

MONTHLY CONSERVATION REPORT
DECEMBER 2024



HIGHLIGHTS



The Mugie Conservancy is a 200 km² Conservation Area located in the North-Western part of Laikipia. The Conservancy is home to several endangered species and plays a key role in connecting Laikipia with the Rift Valley and the Northern Frontier.

Mugie is driven by its mission “To maintain connectivity between the Rift Valley and the Laikipia Plateau; protect and enhance the distinct heritage, history and ecosystem services of the ecological and cultural landscape; conserve and reintroduce endangered species, habitats and natural processes; utilise the sustainable potential of the landscape for measured economic development; whilst safeguarding and promoting the knowledge and skills required for successful conservation and sustainable rangeland management.” The Conservancy engages in several conservation activities explored through this monthly report.

The General Manager’s message

The year concluded with rainfall levels significantly higher than usual, which has been fantastic for the landscape, fostering impressive rangeland recovery after several years of below-average precipitation. However, this surge in rainfall has brought some challenges as well. Elephants, in search of food, have caused significant damage to the olive groves, stripping trees of their fruit. Some of these olive trees are centuries old, and the destruction is particularly concerning given their age and historical significance.

The following table indicates the major achievements and challenges that occurred in the month and the rare wildlife sighting of the month.

| | |
|-----------------------|---|
| Achievement | - Internal Earth Ranger refresher training |
| Challenges | - Nil |
| Sighting of the month | - 9 lion cubs of different ages in Walimu’s pride |

METEOROLOGICAL DATA



The Mugie Conservancy monitors and records the weather conditions daily to influence the decision-making process based on weather cycles and to have reliable forecasts. The data collected is also shared with the Kenya Meteorological Department for their records. So far, the data collected has significantly supported Mugie.

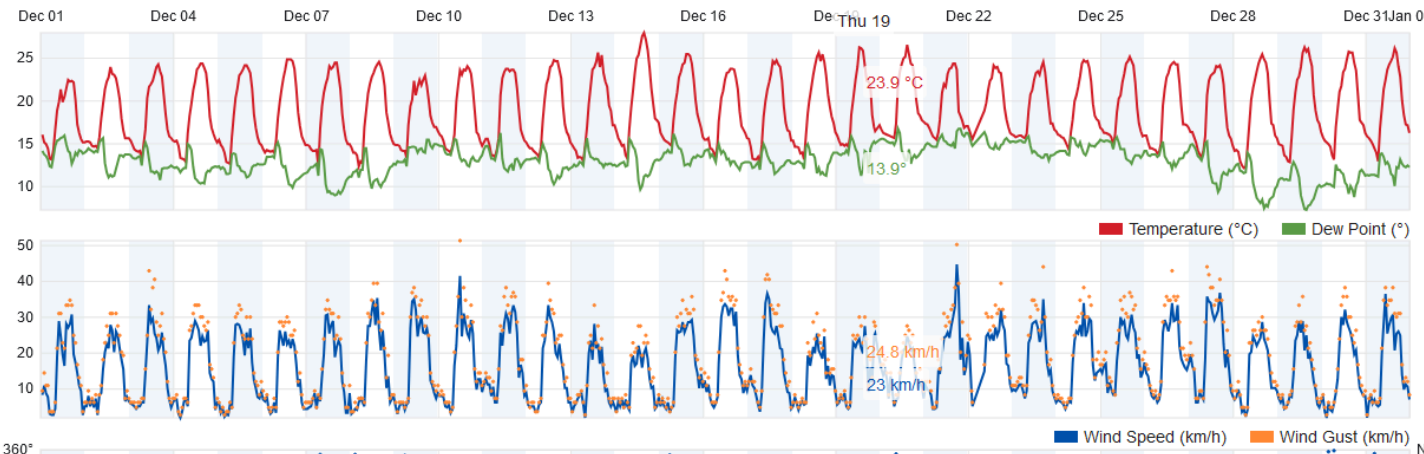
Rainfall data is collected through 12 manual rain gauges spread across the conservancy. Temperature, wind, pressure, and solar radiation are collected via a weather station installed at the Mugie headquarters

The below table shows the data collected for the various meteorological metrics during the reporting period.

