

Mara Lion Project

2017

Quarterly Report

01 July—30 September



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Cover photo: Nic Elliot (Kasaine Sankan in Nakuru National Park conducting a lion survey)

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Executive summary

During this quarter we started our second lion survey of 2017 (August-October) and added all herbivores to the data we now collect. This will allow us to explore herbivore occupancy and trends over time. Our methodology was also put into practice further afield as we participated in a lion survey in Nakuru National Park with the Kenya Wildlife Service and Lion Guardians.

Our community programme continued with the 6 wildlife clubs and saw the

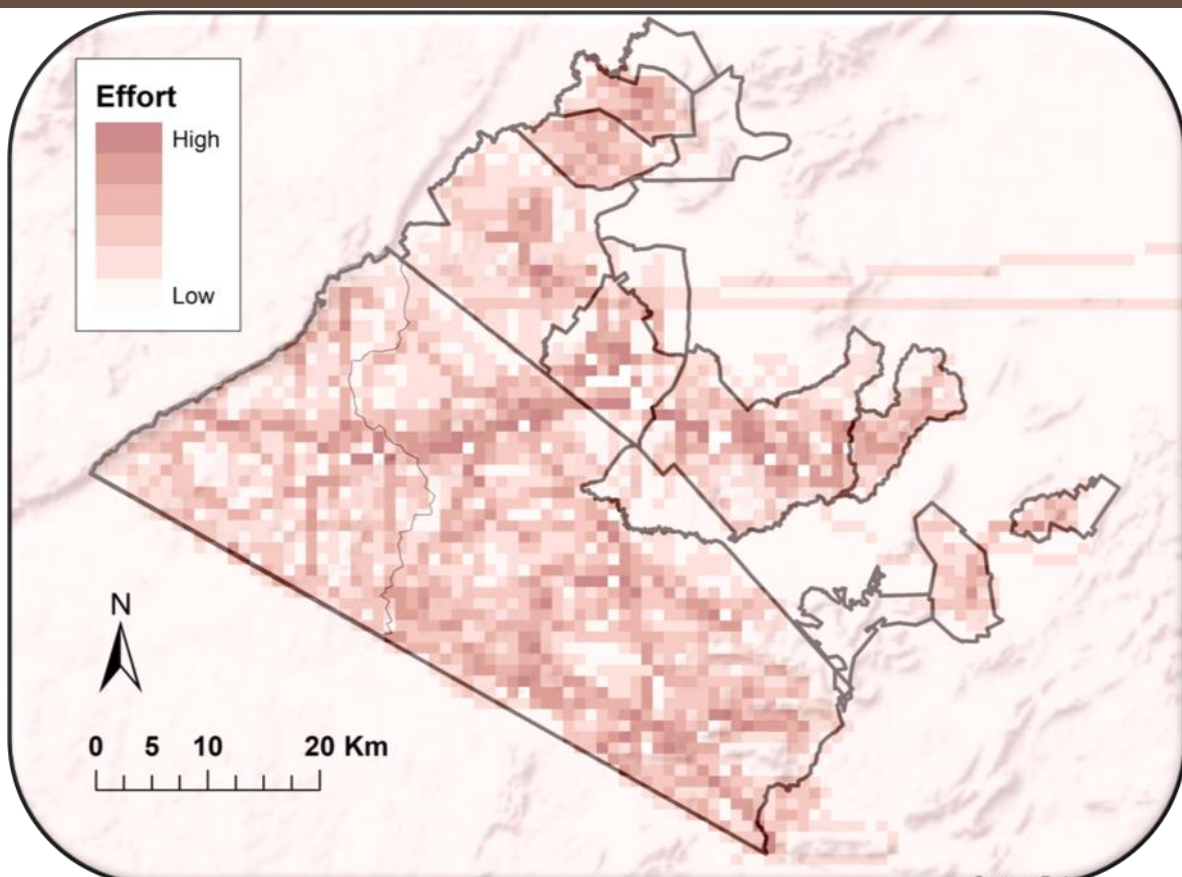
holistic assessor programme build a test boma out of recycled plastic. We finished off our second human-wildlife conflict questionnaire and are currently going through the data.

At a wider level, we attended a meeting on research priorities for wildlife conservation in the Mara, in addition to a management plan workshop for Olare Motorogi Conservancy. Nic Elliot led a workshop on standardisation of survey methodologies for lions at a national level.

