Mara Lion Project

2017
Quarterly Report
01 April—30 June

Contents

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KENYA WILDLIFE TRUST

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Cover photo: Nic Elliot (New cubs in the Iseketa Pride - Olare Motorogi Conservancy)

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Executive summary

During this quarter we finished off our first lion survey of 2017 (February-April) and are now cleaning the data for analysis. We are excited to announce that we expanded our study area by an additional 122km2. We are now conducting survey and monitoring in Ol Derkesi, Olarro North and Olarro South conservancies.

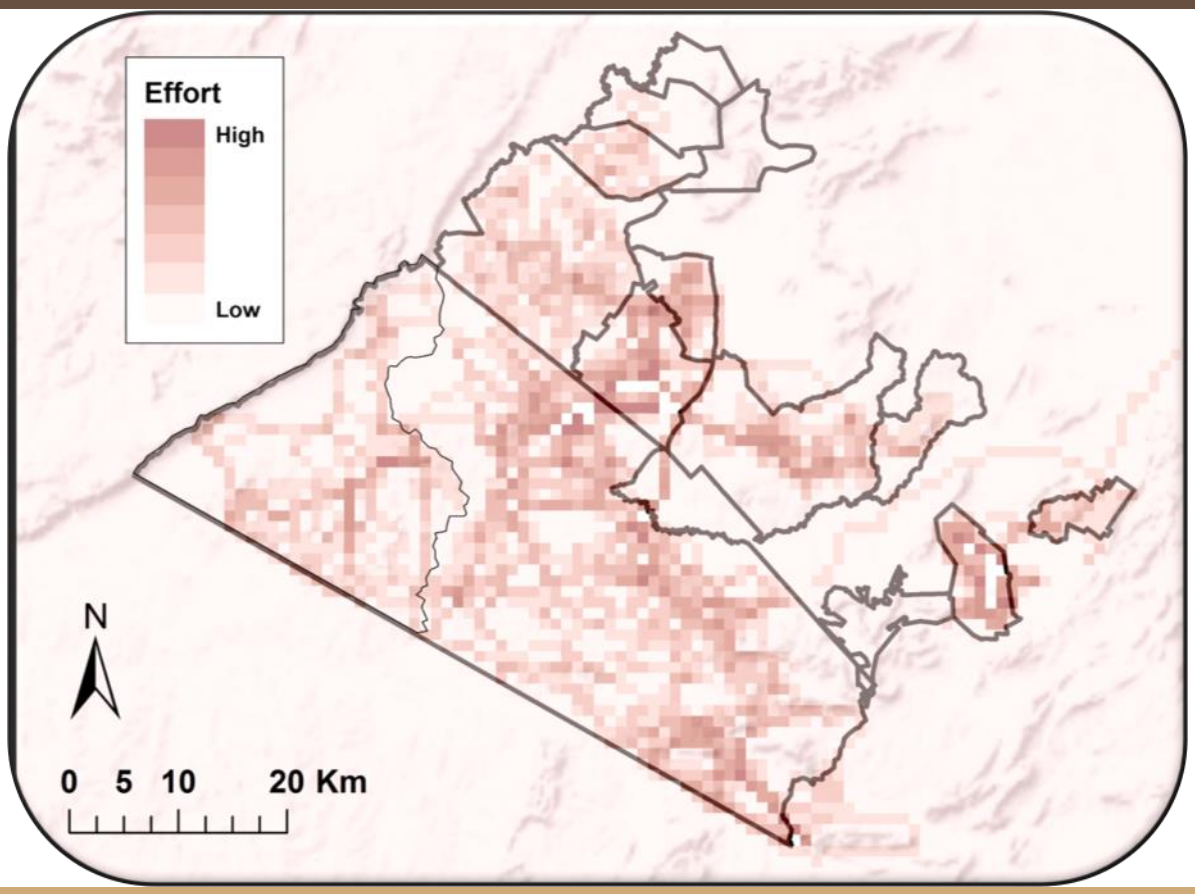
We continued with our 6 wildlife clubs and conducted 5 barazas with over 200 community members. Our second human-wildlife questionnaire is now underway and will be used as a comparison to the 2015 survey. We also collaborated on a pilot project to collect eDNA samples in the Mara.

