MARA PREDATOR CONSERVATION PROGRAMME

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KENYA WILDLIFE TRUST

QUARTER 2 REPORT 2019

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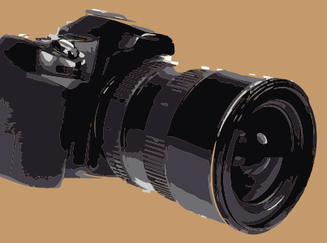

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EXECUTIVE SUMMARY

During this quarter we have been able to complete our analysis of 2018 Aug1-Oct31 lion intensive monitoring data session. There has been a few interesting cheetah dispersing events and we have begun to incorporate leopards into our program. We have obtained valuable information for our wild dog study. Our community section has been busy with anti-poisoning campaigns, poison response trainings, wildlife clubs, barazas and building predator proof` bomas.

Contributors: Niels, Michael, Kelvin, Keiwua, Dominic, Lydia, and Grace
Cover photo: Kelvin Koinet

RESEARCH UPDATE

Lions

Lion data

It has taken a much longer time than expected to clean and ready the data from the 2018 second intensive monitoring survey. This has now been completed and we have created all the necessary input files needed to run the final model to analyse the data in the Spatially Explicit Capture Recapture (SECR) framework. It is a massive dataset and we are currently waiting for a super computer to complete the analysis, in order for us to give an updated Mara lion density estimate. For now, we can provide a summary (table 1) of the actual lion sightings and numbers we recorded during our latest 2018 survey (August01-October31)

Search effort (km driven)	Lion sightings	Lion detections* >1 year old	Unique individuals >1 year old in 2018 survey 01Aug-31Oct	
8,499	277	712	Male	147
			Female	214
			Total	**361**

Table 1: Summary of lion sighting and numbers during the Aug01-Oct31 survey
**Lion detections is the total count (including all duplicates) of all lions seen >1 year*

To put this into context, during the second survey of 2017 our total actual unique individual lion number was 357, but after running it through the SECR model, we acquired a number of 468 lion >1 year old, although noting that the study area in 2017 was slightly smaller. We expect to get a similar estimate for the 2018 dataset, once the model has finished running.

Lion movements

It's fascinating how lion individuals can disappear for months or even years, yet to suddenly turn up in unexpected places. A known male called Tatu was born into the famous Marsh pride in September 2013. He dispersed from the Marsh area with his older brother Red and younger brother Topknot. After a spell in Mara North Conservancy (MNC), the trio went into Lemek Conservancy to take over the Lemek pride from two males who were originally from the Enguyanai pride in Olare-Motorogi Conservancy. Later on, after fathering cubs, the two pride males from MNC, Barikoi and Dere, pushed Tatu, Red and Topknot into Olchorro Conservancy, splitting up the Lemek pride. Then Red and Tatu had new cubs with the few Lemek females that went with them to Olchorro Conservancy, and Topknot was slowly being pushed away and eventually disappeared. We last sighted Red and Tatu towards the end of 2017 in Ol Chorro Conservancy, moving into Enonkishu Conservancy, after a final push by Barikoi and Dere. We figured they went onto the Ol Chorro hills but they vanished and we feared the worst. In early June, Tatu reappeared in Ol Kinyei Conservancy and in very good condition. There is no sign of Red, however. Tatu met up with the old veteran Boxernose, and there might be a new coalition in the making. It's amazing how Tatu managed to go untouched through the unprotected areas all the way to Ol Kinyei Conservancy.

Figure 1: Tatu in Ol Kinyei Conservancy in June

Cheetahs

Selenkei's sub-adults

Selenkei sub-adults left their mother when they were in the National Reserve and began to disperse in mid-June. They quickly picked up a new coalition partner, who is an unknown young male to us but likely to be a disperser from the Serengeti. All five cheetahs (Selenkei's four and the stranger) moved into Olare-Motorogi Conservancy (OMC) and later crossed over to Naboisho Conservancy. A couple of days later, herders reported that they killed a sheep on their land just outside OMC. The youngsters also managed to get themselves trapped inside electric fences. We received other reports from the villages that they had killed a chicken and goats on different occasions, showing just how close they go to homesteads, which angers the local community and increases the risk of retaliation. The first time we rescued these cheetahs from the fences, only four cheetahs were present, three of selenkei cubs (two males and one female) and the male that joined them, and so one of Selenkeis' male cubs was missing and he has not been sighted since. We are not sure what happened to him. We have tried pushing the remaining four cheetahs away from this area and they have now ventured further into the community lands and Pardamat Conservation Area. We hope that they do not cause any further conflicts..

