



ENONKISHU
CONSERVANCY

ENONKISHU CONSERVANCY QUARTERLY REPORT

OCTOBER - DECEMBER 2019

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HIGHLIGHTS FROM OCT-DEC 2019:

- Kisaru and her six cubs (born July 2019) have been coming in and out of Enonkishu since 4 November much to the delight of Enonkishu visitors.
- Dr. Elena Chelysheva gave a workshop to guides, guests, and rangers on cheetah behavior, identification, and group dynamics as well as guiding protocol.
- Q4 2019 brought exceptional rainfall of 592 mm, mostly starting in November.
- Predator sightings continue to rise in Enonkishu with the first wild dog of 2019 spotted in Enonkishu in December.
- Data has continued to be collected on the enclosure cages placed strategically throughout Enonkishu by University of Minnesota's Abby Guthmann. Her study investigates the effectiveness of Enonkishu's grazing practices.
- Enonkishu's Patreon campaign has launched. See details at: <https://www.patreon.com/enonkishu>. Earn rewards by contributing to the conservancy.
- Fourteen Boran cross calves were born to the Herds for Growth herd, one of which was born to a cow that now has two calves!
- Snapshot Safari camera traps continued to be serviced monthly across Enonkishu and Ol Chorro. To sort camera trap images, register at <https://www.zooniverse.org/projects/aguthmann/snapshot-enonkishu>
- A proposal was submitted to KWS and Sheldrick Wildlife Trust to fund an 11 km fence that will protect elephants and crop fields on the conservancy's boundary.
- Ecotraining had a busy quarter at Mara Training Centre and got involved with wildlife monitoring and training the rangers.
- Photographer Chris Taylor visited Enonkishu in October 2019 and delivered masses of monitoring equipment to Enonkishu conservancy.
- Enonkishu Conservancy members committed to entering into a 15 year registered lease to demonstrate their commitment to the conservancy movement.
- Enonkishu's management plan is nearly ready for endorsement by conservancy members.
- The Northern Mara Vaccination Campaign in December vaccinated 752 domestic animals against rabies.
- The search continues for a tourism operator to occupy the site formerly known as Mara Nubian and join the ESCo team in establishing Enonkishu's sustainable future.

I. INTRODUCTION

Enonkishu conservancy has adopted a unique approach to create a balance between people, livestock and wildlife through Holistic Management. By pioneering this distinctive approach in sustainable rangeland management, space is shared among the trio (people, livestock and wildlife) leading to peaceful co-existence. In addition, livestock-wildlife integration provides an opportunity for the landowners to receive significant income emanating from both livestock and tourism enterprises. Livestock graze within the conservancy following a grazing plan drawn bi-annually during the wet and dry seasons. Enonkishu Stakeholders' Company Limited manages cattle belonging to the conservancy as well as those belonging to individual conservancy members at a fixed rate per cow per month. "CowCare" includes, herders, herd manager, maintenance workers, night guards, preventative medication, and routine treatments to control disease. During the day the herders manage the livestock by bunching the herd and grazing them according to the plan. At night, the cattle are enclosed in mobile metal bomas to prevent attack from predators.

Enonkishu aims to provide evidence of ecosystem rehabilitation by monitoring the ecosystem in a holistic manner. Livestock is monitored daily and officially counted at the end of each month. Vegetation is measured by scoring fourteen transects on nineteen parameters at the end of each quarter. Wildlife is monitored daily by rangers on foot using the WILD smart phone application. In addition, two 1-km wildlife monitoring transects have been conducted twice per month since 2016. In September 2018, Enonkishu added a camera trap grid throughout the conservancy and Naretoi. In February 2019, additional wildlife monitoring methods were added including a water-hole observation study, a point-count from an observation point on Kileleoni Hill, and vehicle transects that will be conducted monthly.



Figure I. Vigilant Thomson gazelle interrupted from grazing with the ESCo Herds for Growth.

2. WILDLIFE TRENDS

2.1 WILDLIFE SIGHTINGS DURING RANGER PATROLS AND VISITORS' GAME DRIVES



Figure 2. Kisaru, bounding along the Naretoi gate on 22 Dec.
Photo by Steph Dloniak

Predators in Enonkishu were at an all time high throughout the last quarter of 2019 (Table 1). Kisaru, a cheetah who gave birth to 6 cubs on the northern boundary of Enonkishu in July 2019 continues to make appearances. She and her tribe have crossed into Naretoi on a few occasions, the first on 22 December (Figure 2). As we venture to strengthen our relationships with our neighboring conservancies, tourist vehicles from their establishments are welcome to traverse into Enonkishu. The rangers have been keeping a tally of how many vehicles are with the very sociable cheetah each day.

Notably, a group of 5-7 lions spent 27 November in B7, near the Naretoi main gate. They stopped traffic along the public road several times throughout the day (Figure 3).



Figure 3. A lioness near Naretoi main gate from 27 November 2019. *Photo by Brett Sievright*

During the vaccination campaign in December, the volunteers were treated with a sighting of an injured male wild dog. This was rather noteworthy considering it was the only live sighting in Enonkishu throughout 2019. The Mara Predator Conservation Programme was informed as it is very rare for a wild dog to travel on its own. Apparently, this male has been injured for over six months and has survived solo.



Figure 4. Lone wild dog spotted on 13 December 2019 by volunteer veterinarians.

House in the Wild guides have caught several glimpses of a leopard female and cub near the gate to House in the Wild. In October, Chris Taylor captured an image of a leopard on his veranda at HIW (Figure 5).



Figure 5. Leopard captured on camera trap at House in the Wild in October.
Photo by Chris Taylor.

Table I. Lion, cheetah, wild dog random encounters from Oct-Dec 2019.

Date	Species	Location	Observer	Notes
10 Oct 2019	Leopard	B8	Ecotraining	1 male
12 Oct 2019	Lion	B6	Rangers	1 Female
14 Oct 2019	Lion	Memusi	Rangers	2 individuals
3 Nov 2019	Leopard	B7	Rangers	1 adult seen along T2
4 Nov 2019	Cheetah	B13	Ecotraining	Kisaru and six cubs
6 Nov 2019	Leopard	B7	Ecotraining	1 adult
6 Nov 2019	Lion	B6	Rangers	
13 Nov 2019	Leopard	B7	Ecotraining	1 adult
23 Nov 2019	Lion	B9	Rangers	4 adults near Kuntai's home
26 Nov 2019	Lion	B9	Rangers	
27 Nov 2019	Lion	B7	Rangers	5 near Naretoi gate
29 Nov 2019	Lion	B6	Rangers	1 individual
13 Dec 2019	Cheetah	B12	Rangers	Kisaru and 6 cubs
14 Dec 2019	Wild dog	B7	Rangers	1 adult injured male
14 Dec 2019	Cheetah	B12	Rangers	Kisaru and 6 cubs
22 Dec 2019	Lion	B13	Rangers	6 individuals
22 Dec 2019	Cheetah	B12	Rangers	Kisaru and 6 cubs
24 Dec 2019	Lion	B8	Herders	
24 Dec 2019	Cheetah	B11	Herders	Kisaru and 6 cubs
26 Dec 2019	Lion	B10	Rangers	Unknown number
29 Dec 2019	Lion	B6	Rangers	
31 Dec 2019	Lion	B13	Rangers	At hippo carcass
31 Dec 2019	Leopard	B6	Herders	1 adult

Please share your accounts and
photos of predators with Enonkishu management so that relevant
researchers can be informed

info@enonkishu.org.

2.2 WILDLIFE DATA COLLECTED USING THE WILD SMART PHONE APPLICATION

The WILD smart phone application has been wrought with bugs and issues that have not been able to be corrected, due to limited funding for its development. After discussing the issues with MMWCA and other conservancy managers, management has come to the conclusion that most areas are being monitored through Cyber Tracker. It is a well established application that can be customized to suit the needs of the conservancy. Although WILD was a wonderful introduction to using technology to monitor wildlife,

2.3 WILDLIFE TRANSECT COUNT

Beginning in June 2016, two 1 km transects were established within Enonkishu conservancy in Blocks 7 and 12. The transects are driven between 0700 and 0900 every two weeks. All species located within 100m on either side of the transect are counted and recorded. The data collected is intended to be part of a long term database to monitor wildlife as the conservancy progresses in its objectives of enhancing wildlife habitat through the tool of planned livestock grazing.