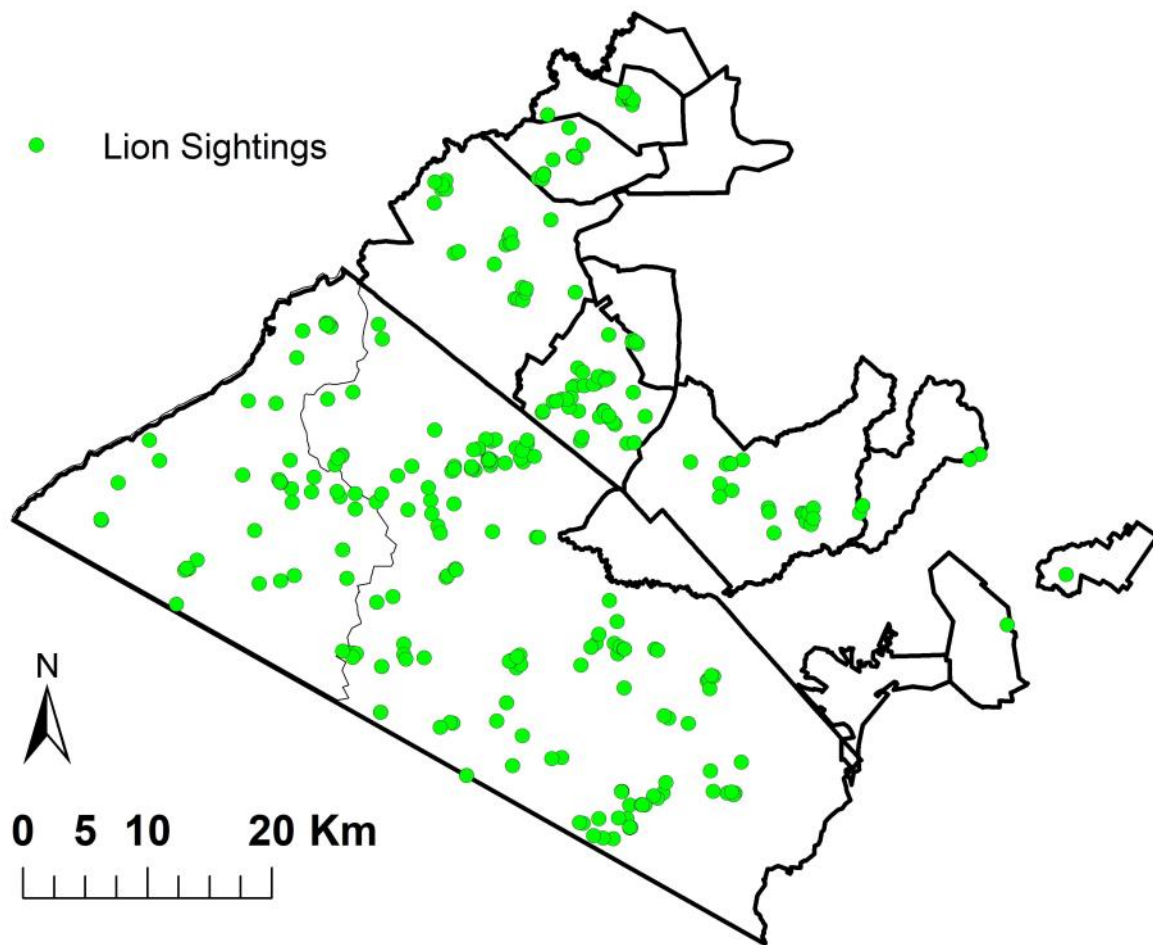
Field update

Twice a year we conduct surveys (February-April and August-October) and use this data to estimate spatial trends in population density. While we do most of our fieldwork during these times, we conduct fieldwork year round to keep our databases and ID catalogues up to date.

During this quarter we completed 170 patrols and drove 10,315 kilometres while recording all herbivores, predators, people, livestock and vehicles. As mentioned last quarter, we have expanded our efforts into Olderkesi, Olarro North and South Conservancies. This map shows all our tracks and is coloured according to distance driven per cell.



During this quarter we had 290 lion sightings. The map below depicts the locations of each sighting and should be viewed in light of the effort map on the previous page.



Lion sightings

During this quarter we had 294 lion sightings as opposed to 122 sightings last quarter. In part this is because May and June fall outside of our survey period and we therefore do less

fieldwork. Instead, we use this time to catch up on office work and enter all our data. However, we still do opportunistic fieldwork to ensure we keep as up to date as possible with changing dynamics.

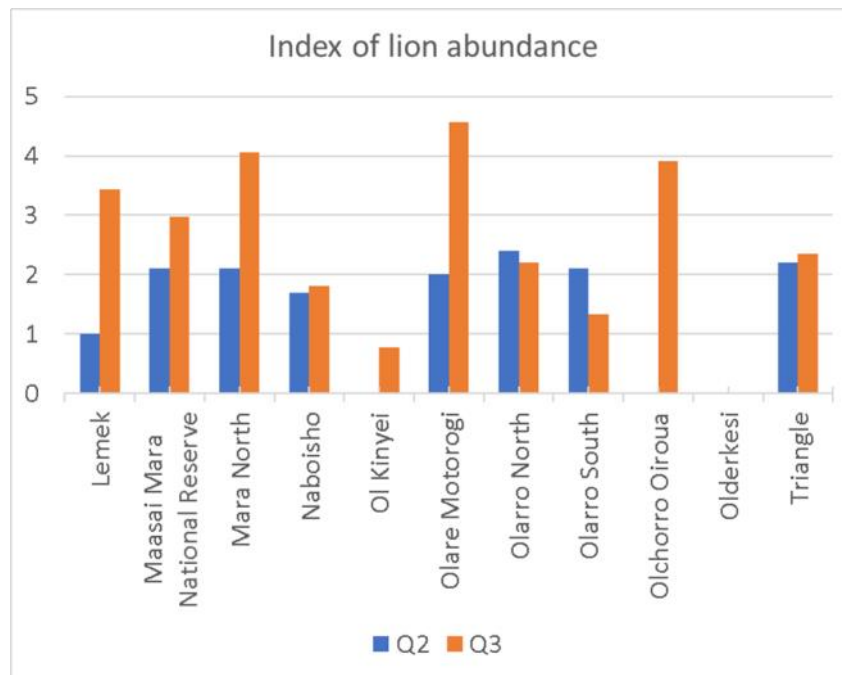
Name	Distance driven	Number of sightings	Index of abundance
Lemek	291	10	3.4
Maasai Mara National Reserve	4808	143	3.0
Mara North	567	23	4.1
Naboisho	1048	19	1.8
Ol Kinyei	258	2	0.8
Olare Motorogi	852	39	4.6
Olarro North	91	2	2.2
Olarro South	302	4	1.3
Olchorro Oiroua	256	10	3.9
Olderkesi	132	0	0.0
Triangle	1704	40	2.3

The table above indicates the distance driven and number of lion sightings we recorded per wildlife area. The index of abundance is a measure of lion abundance taking into account the distance driven.