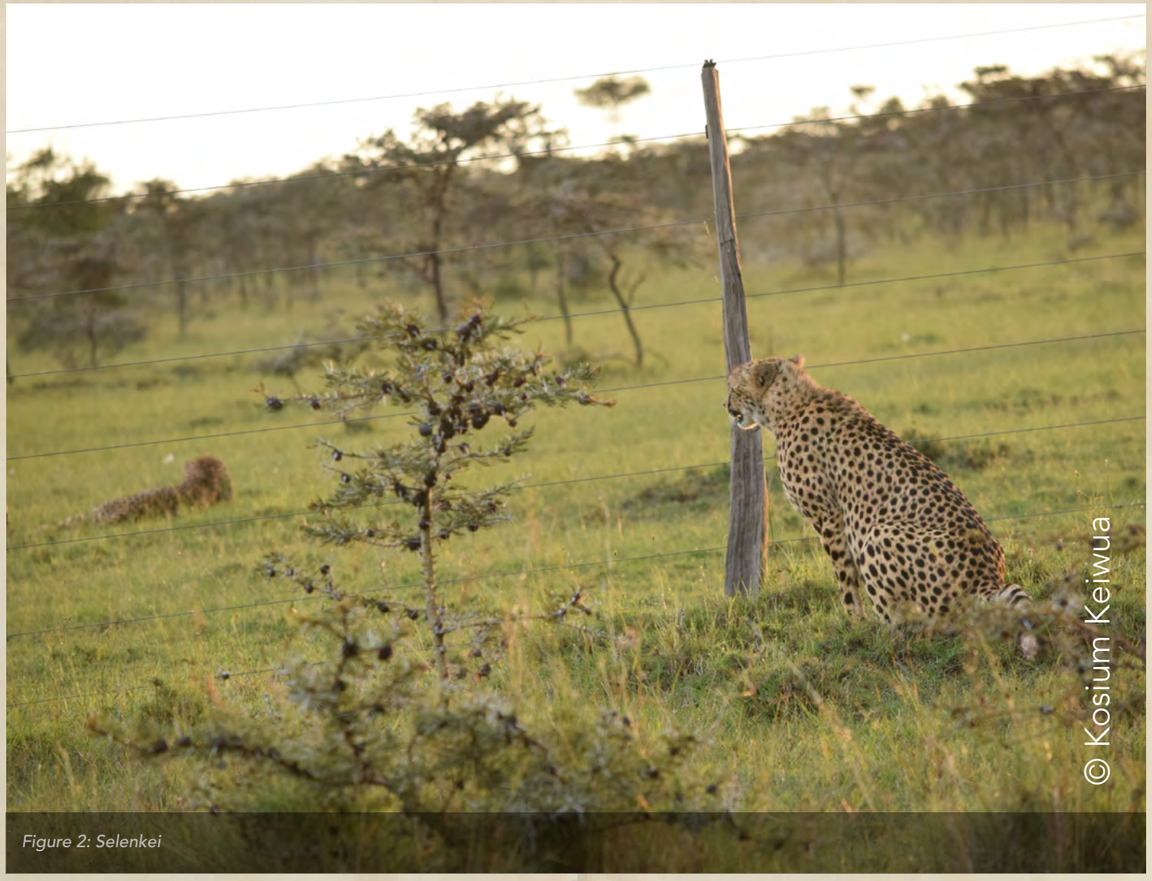


Figure 2: Selenkei

Wild dogs

The wild dog pack at the core of our study is most frequently seen around the hills of Enonkishu Conservancy, Pardamat Conservation Area, the towns of Lemek and Aitong, as well as Mara North Conservancy. It has been crucial for us to involve the local community in these areas in order to further our research into the behaviour of this highly elusive species.

The Mara Predator Conservation Programme (MPCP) has employed a local community member with the responsibility of patrolling these areas and ensuring that livestock herders, rangers, guides and key community members remain in contact in the event of any sightings of wild dogs. In addition, we have held meetings at tourist camps in the area to make sure that managers, guides and staff are aware of our on-going efforts. This has enabled us to start a monitoring database in which we can log the exact location, time, date and details of each sighting or wild dogs-livestock conflict.

Figure 3: Wild dog paw print

In the second half of June 2019, sightings were being reported almost daily around the Lemek and Pardamat areas. We therefore increased our efforts with patrols, assisted by rangers from the Kenya Wildlife Service, the Mara Elephant Project, Mara North Conservancy, as well as members of the community and lodge staff who have all volunteered their time and insight. Groups of four and 10 individuals have been sighted, and we believe that they are all part of the same pack.

Since the initiation of the wild dog study in mid-2018, we have been trying to locate active wild dog denning sites and at the same time collect data on the location of former dens. We have been able to identify several main denning areas (eight at the time of writing), each of which have multiple dens.

In order to gain an insight into pack size, composition and behaviour, the team has been setting up camera traps in areas with frequently reported sightings.

In May, one of the camera traps captured photos of one wild dog between 20:55hrs and 21:34hrs (figure 4). These images were of great interest to us. Firstly, because this is the first time this year that the wild dogs have been caught on camera trap. Secondly, these photos corroborate the findings from studies in Zimbabwe, Botswana and Laikipia that wild dogs are not solely diurnal animals.

Figure 4: Camera trap photo of a wild dog during the dark hours

Figure 5: Camera trap photo of a pregnant/lactating female

In June and July, we were fortunate to capture images of the pack roaming between Mara North Conservancy and Pardamat Conservation Area. These new photographs were taken during the day and have brought to light several pieces of information: Firstly, the photos were taken during daylight hours, meaning we are able to begin work on identifying the individuals in the pack. Secondly, one female captured on camera appears to be pregnant (see figure 5).

