Mara Cheetah Project

Kenya Wildlife Trust

Quarterly Report
1st July—30th September 2017

MARA CHEETAH PROJECT

KENYA WILDLIFE TRUST

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Cover photo: Nic Elliot (One of Kakenya's daughters with her new litter - Mara Triangle)

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Maasai Mara, Kenya

www.maracheetahs.org

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Project overview

Background

In light of a plummeting global cheetah population (over 90% in the last century), the Mara Cheetah Project was established by the Kenya Wildlife Trust in June 2013 to secure one of the species' last remaining strongholds. The Mara Cheetah Project is the first long-term cheetah conservation research project in the Mara and its long-term goal is to ensure that the cheetah population in the Maasai Mara is stable and healthy. To achieve this, the Mara Cheetah Project is using a research-driven conservation approach through a combination of long-term population monitoring, ecological research, community-based conservation and stakeholder engagement.

Aims and objectives

1. Develop and implement robust population monitoring
2. Quantify threats to cheetahs
3. Provide information for evidence-based policy and management decisions
4. Engage with the local community to improve tolerance of cheetahs

Approach

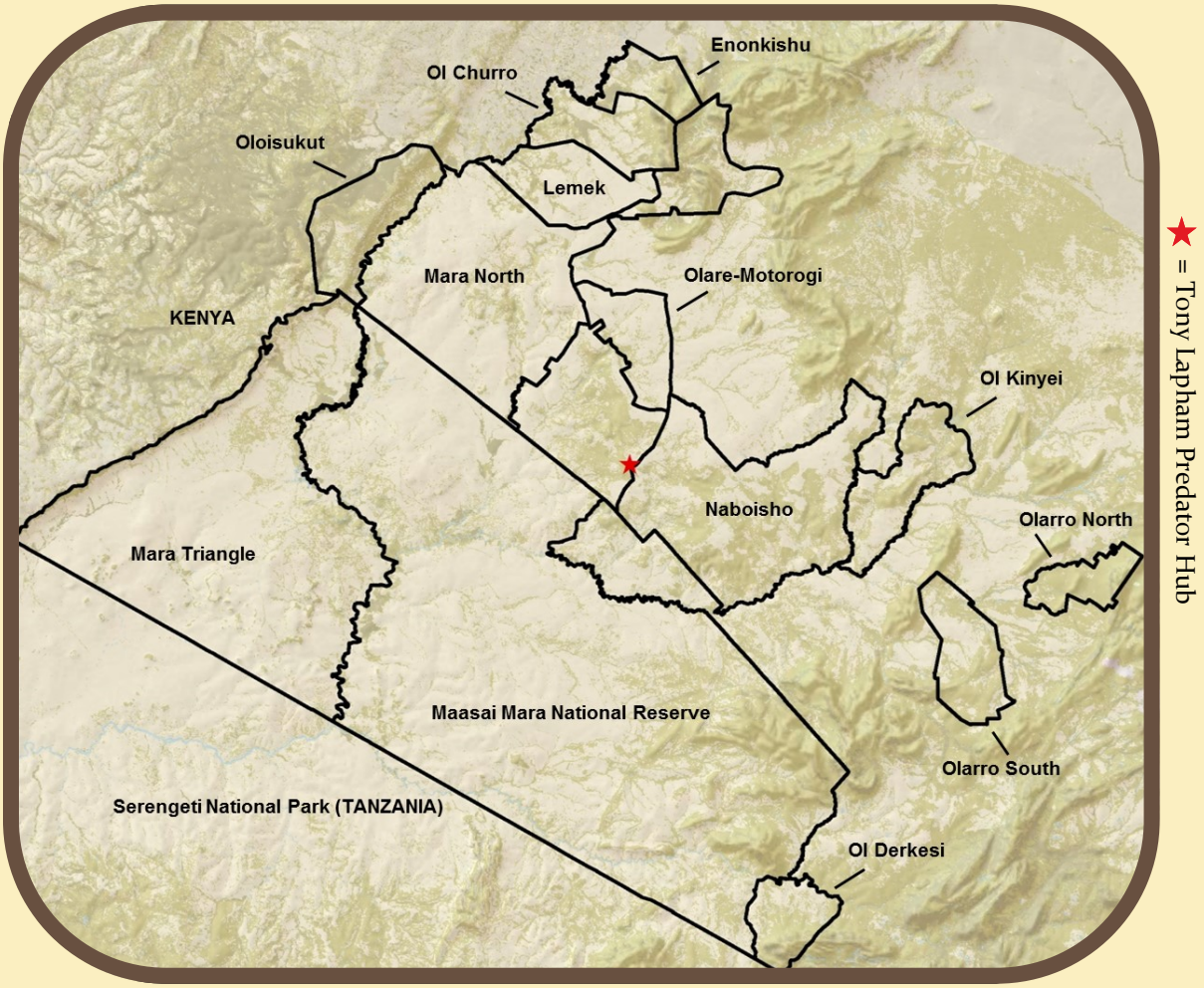
To provide key stakeholders with sound scientific recommendations that they consistently use to inform conservation strategies, and to work with community members and land owners to increase understanding and appreciation of the role of predators in the ecosystem.

Our Mission:

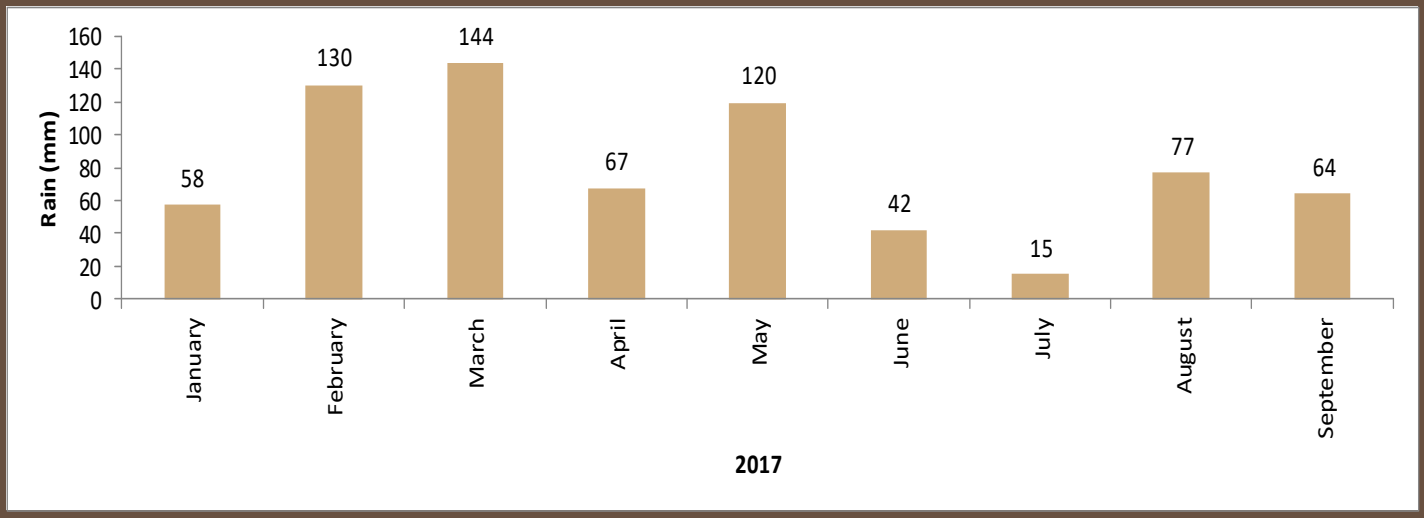
To enable viable predator populations within the Greater Mara Ecosystem

Where we work

The Mara Cheetah Project is based in the Maasai Mara landscape in the South-west of Kenya. The study area covers approximately 2525 km² which includes the Maasai Mara National Reserve (MMNR), which falls under the authority of the Narok County Government, and the adjacent conservancies which are privately managed. To the south, the Maasai Mara borders Serengeti National Park in Tanzania, to the north and west it borders intensive agricultural land and east of the Maasai Mara is largely pastoralist settlement. The project's Community Team works with the communities around the Mara thereby almost doubling the area that the project covers.



Rainfall



Meet the Team

Dr. Femke Broekhuis - Project Director

Femke is the Project Director and Principle Investigator of the Mara Cheetah Project. Femke's career with cheetahs began in 2007 as part of her Masters dissertation, investigating cheetah habitat selection in the Serengeti National Park, Tanzania. From there she joined the Botswana Predator Conservation Trust (BPCT) to set up a cheetah project and begin her D.Phil research with the Wildlife Conservation Research Unit (WildCRU) at the University of Oxford. She spent four years studying cheetahs in the Okavango Delta, Botswana, investigating whether the spatio-temporal behaviour of lions and spotted hyaena influenced that of cheetahs. In June 2013 she was entrusted by the Kenya Wildlife Trust (KWT) to start up the Mara Cheetah Project. Femke has attained her affiliation with WildCRU as a member of WildCRU's research staff.

Mr. Kosiom Keiwua - Field Assistant

Kosiom Keiwua was born in 1988 at Letaari Ololulung'a Division of Narok and from a young age he has loved animals. In 2010 Kosiom joined the Koiyaki Guiding School and after graduating he worked at Karen Blixen Camp as a junior guide. After working at Karen Blixen Camp for almost two years, Kosiom decided to embark on a B.SC. in the hope that one day he could combine his experience in the technology sector with his passion for wildlife. In January 2016 Kosiom joined the Mara Cheetah Project as a Field Assistant.

Mr. Michael Kaelo - Community and Public Relations Manager

Michael was born and raised in Enkobiletai in the Maasai Mara where he grew up seeing wildlife as he grazed shoats and cattle. In 2005 Michael joined Kenyatta University for a B.Sc. in Environmental Studies and Community Development and in January 2012 Michael started his M.A. in Environmental Planning and Management at the University of Nairobi. In September 2014 Michael joined the Mara Cheetah Project and the Mara Lion Project. His interests are geared towards enhancing coexistence between communities, their livestock and wildlife .

Mr. Dominic Sakat - Community Outreach Officer

Dominic is the Community Outreach Officer for both the Mara Cheetah Project and the Mara Lion Project and works in the surrounding communities in an effort to reduce human-wildlife conflict. In 2007 he enrolled in the Koiyaki Guiding School, where he achieved his bronze KSPGA guiding certificate. Dominic is from the Koiyaki region of the Mara and has a keen interest in conservation.

Mr. Julius Makibior - Camp and Vehicle Maintenance Operator

Julius was born in Kakimirai, Bomet County. He is a trained automotive technician with over 20 years of experience in vehicle maintenance. He has previously worked at Transworld Safaris and Sun Africa Hotels as a workshop supervisor and head mechanic. Julius is in charge of all the project vehicles and the maintenance of the Tony Lapham Predator Hub. He is an important member of the project as he ensures that the vehicles are in tiptop condition so that the project is able to conduct its community and field work.

