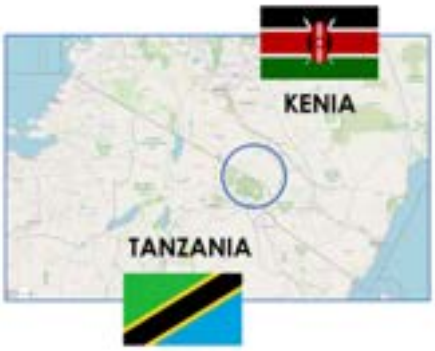
The MOSAIC project, funded by the European Union, is an initiative that combines science and local knowledge to tackle health and environmental challenges. At its core, MOSAIC is about understanding the deep connections between people, animals, and ecosystems—a concept long embraced by the Maasai and now recognized globally as One Health. For more information about the project, visit the website:

***https://www.mosaic-planetaryhealth.eu/***

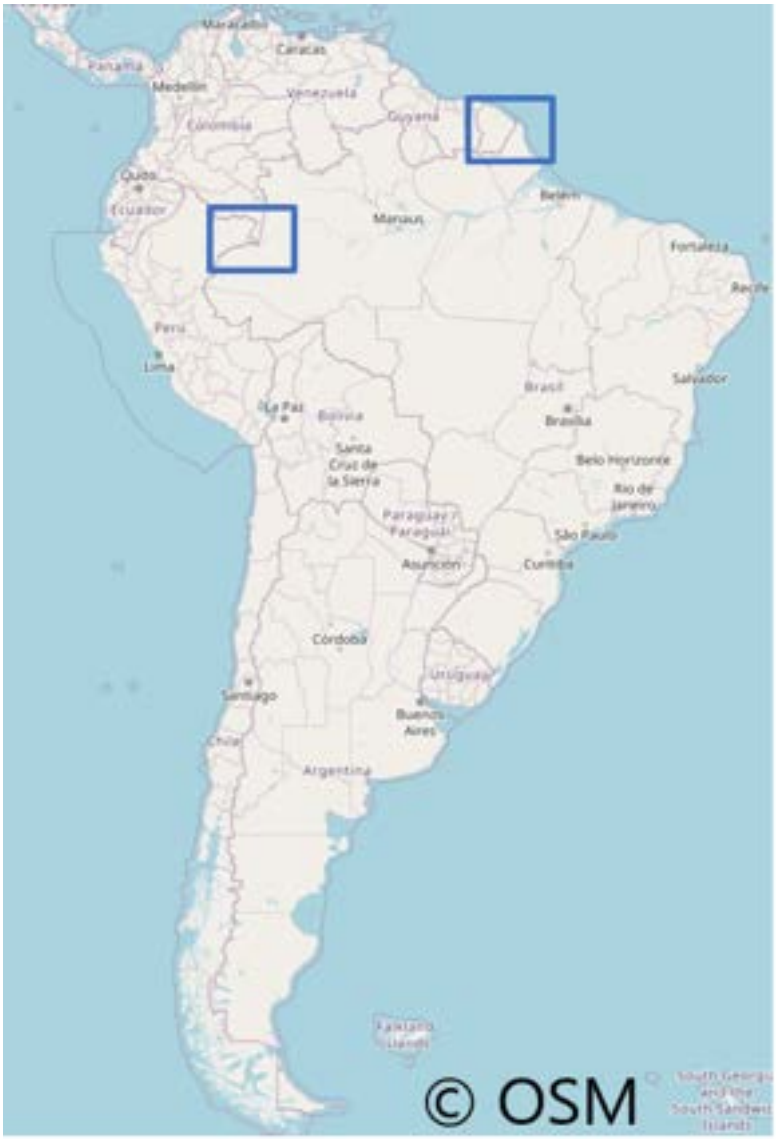
*Below are some photos of local and international stakeholders involved in the MOSAIC project taken during the field mission in East Africa.*

# *Multi-sites of MOSAIC*

***1. East Africa, in the cross boarder region between Kenya and Tanzania***



***2. Sites in the Amazon, in the cross-border areas between Brazil, Colombia and Peru and***
***3. French Guiana and Brazil.***