Had she already given birth, it is unlikely that she would have left her den site. We can therefore assume that this pack will soon be denning, which bodes well for our hopes of collaring a member of the group.

Throughout 2018 and 2019, we have accumulated a number of photos of wild dogs sightings from members of the team as well as guides, tourists and local residents. A key component of establishing a baseline study of wild dogs in the Greater Mara ecosystem involves creating a database in which each individual dog is identified. To do so, we use the unique markings on the sides of their bodies. This allows us to keep track of pack numbers and overall health, as well as identify newcomers and dispersers.

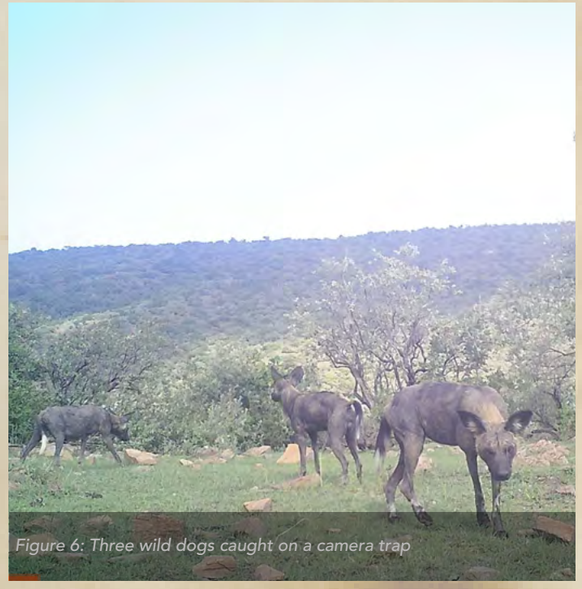


Figure 6: Three wild dogs caught on a camera trap

MPCP has received two wild dog collaring permits from the Kenya Wildlife Service. Collar data from a wild dog will grant us an insight into their behaviour and allow us to document their space use. Such information can potentially help us precure more land for their protection. This data would be invaluable for future studies on the species and has uses from advising environmental management decisions, understanding behavioural shifts in response to human encroachment, habitat degradation as well as enabling us to focus our community education and conservation efforts and mitigate human wildlife conflict.

Through a combination of scientific literature, anecdotal evidence and the aforementioned sightings and data collection, MPCP is working to perform a habitat assessment. Initially, this will be focused on the area surrounding the Pardamart/Aitong/Lemek hills, and with future work expand this assessment to the Greater Mara Ecosystem. By ultimately producing a wild dog habitat suitability map, we will be able to apply evidence-based conservation management in the hopes of assisting this endangered species to reestablish itself locally.

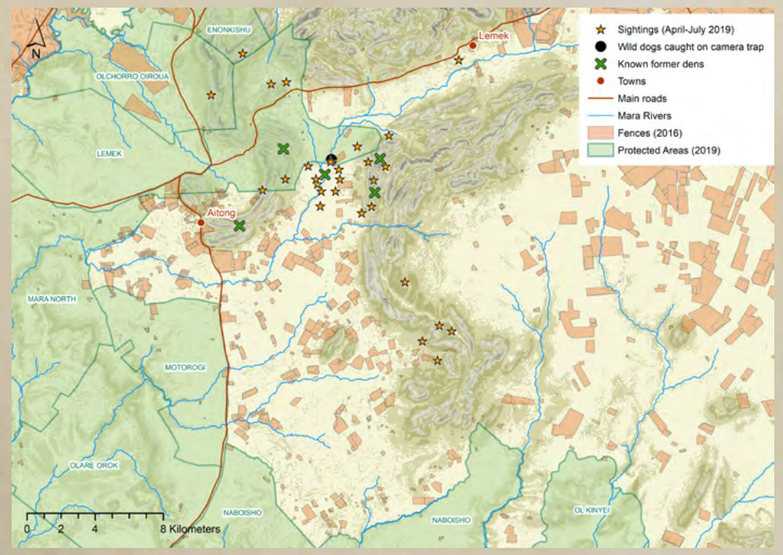


Figure 7: This map displays the area of focus for the current wild dog study. The basemap is a slope gradient which was created using a mosaic dataset of a Digital Elevation Model (DEM) for the GME. The darker colours represented a higher slope gradient. Additionally, the location of all reported sightings from the months of April to July 2019, as well as all known former den sites are shown.

Leopards

During this quarter, we began to incorporate leopards as a study species into our programme. We have focused our efforts on obtaining baseline data for leopard abundance in the Greater Mara Ecosystem, creating a leopard database and ID catalogues. As leopards are solitary and elusive animals, it requires a lot of effort in monitoring this species. Though the number of the Mara leopards is currently unknown, it is believed by many people to be higher than cheetahs.

At all leopard sightings, the GPS location, along with information on their sex, age etc. are recorded. In addition, ID photographs are taken in order to develop profile catalogues to aid in individual recognition. We use the right and left sides of the flank and the head for identification purposes. A leopard's spot pattern is used to distinguish each individual. Besides the spot patterns, other distinctive features can be used such as conspicuous spots, notches and scars. In the past two months we have been able to profile 16 leopards.