Mr. Billy Kaitet - Caretaker and chef

Billy was born and brought up in Naroosura in Narok County. He attended Kanunga Primary school and then Naroosura Secondary school. He trained as a room steward, laundry service and maintenance person at Crocodile Camp, Maasai Mara, where he worked from 2013 to 2015. Billy joined the project in April 2016 as a chef and caretaker. He also helps Julius in the day to day activities at Tony Lapham Predator Hub.

Holistic Assessors

The role of the Holistic Assessors (HAs) is to create awareness on improved livestock husbandry (herding and boma structure), to collect human-wildlife conflict reports and to map and monitor environmental and anthropogenic variables. In the photo from left to right: Sylvester Kipeen (HA), Dominic Sakat (Community Outreach Officer), James Saago (HA), Francis Kumum (HA), Daniel Korio (HA), James Sairowua (HA), Michael Kaelo (Community and Public Relations Manager), Kelvin Koinet (Mara Lion Project Research Assistant).

Interviewers

In June and July we are conducting interviews across the Mara to quantify human-wildlife conflict and people's attitudes towards predators and to identify areas that could be potential conflict hotspots. We have hired 10 people from around the Mara to conduct approximately 800 interviews. In the photo from left to right: Michael Kaelo (MCP/MLP), John Noosaron, David Naurori, Eric Taki, Danson Kaelo, Wilson Rotiken, Daniel Kirapash, Jonathan Noosaron, Richard Letoluo, Clevers Ntokowuan, Saningo Pesi.

Mr. David Thuo - PhD candidate, University of Canberra (Australia)

David, who used to be the Senior Research Assistant on the Mara Cheetah Project, as recently embarked on a PhD in cheetah genetics at the University of Canberra in Australia. For his PhD, David will be using blood, tissue and faecal samples collected by the Mara Cheetah Project to determine population structure and relatedness of cheetahs in the Mara. In addition, he will be collecting samples from other areas in Kenya to determine genetic structure and connectivity on a nationwide level to help inform cheetah management and policies in Kenya.

Ms. Britt Klaassen - MSc student, University of Leiden (The Netherlands)

Britt Klaassen was born in The Netherlands and from a young age she has had a huge passion for nature and wildlife. Britt is currently working on her Master's degree and joined the Mara Cheetah Project in March 2017 to work on her final thesis. For her research project Britt will be using collar data to investigate cheetah habitat selection and movement patterns in the Mara ecosystem in relation to both natural and anthropogenic factors.

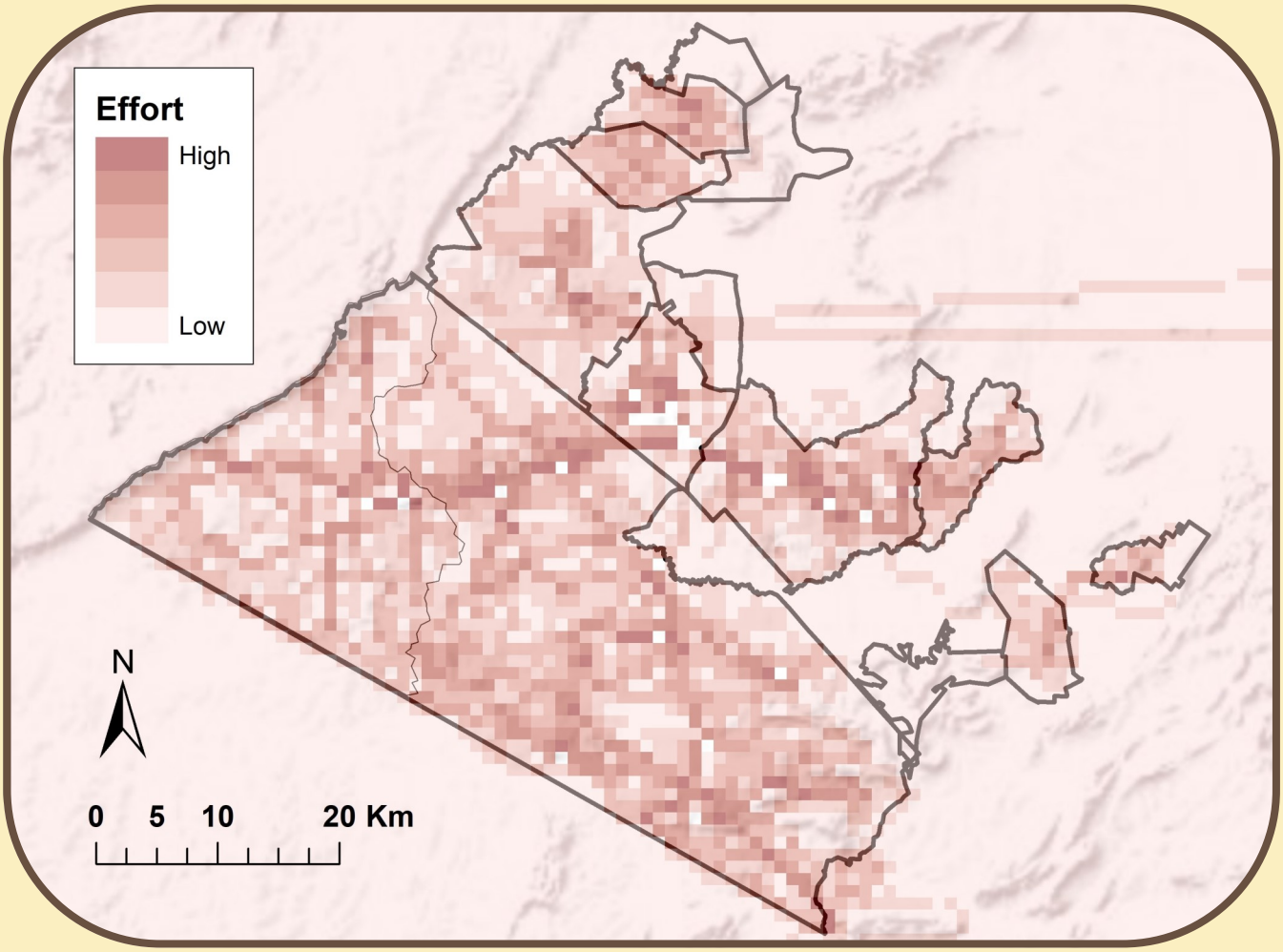
Ms. Emily Madsen - MSc student, Royal Veterinary College (United Kingdom)

Emily Madsen has had a passion for the outdoors and wildlife since a young age growing up in the countryside of the UK. Since completing her B.Sc. in Zoology at the University of Bristol, Emily has spent time traveling and has undertaken a Master's Degree in Wild Animal Biology at the Royal Veterinary College in conjunction with the Zoological Society of London. For her M.Sc. Project, Emily will be using interview data to assess the distributions of wildlife outside of the protected areas in the Mara.

Research

Monitoring

The Mara Cheetah Project field team, together with the Mara Lion Project field team, are out and about on a daily basis collecting information on cheetahs and other predators in the Maasai Mara. This quarter we started our second intensive monitoring survey for 2017 which we have now expanded to also include herbivores. In total, the team drove more than 10,315 km in search of cheetahs, lions and other predators. The diagram below summarises our search effort over the last three months.



Predator species	Count
Spotted hyaena	303
Lion	294
Black-backed jackal	151
Cheetah	105
Leopard	15
Bat-eared fox	9
Serval	4
Side-striped jackal	2

In the last three months we had 105 cheetah sightings in addition to 294 lion sightings. We were also excited to see some of the rarer predators, including a group of two wild dogs in the Maasai Mara National Reserve and a striped hyaena in Olarro South Conservancy.

Population parameters

As part of our monitoring efforts we record all new adults that are seen in the Mara, cubs that are born, individuals that die and independent cubs that leave their mothers.

Adults

This quarter we came across one new cheetah, a young adult female. As she has been sighted in the Southern section of the Maasai Mara National Reserve, we suspect she has come from the Serengeti National Park in Tanzania. Sadly we also lost one cheetah. At the end of July, a female cheetah (Malkia, daughter of Malaika) was reported to have problems walking. The Kenya Wildlife Service Veterinary team immobilised and examined her and this was their report:

"Examination revealed no obvious injury along the spine and in any of the hindlegs. This was considered to be a deep routed problem along the spine at the lumbar region leading to impairment of nerve supply to the hind legs. The injury could have resulted in pinching of nerves at this point through oedema (swelling) or haematoma. No fracture was detected on deep palpation. All physiological parameters were within range and infection was considered a remote possibility." - KWS report July 2017.

During the examination the team discovered that she was pregnant. After the immobilisation Malkia seemed to be doing better but within a day she had aborted her cubs and soon after that she died.

Cubs

This quarter we saw four females with new litters. In total, 13 new cubs were recorded of which six were still alive at the end of September. We also received reports that a female in Mara North has given birth but this is yet to be confirmed by the Mara Cheetah Project. We also suspect that Amani has had another litter but she lost them before anyone sighted them.

Dispersers

This quarter we have recorded quite a few cubs leaving, or dispersing from, their mothers. In total, we recorded seven dispersers of which four were male and three female. When multiple cubs leave their mums they tend to stay in their sibling group which will then split up, unless the sibling group only consists of males. Of the newly dispersed individuals, there was one female who left by herself, a group of three males, a group of two females and a mixed group of one male and one female.

Summary of population parameters for Quarter 3				
New adults	Adult deaths	Births	Cub deaths	Dispersers
1	1	13	6	7

Cheetah sightings

In the past three months we **recorded 42 different adult (21 females and 21 males) cheetahs** in the study area. The next few pages include summaries of the number of cheetahs that were recorded in each of the wildlife areas in the Maasai Mara between 1st July and 30th September 2017.

Maasai Mara National Reserve

Gender	Name	Number of adults	Number of cubs	Notes
Female	Amani	1	0	
	Amani's daughters	2	0	
	Imani	1	0	Daughter of Amani
	Kisiri	1	0	
	Malaika	1	2	
	Malkia	1	0	Daughter of Malaika
	Miyale	1	1	
	Musiara	1	0	Lost all 4 cubs in June
	Musiara's daughter 2	1	0	
	Nolari	1	0	
	Roza	1	3	Lost her 3 cubs
	Siligi	1	0	New female
	Sub-total	**13**	**6**	
Male	5 Musketeers	5	-	Coalition of 5 males
	Hodari	1	-	Amani's son and Imani's brother
	Keekorok male	1	-	
	Miyale's son	1	-	
	Oloolulo male	1	-	
	Sopa males	2	-	
	Sub-total	11	-	
	Total	**24**	**6**	

24 different adult cheetahs (13 females and 11 males) and 6 cubs were recorded in the Maasai Mara National Reserve.

Mara Triangle

Gender	Name	Number of adults	Number of cubs	Notes
Female	Kakenya	1	0	
	Kakenya's daughter 1	1	3	
	Kakenya's daughter 3	1	4	
	Sub-total	**3**	**7**	
Male	Hodari	1	-	Collared male crossed the Mara river
	Triangle males	2	-	Two-male coalition
	Serena male	1	-	
	Sub-total	4	-	
	Total	7	7	

7 different adult cheetahs (3 females and 4 males) and 7 cubs were recorded in the Mara Triangle.