Index of abundance

We conduct an in-depth analysis of all our data that provides density figures across the ecosystem. While we process those data, the below graph shows some trends. We calculate an 'index of abundance' by dividing the number of lion sightings we have by the distance driven in each wildlife area and multiplying by 100.

This means that we had 4.5 lion sightings for every 100km driven in OMC as opposed to 3 sightings for every 100km driven in the MMNR. In most areas, the index of abundance is higher than in Q2. The wildebeest migration was here this quarter which could result in more lions, but it could also be that they are more visible, hence the need for robust analyses.



Lion Deaths

During this quarter four lions are known to have died. First, a dispersing collared male died as a result of an old injury. Next, a young female lion was found in the south east of the Mara Triangle. It is likely that she was killed by other lions. Then in Olarro conservancy, two cubs were killed by the SOL males that have been resident in Naboisho and Ol Kinyei for many years. These males are known to travel back and forth to Olarro conservancy. While disturbing, such behaviour is natural in lions. If a male lion is not the father of existing cubs he will try to kill them. This is because a mother will not come into oestrus until her existing cubs are independent. Male lions cannot afford to wait that long and so kill the cubs, resulting in the female coming into oestrus.

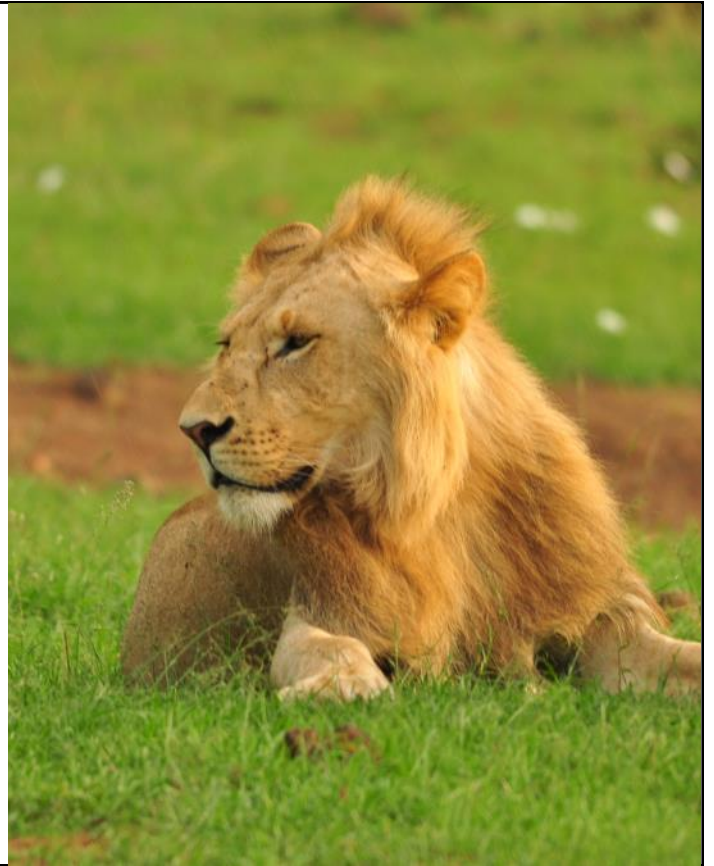
As mentioned in previous reports, the Mara exhibits some deviation from other lion populations. Typically adult males will only hold tenure for 2-3 years before they are ousted by younger, stronger males. However, in the Mara, male tenure is much longer, often 7 or more years. This results in abnormal pride dynamics—for instance, females mating with their fathers, only a few males siring the majority of cubs and increased fragmentation of prides. Male take-overs are a completely natural element of lion ecology and although infanticide may seem distasteful to an observer, it does ensure that fresh genes enter the gene pool and pride stability is maintained as it allows female sub-adults to remain within their natal pride.