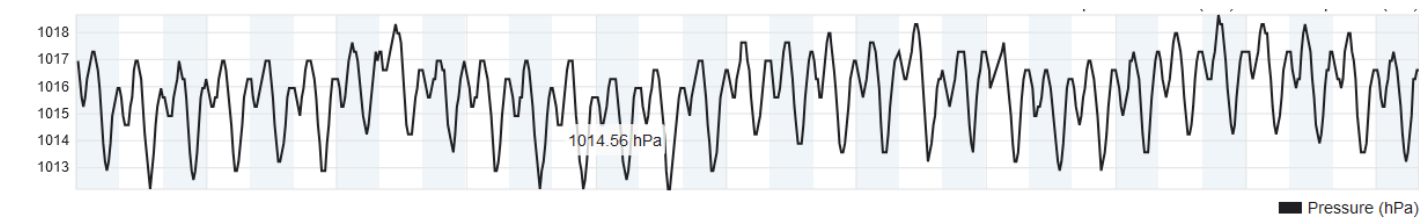
| Metric | Max | Min |
|-------------|---------------|--------------|
| Temperature | 27.9 °C | 10.9 °C |
| Dew Point | 16.7°C | 5.6°C |
| Humidity | 98% | 28% |
| Wind Speed | 44.6 km/h | 0 km/h |
| Pressure | 1,1018.63 hPa | 1,011.85 hPa |

Temperature and wind during December 2024

December 1, 2024 - December 31, 2024



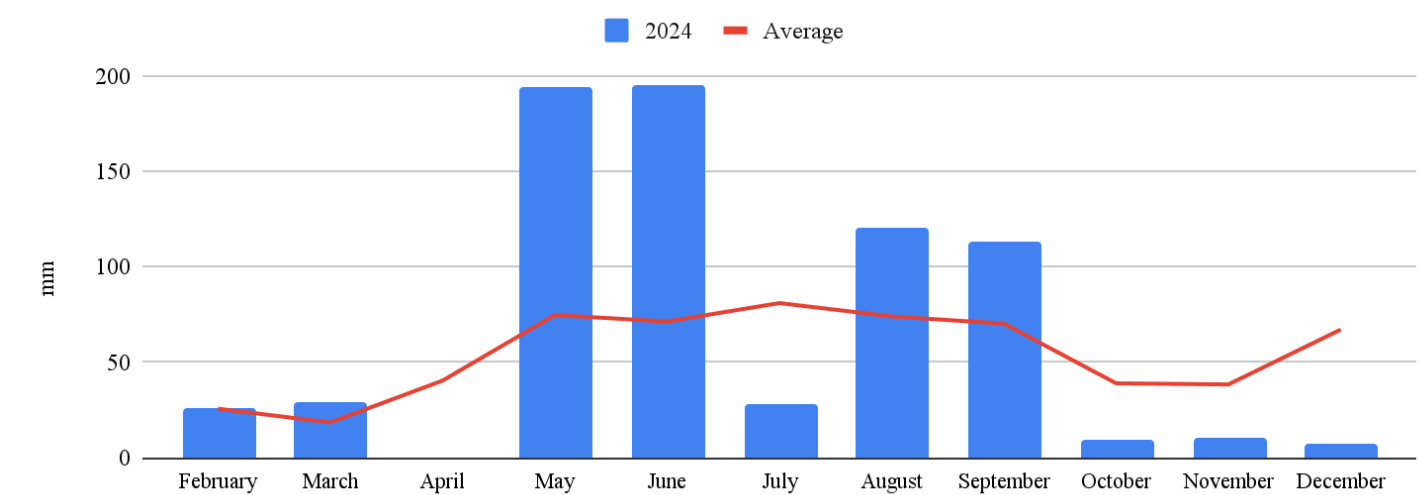
Pressure during December 2024



Rainfall Data in mm

| Station | Jan | Feb | Mar | April | May | June | July | Aug | Sep | Oct | Nov | Dec | Total |
|-----------|------|------|-----|-------|-------|------|-------|-------|------|------|------|-----|-------|
| HQ | 13.6 | 31.4 | 0 | 275.3 | 264 | 55.7 | 113 | 113.3 | 29.2 | 4.4 | 8.1 | 10 | 918 |
| Lima 6 | 45.5 | 57 | 0 | 208 | 256.5 | 35 | 177.5 | 92.5 | 48.8 | 17.5 | 13.1 | 4.5 | 955.9 |
| Mutamaiyu | 25.5 | 19 | 0 | 143 | 182.5 | 39.5 | 161.5 | 86 | 44 | 17 | 21.5 | 0 | 739.5 |
| Golf | 9.5 | 37.5 | 0 | 180 | 231 | 35 | 124.5 | 93 | 16 | 18 | 8.0 | 13 | 765.5 |
| Lima 9 | 26 | 18 | 4.5 | 202 | 84.5 | 4 | 89.5 | 160 | 10 | 8 | 7.8 | 4 | 618.3 |
| Lima 8 | 40.5 | 32 | 0 | 213.5 | 181 | 13 | 92.5 | 99 | 30 | 9 | 6.3 | 0 | 716.8 |
| Nomotio | 62.5 | 57 | 0 | 128.5 | 186 | 22 | 167 | 73.5 | 20 | 0 | 15.2 | 5 | 736.7 |
| Lima 4 | 15 | 35 | 0 | 127 | 190 | 19 | 157 | 113.5 | 42.5 | 14.5 | 8.3 | 3 | 724.8 |
| Lima 2 | 20.5 | 36 | 0 | 195.5 | 169 | 24 | 75 | 158 | 16 | 8.5 | 16.5 | 19 | 738 |
| Lima 10 | 4 | 11 | 0 | 123 | 126 | 16.5 | 127.4 | 183.5 | 75 | 5 | 10.6 | 1 | 683 |
| Bravo 6 | 13 | 34 | 0 | 244 | 252 | 59 | 112.5 | 95 | 49 | 0 | 5 | 13 | 876.5 |
| Ekorian | 36 | 11 | 0 | 192 | 220 | 17 | 42 | 93 | 24 | 7.1 | 6 | 19 | 667.1 |
| AVERAGE | 26 | 31.6 | 0.4 | 186 | 195.2 | 28.3 | 120 | 113.4 | 33.7 | 9.1 | 10.5 | 7.6 | 761.6 |