Mara North Lemek and Ol Chorro Conservancies

Gender	Name	Number of adults	Number of cubs	Notes
Female	Amani	1	0	
	Musiara's daughter 1	1	0	
	Sub-total	**2**	**0**	
Male	Siriwua	1	-	Seen in all 3 conservancies
	Sub-total	1	-	
	Total	3	0	

3 different adult cheetahs (2 females and 1 male) were recorded in Mara North, Lemek and Ol Chorro Conservancies.

Naboisho Conservancy

Gender	Name	Number of adults	Number of cubs	Notes
Female	Naborr	1	0	
	Naborr's daughter 1	1	0	Daughter born in 2015
	Naborr's daughter 2	1	0	
	Selenkei	1	0	Imani's daughter
	Sub-total	**4**	**0**	
Male	5 Musketeers	5	-	Coalition of 5 males
	Forester	1	-	Seen with Naborr
	Naborr's son	1	-	Seen with his sister
	Sub-total	**7**	**-**	
	Total	**11**	**0**	

11 different adult cheetahs (4 females and 7 males) were recorded in Naboisho Conservancy.

Ol Kinyei Conservancy

Gender	Name	Number of adults	Number of cubs	Notes
Female	Naborr	1	0	
	Naborr's daughter	1	0	
	Sub-total	**2**	**0**	
Male	Ol Kinyei males	2	-	Imani's sons (without Nolari's son)
	Sub-total	**2**	**-**	
	Total	**4**	**0**	

4 different adult cheetahs (2 female sand 2 males) were recorded in Ol Kinyei Conservancy.

Olare-Motorogi Conservancy

Gender	Name	Number of adults	Number of cubs	Notes
Female	Musiara's daughter 2	1	0	
	Selenkei	1	3	Daughter of Imani
	Sub-total	**2**	**3**	
Male	5 Musketeers	5	-	Coalition of 5 males
	Sub-total	**5**	**-**	
	Total	**7**	**3**	

7 different adult cheetahs (2 females and 5 males) and 3 cubs were recorded in Olare-Motorogi Conservancy.

Olarro South and North Conservancies

Gender	Name	Number of adults	Number of cubs	Notes
Male	Esoit males	2	-	2-male coalition
	Total	**2**	**0**	

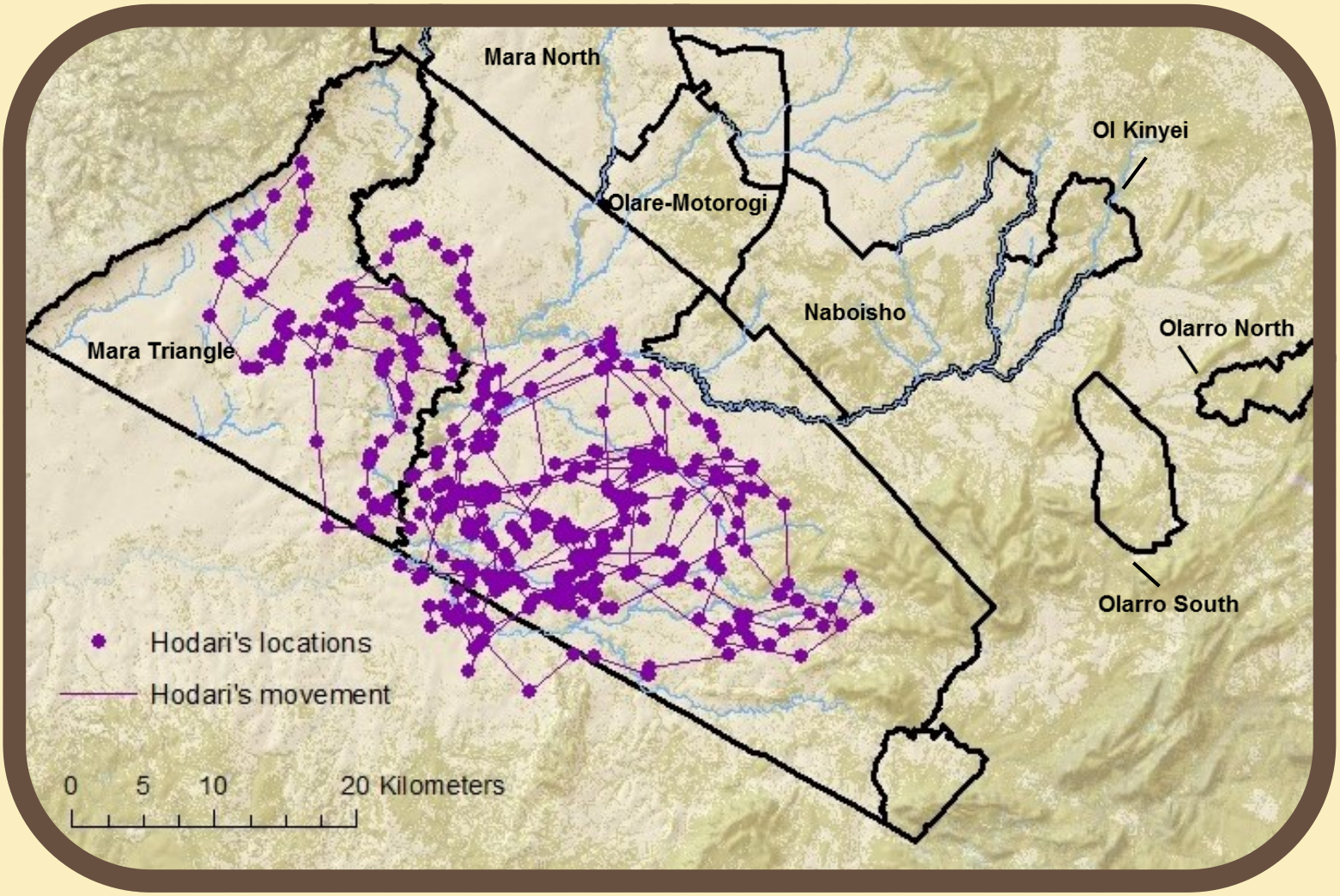
2 adult male cheetahs were recorded in Olarro South Conservancy.

Satellite collars

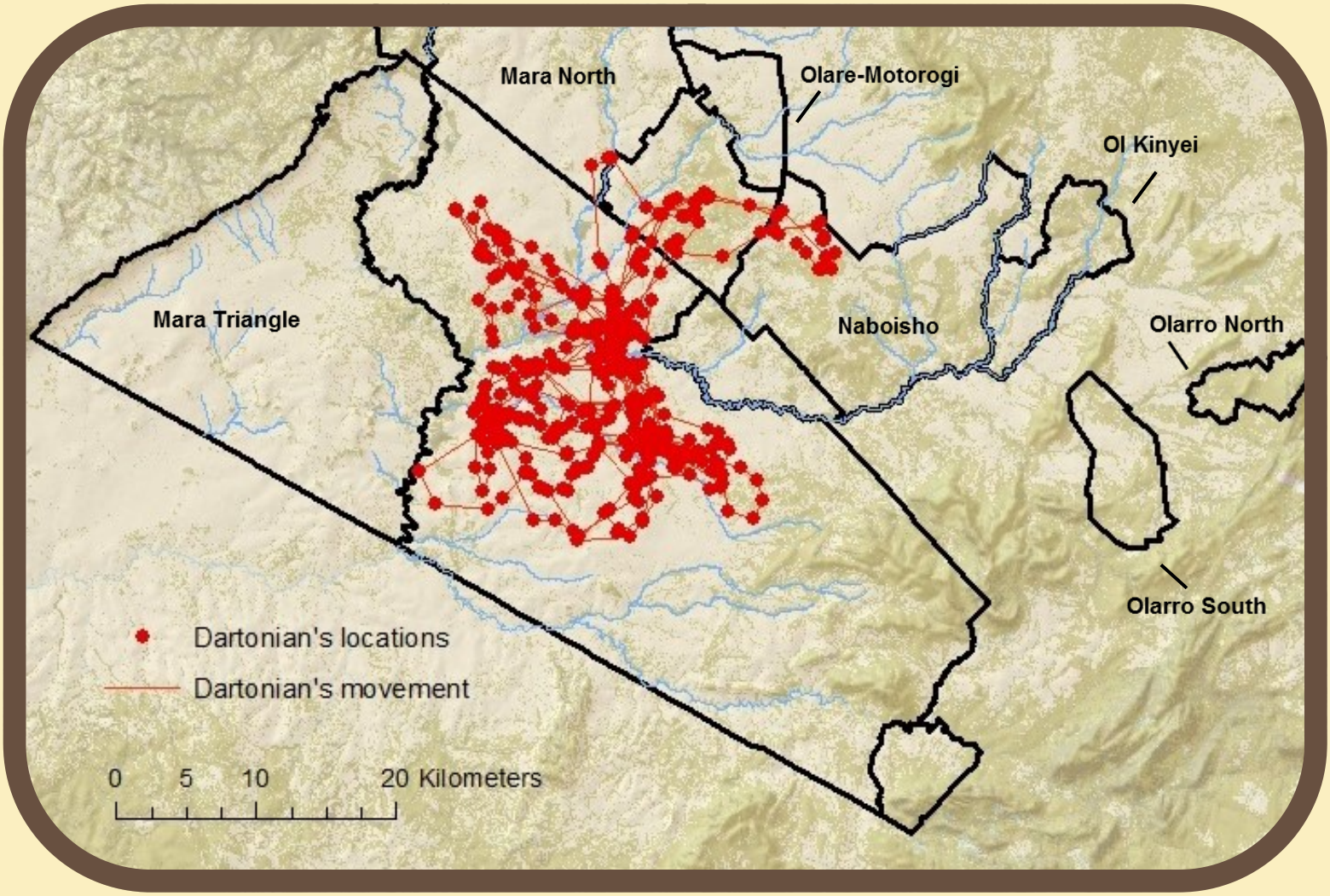
As part of our ongoing collaring project, we have deployed a total of six collars over the last two years. We currently have collars on three groups of males; Hodari (a single male), Forester (a single male) and Dartonian (a member of a five-male coalition also known as the 5 Musketeers). With the help of the data collected by the collars we are in the process of mapping suitable habitats for cheetahs, identifying corridors outside the protected areas and investigating interactions between individuals which will hopefully give us an insight into several different processes including the potential for disease transmission. Below are the movements of the three collared males during this quarter.