The most common species recorded are Thomson's gazelle, White-bearded wildebeest, Common wart-hog, Common impala, and Burchell's zebra. During Q4 2019, the average number of species counted was 7.0, ranging between 4 and 10. The average number of animals counted was 83.8, ranging between 18 and 149 (Figure 6, Figure 7). The number of species counted on the long-term simple transects was drastically lower than the overall averages, mostly due to the muddy conditions of the very wet season. However, the abundant grass produced by the rains will undoubtedly contribute to higher numbers when the mud dries out.

The data produced by the simple transects is shared with similar studies throughout the Mara to compare wildlife densities and abundance.

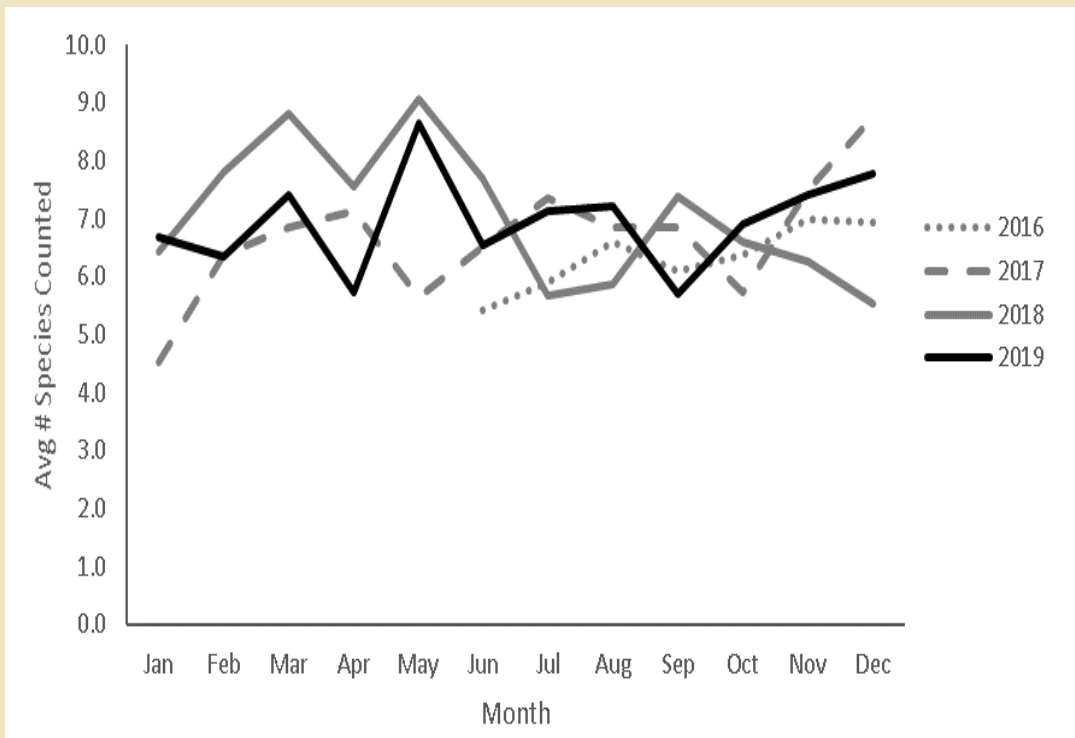


Figure 6. Average number of species counted 100 m each side of two x 2 km transects. Transects are conducted twice per month.

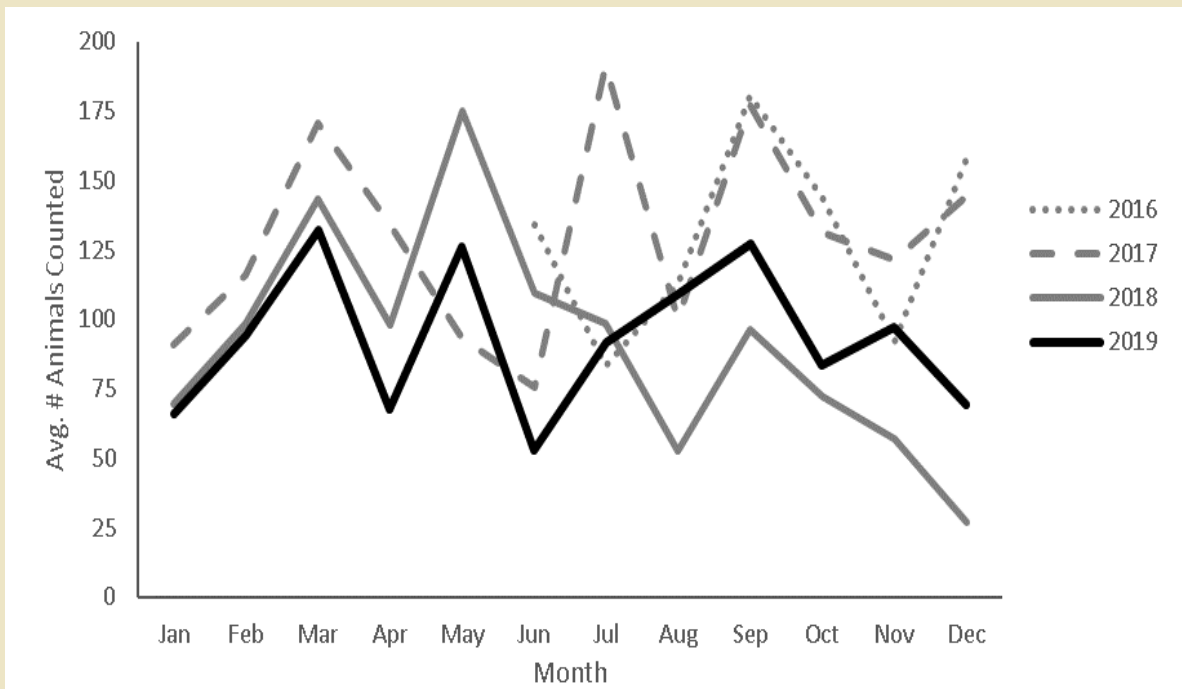


Figure 7. Average number of animals counted 100 m each side of two x 2 km transects. Transects are conducted twice per month.

Table 2. Species observed on 2 one-km wildlife transects Enonkishu Conservancy Oct-Dec 2019 in Enonkishu Conservancy.

Common Name	Scientific Name
African elephant	<i>Loxodonta Africana</i>
African hare	<i>Lepus microtis</i>
Banded mongoose	<i>Mungos mungo</i>
Bat-eared fox	<i>Otocyon megalotis</i>
Black-backed jackal	<i>Canis mesomelas</i>
Burchell's zebra	<i>Equus quagga burchelli</i>
Cape buffalo	<i>Syncerus caffer</i>
Common impala	<i>Aepyceros melampus</i>
Defassa waterbuck	<i>Kobus ellipsiprymnus</i>
Eland	<i>Taurotragus oryx</i>
Grant's gazelle	<i>Nanger granti</i>
Maasai giraffe	<i>Giraffa camelopardalis tippelskirchi</i>
Spotted hyena	<i>Crocuta Crocuta</i>
Thomson's gazelle	<i>Eudorcas thomsonii</i>
Topi	<i>Damaliscus lunatus jimela</i>
Warthog	<i>Phacochoerus africanus</i>
White-bearded wildebeest	<i>Connochaetes taurinus albojubatus</i>

2.4 RANGER IMPRESSIONS OF WILDLIFE NUMBERS

As the wildlife monitoring in Enonkishu has developed throughout 2019, the “back-up” plan was to ask the rangers to estimate the number of each species in the conservancy monthly (Table 3). In order to scrutinize the attentiveness of the rangers and the accuracy of estimates calculated from other methods, the ranger estimates will continue to be collected.