The below chart shows the rainfall received in the month compared to the 2010-2023 rainfall average.



December's rainfall was significantly below the average recorded over the past 13 years.



WILDLIFE PROTECTION

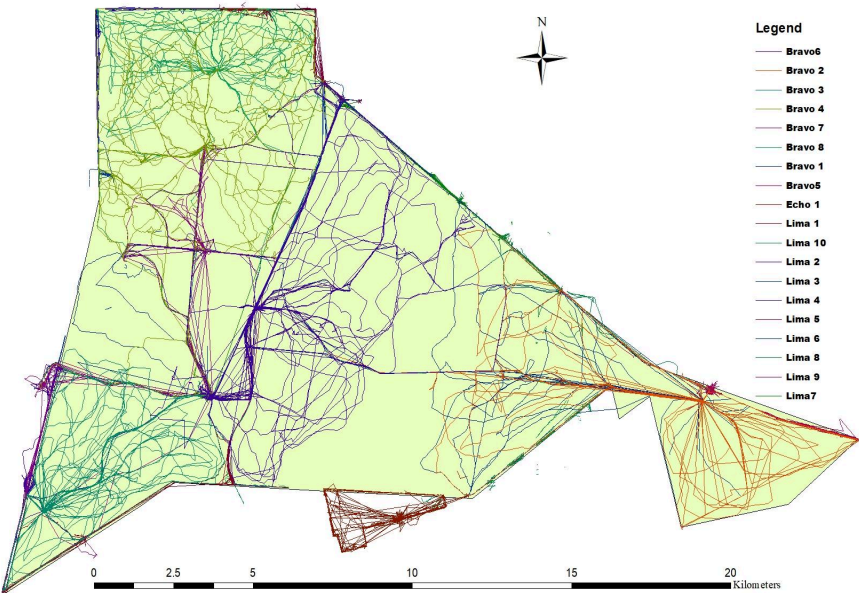


The Mugie Conservancy’s rangers patrol the conservancy day in and day out to ensure the safety of all wildlife, livestock, and people living inside the Conservancy. The 50 rangers and 34 NPRs are based on 11 perimeter stations and 7 internal ones, allowing for a comprehensive conservancy coverage. During the month in review, the ranger team covered 10,055 kilometres on foot. The below table shows the kilometres covered on foot by the rangers on EarthRanger in December 2024

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total | Average |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|--------|--------|---------|
| 6,685 | 3,414 | 8,403 | 7,815 | 6,373 | 6,291 | 9,403 | 8,669 | 9,735 | 12,928 | 9,944 | 10,055 | 99,716 | 8,310 |

To support the rangers on the ground in their operations, Mugie also has a K9 team composed of 3 dogs and 3 handlers. The unit plays a key role in tracking down suspects and over the years it has helped Mugie solve several wildlife crime incidents and petty crimes in the nearby villages.

Mugie’s rangers utilise Earthranger to collect real-time data regarding wildlife sightings and any possible incident to allow for quicker responses and informed decision-making. The map on the right, generated through EarthRanger, shows the area covered by the patrol teams in December 2024. The map allows the conservancy to identify gaps in the patrols and make necessary adjustments in the following months to ensure an efficient and effective Conservancy coverage over the long term.



INCIDENTS

Data collection regarding wildlife incidents allows Mugie to understand trends and correlations that inform decision-making. Several incidents involving wildlife were recorded during the month in review, said incidents are recorded in the below table.

| Incidents | | Occurrence | Details |
|-----------------------------------|-----------------|------------|--|
| <i>Human-Wildlife Conflict</i> | Predation | 3 | 1 calf at Shamba ya Nyasi by hyena, 1 calf at Somou by leopard and 1 sheep at HQ by leopard |
| | Crop raiding | 0 | Nil |
| | Property damage | 2 | Elephants damaging fence lines |
| | Retaliation | 0 | Nil |
| | Fence | 0 | Nil |
| | Other | 1 | Juvenile buffalo injured |
| <i>Vehicle-Wildlife Collision</i> | | 8 | Lokitoe (1 owl, 1 zorilla), Emuria (1 zorilla), Kivuruti (1 guineafowl), Naibor (1 puff adder), Loitikon (1 bird and 1 snake), Limagolf (1 guineafowl) |
| <i>Poaching</i> | | 0 | Nil |
| <i>Disease</i> | | 0 | Nil |
| <i>Electrocution</i> | | 0 | Nil |
| <i>Other illegal activities</i> | | 0 | Nil |