Hodari

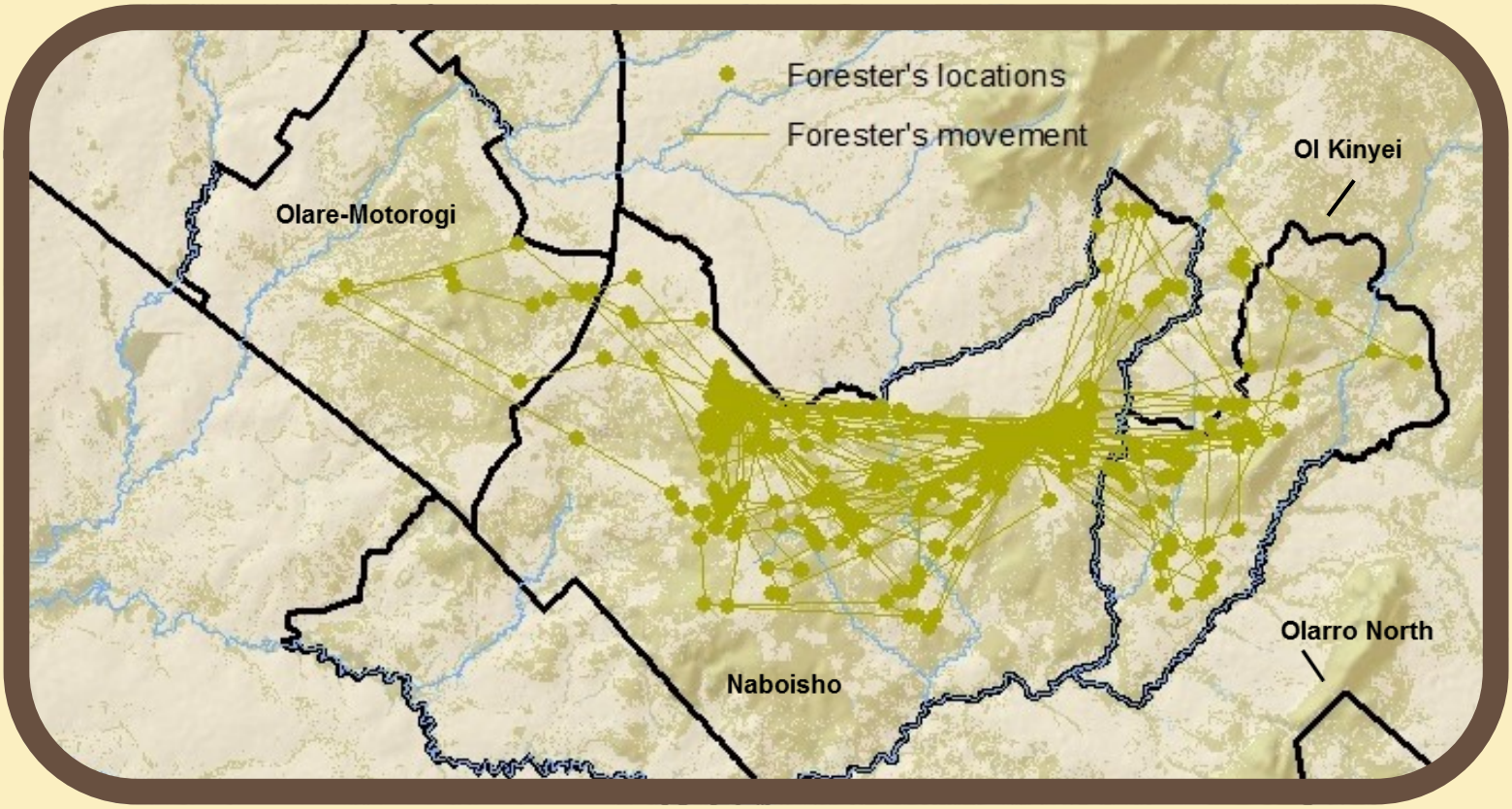
Hodari crossed into the Mara Triangle and then stayed there for almost three weeks before crossing back again. This movement was really interesting as it is relatively rare for cheetahs to cross the Mara river. He also briefly crossed over into Tanzania.



Dartonian (the 5 Musketeers)



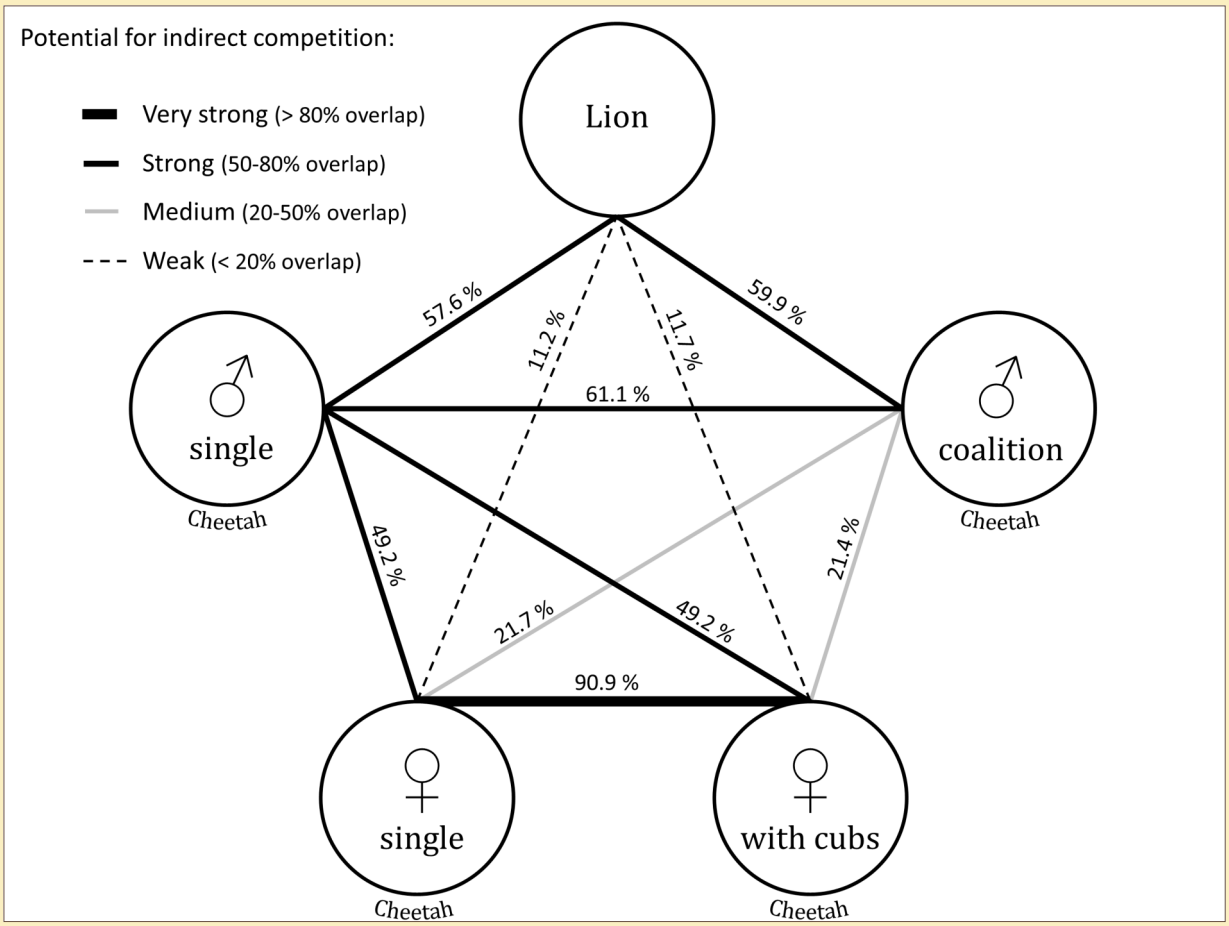
Forester



Cheetah diet

Cheetahs can compete over resources with larger carnivores, such as lions. While cheetahs generally favour smaller prey than lions, male cheetahs frequently occur in coalitions and are larger than solitary females. This could result in male cheetahs killing larger prey and potentially competing more directly with lions than female cheetahs. Understanding competition between different species is important as it can influence population dynamics especially when shifts in prey selection occur. It is therefore important to determine what cheetahs eat to help understand the potential degree and consequences of competition.

To do this, we analysed data on 194 cheetah and 214 lion kills, and compared the feeding ecology of four cheetah social groups: single females, females with cubs, single males and male coalitions to that of lions in the Maasai Mara, Kenya. Female cheetahs have a preference for Thomson's gazelle whereas male cheetahs prefer wildebeest, which is similar to lions' prey preference. Because of this similarity in prey preference between male cheetahs and lions, there is a high potential for competition to occur between them, as illustrated in the diagram below. Understanding these ecological relationships is key, especially when prey become scarce.



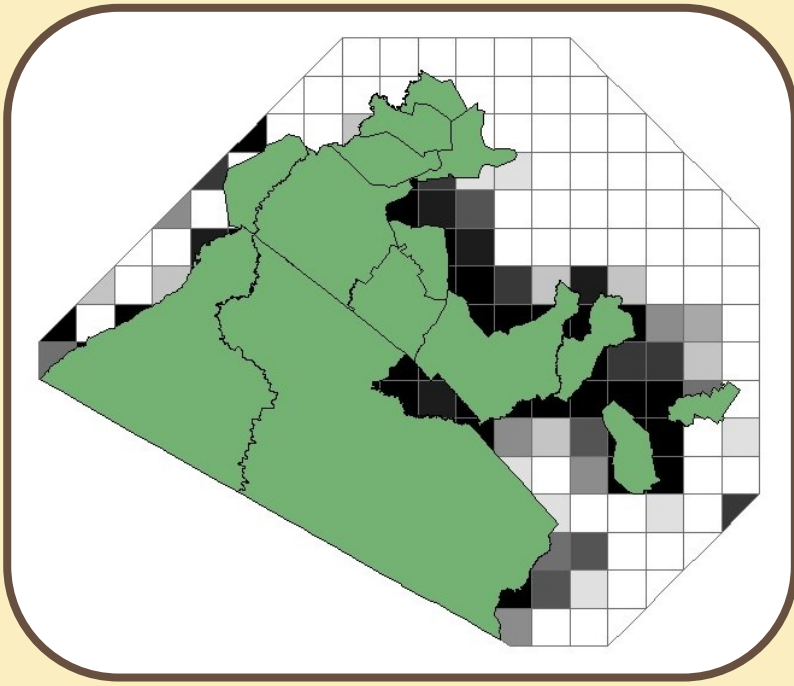
These findings are part of a bigger study that was recently published as the following article: Broekhuis, F., Thuo, D., & Hayward, M. W. (2017) Feeding ecology of cheetahs in the Maasai Mara, Kenya and the potential for intra-and interspecific competition. *Journal of Zoology*.