Since 2014 we have been collecting leopard sightings data. Going through this data in our database and adding our new data, has enabled us to create a distribution map based on our sightings. This is obviously not comprehensive but we aim to provide a thorough distribution map in the future, as we put more effort into our focus on leopards.

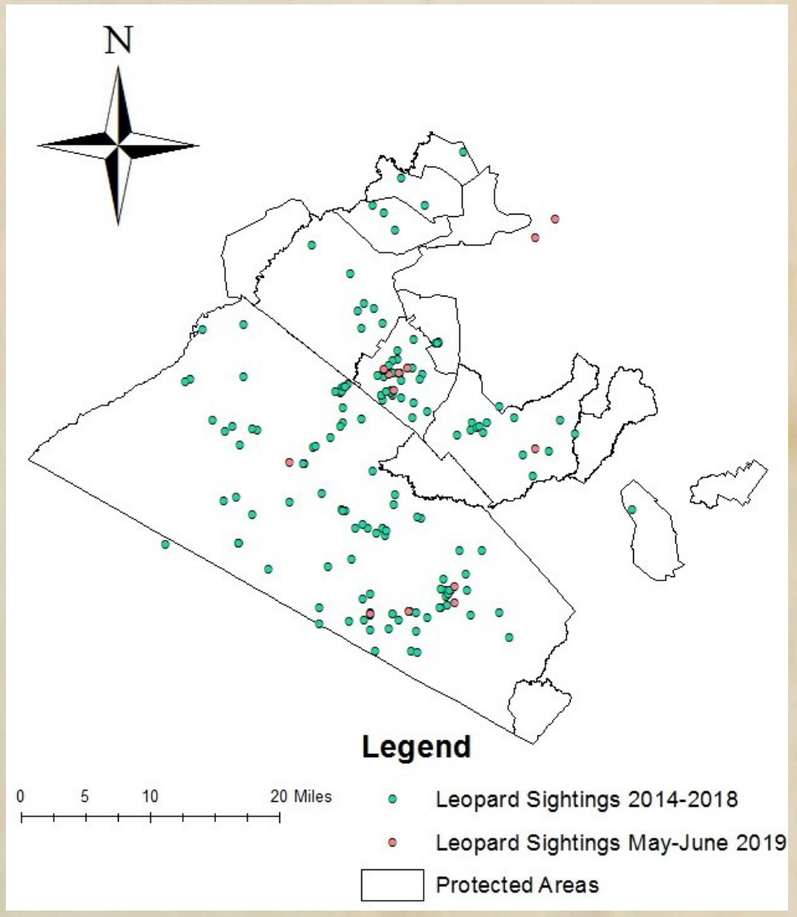
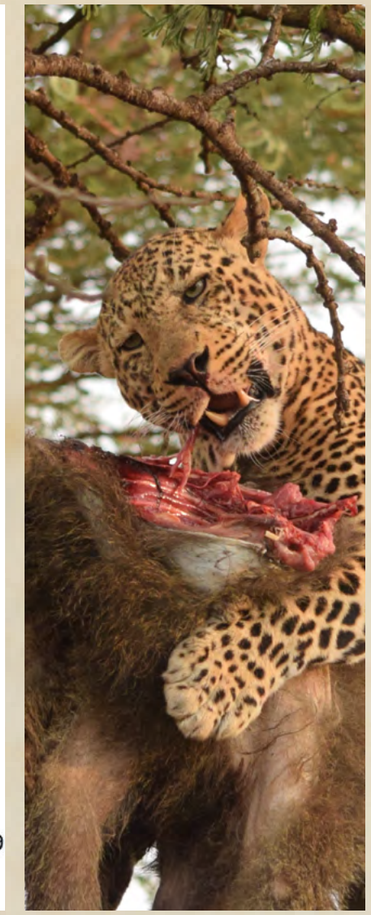


Figure 8: Leopard sightings map



COMMUNITY UPDATE

Anti-Poison Campaign

In our efforts to combat the use of poison to kill predators in retaliation for livestock depredation, we continued to work with the Buffalo dancers (recently registered as Maasai Mara wildlife Ambassadors) . The local drama group comprise of fourteen members. Together with the group we compose songs and choral chants in the local language that discourage the use of poison while encouraging people to embrace the Maasai culture that was tolerant towards predators.

During the seven day campaign, the group visited Sekenani, Mararianda,Ngosuani, Naikarra, Ewuaso ngiro, Endoinyio Narasha and Nkoilale markets in the SouthEast part of the Mara. These markets were selected due to their proximity to the areas where poisoning incidences were reported late last year. The campaigns reached approximately 7,000 people excluding those who will get the message through the recordings made by the attendees.