# One Health (*Biotisho*) and Wellbeing (*Eseriani*)

"A good herder listens to his cows, the land, and the wind. If one suffers, we all do." — Maasai Elder, Amboseli

For generations, the Maasai have lived by a simple truth—when the land thrives, so do its people and animals. This balance, known as *Eseriani*, is more than a tradition; it's One Health (*Biotisho*) in action. From tending livestock with care to respecting wildlife and the environment, the Maasai have long practiced what science now calls *"One Health."*

# QUESTIONNAIRE SURVEY IN AMBOSELI

Team members (MOSAIC) at the Oltukai Lodge, Amboseli

*Project MOSAIC, launched the One Health Questionnaire exercise in the Amboseli ecosystem. The survey, which targeted 330 households across several group ranches, began with a session at Oltukai Lodge, where local resource assessors received training on survey techniques.*

The launch also featured a team from Northern Arizona University (NAU) in the United States, who introduced the Global Ecosystem Dynamics Investigation (GEDI) instrument application, which will assist with data collection by providing valuable satellite-based environmental information. This application will complement the ground-based data being gathered by the assessors, strengthening the overall monitoring of the ecosystem's health.

# Listening to the data rhythm

The One-Health survey marked a significant milestone in understanding how communities interact with their land, diseases spread and how climate extremes are reshaping traditional ways of life. The voices of herders, women, and community leaders were at the center of the study.

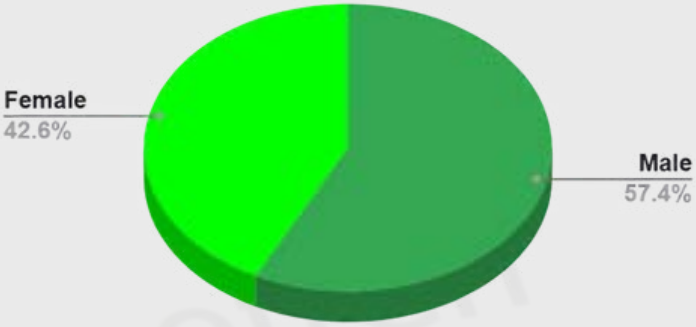
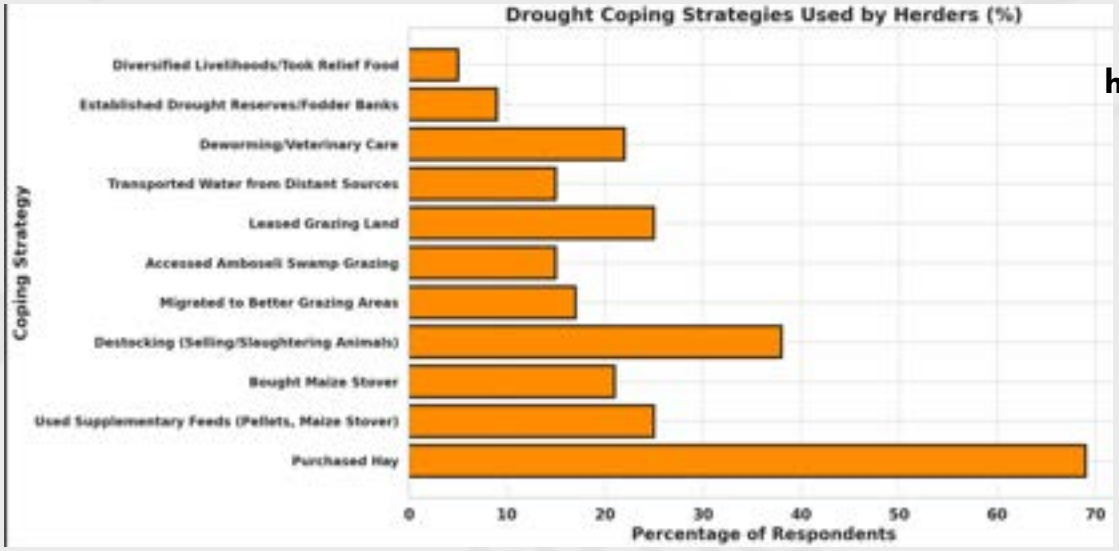