Table 3. Ranger’s estimates of common species within Enonkishu from Jan 2018 to current, averaged monthly.

Common Name	2018				2019			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Burchell’s zebra	208.3	165.0	175.7	196.7	243.3	260.0	312.0	340.0
Giraffe	42.7	39.3	57.0	61.3	50.0	51.7	33.8	20.0
Impala	461.7	533.3	223.3	230.0	203.3	286.0	282.4	621.7
Eland	43.3	52.7	36.7	31.7	42.7	54.3	25.6	41.3
Buffalo	28.3	39.0	39.7	40.0	43.0	58.3	55.3	45.0
White-bearded wildebeest	142.0	73.7	106.7	130.0	140.0	250.0	133.2	163.3
Warthog	169.7	196.7	249.0	216.7	203.3	213.3	242.1	132.7
Elephant	22.7	35.3	25.7	34.3	17.3	65.3	42.0	25.3
Thomson’s gazelle	130.0	130.0	164.7	118.3	163.3	181.7	143.1	106.7
Topi	18.7	23.3	19.7	8.3	8.0	26.3	7.0	18.7
Grant’s gazelle	19.3	15.0	23.0	21.7	19.0	14.3	16.1	16.7
Hartebeest	2.7	1.3	3.0	3.0	1.3	2.7	2.0	2.0
Hippopotamus	27.0	35.7	15.0	2.0	25.0	35.0	29.0	70.0
Waterbuck	21.3	22.0	13.3	10.7	10.0	11.0	12.8	15.0
Bushbuck	-	14.7	12.3	12.3	3.7	4.7	6.0	5.3
Spotted hyena	201.7	110.0	125.0	66.7	31.0	53.3	95.4	100.0
Lion	4.3	4.0	3.7	1.7	1.7	3.0	2.3	5.3
Leopard	4.0	8.0	3.0	5.0	3.7	4.0	2.4	2.7
Black-backed Jackal	-	-	23.0	17.7	10.0	7.3	12.3	8.0
Bat-eared Fox	-	-	9.3	14.0	20.0	15.3	11.2	12.7
Cheetah	-	-	0.3	1.3	1.3	1.3	3.1	6.7

2.5 WILDLIFE AND GENERAL INCIDENTS

Snare and arrow collection

A hippo snare was collected near Bingham camp and brought to the office to put on display so that others can be informed about what to look for when assisting on patrols.

On 26 October, a snare was collected in Block 7 that was designed for a small ungulate. It was found on a tree branch when Eco-training visitors were out on a game drive. The snare has been confiscated for the growing collection in the office.

On 4 November, one arrow was found in a tree trunk in the forest in Block 9. Rangers on foot patrol came across the arrow which is a modern arrow that could be purchased in Chebunyo. There have been reports of three rather suspicious looking people coming on a motorbike. It is said that they hide their hunting tools in the forest. Rangers continue to search for the stash.

Illegal Grazing

On 19 November, the cows belonging to Robert Koriata were found in block 6. The herder had been warned before and was fined for illegal grazing. On the same day, in Block 5, Parmuat's cows were found in block 5 and cows belonging to Sadira were in the same location. They were both fined and rangers were congratulated on their covert patrol to protect the grass resources.

After three herds were caught in one day, the community seemed to get the message that the Enonkishu rangers are serious about consequences of illegal grazing and no other illegal grazers were found throughout the rest of the quarter.



Figure 8. Arrow found in a tree in B9 on 4 November.

2.6 WILDLIFE INJURIES & MORTALITY

Rangers and visitors often report carcasses that are found in and around Enonkishu (Table 4). Only one injury was recorded throughout this quarter. An eland was found with a serious injury to its left hind leg. The eland has not been observed since 14 October.

Table 4. Wildlife mortalities reported to the head ranger October-December 2019.

Species	Date	Location	Suspected Cause
Impala	10 October	Block 9	Hyena predation
Warthog	29 October	Block 7	Unknown predation
Spotted hyena	16 November	Oiti area	Unknown
Black backed jackal	3 December	Block 10	Suspected lion injury
Burchell's zebra	12 December	Block 7	Stillborn foal
Thomson gazelle	14 December	Block 12	Cheetah predation
Impala	14 December	Block 12	Cheetah predation
Warthog	19 December	Block 11	Leopard predation
Impala	24 December	Block 11	Lion predation
Wildebeest	26 December	Block 10	Lion predation
Impala	31 December	Block 9	Leopard predation



Figure 9. Zebra stillborn foal found in B7 on 12 December.

2.7 HUMAN-WILDLIFE INTERACTIONS

On 27 December, Mzee Kaelo reported that the bull elephant that continues to visit his farm had returned. The elephant seemed to target gates, completely destroying 2 out of 3. There are no crops within his shamba so it is very strange destructive and non productive behavior. Mara Elephant Project was informed in hopes that they can potentially collar him to track movements as he does seem to enjoy destroying property.

The community of Munyas approached the ESCo office in December 2019 to ask about progress to the fencing proposal. Before the end of the year, the proposal was distributed to Sheldrick Wildlife Trust and Kenya Wildlife Service. Unfortunately, funds raised had been demarcated for fencing projects elsewhere. However, the information gathered will greatly assist in the drafting of a proposal to obtain funding. Mara Elephant Project worked with ESCo in sharing conflict data and elephant movement data to substantiate the need for a physical barrier to protect the livelihoods of our neighbors and the wildlife within the Mara ecosystem.



Figure 10. One of Mzee Kaelo's gates destroyed by an elephant bull on 27 December.

2.8 RESULTS OF MONTHLY WILDLIFE MONITORING ALONG 4 VEHICLE TRANSECTS

In partnership with Biosphere Expeditions in February 2019, Enonkishu developed a more robust wildlife monitoring scheme including vehicle transects, waterhole observation periods, and hilltop observation surveys. The methodology will undoubtedly adapt as time goes on, but for 2019, ESCo was able to conduct each form of monitoring once monthly.

So far, the results from the vehicle transects summarize the commonality of species in Enonkishu quite nicely (Figure 11). Highlights included counting the firsts of species along transects such as elephant, cheetah, leopard, and lion.