Mugie also supports its neighbouring communities in matters of HWC, the table below summarises the reports received.

| Incidents | | Occurrence | Details |
|--------------------------------|----------------------|------------|--|
| <i>Human-Wildlife Conflict</i> | Predation | 3 | 2 leopards, 1 hyena |
| | Crop raiding | 0 | Nil |
| | Property damage | 0 | Nil |
| | Retaliation | 0 | Nil |
| | Poaching | 0 | Nil |
| | Other | 0 | Nil |
| <i>Illegal Logging</i> | Charcoal/Sandal wood | Daily | Significant charcoal burning on Western and Southern boundaries. Operations are put in place to reduce the same, but require multi-sector interventions. The Louniek corridor will support in limiting the charcoal burning in the area once the construction is finished. KWS has been active in destroying kilns in the area. Some threats on sandalwood harvesting. |

CORRIDOR MOVEMENT



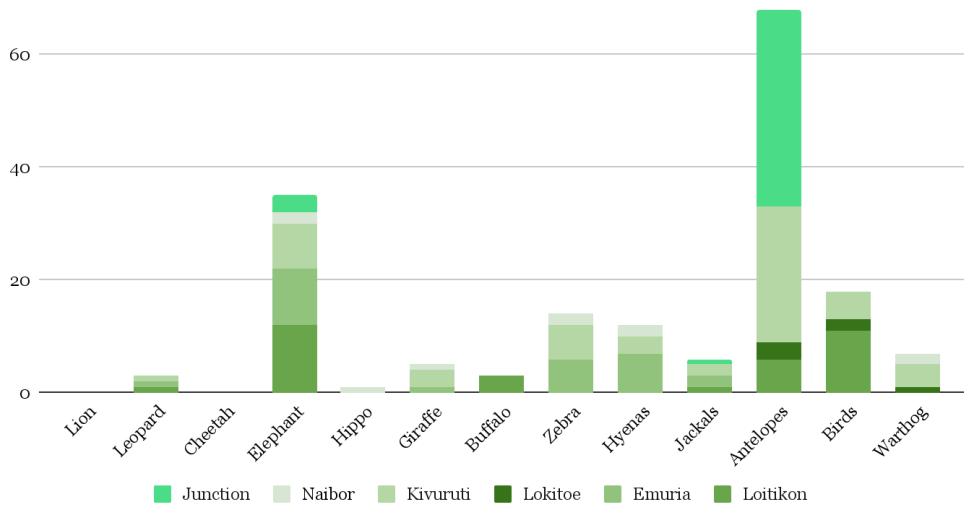
The integrity and functionality of any given ecosystem, and therefore the maintenance of biodiversity and ecosystem services, are made possible by the flow of energy, nutrients, organisms, genes, and information across landscapes. Because of the importance of these flows in the maintenance of landscapes and biodiversity conservation, habitat connectivity is a key conservation element. Mugie is bisected by the National A4 Highway and is mostly fenced in its boundaries, however the conservancy plays a key role in connecting the Rift Valley to the Laikipia Plateau and the Northern Frontier by maintaining corridors that allow for the free flow of wildlife.

A4 CORRIDORS

The A4 bisecting Mugie is a major conservation challenge as it splits the conservancy in two, threatening the wider landscape connectivity. In order to mitigate the negative externalities of the linear infrastructure, thanks to GPS data collected over the years, Mugie identified 6 major wildlife corridors along the road and placed gaps in the fenceline in the identified locations. In order to reduce the risk of collisions with vehicles, Mugie worked in collaboration with KeNHA to place speed bumps in the proximity of the identified corridors. It is Mugie’s hope to raise funds in order to place more advanced and efficient forms of crossings in each corridor and fence the other side of the road in order to safely funnel wildlife from one side to the other and reduce consequential damages and loss of life due to collisions.

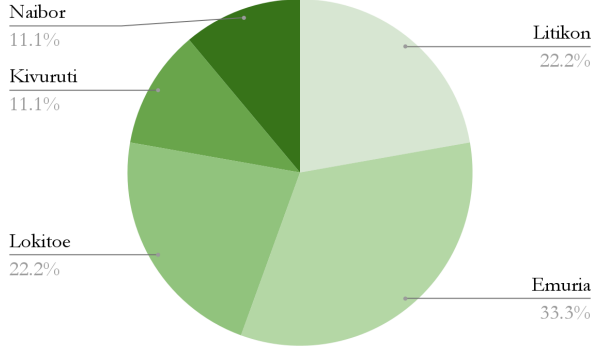
Recorded species

The below graph indicates the number of selected species encounter rates per corridor.