At a wider level, we participated in the 2nd Narok County Government spatial planning workshop, and attended a meeting at KWS to further develop the national protocol for wildlife poisoning. Together with KWS and Lion Guardians, we are planning a workshop in July to standardise survey methods for lions.

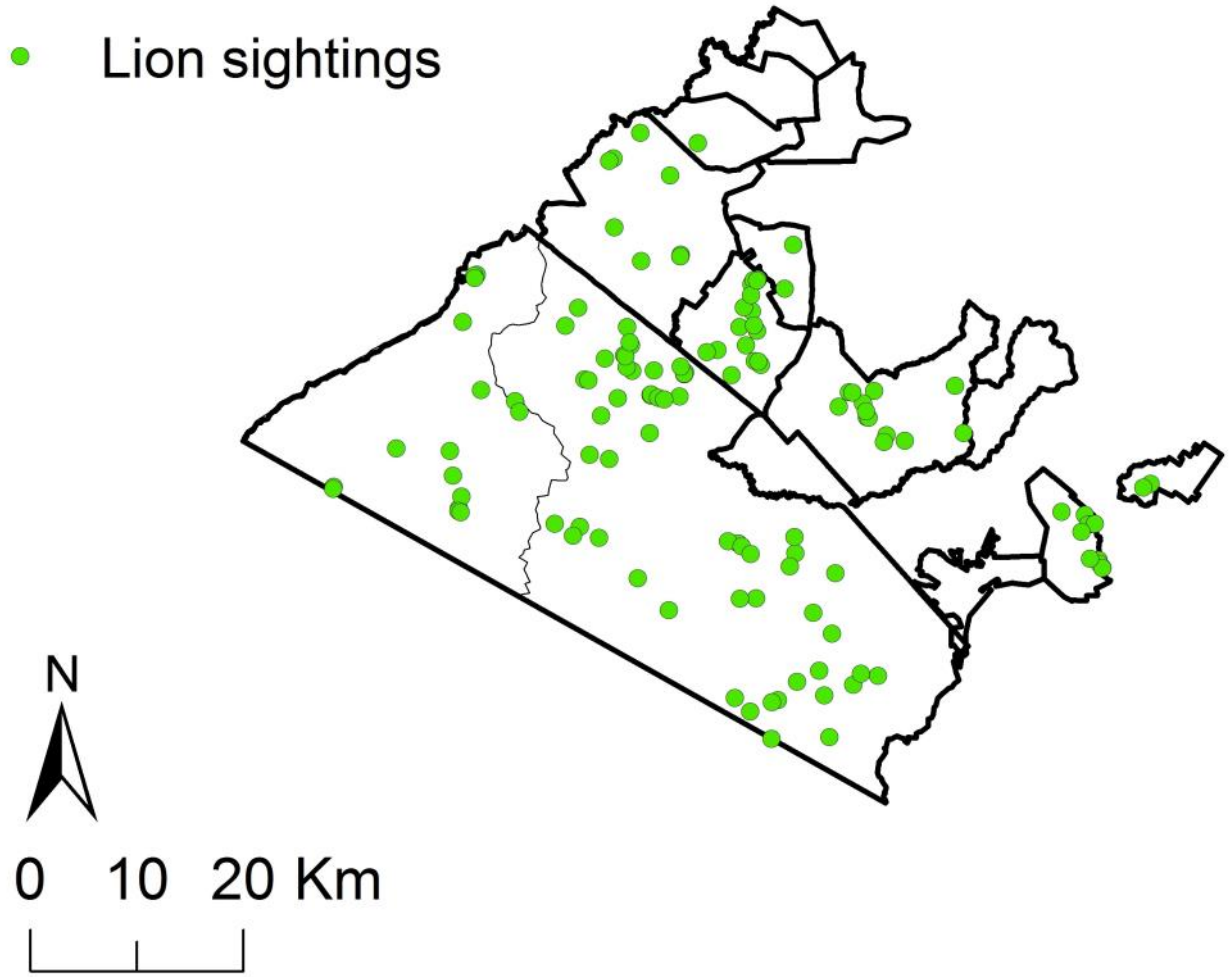
Field update

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 117 patrols and drove 6,591 kilometres while recording all predators, people, livestock and vehicles. We're excited to 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 122 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 122 lion sightings as opposed to 307 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.

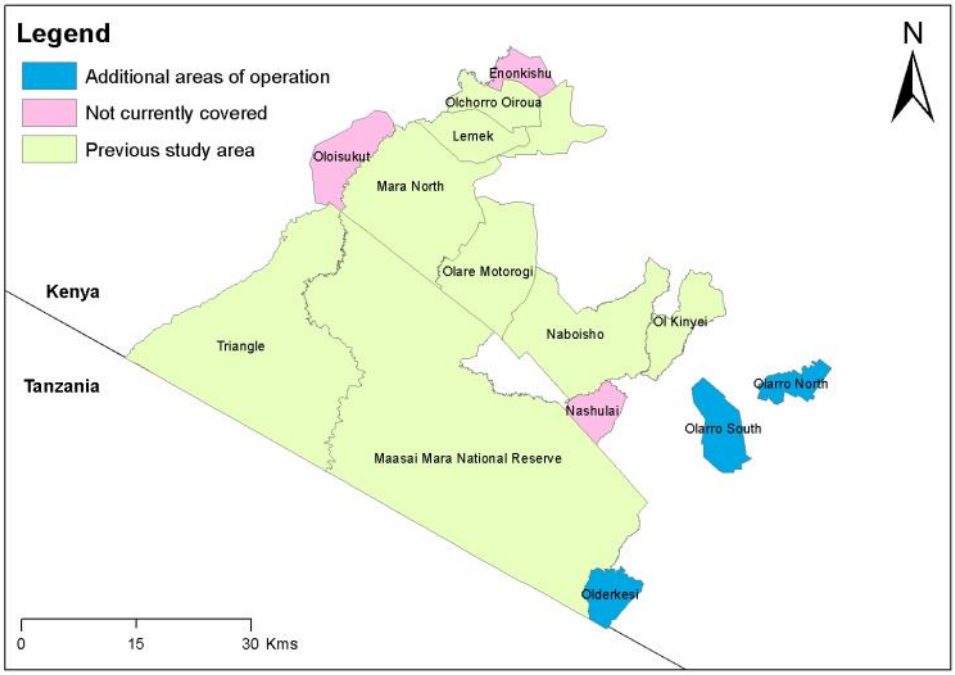
Name	Distance driven	Number of sightings	Index of abundance
Lemek	98	1	1.0
Maasai Mara National Reserve	2728	58	2.1
Mara North	419	9	2.1
Naboisho	289	5	1.7
Ol Kinyei	59	0	0.0
Olare Motorogi	982	20	2.0
Olarro North	84	2	2.4
Olarro South	524	11	2.1
Olchorro Oiroua	14	0	0.0
Olderkesi	106	0	0.0
Triangle	720	16	2.2

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.

Expansion of study area

We're very pleased to announce that during this quarter we expanded our study area by including an additional 122km2. We would like to thank the management of Olarro North and South Conservancies, in addition to Ol Derkesi Conservancy for granting us permission to access these areas. Our aim is to monitor the lion population across the greater Mara Ecosystem and having access to these three areas will provide valuable information not only on lions, but wildlife more generally.

As other conservancies continue to emerge, we are keen to expand our efforts to mirror the changing landscape. We therefore hope to report further expansion in the near future.