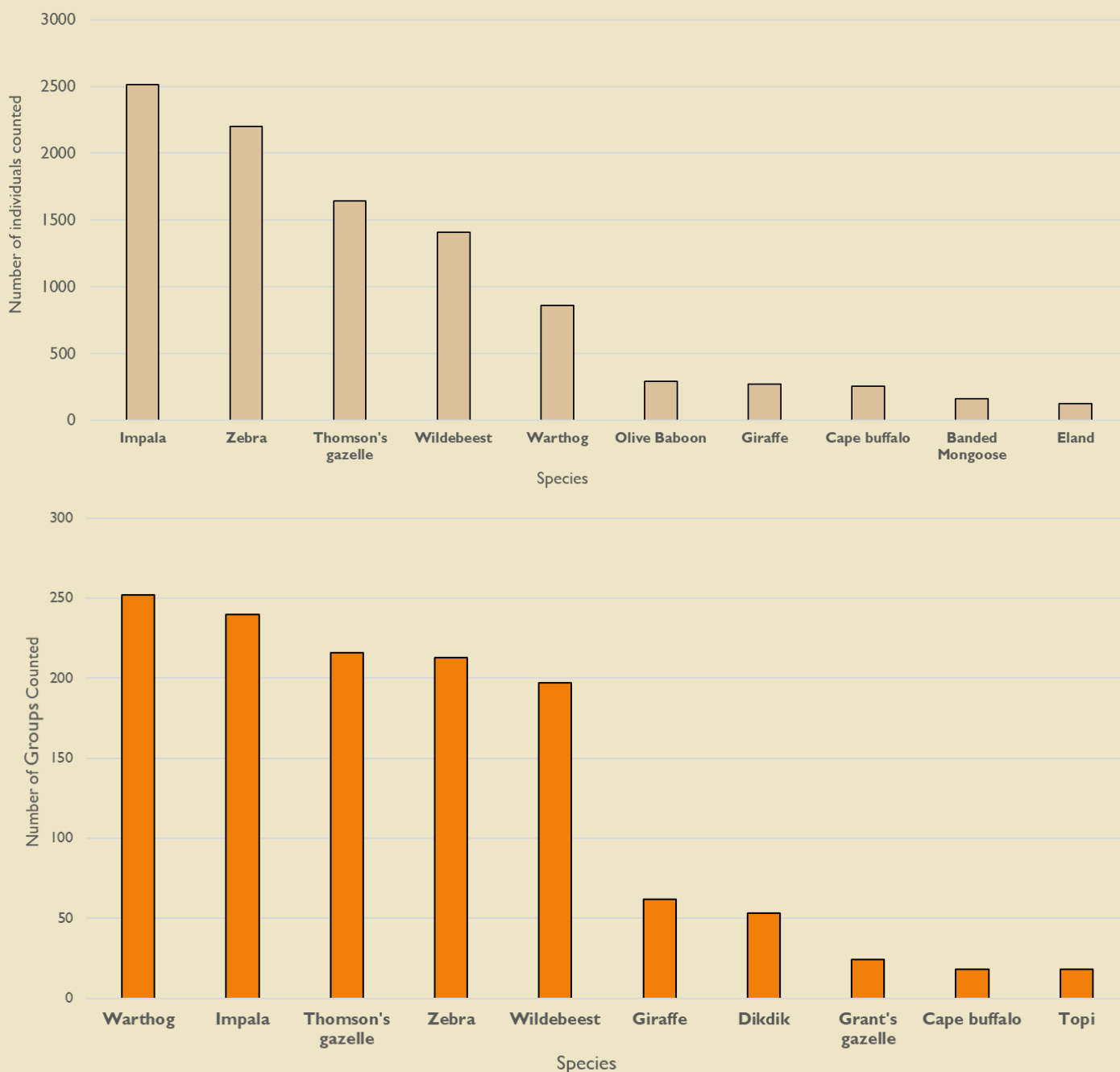


Figure 11. Impala were the most abundant species, while warthog were the most commonly counted species on vehicle transects in 2019.

3. LIVESTOCK

3.1 LIVESTOCK NUMBERS

Since the inception of Enonkishu Conservancy in 2009 and especially after planned grazing was implemented in 2014, the number wildlife recorded has increased dramatically. In order to better track the progress of the conservancy and the livestock it is able to support, the herd is counted once per month. Since the landowners continue to buy, sell, and relocate livestock, the numbers are frequently changing. When the conservancy was newly formed, landowners believed that the maximum amount of cattle the land could sustain was 300. However, over the past three years of better management practices, this number has increased to a cap of 800. Conservancy members have been reducing the sheep in the conservancy in order to concentrate efforts on cattle with goats allowed to stave off bush encroachment and simulate the grazing and browsing of wildlife.

The effort by conservancy members to reduce the number of sheep grazing in the conservancy seems to have stalled, despite constant agenda points at meetings held with members. In fact, during December, the chairman moved 115 sheep back into the conservancy for two weeks because of some issues with his herder who was keeping the sheep nearby. The other two non-members who keep their sheep confined to Block 11. The current approach to the grazing of sheep and goats is to restrict them to one grazing

Table 5. Stocking rate within Enonkishu Conservancy throughout the third quarter of 2019.

Stock	Q3 2019	October	November	December
Cattle	642	652	632	641
Goats	4	18	18	21
Sheep	67	70	101	75
TOTAL	713	732	650	730

3.2 SALES & CATTLE MOVEMENT

Conservancy members buy and sell cattle and the conservancy will keep records to track its progress over time. Several measures have been implemented to increase the quality of cattle including community capacity building in improved livestock husbandry offered by the Mara Training Centre and improved breeding introduced to the community herds by the Herds for Growth program. The objective is that landowners will recognize the change in the market demanding high quality beef and shift towards an improved quality of livestock over quantity.

During the fourth quarter of 2019, thirty five cows moved to other land owned by the landowners. Thirteen cows were brought into the conservancy calculating a net loss of 22 cows belonging to individual conservancy members.

Two conservancy members have more cattle than what their leases can sustain through CowCare. Herds for Growth is growing steady, but slower as cows belonging to individual members have started to give birth. The conservancy is slowly moving towards having a herd that benefits ALL conservancy members equally rather than maximizing benefits for conservancy members that own livestock.

3.3 LIVESTOCK MORTALITY AND DEPREDATION

For two years, ESCo has been campaigning for our neighboring communities to share information about human wildlife interactions. Although the process of compensation is not in place, presenting a need for assistance will garner support for mitigation strategies along the edge of wildlife habitat. It has taken two years for the community to report such incidences (Figure 12).

With the influx of predators throughout the end of 2019 came an influx of conflict incidents (Table 5).

Table 5. Incidents as reported to Enonkishu head ranger throughout the fourth quarter of 2019.

Date	Owner	Details
16 Oct	Unknown	1 sheep carcass found up a tree, killed by leopard
20 Nov	Chelemei	7 goats killed by hyena along the river inside a boma
22 Nov	Kileyia	2 bulls, 1 female cow killed by lion in B5 on their way to Musuani
23 Nov	Kiliburet	6 shoats killed in a boma across the river by hyenas
2 Dec	Ndutu	2 cows killed by lions after spooking out of the boma. KWS assisted in collecting lost cows throughout the day.
25 Dec	Mzee Kaelo	Dog killed by leopard near his homestead
28 Dec	Sadura	3 cows killed by hyenas in B5. One cow was injured.



Figure 12. Seven goats killed when hyenas broke into a boma across the river.

4. ECOLOGICAL MONITORING AND HOLISTIC MANAGEMENT

Enonkishu and Mara Training Centre staff record data regarding the health of the conservancy's rangeland, ecosystem, and livestock. Monitoring and evaluation is an integral aspect of trainings at MTC and as Enonkishu showcases a healthy coexistence between wildlife and livestock, evidence needs to be collected in the form of data. Holistic management is a decision-making framework designed to help individuals, businesses and communities improve their quality of life and generate wealth, while simultaneously protecting and improving their environment. In Enonkishu Conservancy, Holistic Management was piloted in 2014 and has shifted the management strategy to incorporate the community and wildlife ensuring that decisions made were socially, economically and environmentally sound.

4.1 RAINFALL DATA

A rain gauge is located within Naretoi at the site of the old Mara Beef office near the stables. Rainfall data is collected at the end of each month. The rainfall pattern throughout the fourth quarter of 2019 was exceptional (592 mm) and resulted in cumulative rainfall for 2019 being the highest since consistent record keeping began in 2016 (1404.7 mm) (Table 6). In fact, December 2019 recorded the most rain in one month since 2016 (312.5 mm), just surpassing April 2018 (301.7 mm) (Figure 13).

Table 6. Annual rainfall collected at former Mara Beef dairy stables.