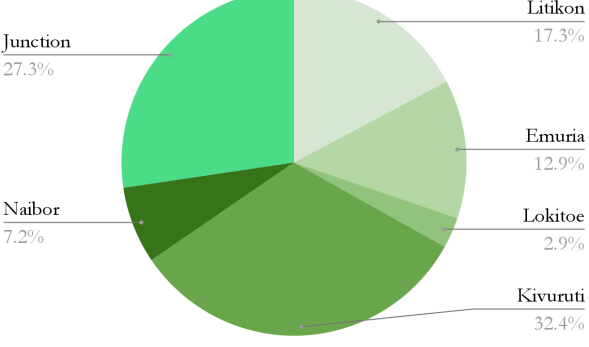


Closer observation and analysis of the data has shown that different species use some corridors more than others. The below chart shows the correlation between major species and individual corridors.

Predators



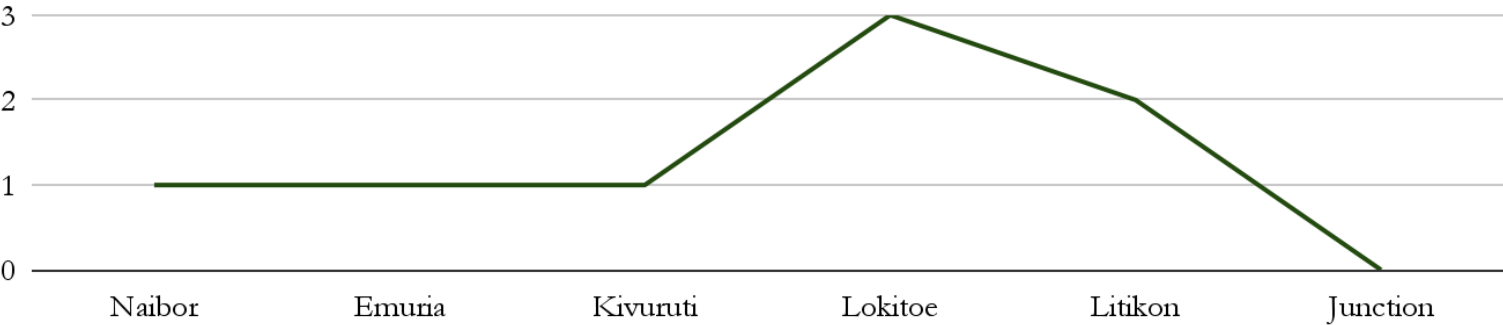
Herbivores



Corridor encounter rates for main species can be seen in the below table

| Species | Litikon | Emuria | Lokitoe | Kivuruti | Naibor | Junction |
|-----------|---------|--------|---------|----------|--------|----------|
| Lion | 0 | 0 | 0 | 0 | 0 | 0 |
| Leopard | 1 | 1 | 0 | 1 | 0 | 0 |
| Cheetah | 0 | 0 | 0 | 0 | 0 | 0 |
| Elephant | 12 | 10 | 0 | 8 | 2 | 3 |
| Hippo | 0 | 0 | 0 | 0 | 1 | 0 |
| Giraffe | 1 | 0 | 3 | 0 | 0 | 3 |
| Buffalo | 3 | 0 | 0 | 0 | 0 | 0 |
| Zebra | 0 | 6 | 0 | 6 | 0 | 2 |
| Hyena | 0 | 7 | 0 | 3 | 0 | 2 |
| Warthog | 0 | 0 | 1 | 4 | 2 | 0 |
| Jackal | 1 | 2 | 0 | 2 | 0 | 1 |
| Antelopes | 6 | 0 | 3 | 24 | 0 | 35 |
| Birds | 11 | 0 | 2 | 5 | 0 | 0 |

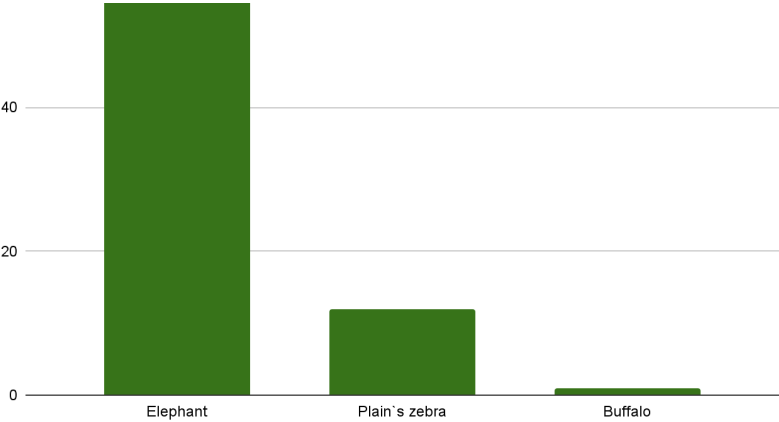
The below table indicates the percentages of Vehicle-Wildlife Collisions per section of the A4