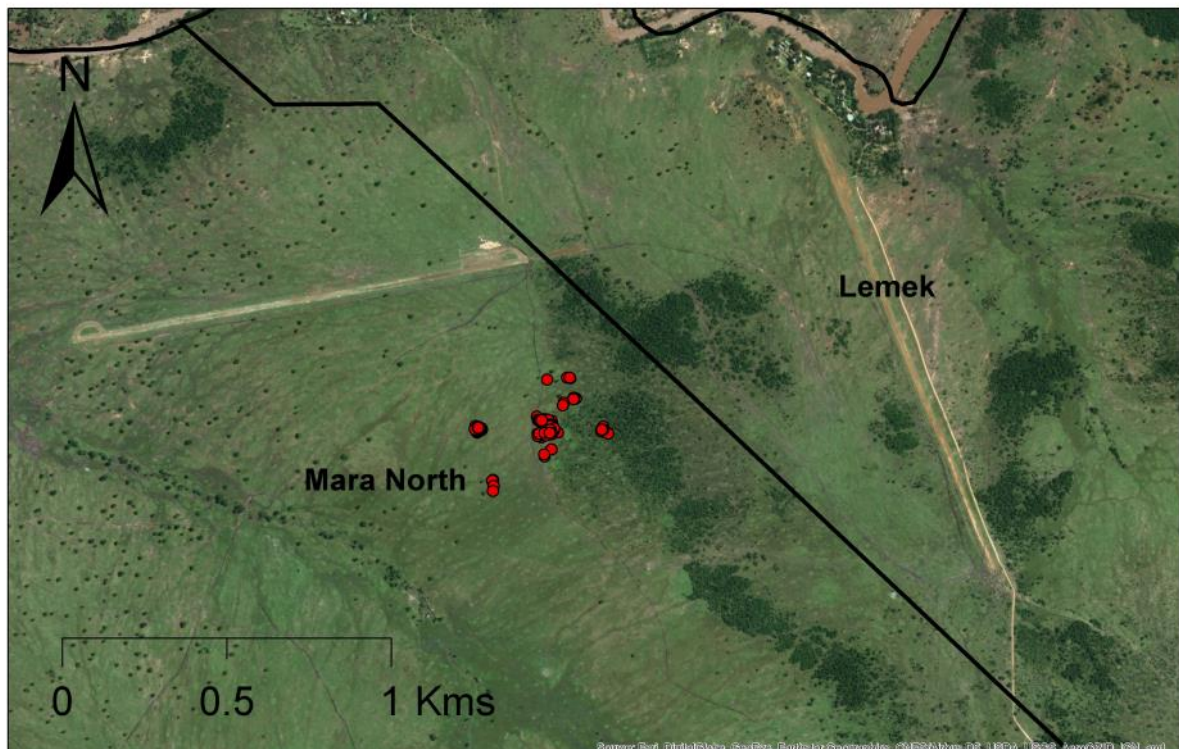
Collar update

We are managing to obtain some vital information on dispersing sub-adult males via satellite collars. We chose sub-adult males due to the large number of young males we have recorded dispersing from their natal pride that then disappear.

We have now deployed a total of eight collars (two additions this quarter), but due to the nature of the study, not all are still deployed. Currently only two lions are fitted with collars, as two of the other collars dropped off according to a pre-programmed schedule. In the coming months, we hope to deploy more collars in order to get back up to our permitted seven collars. Please contact us if you have any questions relating to this programme.



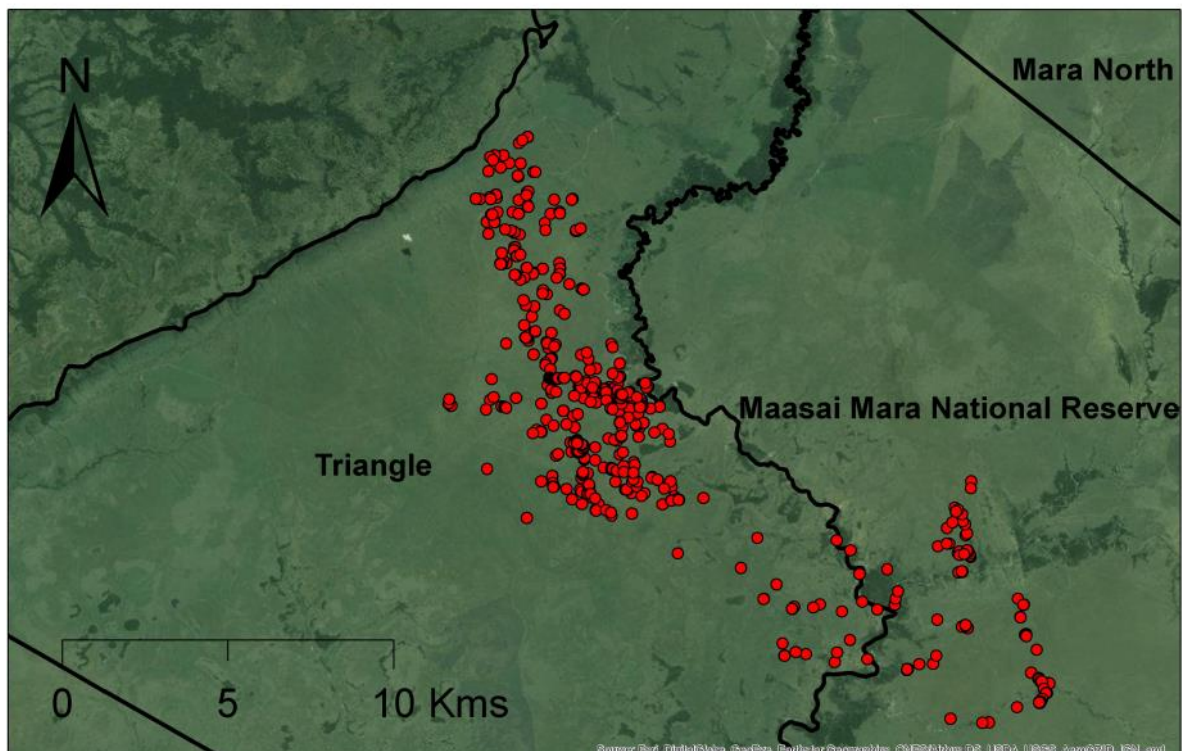
CHEcM1



Collar recovered: This young male comes from the Cheli Pride in Mara North. Together with his two brothers he was just starting to disperse and look for a territory. Unfortunately he got into a fight with other male lions and was seriously wounded. We therefore removed the collar on 10 July while he was being treated by a KWS veterinarian. His two brothers have since moved into the Mara Triangle and we have deployed a collar on one of them.