Year	Cumulative rainfall (mm)
2016	964.5
2017	909.4
2018	1132.7
2019	1404.7

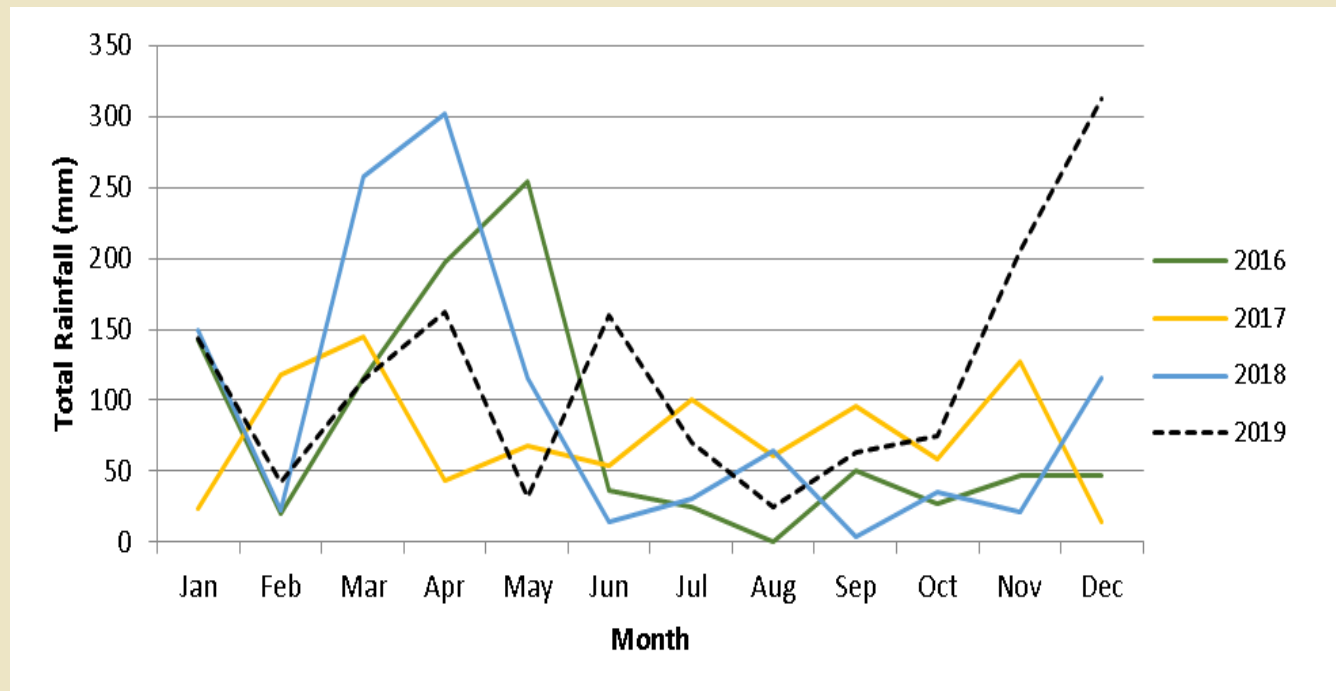


Figure 13. Rainfall recorded within Naretoi near the stables from Jan 2016 - Sept 2019.

4.2 BIOLOGICAL MONITORING

A vital part of Holistic Planned Grazing is biological monitoring to make sure the plan is moving toward the desired scenario or what is commonly referred to as the “future resource base”. With continued planned grazing, Enonkishu Conservancy will serve as a 1705 hectare demonstration site of effective holistic planned grazing to be viewed by trainees of the Mara Training Center. Since 2014, Enonkishu has been establishing a program to monitor the effects of managed grazing on the overall health of the grassland. With the completion of the 2019 data collection at the end of December, there is now eighteen months of consistent data from which to analyze the effects of planned grazing.

Fourteen transects have been set up from which five quadrats are examined during each biomonitoring session. There are four established transects within control blocks that are not included in Enonkishu’s grazing plan. Ten transects are located within blocks implementing planned grazing. Data is collected at an interval by laying a quadrat every 5m along each transect. Each transect starting point has been marked with a metallic peg which serve as a focal point for photographic record. A GPS coordinate is also taken at the marker peg for easy navigation to the transect sites. Nineteen parameters are examined in each quadrat to describe cover, soil surface description (capping), litter (the amount of dead plant debris covering the soil surface, and plant species (grass, tree, shrub, forbs or sedge). In addition, insect and animal presence is noted. The corresponding ratings are designed such that a rating of “5” indicates the best possible score, with “0” indicating the worst possible score. As an example, the parameter of Plant Density rates 5 if there is 100% plant cover, with a score of 0 indicating no plant cover.

The first parameter investigated within every quadrat of each transect is plant density, measured by the percentage of the 1 meter x 1 meter square covered in plants. It is the one parameter that has been consistently accounted for during biomonitoring sessions since its inception in November 2014. However, at the onset, transects were monitored once annually, after the grazing season, which varied from 2014-2015. In 2016, the methodology was adapted to collecting data four times a year at the end of each quarter. An investigation into plant density over the past six years shows a notable difference between blocks implemented in the grazing plan and the control blocks. Transects which were conducted in the grazing plan blocks have recovered much more efficiently than those in control blocks. On average throughout 2019, the plant density in grazing blocks was 13.6% higher than plant density in the control blocks (Figure 14).

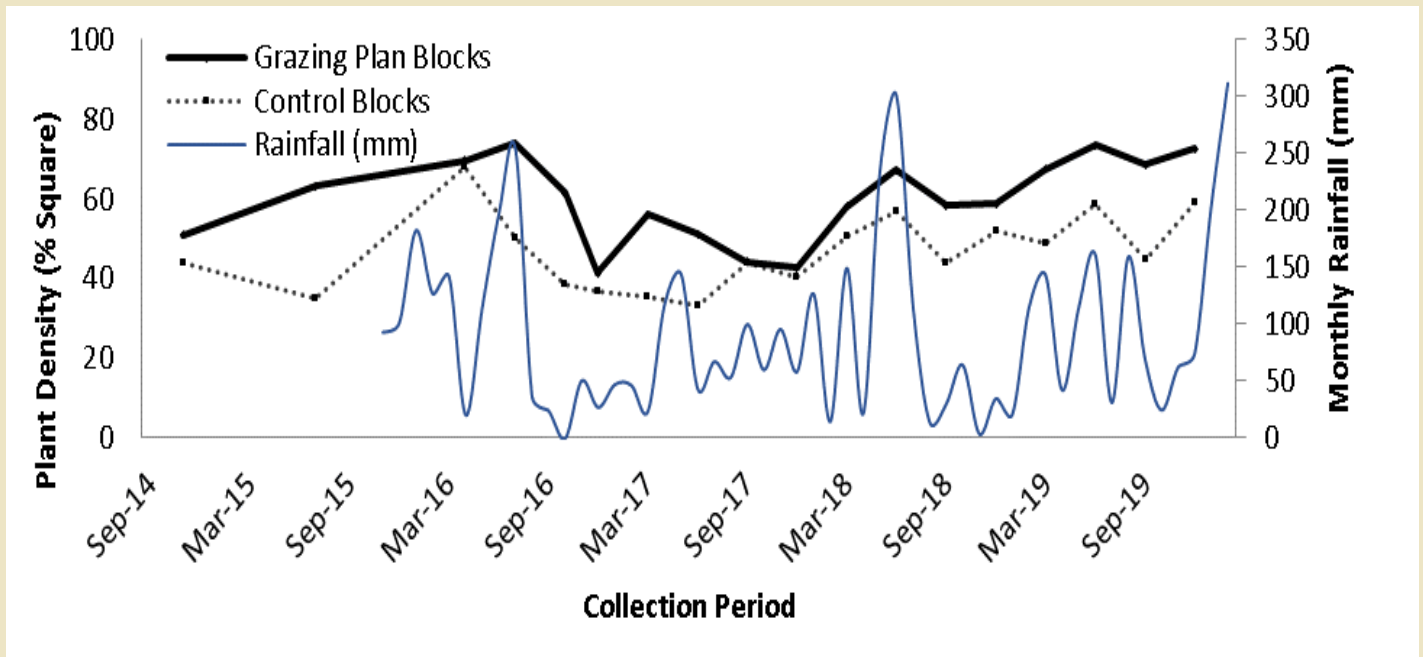


Figure 14. Plant density measured as percentage of quadrat covered in plants throughout the duration of the biomonitoring effort.

Although the data from 2014 and 2015 is not as comprehensive as the following sessions, data has been extrapolated for parameters where it was indicated on the raw data sheets. The resulting average score of all parameters shows a consistent trend of planned grazing blocks having higher scores than the control blocks (Figure 15). In the fourth quarter of 2019, the average score of grazing plan blocks was second only to the biomonitoring score in June 2018. For this reason, we anticipate the grass needs some time to settle in after the recent rains and we expect the rise in scores during the biomonitoring at the end of Q12020.