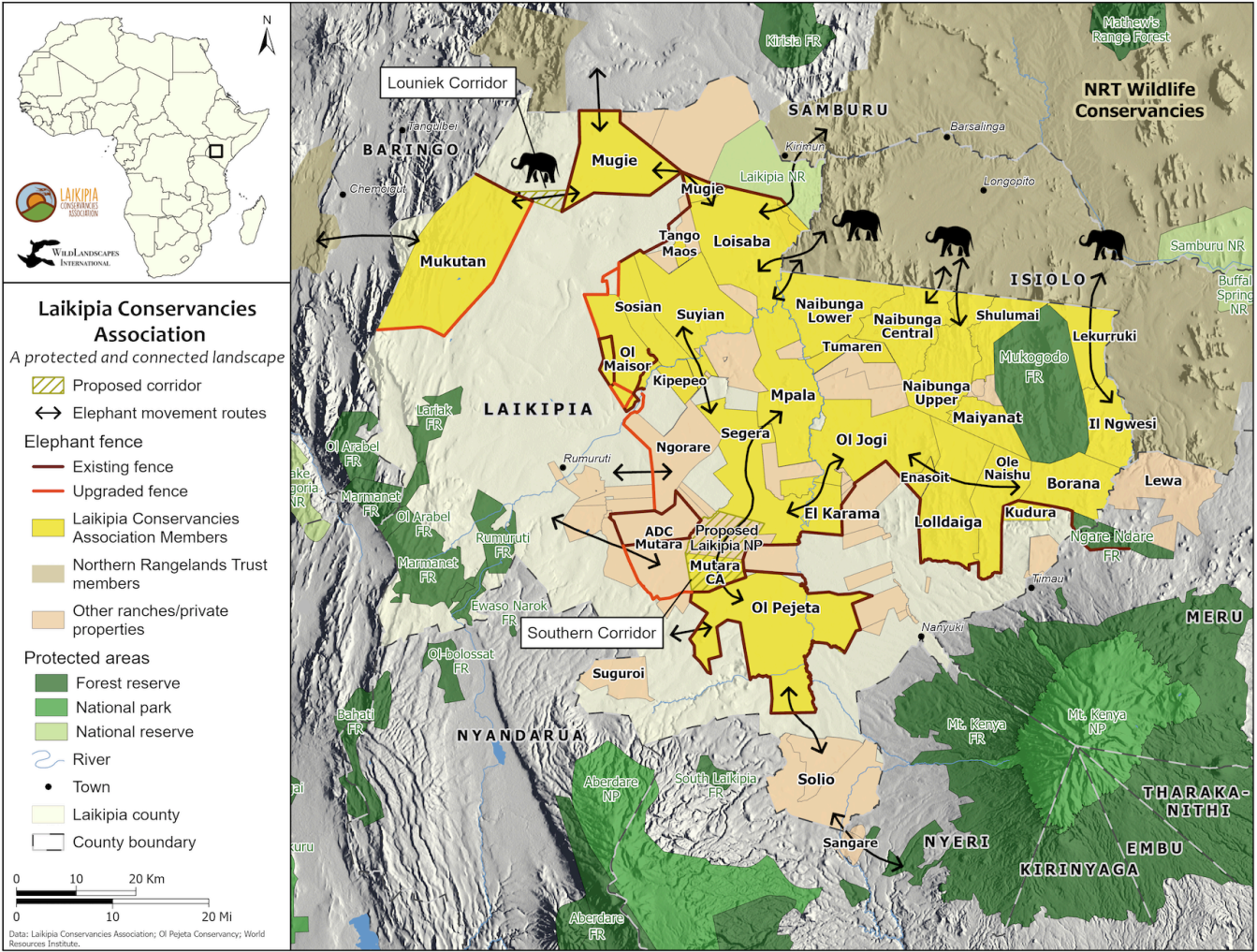
WIDER LANDSCAPE CORRIDORS

To keep connectivity across the wider landscape, Mugie has various corridors along its boundary. A major corridor is Kitenye, an area that connects Mugie to Loisaba Conservancy. At the moment, Mugie is in the process of opening another major corridor with Mukutan Conservancy, strengthening the habitat connectivity to Baringo and the Rift Valley. Other corridors include Loitikon and Kilo 1 towards Samburu and therefore the Northern Frontier.

The chart below shows the species using the Kilo 1 and Loitikon corridors during the month under review.



The below map shows Mugie in the landscape and the various corridors. From the map it is possible to understand the importance of the Conservancy in connecting the Laikipia Plateau with the Rift Valley and the Northern Frontier.