Figure 9: Maasai Mara Wildlife Ambassadors performing at Naikarra Market during the anti-poison campaigns (Photo: Dominic Sakat)

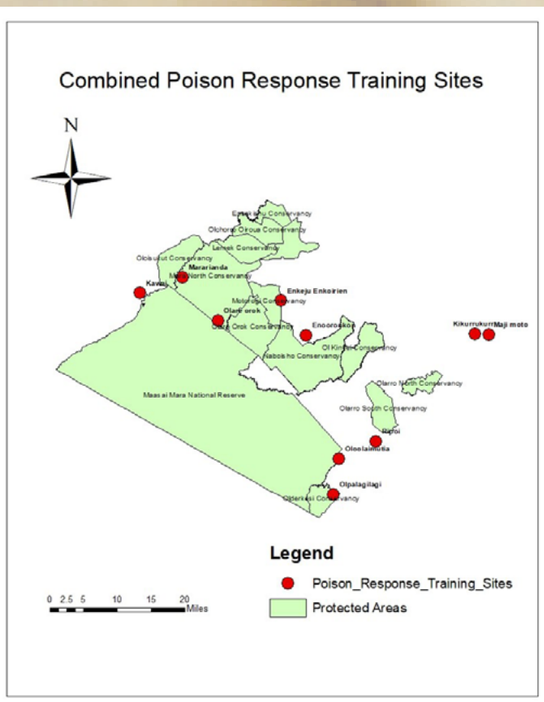
After the performance in each market, community members were allowed to join and ask questions and comment on the performance. Most participants commended MPCP for being on the forefront in combating wildlife poisoning. During the campaign, T-shirts with a message to discourage the use of poison were distributed in every market to enhance the spread of the message.

Poison Response Trainings

In our ongoing efforts to establish a wider network of community members equipped with skills to respond to wildlife poisoning incidents, we organized five rapid response trainings in various parts of the Mara. The main objective of the training is to ensure that community members have the skills to attend to poisoning incidents in a timely manner to save predators, without endangering their lives. When poisoning incidents occur, mostly in places bordering protected areas, the community are deemed to be the first to detect either as they graze livestock or fetching firewood. The longer it takes before the carcasses are found and the site decontaminated, the higher the danger of secondary poisoning to other predators including domestic dogs. The community thus can break the chain of poisoning through early detection and site decontamination making these training invaluable.

Date	Venue	No of people trained
15/04/2019	Maji moto	20
16/04/2019	Kikurrukurr	17
17/04/2019	Olpalagilagi	26
18/04/2019	Kawai	21
19/04/2019	Mararianda	16
	TOTAL	**100**

Number of community members trained in 5 different areas in the Mara during the reporting period.



A map of the poison response training sites

The trainings were held at different parts of the Mara where 100 community members were trained (see table 1 above). During the training, the attendees were equipped with skills on identifying the signs of a poisoned animal, the common types of poisons used, reporting poisoning incidents (who to report to), decontamination of the site among others.

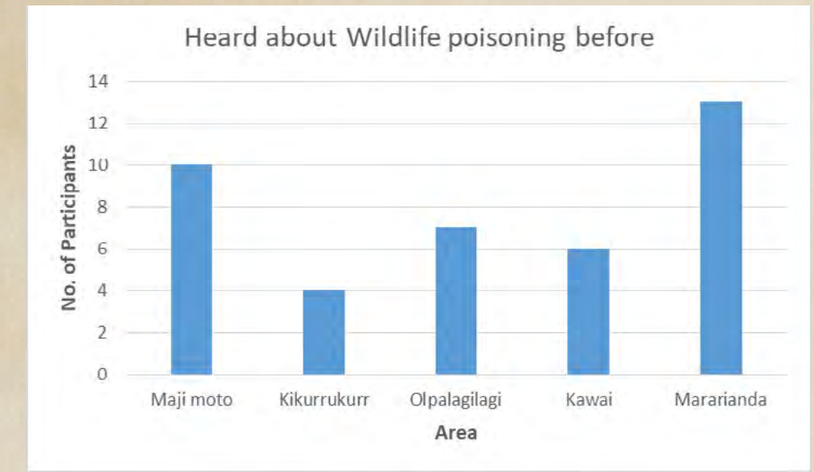
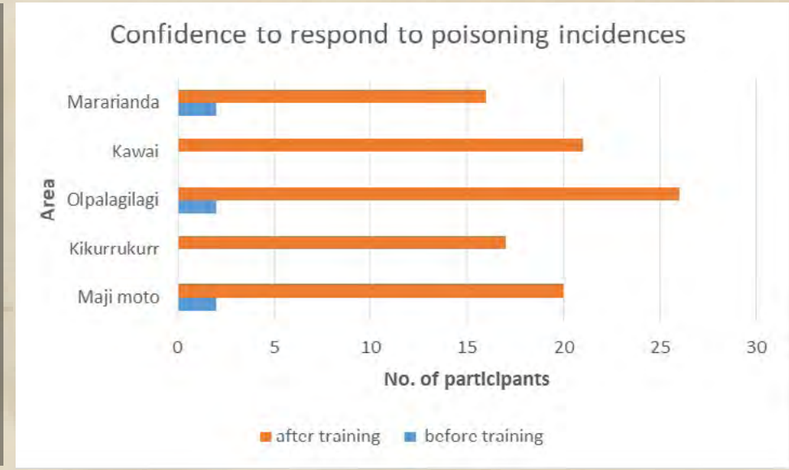


Figure 12: We sought to find out whether people had heard about wildlife poisoning in the respective areas and we found out that 40% of the participants had heard of incidences where wildlife were poisoned in the Mara Ecosystem

Figure 13: There was a 96% change in confidence to respond to poisoning incidents after the training which underscores the importance of such training. The training sites border wildlife conservation areas, in this case Mara National Reserve and community conservancies, and have previously reported cases of human wildlife conflict. The locations of the training sites are illustrated in the map below.