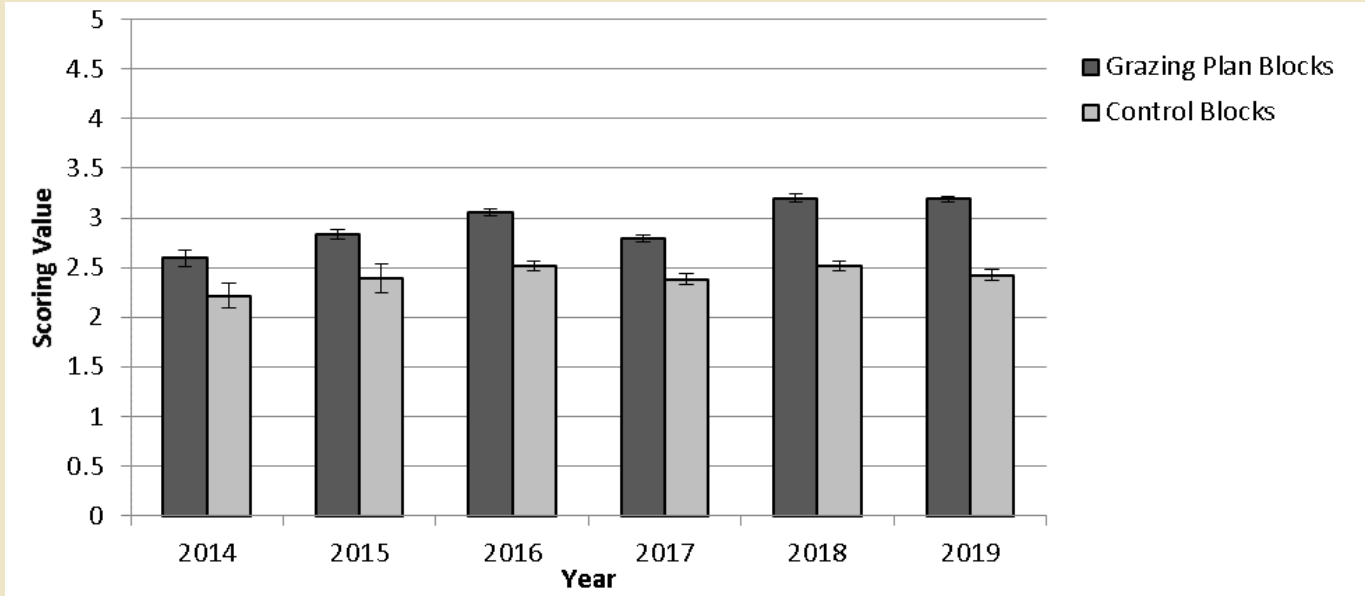


Figure 15. Average score of up to nineteen parameters throughout seventeen bio monitoring sessions. The years 2014 and 2015 had one session each, while 2016-2019 had four quarters. Error bars indicate standard error of data collected each year.

Aside from the data, the difference the rains have had on the vegetation in the conservancy is extraordinary. Head ranger, Dapash, reckons that the grass now is taller than in 2016, which as of yet has been the optimum (Figure 16). However, the enthusiasm over the variety of grasses and the height to which they are growing is palpable. Management is considering methods to make sure that all of the scales for parameters always show room for improvement as we are currently observing the best it has ever been.



Figure 16. Head ranger, Dapash, getting very excited over the height of seeding grass in B7.

4.3 HERD MANAGEMENT

The cattle herds within Enonkishu are managed by ESCo. A monthly “CowCare” fee is deducted from the lease payments of members who are keeping livestock in the conservancy. This fee pays for preventative medicine, routine treatments and prevention, a herd manager, herders, maintenance crew, and night watchmen. As the herders within Enonkishu are now employed by the ESCo, there have been little incidents of cattle not abiding by the grazing plan. The monitoring officer, Musa Kiseer, has been checking in with the herders on a monthly basis to ensure they are pleased with the time allotted in each block. Adaptation to challenges such as mud and predator activity is essential to manage the herd holistically. At the end of each month, several employees count stock belonging to each individual conservancy member to log “CowCare” deductions. Other regular activities of caring for the conservancy herd include castrating bulls to ensure only the Boran bull genetics are bred, and de-horning the calves to ensure minimal injuries during management activities.

4.4 WATER POINTS AND CATTLE DIP

The conservancy has four water points (i.e. three water troughs and a dam) which were constructed using funds donated by the MAMASE project in 2017. The water points are centralized such that livestock in grazing blocks 10, 7, 12 and 13 are served by the water troughs and livestock in grazing blocks 8, 6 and 5 are served by the dam. Consequently, eroded areas have begun to heal along the Mara River banks where the cows used to drink before the water points were constructed. In addition to the water points, the MaMaSe project funded the refurbishment of a cattle plunge dip that had been rendered un-usable since 1998.

Cattle continue to be dipped twice per month on Friday’s at the cattle dip in Block 11. The dip underwent some maintenance to prevent leakage into the rangeland.

The Koriata water tank continues to be active and has been instrumental in minimizing cases of illegal grazing along the northern boundary. The abundant rainfall has presented challenges of vegetation and debris clogging pipework from the springs. Maintenance workers remain active by constantly checking and correcting problems. In addition, the Memusi dam nearly breached at the end of December, but Jim Gardiner and rangers were able to unclog the outlet ensuring stability.

5. CAPACITY BUILDING

5.1 REGISTERING ENONKISHU

MMWCA continues to assist Enonkishu in an effort to establish and register an official management plan. The plan has been prepared and the next step is to plan a meeting with all members to publicly endorse the 5 year management plan. The benefit of registering a management plan gazettes Enonkishu as a wildlife protected area. Further steps are needed in registering leases and establishing agreements to ensure the longevity and stability of commitment from stakeholders and members alike.

5.2 ESTABLISHMENT OF MANAGEMENT PLAN FOR ENONKISHU

On 11 November, a meeting was held at Olerai to discuss Enonkishu's future and how to pave the way forward on sustainability, stability, and commitment from members and stakeholders (Figure 17). At this initial meeting attended by Howard Saunders, he made the point from the business perspective that it is completely unsustainable to commit more to the land access payments without having a written agreement and registered leases in place and without meeting the operating costs of the conservancy as it is. The idea was met with resistance from conservancy members who were aiming for an incremental increase of payments throughout the agreement period.

On 12 December, a follow up meeting was held at Olerai. Dickson Kaelo (CEO of Kenya Wildlife Conservancy Association) and Lawrence Mbithi (MMWCA Lands Officer) were in attendance and explained the benefits of stakeholders and members to register leases officially. The executive board of the Enonkishu Cooperative Society agreed that signing a 15 year registered lease with caveats by which they can withdraw from the lease by informing the lease holder would greatly increase the potential of the conservancy's future.



Figure 17. Meeting Enonkishu Cooperative members, Dickson Kaelo (KWCA) and Lawrence Mbithi (MMWCA) to discuss the importance of registered leases.

Next steps include running through the finances of Enonkishu Stakeholder’s Company with the treasurer of the Cooperative, a further meeting with the executive board of the cooperative to discuss terms such as limiting the number of livestock, development within the leased land, fencing, and informing the conservancy first of an intention to withdraw and sell their land. The rate of the lease will also be on the agenda. When a draft is created, each party will contract a lawyer to review it before being signed by members and officially registered.

5.3 INTERNATIONAL TREE FOUNDATION TRAINING

From 14-18 October, MTC’s Musa Kiseer and Normeshuki Chesingei (Figure 18) attended a workshop where participants in the trees for the future program learned about the design of a forest garden, how to maximize plant survival, how to prepare a garden to maximize useful productivity, as well as the particulars of planting fruit trees and fodder.



Figure 18. Normeshuki Chesingei after returning from her second training sponsored by the International Tree Foundation.

5.4 RANGER WORKSHOP ON RULES OF ENGAGEMENT FOR WALKING WITH VISITORS

On 2 November, Eco-training trainer, Jami Van der Merwe, held a workshop with Enonkishu rangers to share information on the standard operating procedures for walking safaris. Although it has been decided that climbs up Kileleoni is not encouraged, having rangers with visitors who insist is essential. Rangers learned about how to prepare the guests and learned about the risks involved and how to manage those risks. The advantage of such workshops is to build confidence in the rangers so that they are able to demand authority from visitors and be a leader rather than a follower when it comes to risk management.