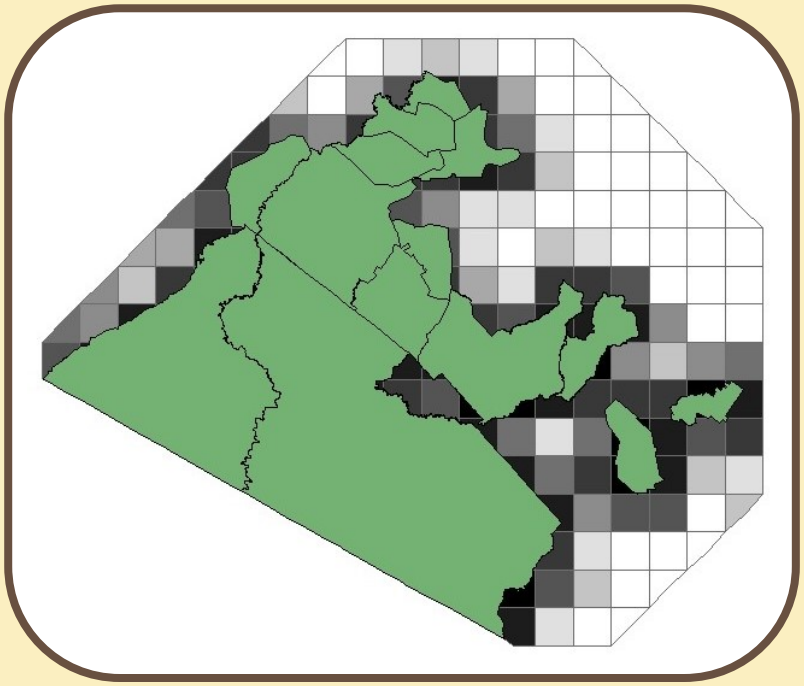
Species distribution outside PAs

There is a continued desire to expand the conservancies around the Mara but it is important to ensure that the areas chosen are actually beneficial to wildlife. In June/July 2015 an interview survey was conducted in the areas surrounding the protected areas to collect information about the presence of six species; cheetah, lion, leopard, wild dog, elephant and spotted hyaena. These data were then used in site-occupancy modelling to assess the site-use distributions of the six species in relation to human presence, fences, habitat, distance to the protected areas and rivers. The results for each species are displayed in the maps below with the darker squares showing areas with a higher probability of site-use.

Cheetah

Cheetah preferred sites closer to the protected areas and avoided humans. They also selected for sites with more open habitat which is likely due to their increased hunting success in areas of open habitat although they are known to use denser areas of vegetation as refuge from competitors such as lions. The area between Ol Kinyei and Olarro shows a relatively high level of site use and this has also been seen in the GPS collar data collected by the Mara Cheetah Project in 2015 where one female cheetah regularly crossed this area between the two conservancies.



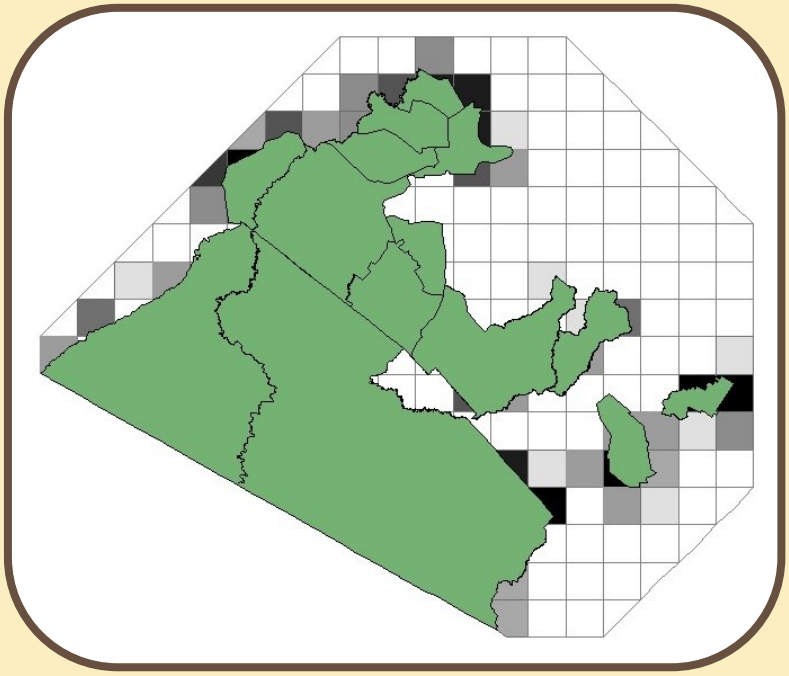


Lion

Lions selected for sites closer to the protected areas and away from humans. In addition, they selected for sites close to rivers and with a high proportion of semi-closed habitat. Lions' preference for rivers is likely due to the cooler environment, the denning opportunities and the increased hunting opportunities. When compared to the GPS collar data from the Mara Lion Project we can see that the region between Naboisho, Ol Kinyei and Olarro is frequently used by two different groups of sub-adults making particular use of two drainage ditches. Lion site-use is similar to that of leopards, however, lion have a much wider distribution which is likely a result of the higher density of lions in the Mara.

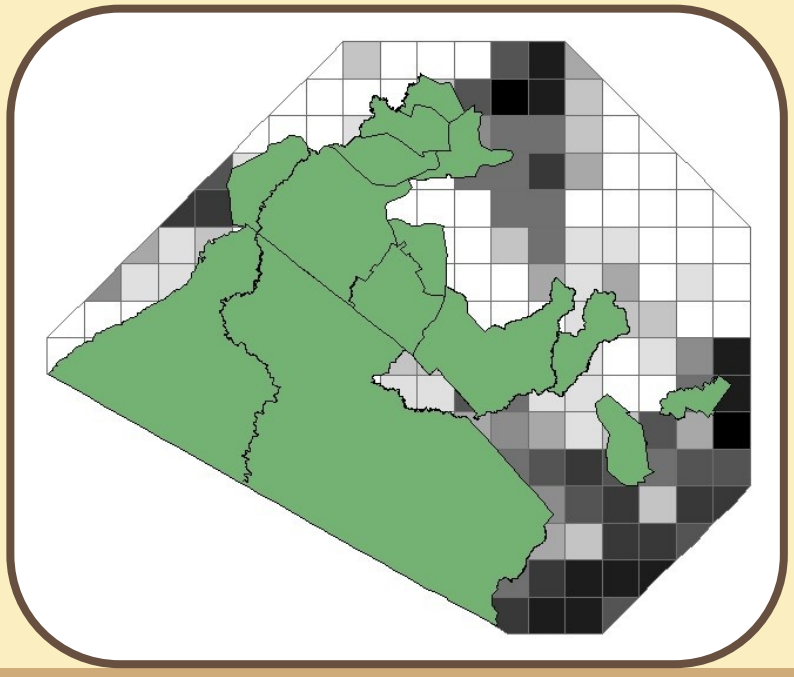
Leopard

Leopard preferred sites closer to the protected areas, avoided large areas of open habitat and avoided human presence. They also selected for sites close to rivers, this is likely a result of leopard hunting techniques which rely on denser vegetation to stalk their prey. There is little site-use in the Pardamat Hills region which seems surprising as it is likely that they are present in these hills. It is possible they are difficult to detect because they are present at low densities, nocturnal and extremely elusive.



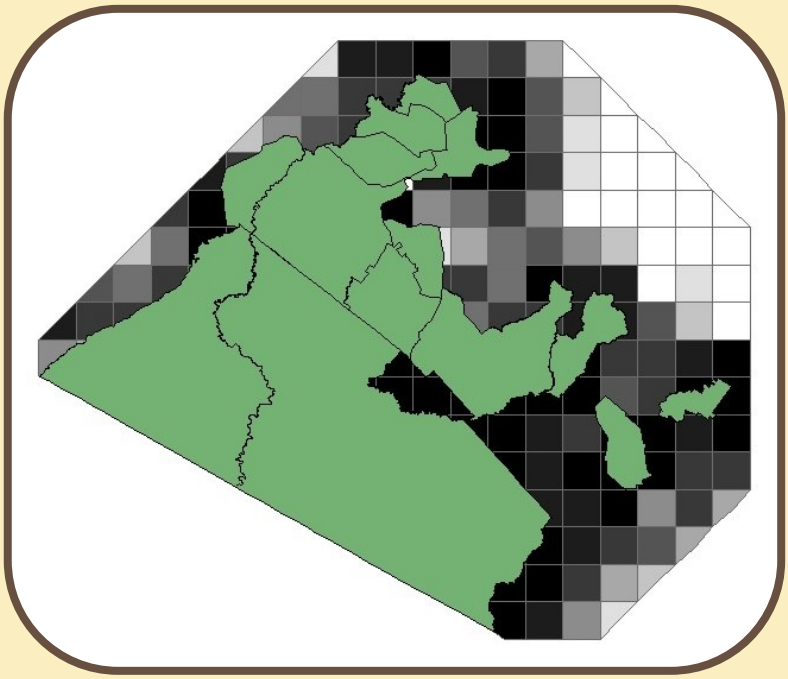
Wild dog

Wild dogs often avoid areas with high lion density and as the Mara is known for its high density of carnivores it is not surprising that wild dogs are mostly found outside the protected areas. Wild dogs did still choose sites closer to the protected areas which could be because there is a higher density of prey closer to these boundaries. They also showed an avoidance of fences and selected for areas with a higher proportion of semi-closed habitat. This could be the result of trying to minimise detection by humans but also by other predators. The wild dogs also showed a preference for sites closer to rivers, probably for similar reasons to lions.



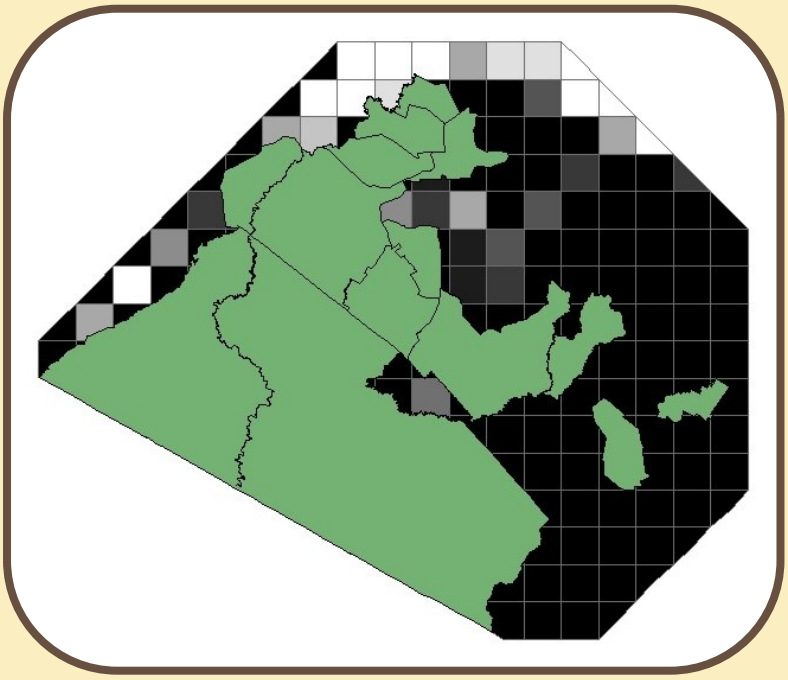
Elephant

Elephant avoided sites with a large amount of fencing and sites with a large amount of open areas which is likely because they are trying to reduce the chances of detection in the human dominated landscape. On the other hand, elephants preferred sites close to the protected areas and areas close to rivers, which could offer opportunities for browsing and minimise detection by humans.