Lion Deaths

During the quarter a number of cubs disappeared. In many cases we are unable to confirm the exact details of disappearances but we do make some assumptions. For example, if we know that a certain pride has 8 cubs under the age of 12 months and then we consistently see that pride with only 5 cubs, we assume that the other three have died. If older cubs (12-18 months) are missing, we mark them as missing since they may have dispersed. In the Mara, lions are leaving or dispersing from their natal pride when they are as young as 18 months. The younger they disperse, the lower their chances of survival to adulthood. Therefore if the older cubs we mention above (12-18 months) are missing, it is highly likely that they have not survived.

During this quarter we only recorded one case of confirmed mortality, once again a dispersing sub-adult male:

20/02/2017

Location: Naboisho Conservancy

Dead lions: 1 sub-adult male lion

Pride: Dispersing male—Unknown

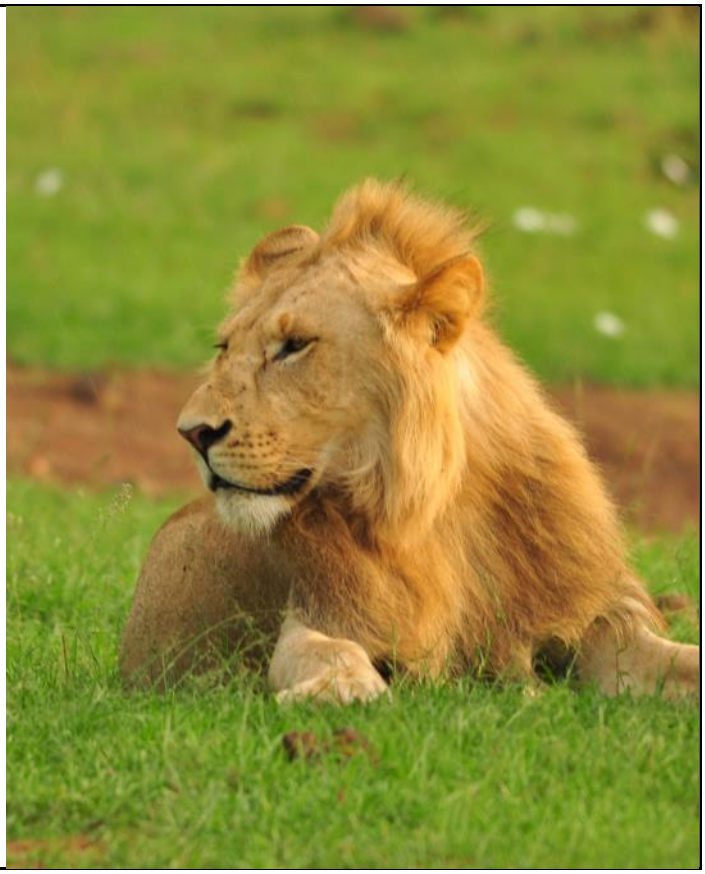
Cause of death: Likely natural

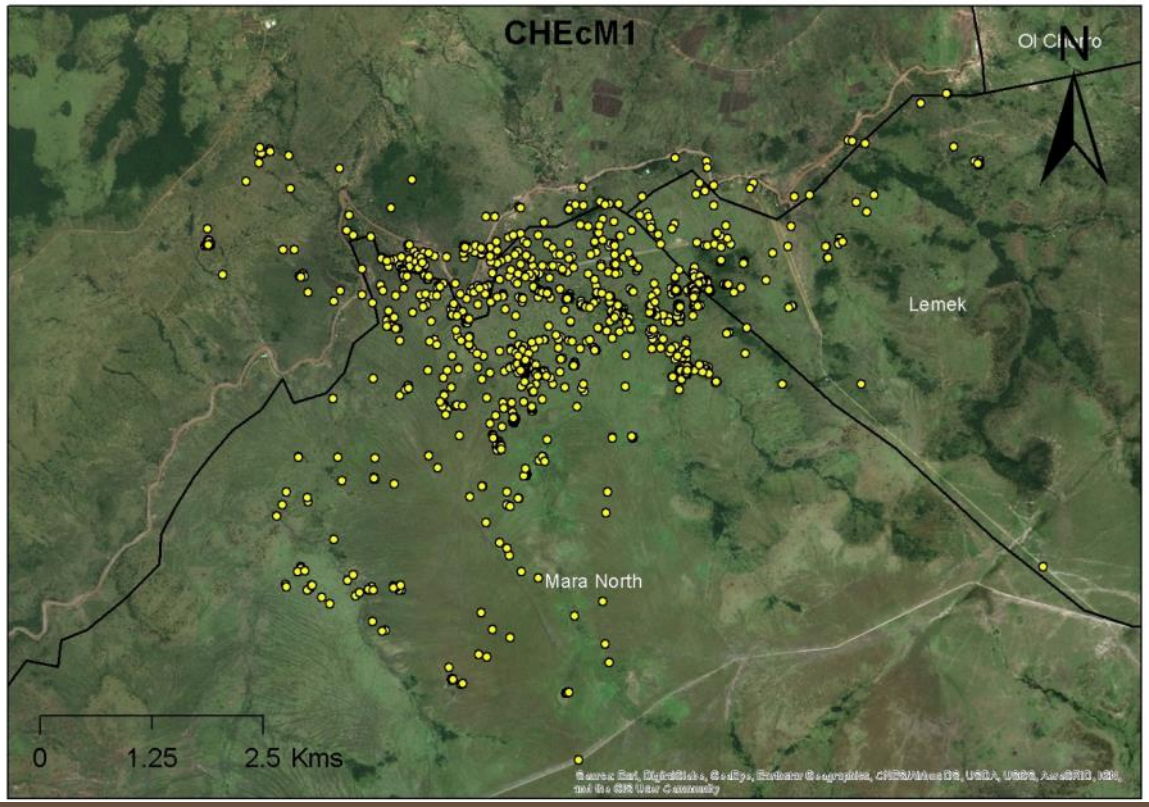
Summary: At the beginning of April a young male lions was seen in Naboisho conservancy dragging its back legs. He had severe injuries and could not be located again. He was spotted again in late May and the KWS mobile vet team attended. On close examination, it was concluded that the lion could not recover and he was euthanised.

Collar update

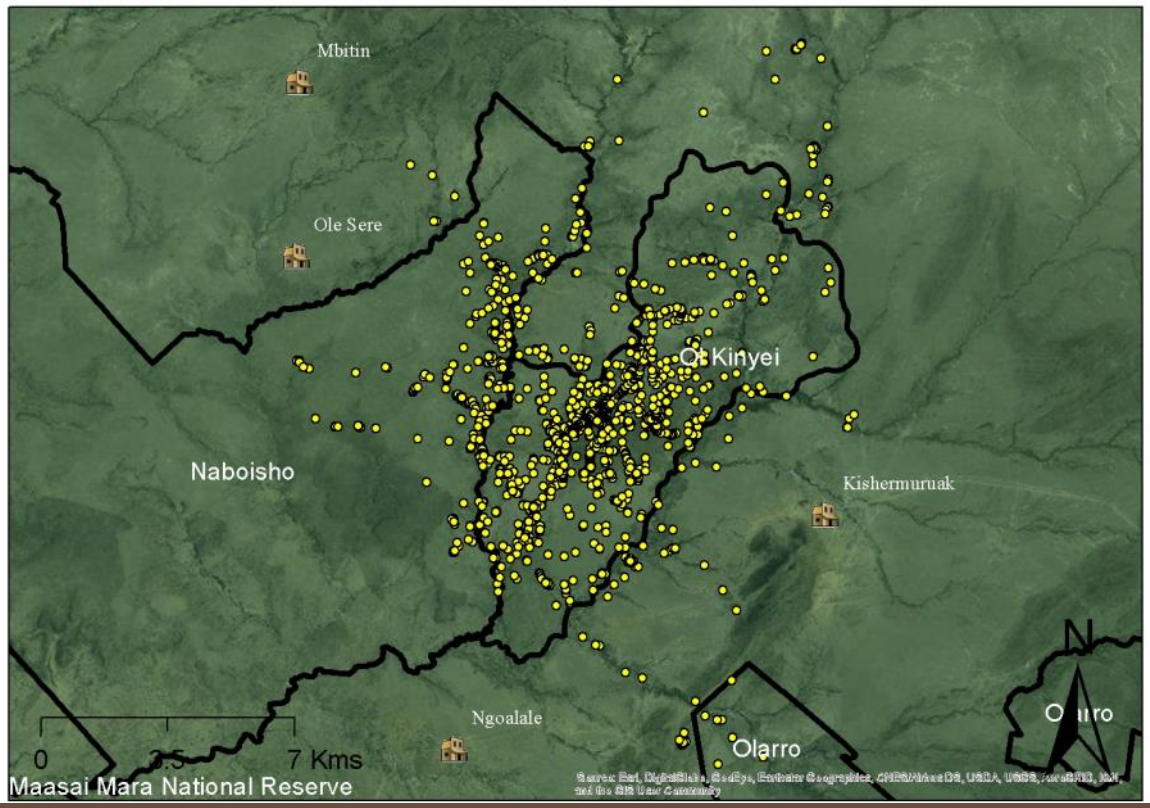
We are managing to obtain some vital information on dispersing sub-adult males via satellite collars. We chose sub-adult males due to the large number of young males we have recorded dispersing from their natal pride that then disappear.