5.5 BUILDING A COLLABORATIVE RELATIONSHIP WITH OL CHORRO AND LEMEK

Meetings between Ol Chorro, Lemek, and Enonkishu conservancies have stalled throughout the fourth quarter, as ESCo concentrates on the development of Enonkishu’s management plan and the lease negotiations with its members. The support is still evident, but schedules are quite busy with internal meetings and interactions to get Enonkishu on a level playing ground as its neighboring conservancies. The plan is to set up a meeting with the Kenya Association of Tourism Partners to streamline payments from Me to We to the conservancies utilized by their guests, at which point further meetings will be held with all three conservancies present.

5.6 CHEETAH WORKSHOP AT MARA TRAINING CENTRE

On 17 December, Dr. Elena Chelysheva was hosted at Mara Training Centre (Figure 19). As Kisaru and her cubs have been frequenting the conservancy, her visit was to educate guides, visitors and rangers on etiquette in her presence. Kisaru's cubs were born at the end of July 2019 and are getting to an age when not only do they require a lot of food, but are also trying to learn how to hunt. It is a vulnerable time for cheetah cubs as they transition to hunting for their own food. This makes it all the more important to manage game viewers in her presence ensuring minimal disturbance.



Figure 19. Dr. Elena Chelysheva presenting on cheetah behavior and natural history at MTC on 17 Dec 2019.

Enonkishu rangers had a workshop to learn about how to identify individuals (Figure 20). Elena will be sharing an ID book so that we can monitor the cubs as they reach adulthood and may be seen apart from their superstar mother.



Figure 20. Enonkishu rangers learning how to identify individual cheetahs using their unique spot patterns.

6. SOCIAL AND GOVERNANCE

6.1 VACANT MARA NUBIAN CAMP

The site of Mara Nubian has been evacuated and cleared to the best of our abilities (Figure 21). EScO is still looking for a responsible operator to join as a stakeholder and contribute to the sustainability of the conservancy. We are looking for a specific type of operator who will appreciate the efforts of the Enonkishu model, moving towards coexistence between people, livestock, and wildlife. Interested parties should contact info@enonkishu.org for further information.



Figure 21. Former site of Mara Nubian Camp *Photo by Chris Taylor.*

6.2 RANGER APPRECIATION NYAMA CHOMA

On 23 October, Enonkishu employees welcomed photographer and filmmaker Chris Taylor and Leanne McColm at their staff appreciation nyama choma in the conservancy (Figure 22). Every time meat is eaten by staff, there is singing and dancing. This is an excellent way of joining forces and a chance for all to be included in the common goals of the conservancy.



Figure 22. EScO herders and rangers doing their happy dance after indulging in meat and sodas.

7. CURRENT PROJECTS

7.1 POWER THE RANGERS! CAMPAIGN

Photographer Chris Taylor returned to Enonkishu in October with his partner, Leanne McColm. Chris first visited the conservancy in February 2019 (Figure 23). He offered to return to take some marketing photos for HIW & MTC. While away, Chris was able to run a fundraiser to provide a plethora of equipment for Enonkishu’s monitoring efforts and for the rangers’ livelihoods. Thanks to Chris’s Power the Rangers campaign, Camp Shannock was created near the Enonkishu office. All rangers were provided with new mattresses, fancy Leatherman multi-tools, t-shirts, binoculars, and some printed photos that Chris had brought for them. Enonkishu now has ample equipment to conduct all of the wildlife monitoring which was initiated in February 2019. Equipment included: rangefinder, GPS units, binoculars, thermometers, compasses, head lamps, red torches, and a spotting scope. Chris and Leanne will be returning to Mara Training Centre in June 2020 to lead a photography safari!



Figure 23. Rangers displaying their gratitude for the equipment fundraised by Chris Taylor in the UK.

7.2 RESEARCH INVESTIGATING THE EFFECTS OF SUSTAINABLE RANGELAND MANAGEMENT

Abby Guthmann's PhD project in Enonkishu is carrying on in her absence. Michael Bolton, who started working with Enonkishu in July as an intern, has become her employed field assistant as of November 2019. He has been instrumental in servicing camera traps as well as keeping a schedule for collecting and weighing grass cuttings from the exclosure experiment laid out by Abby. The exclosure cages have become part of the natural environment (Figure 24) and we are excited to see what comes from Ms. Guthmann's study (Figure 25). Major repairs are needed to the forage cages, which seem to be a favorite novelty item for elephants.



Figure 24. Grey crowned cranes making themselves at home near the exclosure cages in B7.



Figure 25. Bolton, Musa, and Dapash inspecting grass growth inside one of the exclosure cages.

7.3 MUNYAS FENCE PROPOSAL

ESCo management has been working with Mara Elephant Project to create a proposal for fencing an 11.45 km fence near the community of Munyas (Figure 26). Before the end of the year, the proposal was sent to Sheldrick Wildlife Trust and KWS as potential projects to include in the 2020 budget. Both organizations had designated their budgets elsewhere, but the proposal can be used for grant writing to make sure our neighboring communities remain supportive of conservation efforts within Enonkishu. The total cost, as quoted by Sanyati fencing is nearly KES 20 million, but ESCo needs to include maintenance at least in the short term.

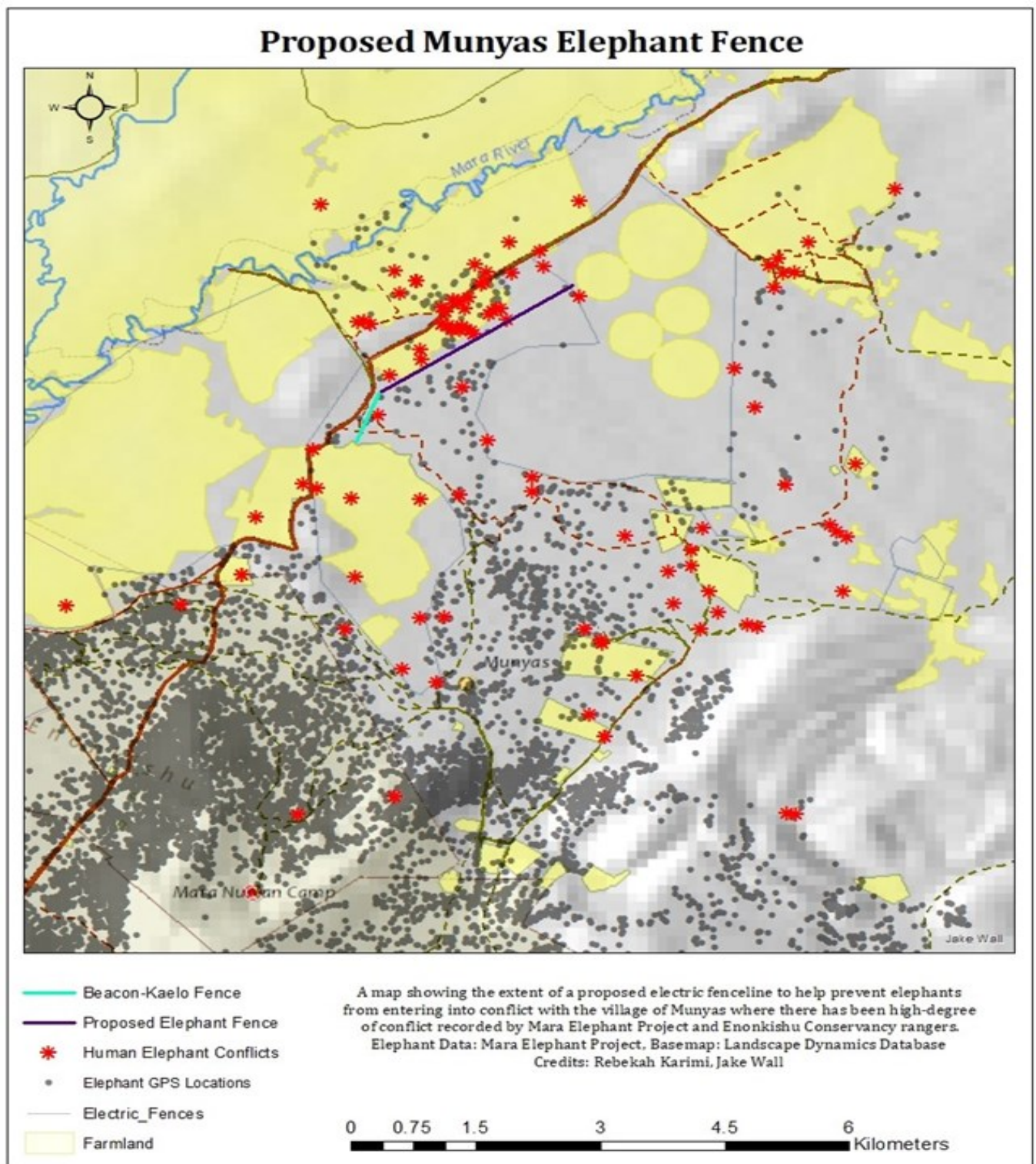


Figure 26. Collared elephant movement and conflict data collected by MEP rangers over the last two years.