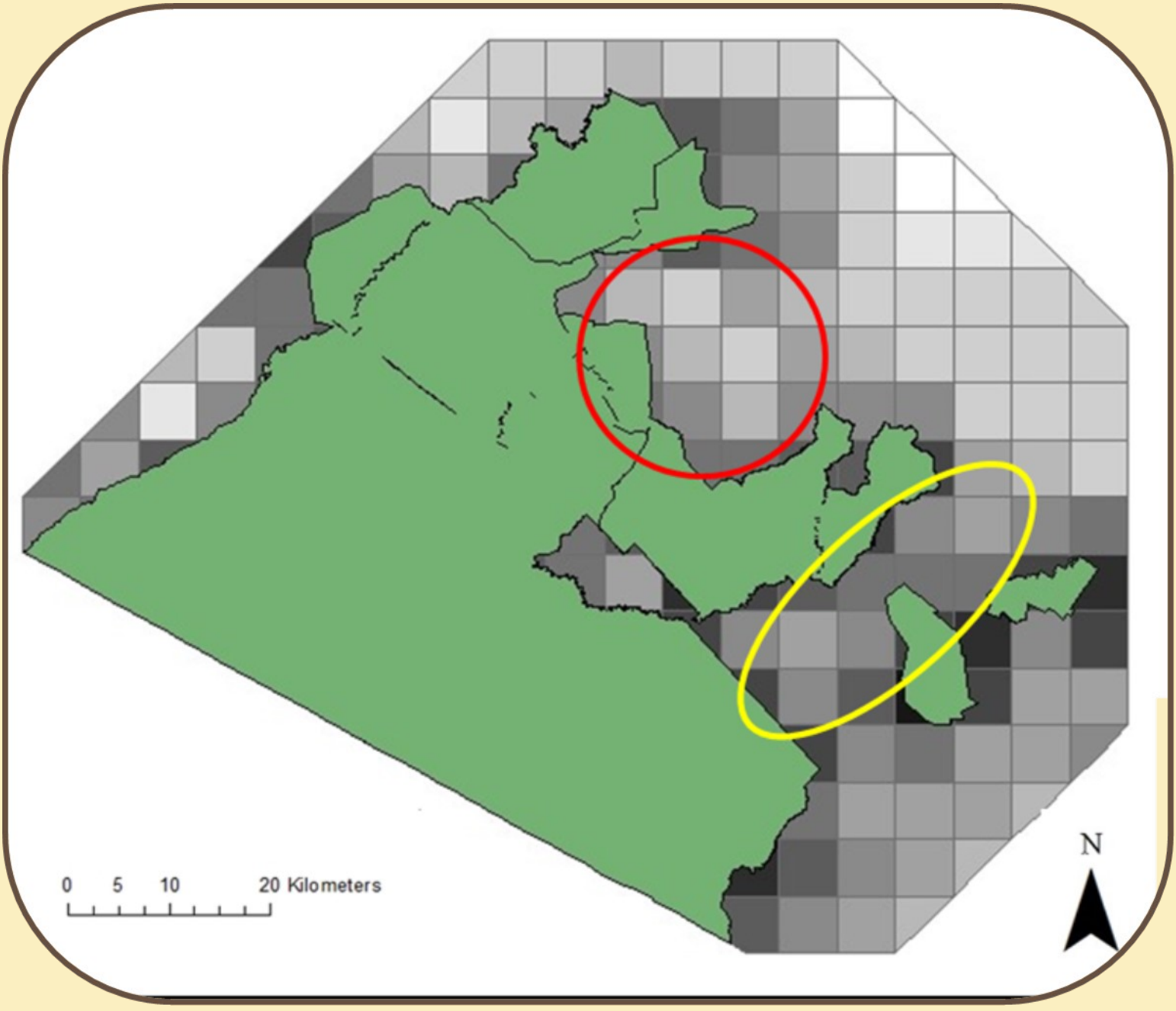


Spotted hyaena

Spotted hyaenas had the highest reported frequencies of sightings out of all six species and showed the widest distribution. They were minimally affected by both the distance to protected areas and the distance to humans. This makes sense as it has been seen that hyaenas will change their behavioural patterns in response to human activity rather than change the areas of site-use. The Pardamat Plains has a relatively low level of use compared to other areas.



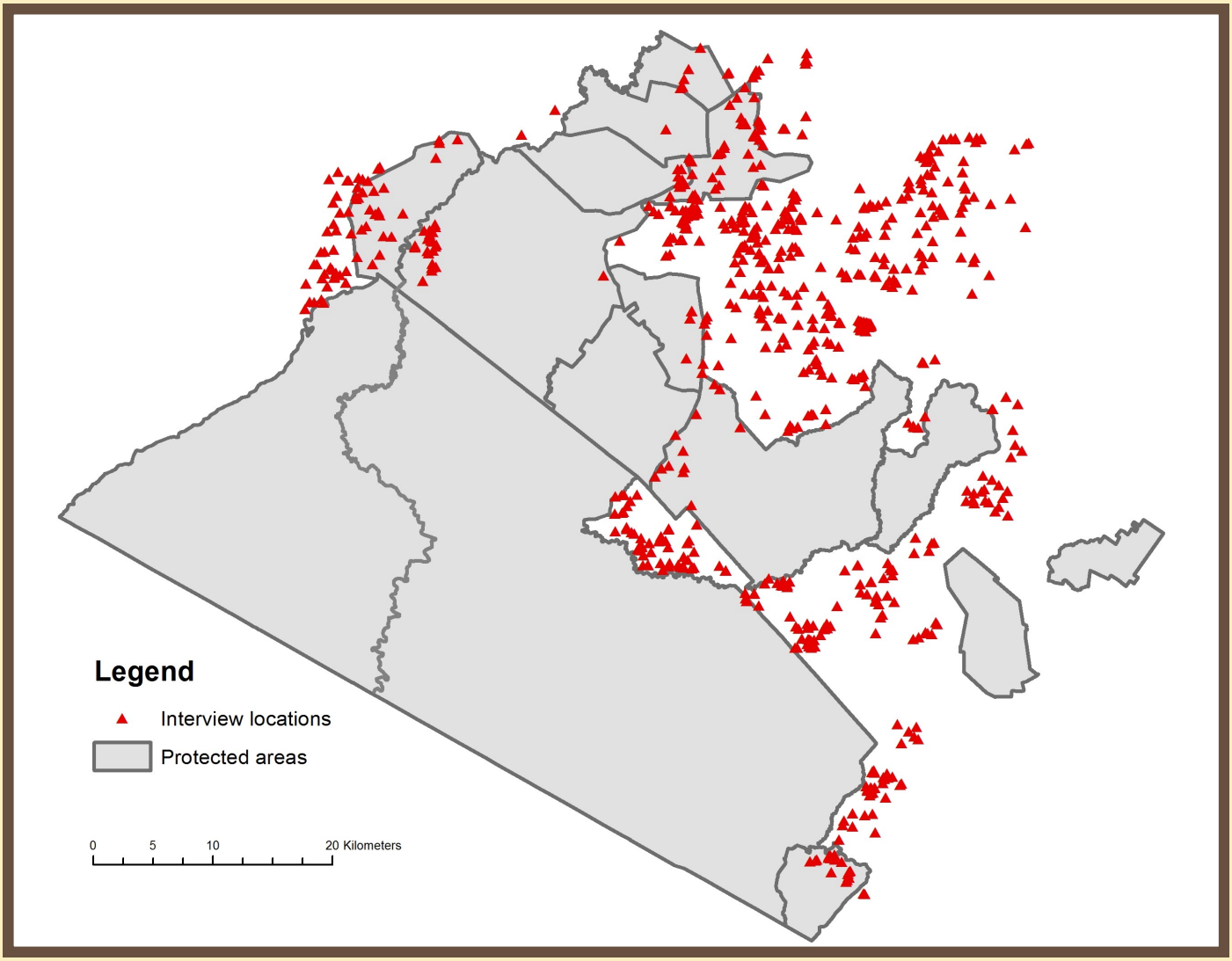
We then created an overall species map by combining the site-use of all six species. There are two areas which are particularly noteworthy; first is the Pardamat Plains (circled in red) which has a relatively low level of site use by all six species compared to other areas the same distance from the protected areas. The second area that seems particularly important is the area between Naboisho, Ol Kinyei to the Olarro conservancies (circled in yellow) which could be important corridors as this area is frequently used by most of these species. This could prove to be particularly problematic when the Sekenani road is finished being tarmacked as it will cut through many of these corridors. For these reasons we recommend that the movement of wildlife be take into account during the planning of the Sekenani road and that these areas be considered for inclusion in future conservancies.



Questionnaire survey

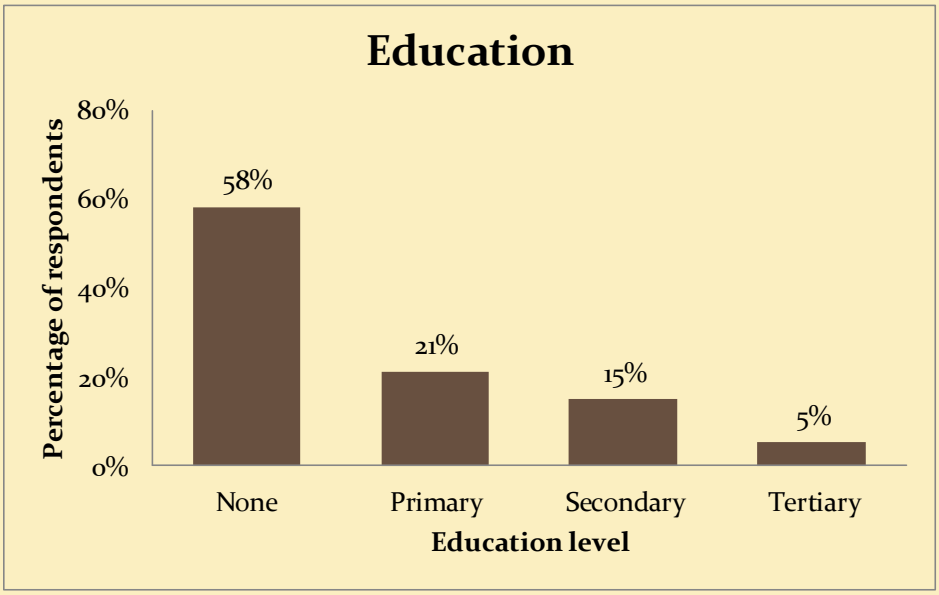
In 2015, we carried out an extensive questionnaire survey across the Maasai Mara aimed at quantifying human-wildlife conflict, determining people's attitudes towards wildlife and producing a conflict 'hotspot' map to help direct interventions where they are most needed. This year we repeated the survey to try and see if there are changes in the spread of conflicts and assess whether people's attitudes towards wildlife have changed over the span of two years.