*Illustration of gender distribution of the respondents*

*Nicodemus, MOSAIC spatial statistician, discussing with the respondents during the survey in Amboseli.*

The questionnaire covered 4 major group ranches including Olgulului, Kimana, Eselenkei, and Imbirikani




**“336**

**The number of pastoralist households that took part in the survey.**

*Sakimba kimiti, A researcher with the MOSAIC project collects data from a respondent during the survey.*

# ...Involving Local Communities in MOSAIC

In many villages, the arrival of researchers conducting surveys is nothing new. People have answered questions about their livestock, health, and struggles. But after the researchers left, life remained the same. So when the MOSAIC team began conducting the One Health survey in Amboseli, some respondents hesitated. “What will come out of this?” they asked. “Will anything change?”

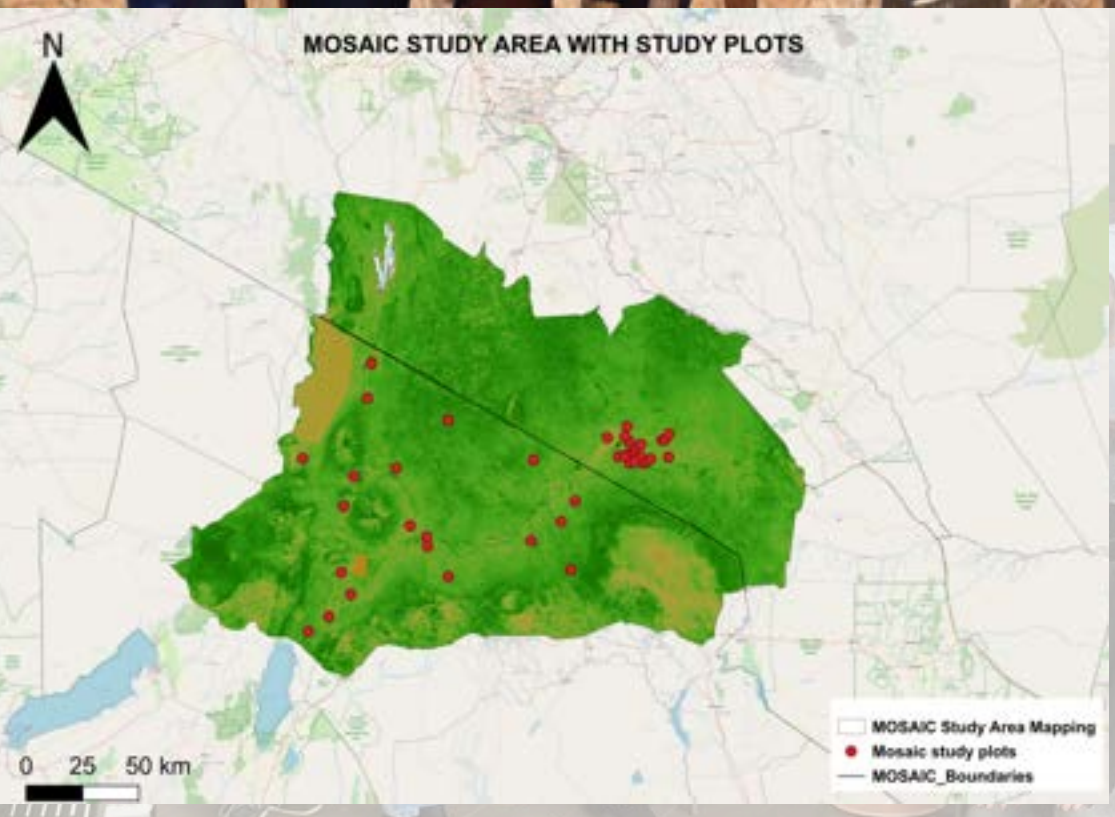
But something felt different this time. As the team moved from homestead to homestead, they, handed out MOSAIC brochures, translated into Maasai and inviting them to discuss their well-being, curiosity sparked! People sat down to read, recognizing their own realities reflected in the turning of pages.