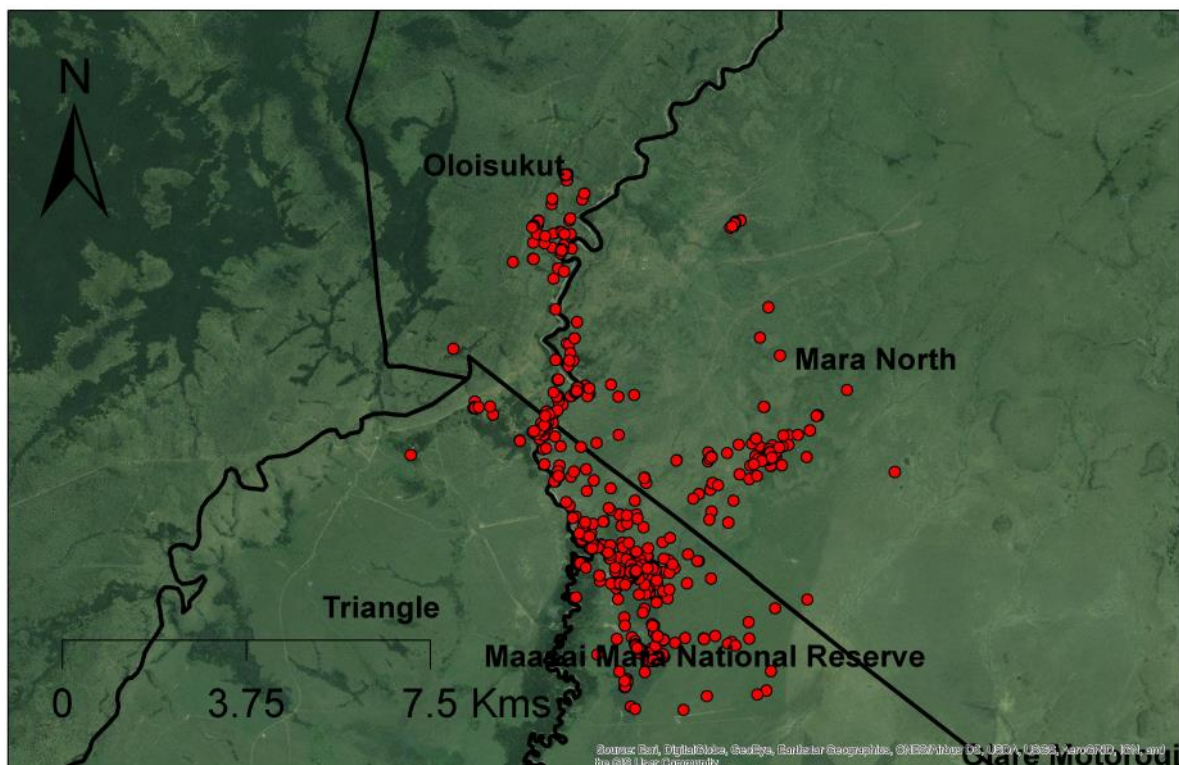


● ● ●
CHEcM3



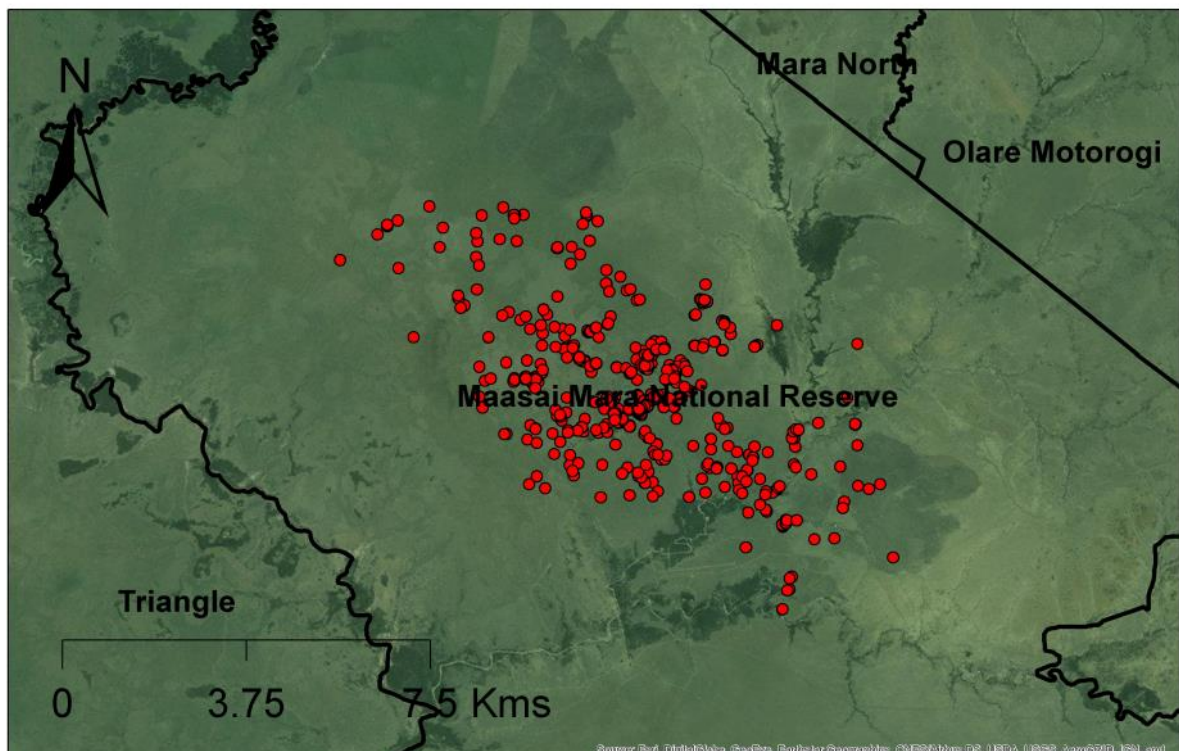
Collar active: Having removed the collar from CHEcM₁, we managed to find his two brothers in the Mara Triangle. On 16th August we deployed this collar on CHEcM₃. He crossed the river into the MMNR, but has since returned to the Mara Triangle.