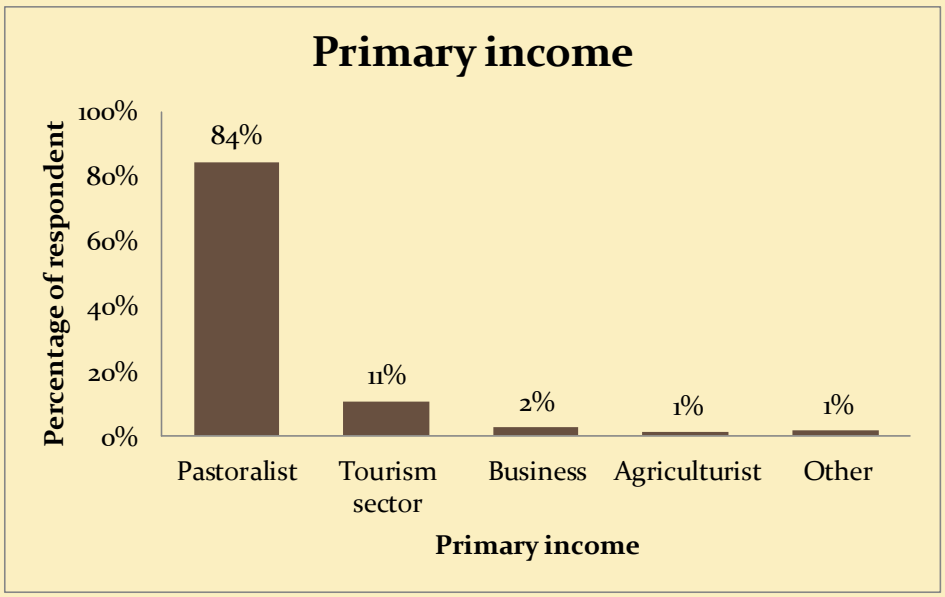
Similar to two years ago, we hired 10 interviews from around the Mara to conduct the survey and we randomly selected 820 *manyattas* (settlements with livestock enclosures) in the same zones as in the previous survey. The two-month survey started at the beginning of June and was completed at the end of July. This year's survey was carried out in collaboration with the Mara Lion Project and The Peregrine Fund with funding provided by the BAND foundation and Naboisho ManCo.

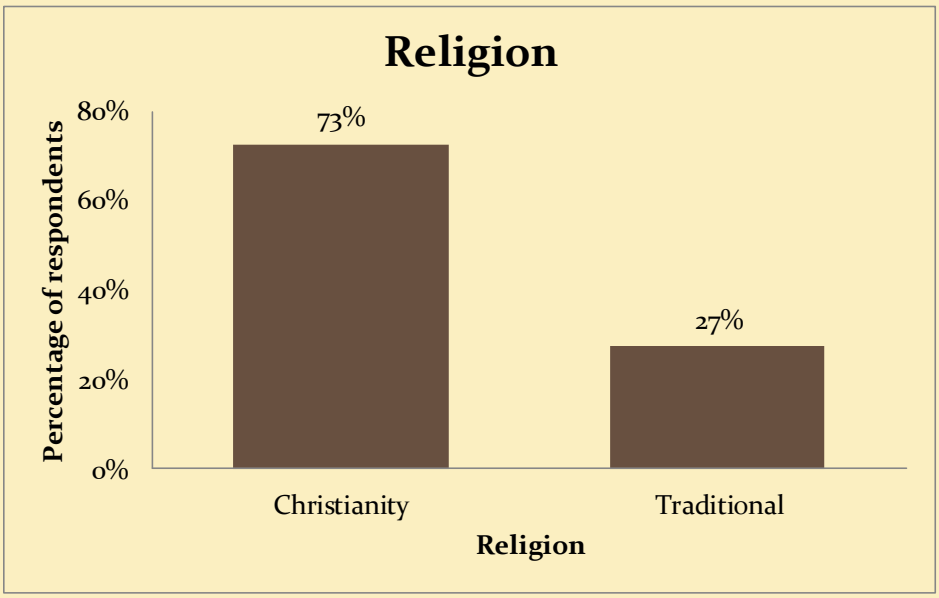


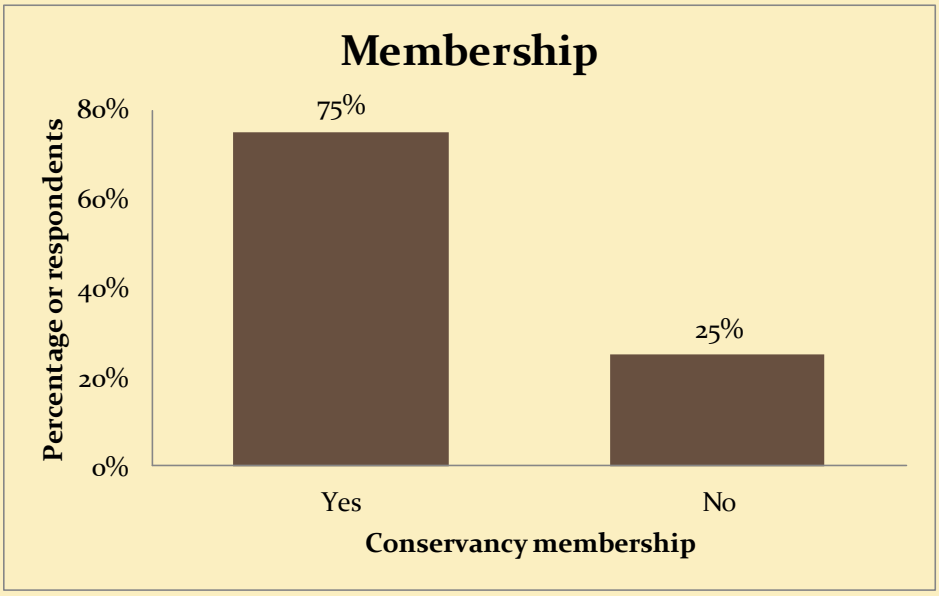
The following pages provide a brief summary of the data that were collected. The next step will be to compare the data to those that were collected in 2015 to see if there have been any changes.

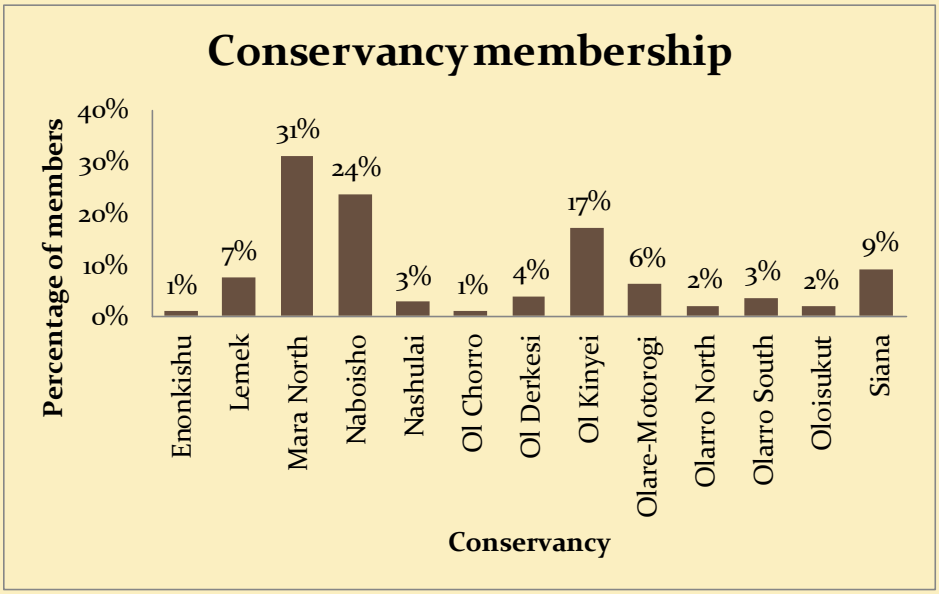
Demography


Education
Percentage of respondents
80%
60%
40%
20%
0%
58%
21%
15%
5%
None
Primary
Secondary
Tertiary
Education level


Primary income
Percentage of respondent
100%
80%
60%
40%
20%
0%
84%
11%
2%
1%
1%
Pastoralist
Tourism sector
Business
Agriculturist
Other
Primary income


Religion
Percentage of respondents
80%
60%
40%
20%
0%
73%
27%
Christianity
Traditional
Religion

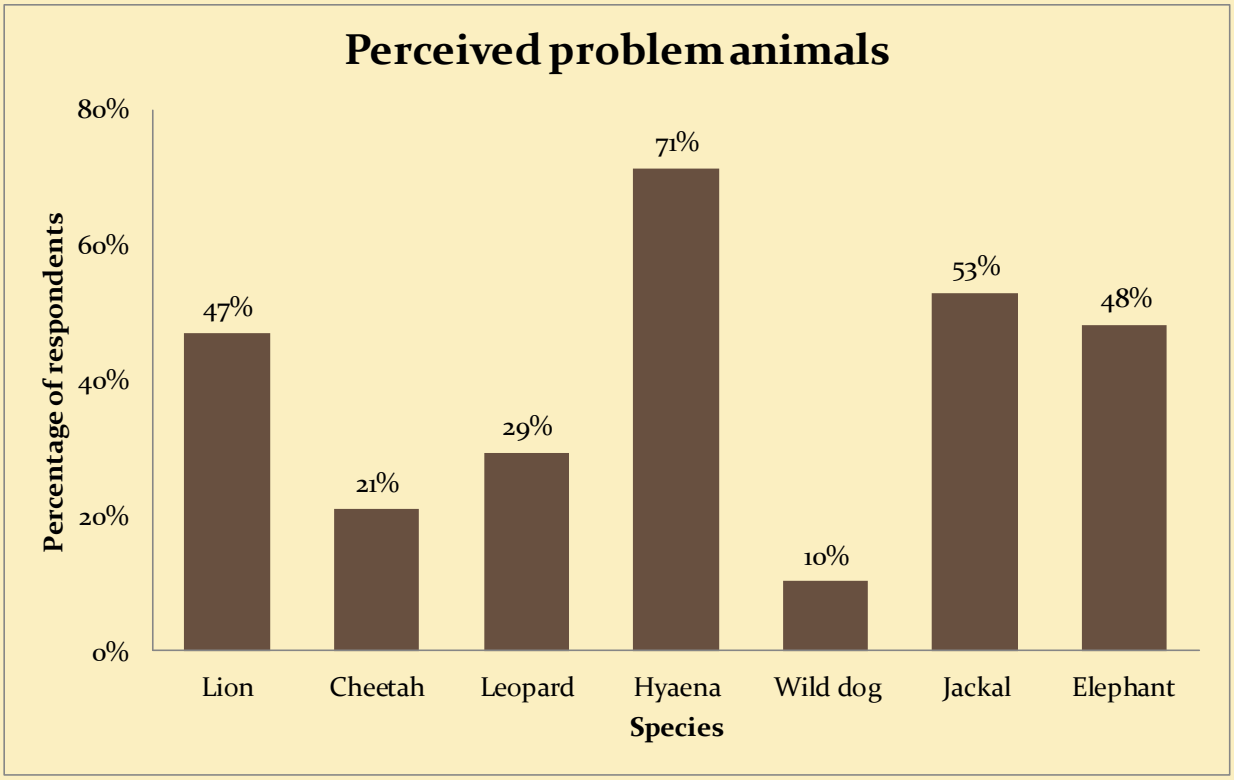




Livestock owned		
	Cattle	Shoats
Total	82406	150956
Average	108.86	196.30
Standard deviation	120.98	146.05
Min	2	7
Max	950	800

Problem animals

Respondents were shown photographs of lion, cheetah, leopard, spotted hyaena, wild dog, jackal and elephant and asked whether they thought any of these animals caused problems. Respondents thought that spotted hyaena's caused the most problems and wild dogs the least.