Community members were highly willing to participate. Some volunteered to share their experiences and were eager to receive the survey results, curious about how the data would influence solutions. They wanted to ensure that One Health was not just an idea, but a movement driven by the very people it sought to support.

Paul Kasaine (right), maasai elder, and Peter Solonka of ACC during the one health surveys administration in Amboseli.

# *The health of the ecosystem through monitoring...*

From Left, Lekanaiya, Kasaine and Maitumo demonstrating to the MOSAIC team how they measure vegetation




Study region showing Southern Kenya and Nothern Tanzania

The team has employed remote sensing, satellite imagery, and NDVI index to measure various aspects of land health.

# Community Resource Assessors

Resource Assessors  supported by the MOSAIC project in Amboseli, monitor vegetation cover, water sources, and grazing conditions, ensuring that the data reflects real-time conditions on the ground.

The team is equipped with GPS-enabled Tablets, vegetation monitoring equipment, and field notebooks, which they use to record the data.

Accessing these areas isn't always easy. They use motorbikes to navigate and assess which areas are recovering and which are degrading. Their data helps predict grass availability, species distribution, land-use changes, and potential conflict zones between livestock and wildlife.

Dr.Victor Mose, Felista Ndunge and Winnie Kemunto issuing motorbikes to the resource assessors at the Noonkotiak Centre, 2024

The Maasai proverbs *Elatia nainasasa imanyit and Meer engudi nalakua olasurai* reflect a deep understanding that those closest to a problem are best placed to solve it, **Sakimba Kimiti, MOSAIC Community Researcher.**

The practise of open science in the MOSAIC project is a better way to empower the local community to understand the health and well-being consequences of ecosystem change and degradation. Through sharing of information we are able to address these consequences through adaptation and mitigation actions , **Nicodemus Mwania, MOSAIC-Statistician and GIS analyst.**

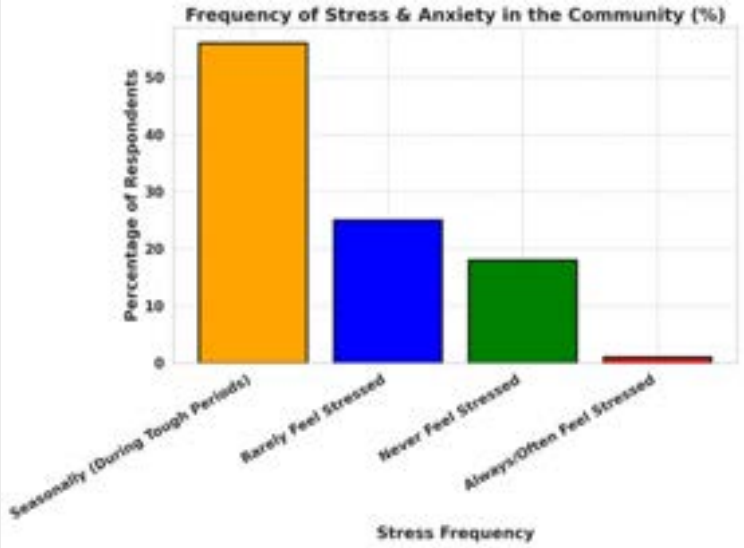
We are now at a crucial moment where local, traditional, and scientific knowledge must come together on a shared platform to create meaningful change.
**Prof. *Aneta Afelt, MOSAIC Co-leader, Poland.***

**From (right), Prof. Aneta Afelt, Daniel, Resource Assessors Sunte Kimiti and Paul Kasaine, Immaculate Ombongi and Sakimba Kimiti during a visit to the amboseli in september 2024 post MOSAIC East Africa Mission**

# Extreme drought and mental health.

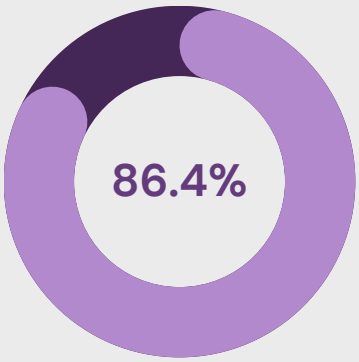
## Highlights from the One-Health Survey