PORaM1



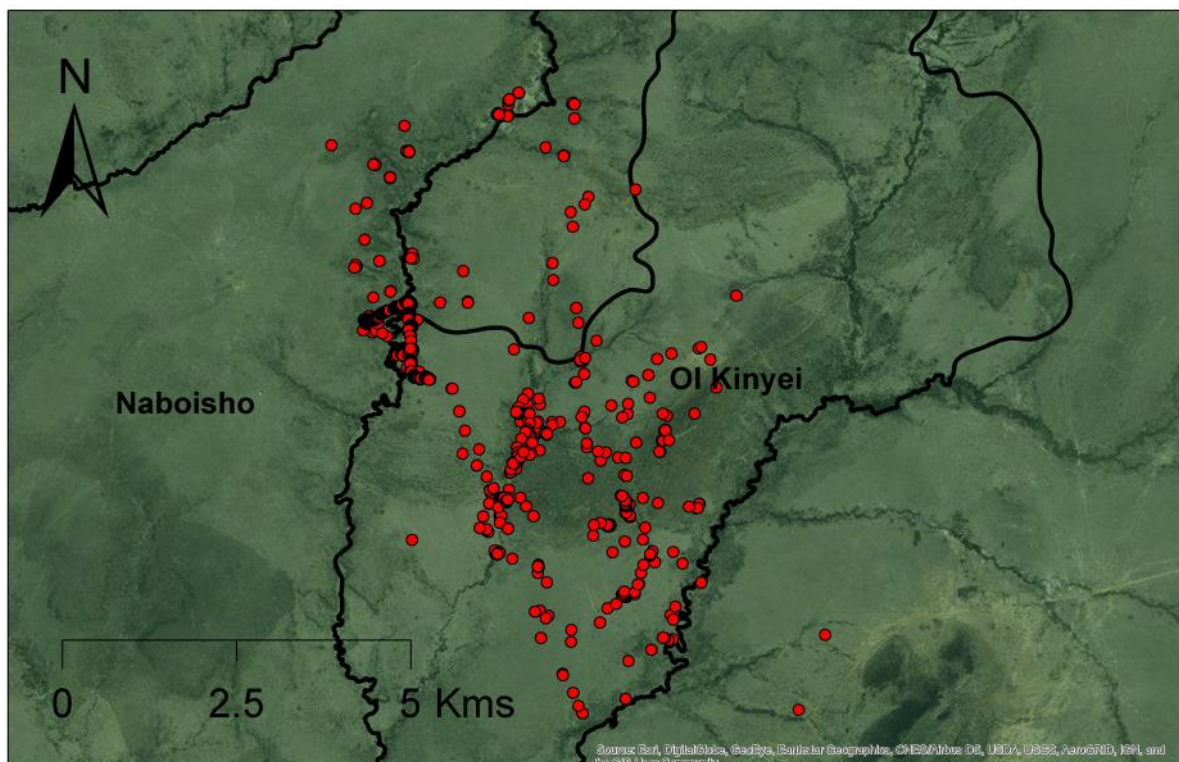
Collar recovered: Collared since July 2016, this lone male has spent the majority of his time up and down the Mara River. We had pre-programmed this collar to drop-off on 1st September 2017 and the collar fell off inside the grounds of Mpata Safari Club in Mara North Conservancy.

● ● ●
PRBcM1



Collar active: We deployed this collar on the 28th of August. Part of a coalition of 3, this male spends most of his time in the Rhino Ridge area. As the prey disappears, we expect the trio to disperse further afield as they search for a new territory.

SAMbM1



Collar recovered: This lion died on 30th July 2017. He had been carrying an injury since December but appeared to be recovering and had been rejoined by his brothers. His death therefore remains a bit of a mystery, but we suspect he died as a result of fighting with other lions.

Nakuru Lion Survey



In September this year, Kenya Wildlife Service, Lion Guardians and the Mara Lion Project carried out a lion survey of Nakuru National Park. Kasaine Sankan of the Mara Lion Project spent three weeks in Nakuru assisting on the survey. Following the success of our spatially-explicit capture-recapture (SECR) methodology in the Maasai Mara, we utilised the same methods in Nakuru. While the vegetation is thicker and the lion density is lower, we were able (with a great deal of effort from the team) to collect good data. In the coming months we will process, analyse and write-up the results from the survey.

This collaborative effort, generously supported by ICEA Lion Group, was a pilot study for the nationwide surveys that we are hoping to carry out in order to inform the new KWS lion strategy. A great advantage of using SECR as a standardised analytical framework is that different field methods can be used according to the study area. As lion densities get lower and vegetation gets thicker we will adapt our field methods and explore other forms of data collection. We are fortunate to have the statistical support of Dr. Arjun Gopalaswamy who has been at the forefront of developing models to analyse such survey data.