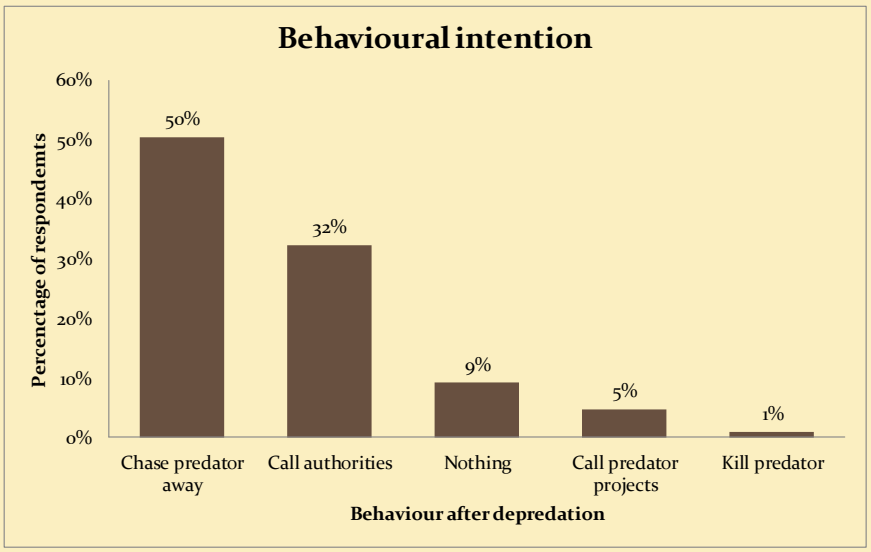


Respondents who thought that a species caused problems were asked what the problems were. The killing and or injuring of shoats was the biggest problem for all species apart from lion and elephant. The biggest problem caused by lions was the killing and/or injuring of cattle and for elephants it was the damaging of property such as fences. Figures in the table below represent the number of respondents.

	Lion	Cheetah	Leopard	Spotted hyaena	Wild dog	Jackal	Elephant
Damaged crops	-	-	-	-	-	-	132
Damaged property	-	-	-	-	-	-	**306**
Injured family member	3		-	-	-	-	9
Injured respondent	3		-	-	-	-	2
Killed family member	-	-	-	-	-	-	11
Killed/injured cattle	**360**	7	22	155	3	5	55
Killed/injured shoats	47	**153**	**217**	**529**	**73**	**421**	8

Behavioural intentions

Respondents were asked what they would do if a predator killed their livestock. Half of the respondents said that they would chase the predator away and only 1% said that they would kill the predator.



Respondents were then asked if they thought people in the community killed predators and 3% said that they thought people did.

Respondents who thought people killed predators were asked how they thought they were killed. Most respondents thought that people mostly used spears, but also bow and arrow, poison and snares. Figures in the table below represent the number of respondents.

	Lion	Cheetah	Leopard	Spotted hyaena	Wild dog
Spear	35	31	31	32	30
Bow and arrow	17	23	18	10	23
Poison	12	5	11	12	10
Snare	-	-	17	7	-

Outreach and Education

Community engagements

Wildlife Clubs

We have continued to work closely with the six schools to implement the Wildlife Clubs curriculum. We aim to motivate young conservationists to better understand conservation issues and develop a passion for addressing them. Some of the activities the clubs have undertaken this quarter include: club meetings, cleanups, conservation talks, and an exposure visit to Mara Discovery Centre where kids learnt on how to create tree nurseries and make use of plastic bottles. We also screened wildlife films and documentaries. Next quarter we will carry out other activities for wildlife members and also screen films to non-members to try and spread the conservation message. We are also extremely fortunate to have received support from WWF to continue working with the wildlife clubs. After a hiatus in funds, this is most welcome.

Holistic assessors

This quarter the team continued to collect vital data on livestock, predators and livestock depredation. The team also organised five community meetings (*barazas*) in Saparingo, Sekenani, Olng'ayanet, Laila and Rekero. The barazas were attended by over 200 participants who expressed their support to adopt less toxic chemicals to kill fleas on their livestock and the use of renewable materials to construct bomas. There is currently massive deforestation with increased boma and fence building. As this is still an unfamiliar concept, we built a demonstration boma made from recycled plastic posts. We are using this as a model boma to show people alternative construction materials and will monitor its durability as we plan to erect more model bomas.

Demonstration *boma* built with recycled plastic poles as part of a programme to encourage the use of sustainable resources.

Workshops and meetings

Research meeting at the Tony Lapham Predator Hub

For her MSc thesis, Emily used interview data to assess the distributions of wildlife outside the protected areas of the Mara. At the end of July, Emily presented her findings (see pages 18-21) to key stakeholders including the Kenya Wildlife Service, Narok County Government, Maasai Mara Wildlife Conservancies Association, conservancy managers and various NGOs and research groups.

Olare-Motorogi Conservancy Management Plan Meeting

This quarter we participated in a meeting as Olare-Motorogi Conservancy began work on their management plan. The workshop, which was organized and facilitated by Maasai Mara Wildlife Conservancies Association and Kenya Wildlife Service, attracted more than fifty participants. This was a laudable move for the conservancy as it strives to comply with the law that requires conservancies to have management plans but more so it is a step in the right direction towards a brighter future for wildlife and community members.

Conservation Research Meeting

We participated in a priority setting workshop at Fig Tree Lodge. The workshop, organised by Jacob Bro-Jorgensen from the University of Liverpool, was well attended by Narok County, KWS and various research groups. The aim was to prioritise research needs for the Mara that will be useful for conservation and management decisions. After much discussion, research topics were ranked by each person and the outcome is currently being compiled. This was a major step for science and we look forwards to seeing research playing a more central role in the conservation of the Mara.

Other Updates

News

Internships

Two interns joined us this quarter. Michelle Wanjiku a student at the University of Eldoret taking a Bachelor of Tourism and Margaret Njuguna of Masinde Muliro University of Science and Technology taking a BSc. Environmental Conservation and Management spent their time with the project learning about the various activities we undertake. They were a big help and we thank them for their time.

Sabbatical

Greg and Kate Armfield joined the team for four weeks while on their sabbatical. Greg works for WWF-UK in content production while Kate works in marketing for a private firm. They have been an enormous help to us in producing content and the endless task of identifying lions and updating databases. We are very fortunate that they decided to come and stay and help us out on many different levels. Thanks for WWF for making this connection.

Students

As part of her thesis for her Master's Degree in Wild Animal Biology at the Royal Veterinary College and the Zoological Society of London, Emily Madsen looked at species distribution outside the protected areas (pages 18-21). In September she successfully defended her thesis for which she received a well-deserved merit. Congratulations Emily for a job well done! Emily has returned to volunteer on the project for another three months to assist with data collect and analysis.

Partners and collaborators

We are proud to be working with both local and international partners, without whom we would not have been able to achieve what we have. We would like to thank the following partners for their continued support and we look forward to continuing these partnerships going into the future:

- **Narok County Government**
- **Kenya Wildlife Services (KWS)**
- **Maasai Mara Wildlife Conservancies Association (MMWCA)**
- **Mara Lion Project**
- **Dr. Arjun Gopalaswamy**
- **Smithsonian Institution**
- **Wildlife Conservation Research Unit (WildCRU), University of Oxford**
- **Mara Triangle (Mara Conservancies)**
- **Mara North Conservancy**
- **Olare-Motorogi Conservancy**
- **Olarro South and North Conservancies**
- **Ol Derikesi Conservancy**
- **Naboisho Conservancy**
- **Ol Kinyei Conservancy**
- **Lemek Conservancy**
- **Ol Chorro Conservancy**
- **Enonkishu Conservancy**

Acknowledgements

We would like to thank everyone who has supported us in this project and we hope your support will continue into the foreseeable future.

Donations

The running costs, from vehicle fuel and maintenance to salaries and equipment, are the hardest things to find funding for, yet without it we would not be able to monitor cheetahs on a day-to-day basis and collect the necessary data needed to establish the ecology and threats that cheetahs face in the Maasai Mara. We are therefore particularly grateful to the following donors for their unrestricted funding which enables us to run this project:

- **Delta Trust**
- **Evergreen II Trust**
- **Angus & Margaret Wurtele**
- **Mason Thalheimer and Samlyn Capital**
- **J.A. & H.G Woodruff, Jr. Charitable Trust**
- **Asilia Africa**
- **Margaret Prentice and John Dyson**
- **Naboisho Camp**
- **Sala's Camp**
- **Rekero Trust**
- **William and Crystal Ribich**
- **Big Cat Rescue**
- **Jeffrey Wu**
- **Various anonymous donors**

We would also like to thank the following donors for supporting specific projects:

- **BAND Foundation** for providing the funding for the biomedical project and the questionnaire survey.
- **Banovich Wildscapes Foundation** for funding the purchasing of five satellite collars and for covering veterinary costs.
- **African Wildlife Foundation** (AWF) for funding Holistic Assessor Program and covering local salaries and vehicle running costs - without which we would not be able to do our work.
- **Naboisho ManCo** for funding the questionnaire survey and local salaries.

Data and photos

Thank you to all of you who have provided us with photos and reports on cheetah sightings both from the Maasai Mara and the Serengeti.

Logistic support

We would like to thank Asilia, The Safari Collection, Seiya and Kicheche for their support on the ground.

How you can help

There are various ways in which you can support to work by the Mara Cheetah Project.

Report cheetah sightings

Sightings of cheetahs help us in our monitoring efforts. If you would like to help then please provide your cheetah sightings through one of the following channels:

- Download Spot-a-Cat (http://www.maracheetahs.org/spot-a-cat/), an Android App available in Google Play that allows everyone to record cheetah sightings. The App allows users to upload sightings with photos, view an interactive map of their sightings and learn about cheetahs in the "fact file".
- Fill in the online sighting form on the project website (http://www.maracheetahs.org/how-to-help/cheetah-sightings/).
- Email your sightings to sightings@maracheetahs.org

Make a donation

To ensure the long term success of the Mara Cheetah Project it is crucial that there is funding available for the core running costs which include staff salaries, vehicle maintenance and fuel, fees for permits and basic project equipment. With these costs covered the team can continue with the important day-to-day monitoring of the cheetah population in the Maasai Mara.

US $300

Can purchase a camera which can be used by safari guides to help with cheetah monitoring

US $1,500

Covers the cost of research equipment needed to monitor and collect data on cheetahs

US $2,000

Covers the cost of fuel and vehicle maintenance for all project vehicles for 3 months

US $7,500

Covers the salary for a local research assistant

Donations can be made through the Mara Cheetah Project website:

http://www.maracheetahs.org/how-to-help/donations/

Email: info@maracheetahs.org

Website: www.maracheetahs.org

Twitter: www.twitter.com/MaraCheetahs

Facebook: www.facebook.com/MaraCheetahProject

Instagram: www.instagram.com/MaraCheetahs