We have now deployed a total of seven collars (two additions this quarter), but due to the nature of the study, not all are still deployed. Currently only three lions are fitted with collars, due to a variety of reasons which are explained on a case by case basis in the following pages. 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.

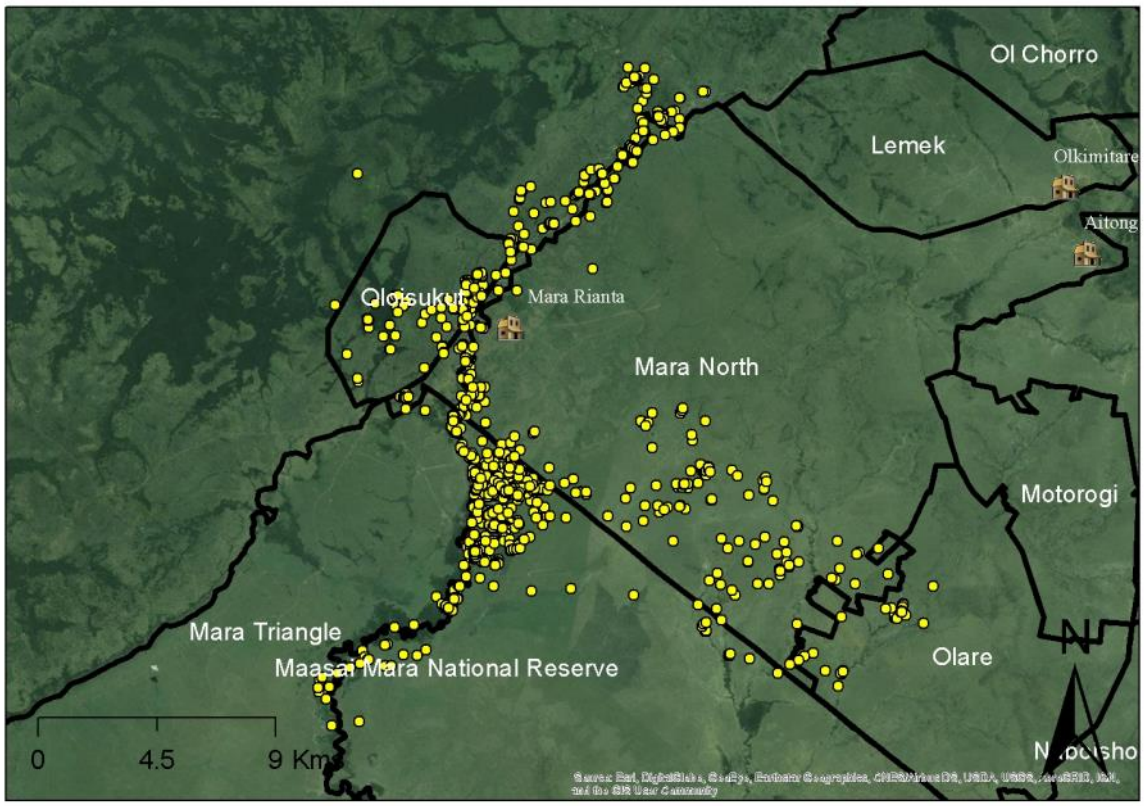




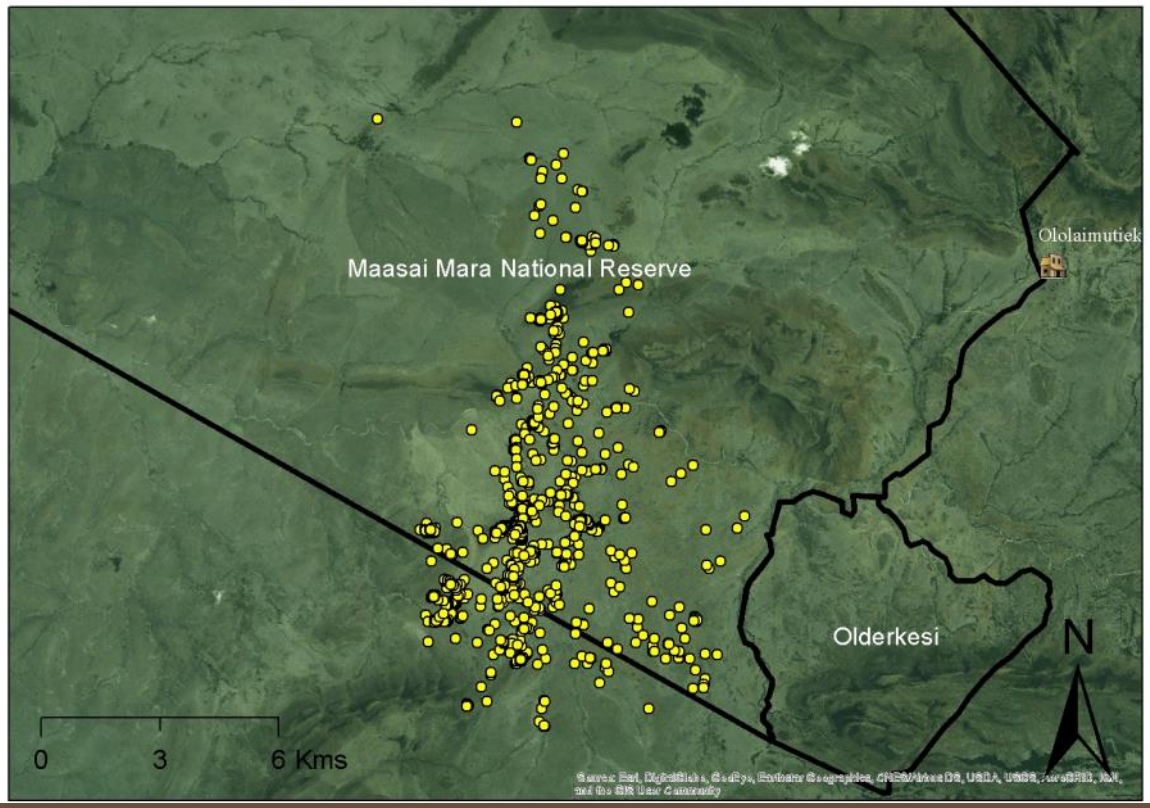
This young male comes from the Cheli Pride in Mara North. Together with his two brothers he was just starting to disperse and look for a territory. Unfortunately he got into a fight with other male lions and was seriously wounded. We therefore removed the collar on 10 July while he was being treated by a KWS veterinarian. Due to the nature of his injuries, his future is uncertain and we hope to deploy the collar on one of his brothers in the near future.