One of two males from the WCK pride in Nakuru National Park

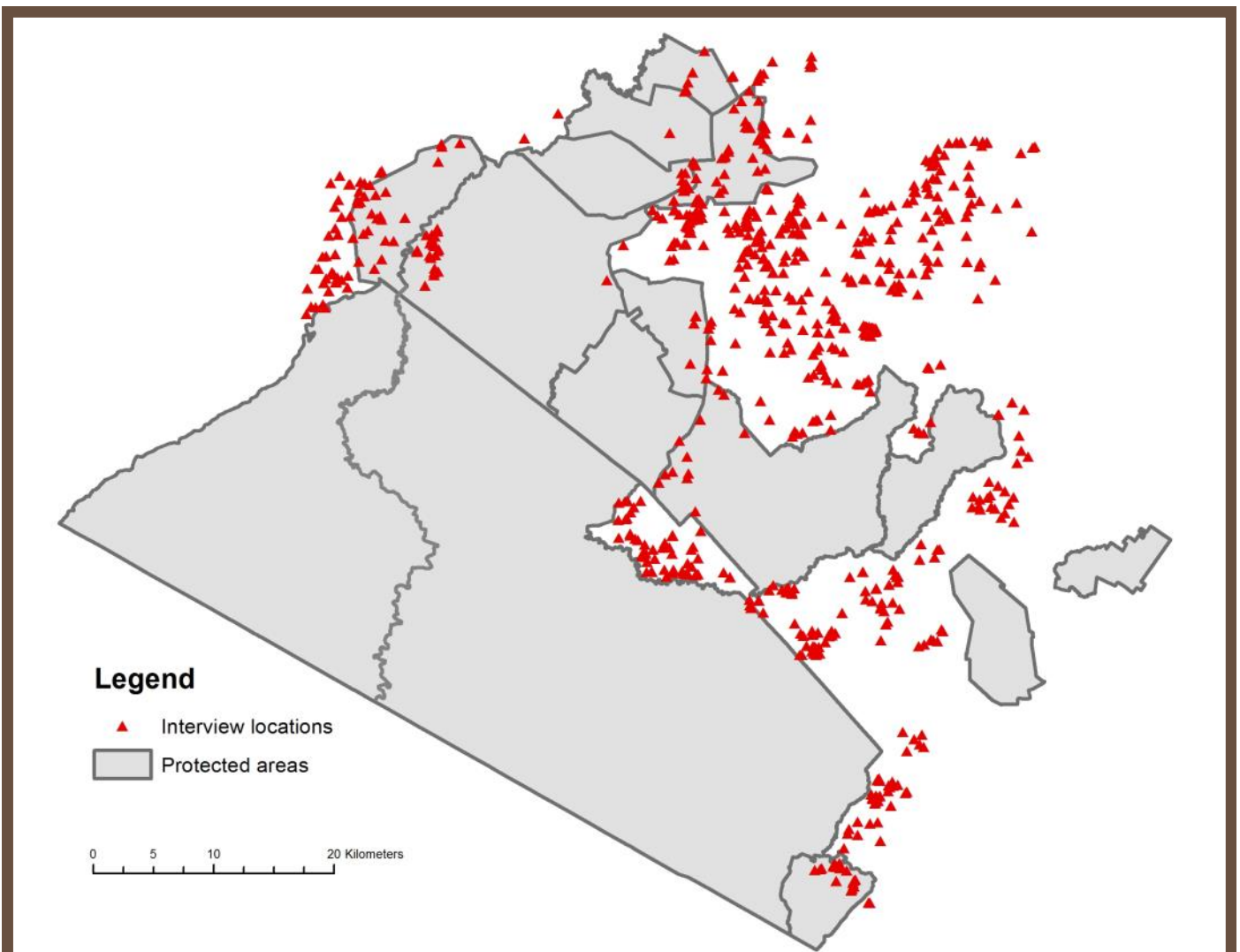
Outreach



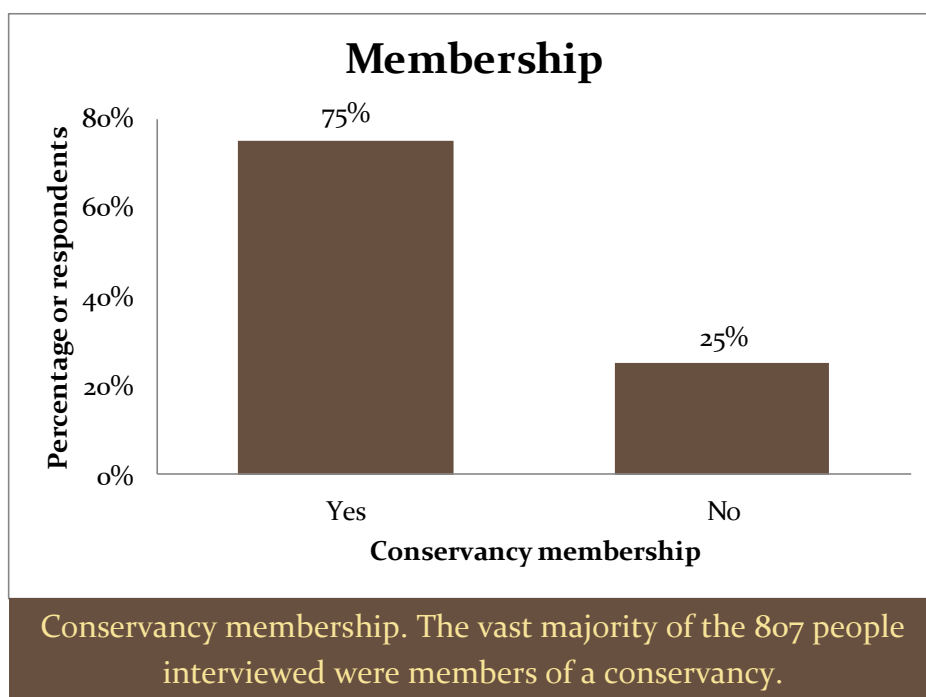
Questionnaire survey

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 quarter we repeated the survey to document change in the spread of conflicts and assess whether people's attitudes towards wildlife have changed.

Similar to two years ago, we hired 10 interviewers from within the Mara to conduct the survey. 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 will be completed by the end of July. This year's survey is carried out in collaboration with the Mara Cheetah Project and the Peregrine Fund.



Locations of the 807 homesteads where surveys were conducted. Interviewees were asked about conflict incidents, their attitudes towards wildlife and also the frequency that they saw specific animals. These questions are similar to those asked in 2015 and will allow us to assess changes in the intervening years.



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

On average people owned 109 cows and 196 shoats. Considering the high human population, this highlights the amount of livestock pressure that is currently facing the Mara

	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

Self-reported livestock loss. Although spotted hyaenas were reported to have killed far more than any other predator, lions killed the most cows, which have huge cultural significance to Maasai people.



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..



We have over 250 children that are members of our wildlife clubs. Each quarter we plan a range of activities with the children. In the coming quarter we will be taking them on game drives—a real favourite among the kids and they get to see wildlife up close and personal, in the same way a tourist would.