LION MONITORING

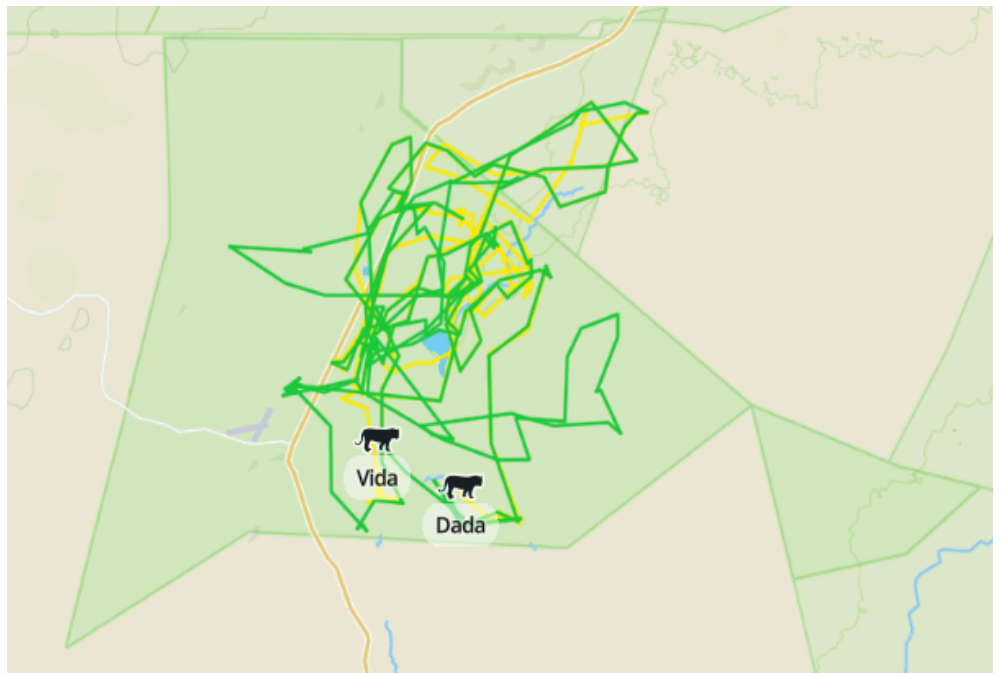


Lions pose a major conservation challenge due the conflicts that arise from the killing of livestock. Mugie currently has approximately 60 lions with 4 major prides and several smaller groups across the Conservancy. In order to reduce and prevent the predation of livestock, seven females in three different prides and one male were fitted with a collar in partnership with Lion Landscapes, KWS and WRTI. The collars allow the Conservation Team to follow the pride movements and prevent incidents from happening by making the herders/community aware of the presence of lions in their specific areas.

The collars also allow the Conservation Team to better understand the movements of the prides within the Conservancy and the overlapping of their territories. All monitoring, tracking, and analysis are conducted through EarthRanger.

The map, extracted from EarthRanger, shows the movements of Dada and Vida throughout the month being reviewed.

During the month the collared lionesses spent some time outside the conservancy towards the north. Dada was treated by the KWS vets for a limp and she is now doing well. Bast's collar hasn't been transmitting any signals, and for the past few weeks, the team has been actively searching for her in the conservancy. She has been spotted multiple times during this period.



VULTURE SAFE FEEDING SITE



Vultures are often widely loathed, however, they play a key role in every ecosystem by keeping it healthy and disease-free as they consume carrion. Unfortunately, the ecosystem services provided by vulture populations are significantly decreasing in Kenya and throughout Africa as the populations are seeing drastic downfalls.

To address the issue, Mugie in collaboration with KWS, WRTI, The Peregrine Fund, Kenya Birds of Prey Trust, and National Geographic opened a vulture-safe feeding site, where poison-free carrion is fed to the birds.

This project aims to pilot a sustainable and safe Vulture Feeding Site and measure its short-term effects on scavenger and predator populations, local communities as financial beneficiaries, and the tourism experience as a gauge of its long-term sustainability. Ultimately, the project aims at creating a series of coordinated vulture restaurants across the northern Laikipia landscape that benefit vultures, and local communities, and that provide a unique tourist attraction, not found elsewhere in Kenya, which will provide sustained income to maintain this project over the long-term.

INVASIVE SPECIES MANAGEMENT



Invasive species are a major conservation challenge across the world, and Mugie is not exempt. The identified invasive species in Mugie are *Schkuhria* spp, *Bidens pilosa*, *Parthenium* spp, *Opuntia stricta*, *Cirsium vulgae*, *Dodonaea viscosa*, *Xanthium strumarium*, *Eichhornia crassipes*, *Datura stramonium*, *Hyacinthus* and *Kalanchoe delagoensis*. To prevent the complete spreading of invasive plants, especially *Opuntia*, Mugie has trained its rangers to identify the plant and report it through EarthRanger so that a team can be sent to remove and rid the plant without the risk of its spreading. *Opuntia* is a major issue in the wider landscape with areas where the plant has up to 80% coverage, drastically reducing pasture availability. *Opuntia* is easily spread by wildlife that eats it; such as elephants, baboons, and other antelopes.