Community Barazas

One of our key objectives as the Mara Predator conservation programme is to ensure we work closely with community members to ensure there is an understanding and appreciation of the roles of predators in the ecosystem. To do this, we hold annual barazas (community meetings) to discuss our work, get community feedback on various issues and co-work to design ways to promote coexistence with predators. The barazas provide a platform by which the community can get feedback to questions related to conservation in general, give suggestions on future research or topics of discussions, gets in-depth knowledge on legislations related to wildlife and be involved in capacity building.

During the reporting period, we organized five community barazas in Orkekun (Lemek hils) , Olokeri (Ngosuani), Emurua dikirr, Nado enterit and Olkarkar. The objectives of these barazas were to understand people's attitudes towards predators, discuss issues of benefits from predators and to get more information on the presence of Wild dogs in these areas. MPCP has recently initiated a study on wild dogs and these areas were selected as they are deemed to be used by Wild dogs as transit points. The barazas were attended by 227 across the 5 areas as depicted in figure 15 below.

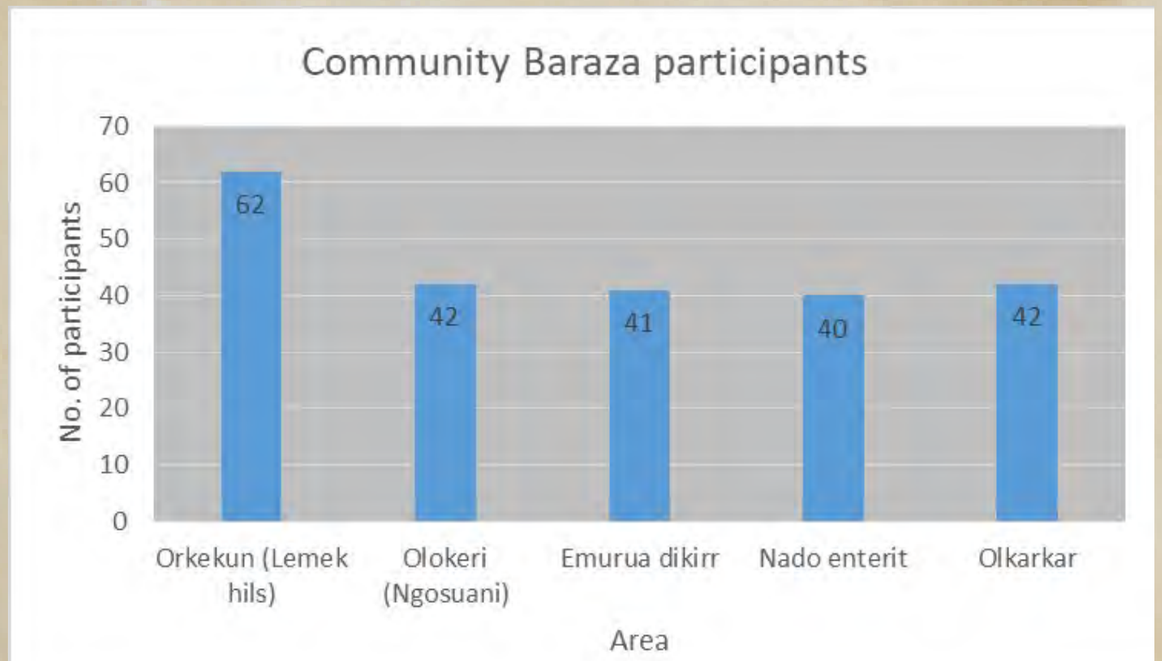


Figure 15: 227 participants attended our community barazas held in 5 different areas across the Mara.

Recycled plastic poles bomas: an innovative tool for human wildlife conflict mitigation

During the last quarter, we put up an additional four bomas in Endoinyo Narasha, Nkoilale, Sekenani and Oloolaimutia area bringing the total number of bomas constructed to 11 (Figure 22) which offered protection to more than 1100 heads of cattle. These areas were selected as part of conflicts hotspots and also their proximity to Protected Areas making them prone to depredation. One of the beneficiaries of this project is Julius ole Mpoe who in 2015 lost 200 sheep when hyenas attacked his boma leaving him with less than 20 sheep most of them with injuries. MPCP (then Mara Lion Project and Mara Cheetah Project) community officers Michael Kaelo and Dominic Sakat recorded the incident and assisted him to have the loss recorded by the Kenya Wildlife Service personnel.

A completed recycled plastic poles boma at Sekenani

The construction of these bomas has heightened the demand for recycled plastic poles bomas from the community. MPCP has received numerous requests to support the construction of model bomas from the community living in the other hotspots that have not been covered. The 11 bomas (Figure 22) cover the North Eastern to South Eastern periphery of the protected areas and thus a need for more model bomas to cover the other sections of conflict hot spots especially on the escarpment on Trans-mara side where conflicts are increasing due to the increase in predators following the creation of Oloisukut and Nyakweri conservancies.