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 Rehero. 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.



Over 200 people attended our barazas to discuss the use of plastic poles to construct *bomas* and finding alternatives to Marshall, a pesticide that is also used to poison wildlife. We also built a model boma made of recycled plastic (below by Greg Armfield).





KWS workshop for standardizing lion survey methodology

As KWS looks to update the National Lion Strategy, Nic Elliot co-facilitated a workshop together with Dr. Stephanie Dolrenry (Lion Guardians) and Monica Chege and Linus Kariuki (KWS) on survey methodology. The multitude of methods currently used makes comparison and trend analyses problematic. Recognising this, KWS has determined to standardize methods for a national survey that will inform the National Strategy. Drawing on the success of the methods currently employed in the Mara, Nic outlined how these methods will be applied across the country in order to provide reliable figures at a national level. The workshop was attended by 47 delegates from across the country, including 26 KWS personnel and scientists and a host of NGO's directly involved in lion conservation. ICEA Lion Group generously sponsored the workshop.

Olare Motorogi Conservancy Management Plan Meeting

This quarter we participated in a meeting as OMC began work on their management plan for the conservancy. 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, organized by Jacob Bro-Jorgensen, 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 research playing a more central role in the conservation of the Mara.



Femke Broekhuis of the Mara Cheetah Project presented some of her findings at the priority setting workshop. The outcome of the meeting will be a list of critical research gaps that need to be filled in order to inform the most relevant conservation and management decisions.



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 here learning about the various activities we undertake. They were a big help and we thank them for their time.

Kasaine Sankan also continued on with us throughout the quarter. His experience and knowledge of the Mara are invaluable. We wish him well as he continues with his degree programme at Eldoret University.

Sabbatical

Greg and Kate Armfield volunteered with us 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.



Greg and Kate Armfield who joined us on their sabbatical.



Meet the Team



Nic Elliot - Project Director

Nic has worked with lions since 2007, focusing his research and conservation efforts on dispersing males. In 2007 he joined the University of Oxford's WildCRU and returned to his native Zimbabwe to conduct a PhD on the ecology of dispersal in lions which he completed in 2013.



Michael Kaelo - Chief Community Officer

In 2005 Michael joined Kenyatta University for a BSc. in Environmental Studies and Community Development. In January 2012 Michael started an M.A in Environmental Planning and Management at the University of Nairobi after which Michael joined the Mara Lion Project.



Niels Mogensen - Chief Project Officer

Niels conducted a BSc. in Biology at the University of Aarhus and later transferred to the Department of Behavioural Biology at the University of Copenhagen for his MSc. His field-work focused on how the Maasai and their livestock affected lion behaviour.



Dominic Sakat - Community Liaison Officer

In 2007 Dominic was enrolled in the Koiyaki Guiding School, where he attained his bronze KSPGA guiding certificate. Since August 2011 Dominic has been working in the communities of the Mara in an effort to mitigate against human-lion conflict.



Kelvin Koinet - Research Assistant

Kelvin joined the project at the beginning of 2016. For the past seven years he worked with SORALO, in his later years, running a team of Resource Assessors. He is currently undertaking a Bachelors degree through correspondence at the University of Nairobi.



Holistic Assessor team

In early 2016 we launched the holistic assessor programme. We employed five people (seen together with Dominic Sakat) to work within their home areas on issues relating to human-wildlife conflicts. All five are based in the Pardamat area.



Julius Makibior - Mechanic

Julius was born in Kakimirai, Bomet County. He is a trained automotive technician with over 20 years of experience in vehicle maintenance. Julius is in charge of all the project vehicles and the maintenance of the Tony Lapham Predator Hub and is therefore crucial to the team.



Billy Kaitet—Caretaker and chef

Billy was born and brought up in Naroosura in Narok County. He trained as a room steward, laundry service and maintenance person. 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.



Kasaine Sankan

This quarter we were delighted to welcome back Kasaine Sankan. Kasaine is pursuing a Bachelors degree at Eldoret University, which is partially sponsored by the Kenya Wildlife Trust. Kasaine was with us for one month while on a university break and will return in June.



Acknowledgements



We are grateful for the collaborations and support of our partners and stakeholders in the area:

- Mara Cheetah Project
- Narok County Government
- Kenya Wildlife Services (KWS)
- Maasai Mara Wildlife Conservancies Association (MMWCA)
- Mara Triangle (Mara Conservancy)
- Mara North Conservancy
- Olare-Motorogi Conservancy
- Naboisho Conservancy
- Ol Kinyei Conservancy
- Lemek Conservancy
- Ol Chorro Conservancy
- Olarro Conservancy

Affiliations

The **Kenya Wildlife Trust (KWT)** is the umbrella organisation for the Mara Lion Project. The Mara Lion Project was established by the Kenya Wildlife Trust (KWT) and officially launched in October 2013 amid concern that the lion population may be declining. KWT recognises the vital importance of large predators, and particularly big cats, to both tourism and the surrounding communities. Nowhere is this more apparent than in the Greater Maasai Mara Ecosystem where tourists come from around the world to view big cats in a viewing experience unparalleled in Africa.



Nic Elliot of the Mara Lion Project is a member of the Wildlife Conservation Research Unit (WildCRU), University of Oxford.



Donations

We are grateful to the following for their support of our work in the field this quarter:



Long-term Funding

We are extremely grateful to the following institutions and individuals for their long-term, and continuous support of the Mara Lion Project. Your support ensures that the project can not only continue, but also grow and develop in response to rising challenges across the Greater Mara.

BAND Foundation for providing funding for the biomedical project

Allan Earnshaw, Nick Lapham and Skip Dunn for their continued support and enthusiasm for the project