### Stress in the Community: A Seasonal Burden

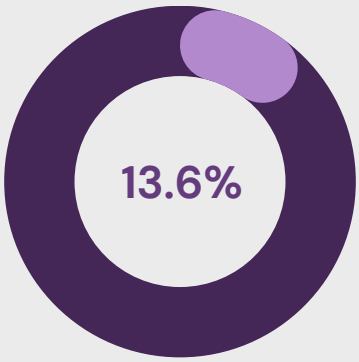



Over 50% of the community experiences stress and anxiety, but mainly during tough times such as the drought period when livestock and families struggle to find food. The burden weighs heavily on herders, who rely on their animals for survival.

What are the root causes of this stress? Respondents pointed to recurring droughts, livestock diseases, and the escalating cost of education as key factors. When cattle perish due to drought or disease, families lose not only their animals but also their primary source of income. The rising cost of school fees further strains their finances, while food insecurity becomes an ongoing challenge. Additionally, some herders face job losses, compounding their anxieties and deepening their sense of instability.




**Did Not Receive Mental Health Support**




**Receive Mental Health Support**

Over 86% of people surveyed had not received any form of mental health support in the past year. For many, stress and anxiety are simply part of life—unspoken, unmanaged, and endured!

# International Collaboration

The MOSAIC project extends beyond the borders of Amboseli, fostering connections among researchers, communities, and conservationists across regions. It serves as a global network that integrates scientific research, indigenous knowledge, and practical solutions, broadening the scope of One Health studies across diverse sites and ecosystems.

*Emmanuel Roux, MOSAIC Project Coordinator, Martha and local stakeholders during the field mission in East Africa.(Sept 2024).*

> *One tool which can help a lot in bringing together knowledge , data, and to share and facilitate research data and engagement of local communities, is open-science.* ***Emmanuel Roux (IRD- MOSAIC Coordinator).***

*Amazon Region Field Mission October 2024.*

> *When we think about Amboseli Park as conservationists we think a lot about wildlife and we usually forget the importance of domestic animals for the community.* ***Alessandra Nava (PICTIS/FIOCRUZ- MOSAIC-Co Leader).***

*Mosaic team at Lisbon, Portugal, March 2025.*

> *Science can help us to scale up, get to know what happens in other regions* ***Victor N. Mose, (ACP/ACC- MOSAIC Co-Leader).***

*At the Corpenicus, in Warsaw, Poland, December 2024.*

***Brazil, October 2024.***

# *Artificial Intelligence in the wild...*

During the first MOSAIC mission to the Amboseli ecosystem, the "ERAMATARE" game was introduced as an interactive platform for researchers, local community members, and stakeholders to engage in discussions on the envisaged future role of artificial intelligence (AI) in conservation. The game served as both an educational and exploratory tool, allowing participants to express their ideas, concerns, and hopes regarding AI potential impact on conservation efforts, particularly within the context of the One Health framework.

Sopa Lodge, 2024

Traditionally, Eramatare refers to a gathering where the community comes together to discuss important matters, ensuring that everyone's voice is heard and solutions benefit the whole group.

A scientific publication on the *eramatare* game is underway...

While some participants saw technology as a tool for predicting climate patterns and improving livestock health, others questioned its accessibility and cultural fit within the Maasai way of life.
A major concern was the fear of job losses—if AI and technology take over monitoring, tracking, and decision-making, what would happen to the people whose livelihoods depend on traditional herding, conservation work, and land management? Would technology complement their efforts, or replace them entirely?
Perhaps Co- Intelligence is the way to go!

# *Influencing local policy and scaling up to National & Regional level*

**Lucy Waruingi,**
**Executive Director ACC & MOSAIC Researcher**

Conservation success cannot exist in isolation—it must be embedded in policy and practice at national, regional, and global levels. The secretariat of Southern Rangelands Coalition provides a platform for collaboration with projects such as MOSAIC in bringing together regional and county agencies to advance integrated land management across southern Kenya.

Beyond policy, there is an opportunity for the next generation of conservation leaders through education. The Conservation Ambassadors Program which is inspiring young minds in schools, is fostering a deep connection to nature.