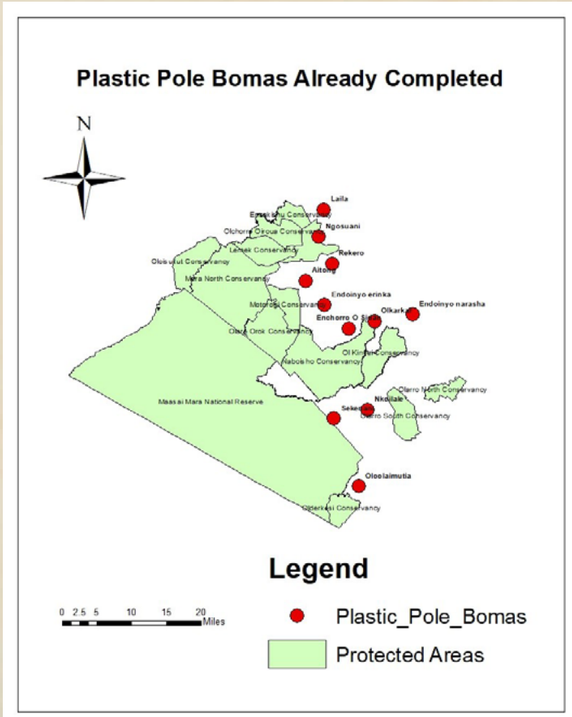


Figure 22: Map of the Recycled plastic bomas constructed from 2017-2019

Schools Outreach Program

During this reporting period, we have continued to work with our nine Wildlife Clubs spread across 9 schools in the Mara Ecosystem. Through this collaboration with the Wildlife Clubs of Kenya (WCK) a curriculum is shared across the schools to ensure that children acquire knowledge on various environmental subjects for holistic learning.
This quarter, MPCP worked with the schools to implement various activities including hosting our annual holiday kids camp, implementing an art competition, taking all the children for game drives among others as discussed in detail below.

Annual Kids Camp

This is an annual event for our wildlife club members aged between 10-13 years. This quarter between (15th to 18th April) we hosted twenty children (10 girls & 10 boys) from St. John and ADCAM primary schools at the Tony Lapham Predator Hub and engaged them in a series of learning activities. The main objective of this activity is to create an opportunity for school children to spend time during the school holidays to engage in hands on conservation activities with us.

During this year's holiday Kids camp, the children engaged in various activities including; talks from our staff and those of The Maa Trust on what they do and how they do it, drawing of artwork, quiz nights, tutorials, nature walks, watching films and documentaries on wildlife and a game drives into the MMNR. The series of activities were designed to pass as much theoretical and practical knowledge to the children as possible within the period of stay. The game drives and documentaries provided interesting learning experiences for the children as they get to see what happens in other parts of the world through documentaries and see wildlife in their natural habitat.

Figure 23: Kelvin Koinet of MPCP takes the children through a tutorial during this year's holiday Kids camp

Annual Art Competition

This year's art competition which was done in two different venues, Talek and Aitong, brought together ninety children from the nine school MPCP supports. Ten children from each school were selected by the clubs to represent them based on their drawing skills. With the help of a trainer the children did amazing art on the method "Crayon Etching". This is a type of art-making that exploits the properties of water-based ink or paint and waxy crayons. The resist that happens between these two media allow the artist to create an interesting image that can be vibrant and rich with contrast and complexity. The difficult part of this activity was judging of the art, since the competition was stiff. After involving the MPCP and The Maa Trust staff as judges for the artwork, Soitanae Tinka from AdCAM emerged the best artist and was awarded with a bicycle as a prize. The second and third winner were from St.John Primary School and were awarded a waterproof school bags. All training participants were awarded with a certificate of participation as they also did a good job.

Annual game drives

During our game drives this quarter, 347 children visited the different protected areas including Maasai Mara Game Reserve, Naboisho and Mara North Conservancies. They managed to see lions, cheetahs, elephants, and wildebeest among others. The children from the three new schools (Ng'osuani, Mbitin and Olkurroto) were more fascinated as this year's game drive was their first visit to the Protected Areas. By enabling the game drives to happen annually, MPCP creates an enabling environment for children to gain in-depth knowledge about nature in a practical and enjoyable way.

Figure 26: Wildlife Club members from St. John Academy and ADCAM primary schools in Aitong having a break during this year's game drive at Mara North Conservancy.

Appendices

Cheetah sightings

This quarter we sighted 28 different individual cheetahs (11 females and 17 males) in the National Reserve and the Mara Conservancies. The tables below depict areas where they were sighted, sex and number of cubs.

Mara National Reserve

GENDER	NAME	NUMBER OF ADULTS	NUMBER OF CUBS
Female	Miyale	1	0
	Raisi	1	3
	Nashipai	1	0
	Selenkei	1	4
	Anashe	1	0
	Sub Total	**5**	**7**
Male	5 Musketeers	5	0
	Olchore	1	0
	Sub Total	**6**	**0**
	Total	**11**	**7**

A total of 11 different adult cheetahs (5 females and 6 males) and 7 cubs were recorded in the Maasai Mara National Reserve.