7.4 RAINCOATS FOR HERDERS

ESCo's herders have been requesting raincoats for a very long time and with the prolonged rains, they finally received them in November 2019 (Figure 27).



Figure 27. ESCo herders with their new raincoats, ready to bring on the rain.

7.5 VEHICLE OVERHAUL

In December 2019, Enonkishu's Suzuki Maruti underwent a major overhaul in Aitong. New shocks and springs made a huge difference in the willingness to go on patrol as riding it the vehicle was extremely jarring.

7.6 NOTHERN MARA VACCINATION & STERILIZATION CAMPAIGN

Thirteen veterinarians and 11 volunteers vaccinated 547 dogs, 193 cats, and 12 donkeys against rabies during the fourth annual northern Mara vaccination campaign 12-13 December (Figure 28). In addition, six dogs and three cats were sterilized. Dr. Derick Chibeu of KESCAVA did an amazing job at drawing people and donors to the event. KESCAVA, World Animal Protection, and Kenya Wildlife Trust were sponsors and graciously Mara Training Centre provided food and accommodation. The highlight of everyone's visit to Enonkishu was a sighting of a lone wild dog which is the primary reason vaccination events are held- to prevent the spread of disease from domestic animals to wildlife and people.



Figure 28. Northern Mara Vaccination and Sterilization campaign 2019.

7.7 ENONKISHU IS CREATING A WILDLIFE CONSERVANCY ON PATREON PLATFORM

Mr. Jono Allen, a longtime friend of Enonkishu conservancy has created an avenue for friends, family and guests who believe in the Enonkishu model and want to be part of making it sustainable. Monthly donors will be rewarded with bednights, game drives, photography, and more! Please share widely with visitors who want to be a part of our success story. <https://www.patreon.com/enonkishu>.



7.8 HERDS FOR GROWTH

In September 2017, a group of donors visited from the UK, where they had raised \$40,000 for the purpose of purchasing a herd of cows to assist the conservancy in obtaining land rent in the years to come. Tarquin Wood's cousin, Hamish Stoddart led the fundraising efforts and team of volunteers. In the last quarter of 2017, additional funds totaling KES 2,243,081 were raised for bolstering the initial herd. These heifers will graze, grow, and breed with higher quality bulls in the conservancy. In about four years, this "Peach" herd will produce a significant portion of the land rent, which will relieve some strain on the budget near land rent due dates. With the growth of the herd, livestock owners within the conservancy will be reducing their livestock holdings to assure the carrying capacity of the conservancy is not overstretched.

Five heifers that were losing condition were sold in October 2019. They were replaced with four gorgeous heifers that arrived ready for the bull. Herds for Growth gained another heifer from Mara Beef as well as 14 new calves. Weaning and de-horning stalled because of the weather, but more calves are ready to be weaned when everything dries out. Worthy of praise are two females that gave birth to their second calves since in ESCo's ownership. Both previously gave birth to non-Boran calves. The race is on to find out who our most productive heifer will be! Currently, the conservancy herd is comprised of 67% cattle owned by individual conservancy members and 33% owned by all members in the Herds for Growth.



Figure 29. First cow to give birth to 2 calves belonging to the Herds for Growth program.

7.9 SNAPSHOT ENONKISHU

Snapshot Safari has targeted Enonkishu as a starting point for establishing a camera trap grid throughout the Mara conservancies. The goal is to develop a method of remotely monitoring wildlife and environmental conditions over time. Dr. Craig Packer and University of Minnesota have given 30 camera traps and supporting equipment to Enonkishu since 2018. Images are uploaded into the Snapshot platform and citizen scientists with an internet connection are able to sort through the images, making the use of camera trap data much more feasible. With additional donations, Enonkishu hopes to spread the camera trap grid into other conservancies, eventually reaching the Maasai Mara National Reserve. Camera trap maintenance includes ensuring the security of the equipment as well as switching out ST cards and batteries every six weeks. If you are interested or would like to view the images, please participate by registering: <https://www.zooniverse.org/projects/aguthmann/snapshot-enonkishu>.

Camera traps were serviced twice throughout the fourth quarter of 2019. Images were delivered to University of Minnesota to be uploaded to the platform and sorted by volunteers. Rechargeable batteries are beginning to show their age and are requiring charges more frequently, but the rangers have embraced the task as another way of monitoring and patrolling on their way to camera trap services. At times, we even get a glimpse of squatters in the protective cases (Figure 30).



Figure 30. Surprise Battersby green snake in a camera trap case.

8. TOURISM RECORDS

Enonkishu receives income from tourism through a conservancy fee paid by the visitors who either visit House in the Wild, Naretoi, or Mara Training Centre (Table 7).

Table 7. Bednight record for Enonkishu supporting enterprises October—December 2019.

Destination	Number of Bednights
House in the Wild	293
Naretoi (Private Plots)	47
Mara Training Centre	426
TOTAL	766

9. THE MARA TRAINING CENTER

The Mara Training Centre within Enonkishu forms the platform for other conservancies/community groups to be trained in an Integrated Sustainable Rangeland Management approach, including governance structures and improved livestock husbandry so as to promote sustainability in their respective organizations. The MTC is diversifying its trainings and offers budget accommodation for volunteers and visitors that want to learn about the Enonkishu Model as well as catering to business retreats and family gatherings.

Mara Training Centre has encompassed the transition from exclusively trainings supported by non-governmental organizations to a more budget-friendly safari destination attracting student groups and the like. Several Eco-training groups greatly contributed to the photos in this report and were very involved in informing ESMCo management of sightings (Figure 31).

Continued gratitude to MTC for hosting Dr. Elena Chelysheva who gave a workshop to guides, visitors, and rangers in the neighborhood. Mara Training Centre also graciously hosted the team of veterinarians and volunteers for the Northern Mara Vaccination event in December.



Figure 31. Ecotraining students birdwatching along the river on MTC's property.

10. FUTURE ENDAVOURS

The objectives of Enonkishu Conservancy are to utilize livestock management to enhance livelihoods of wildlife and community. As we move forward with these objectives in mind, the conservancy management is looking forward to the following actions.

- Building the relationship with Ol Chorro and Lemek conservancies.
- Securing Enonkishu's bordering community of Munyasi from elephant conflict by constructing a fence to block elephant movement to the crop fields and river.
- Registration of land leases and the conservancy as a nationally-recognized protected area.
- Constant investigation as to how to monitor the entire ecosystem of Enonkishu at a scalable level.
- Development of a livestock herd that benefits all conservancy members.
- Continuing to empower the rangers with all necessary equipment and comfortable space to perform their duties.
- Wild Philanthropy fundraiser in California, USA, on 21 March 2020.
- Striving towards sustainability with increased occupancy within Naretoi homes, Mara Training Centre, and House in the Wild.
- Securing a tourism partner to renovate Nubian camp and become a stakeholder supporting Enonkishu.
- Development of Patreon as a platform for supporters to earn rewards and opportunities to visit Enonkishu.