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## Noonkotiak Resource Centre

The planned Noonkotiak resource centre which will be the main research & information hub in Amboseli provides a physical space for the community to interact and co-design research products with scientist and other stakeholders.

This centre will facilitate advancement of community livelihoods, sustainable resource management, and human-wildlife coexistence through integration of research, policy, educational opportunities/knowledge sharing and income generating community projects.

# Maasai Highlight Longstanding Use of One Health (*Biotisho*) Approach in Rangelands

The Maasai concept of eseriani, which embodies their holistic view of well-being, illustrates their long-standing integration of environmental, animal, and human health. Their practices, such as recently embracing of early livestock sales to mitigate the impacts of extreme droughts and related diseases, showcase their adaptive strategies in response to environmental and mental stress. This integration is also reflected toponymically in place names like Kiserian in Kajiado County.

**Dr. Victor Mose, Co-Leader MOSAIC project.**

The Maasai have intuitively practiced One Health (*Biotisho*) principles long before they were formalized, demonstrating their deep understanding of the links between pasture health, livestock, and human well-being (*Eseriani*).

H.E. Arnaud Suquet, French Ambassador to Kenya, and Victor Mose at an Innovation and Science event held at the French Residence in Nairobi. The event featured discussions on One Health and highlighted ongoing activities under the MOSAIC project.

Victor Mose (left), Christine Omwombo (right), and Ms. Valérie Verdier (center), Chief Executive Officer of the French Institute for Research and Development (IRD), during a visit to the French Embassy residence in Nairobi. The meeting included discussions on the MOSAIC project and its contribution to the One Health agenda.

*MOSAIC team, Martha (left), Victor and Eduarda enjoy a photo moment with a local Maasai stakeholder during the mission in East Africa.*

# From the observation hill...

Dr. David Western(Jonah)
MOSAIC Project Advisor

"Years ago, when I started in Amboseli, I watched wildebeest, zebras, elephants, buffalo, Maasai, and the livestock track the seasonal rhythms, migrating with the rains and returning in the dry season. Maasai and wildlife coexisted here and were the inspiration for a new direction in conservation: securing Amboseli for both in the future, as in the past.

Unlike our modern conservation approach, which is built around creating parks and excluding people, the Maasai herds and wildlife shared the land and moved freely across the ecosystem.

Sharing space and moving to the rhythms of the seasons allowed both to survive the worst times and thrive in the best. Coexistence became the guiding principle for conserving Amboseli's wildlife.

Rather than confining wildlife to parks separated from people, Amboseli became a model for finding space and a place for both across the migratory range.

One Health (*biotisho*) recognizes the interconnected health of people, animals, and the environment.

In strengthening coexistence, supporting local communities, and ensuring conservation is a shared effort benefitting all, *biotisho* can safeguard Amboseli for the future.

*Mission participants at the Observation Hill.*

Amboseli is changing, but its story is not far from written. The challenge ahead is this: how do we move forward while sustaining the health of the land? The answer, I believe, lies in listening to the land, to the people, and to the lessons Amboseli has to offer.

Contributors:

- Ms. Chricencia Odhach- MOSAIC Health Database Manager.
- Ms. Felista Ndunge- MOSAIC Project Coordinator-East Africa.
- Mr. Kennedy Sakimba Kimiti- MOSAIC Community Researcher.
- Ms. Lucy Waruingi- MOSAIC Researcher.
- Mr. Nicodemus Mwania- MOSAIC- Statistician & GIS Analyst.
- Mr. Paul Kasaine-Community Resource Assessor.
- Mr. Samuel Lekanaiya-Community Resource Assessor.
- Mr. Sunte Kimiti-Community Resource Assessor.
- Dr. Victor N. Mose- MOSAIC Co-leader & Researcher.
- Dr. David Western- MOSAIC Project Advisor.

MOSAIC

ACC AFRICAN CONSERVATION CENTRE

AMBOSELI CONSERVATION PROGRAM

55 Hekima Road, Fair Acres, 15289
00509 Nairobi, Kenya.

https://amboseliprogram.org/
https://accafrica.org
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