Olare-Motorogi Conservancy

GENDER	NAME	NUMBER OF ADULTS	NUMBER OF CUBS
Female	Nashipai	1	0
	Selenkei's daughter	1	0
	Amani	**1**	**3**
	Sub Total	3	3
Male	5 Musketeers	5	0
	Olchore	1	0
	EM	1	0
	Selenkei sons	3	0
	New male	**1**	**0**
	Sub Total	**11**	**0**
	Total	**14**	**3**

14 different adult cheetahs (3 females and 11 males) and 3 cubs were recorded in Olare-Motorogi Conservancy.

Mara North Conservancy

GENDER	NAME	NUMBER OF ADULTS	NUMBER OF CUBS
Female	Amani	1	3
	Kisaru	**1**	**0**
	Sub Total	2	3
Male	**Kiraposhe sons**	**2**	**0**
	Sub Total	**2**	**0**
	Total	**4**	**3**

Four different adult cheetahs (2 females and 2 males) and 3 cubs were recorded in Mara North Conservancy.

Naboisho Conservancy

GENDER	NAME	NUMBER OF ADULTS	NUMBER OF CUBS
Female	Selenkei	1	4
	Sub Total	**1**	**4**
Male	**Olkinyei Males**	**2**	**0**
	Sub Total	**2**	**0**
	Total	**3**	**4**

3 different adult cheetahs (1 female and 2 males) and 4 cubs were recorded in Naboisho Conservancy.

Olkinyei Conservancy

GENDER	NAME	NUMBER OF ADULTS	NUMBER OF CUBS
Female	Nebaati	1	4
	Sub Total	**1**	**4**
	Total	**1**	**4**

1 adult cheetah (1 female) and 4 cubs were recorded in Olkinyei Conservancy.

Olarro North Conservancy

GENDER	NAME	NUMBER OF ADULTS	NUMBER OF CUBS
Female	Kiraposhe	1	2
	Natasha	1	3
	Sub Total	**2**	**5**
	Total	**2**	**5**

2 different adult cheetahs (2 females) and 5 cubs were recorded in Olarro North Conservancy.

Population parameters

Below is a summary of dispersers, new individuals and deaths that were recorded during this quarter:

PARAMETER	NUMBER	NOTES
Cub Deaths	1	This quarter we recorded the death of a ten month old female cub in Olarro North Conservancy, who was run over by a speeding vehicle.
Dispersers	4	During this quarter Selenkei's cubs left their mother (see above for full details)
Adult Deaths	1	One adult male named Siriwua was found dead in April near Elephant Pepper Camp in Mara North Conservancy. He had a big fracture on his head which we suspect was inflicted by a lion.
Births	0	No births were recorded during this quarter
New Cheetahs	1	This quarter we have recorded one new male disperser potentially from the Serengeti who teamed up with Selenkei's cubs.

Students

Two students joined the MPCP team during this quarter. Lydia Cornu is an M.Sc student from the University of Copenhagen. She has been working on our wild dog study which we initiated last year. An update on the study is described above.

Brian Schuh has just begun his Ph.D. studies and visited our Predator Hub for a few weeks to commence on his pilot studies. Brian is part of the University of Wisconsin-Madison's, Carnivore Coexistence Lab and has a keen interest in human-cheetah coexistence. Over the next few years, he will be working closely with MPCP conducting original field and community-based research evaluating if and how cheetahs and livestock can share the Mara Conservancies.

His most recent pilot study will prepare him for an in-depth research project aimed at identifying the impact of grazing livestock on cheetahs within our conservancies. Cheetahs have lost much of their historic range due to increasing human disturbances, such as; settlements, agriculture, livestock enclosures, fences, and roads. Large areas on which cheetahs still remain, like Mara conservancies, are relatively undeveloped and are only temporarily occupied by humans for grazing livestock (and tourism). These areas remain critical for long-term cheetah survival, however, the direct impact of livestock to cheetah behavior is still relatively unknown. Given the limited extent of available protected areas, Brian hopes to examine the behavioral response of cheetahs to grazing livestock to illuminate the pressures this disturbance may pose and the subsequent impact to habitat loss and fragmentation for Africa's most vulnerable big cat.

The Maasai Mara is the perfect place for Brian to conduct this research as the surrounding conservancies offer a glimpse into coexistence by sustaining high densities of cheetahs and managed livestock grazing on a mixed-use landscape. By understanding how a low-conflict system such as this works, he hopes to recommend management strategies for cheetahs and other predators, aimed at safeguarding vital habitat and reducing human-wildlife conflict on mixed-use landscapes in the greater Mara ecosystem and across Africa. His experimental audio play-back research will provide the first-ever evaluation of the immediate impact of grazing livestock on cheetah behavior and will help protect cheetahs for generations to come.

Mara Predator Conservation Programme
info@marapredatorconservation.org | www.marapredatorconservation.org

@MaraPredator @marapredatorconservation MaraPredatorConservation