ACTIVITIES OF NOTE



Carnivore Conservation

Lion

- The KWS vet team treated Dada after she was observed limping.
- Lion identification through LINC continued to establish their population within Mugie.
- All the various prides were confirmed to be doing well in the month under review.
- A request was sent to KWS to re-collar Walimu, Sarabi, Mfalme and Bast

Leopard

- Ongoing camera trap data collection with Uhifadhi wa Chui (San Diego Zoo's Leopard program in Kenya).

Cheetah

- Ongoing collection of ID images to better understand Mugie's cheetah population.
- Ongoing monitoring of the collared Chongo Coalition.

Louniek Corridor

The Louniek corridor connects Mugie and Mukutan Conservancies, this is a critical corridor that connects the Rift Valley with the Laikipia plateau and further afar. During the month under review, the fencing works carried on with minimal interruptions. A team of 6 corridor scouts played a key role in community sensitization, information sharing, and data collection through EarthRanger. There were several incidents related to malicious damage of the corridor fence lines and elephants breaking the fence.

Coexistence Training

Thanks to a long-standing partnership between Mugie Conservancy and The Peregrine Fund (TPF), several training sessions are conducted by the TPF team in Mugie. The various trainings aim at promoting a peaceful coexistence between pastoralists and predators, covering topics such as predator-proof boma construction, effects of poisoning, and incident management.

Climate Change

Climate change significantly impacts rangelands in Mugie Conservancy, affecting vegetation, water resources, and ecosystem health. Changes in temperature, rainfall, and extreme weather degrade grazing areas, limiting forage for livestock and wildlife. This scarcity pushes wildlife toward human settlements, increasing conflicts such as crop raids and livestock attacks. Effective rangeland management ensures adequate grazing and water, keeping wildlife within natural habitats. Mugie's commitment to sustainable practices enhances forage and water availability while developing carbon projects to generate revenue through carbon credits, promoting soil health and carbon storage. This balanced approach supports ecosystem restoration, conservation and community wellbeing.

WASTE MANAGEMENT



Growing human development means an increased pressure on nature. Waste is a major problem across the world, especially plastic. To mitigate the impact of waste on the local ecosystem, Mugie has constructed a waste management centre where all the waste collected along the A4 highway and waste generated inside the Conservancy is collected and sorted. The sorted waste is then collected by certified recycling companies.

The table below shows the amount of waste in kg collected along the A4 highway during the month.

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total | Average |
|------|-----|------|-------|------|-----|------|------|-------|------|-----|-------|---------|---------|
| 95.5 | 80 | 37.5 | 127.3 | 74.5 | 160 | 86.5 | 94.5 | 136.5 | 55.7 | 126 | 124.5 | 1,198.5 | 99.9 |

EDUCATION



Kids are the future and education plays a key role in supporting them to shape the same. Once a week, the Mugie’s team in collaboration with its tourism partners; holds a Healthy Kids Class in which conservation, sustainability, and healthcare topics are discussed with Mugie’s school kids engagingly. The program has been so far proven incredibly successful, with significant interest from all the kids.

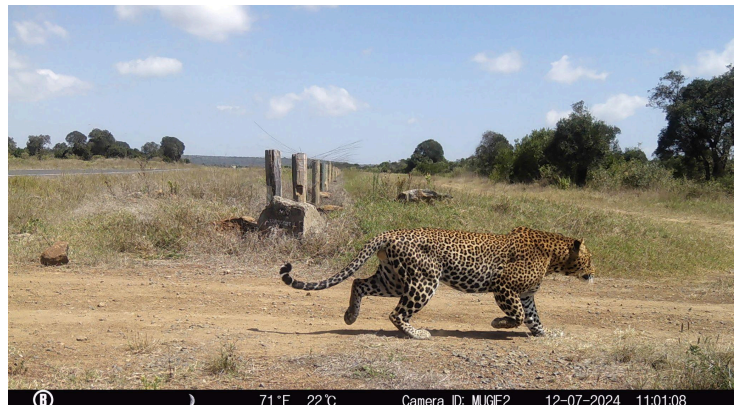


CAMERA TRAPS

Camera traps play a key role in monitoring wildlife movements across corridors and the conservancy as a whole. Mugie has also partnered with Wildlife Protection Solutions to have data-enabled cameras across the conservancy sharing live data with the Conservation and Security Teams in order to improve response speed to any incident.

All the images collected are then sorted with the support of Trap Tagger and then uploaded into different wild books to identify individual animals. The identification of individual animals allows the Conservation Team to better understand the spatial ecology and interactions of identified animals.

A total of 1,264 images were analysed with the help of TrapTagger. During the analysis several images with crossing wildlife and vehicle lights in the background were noted. This highlights the importance of proper wildlife corridors along highways.





CONSERVATION PARTNERS

Mugie would like to acknowledge and thank the below partners for their continued support in the various aspects of conservation both inside Mugie and in its neighbouring communities.