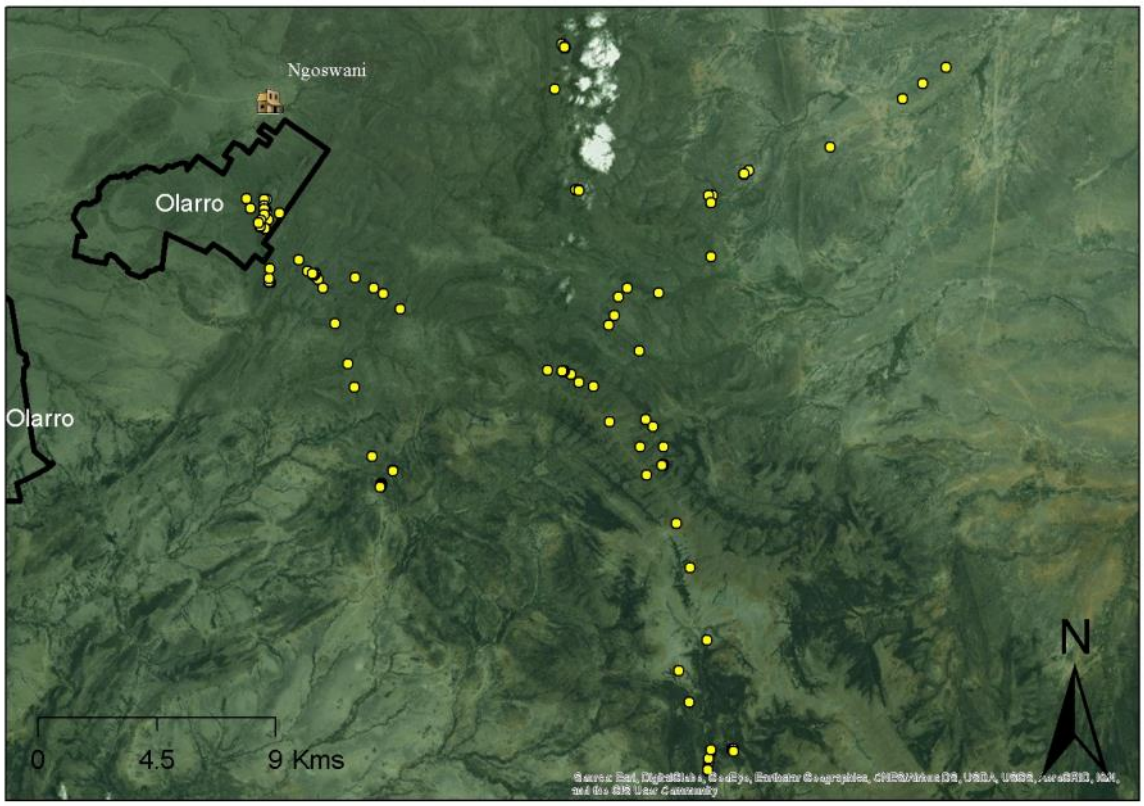
This lion has been collared since July 2016. He sustained a possible dislocation to one of his back legs which has limited movements somewhat. However, he looks to be improving and is now back with his brothers. He has yet to settle into a territory.



Also collared since July 2016, this lone male has spent the majority of his time up and down the Mara River. He has frequently returned to his natal (home) area close to Olare Motorogi Conservancy. Currently he is in the Musiara area, but due to being solitary, is unlikely to stay there.



Having spent some time in Naboisho, this lion and his brother moved back into the Reserve and down to the Sand River. At the beginning of this month we picked up his collar, which had signs of human interference. With no trace of the lion, we are uncertain if he is still alive.



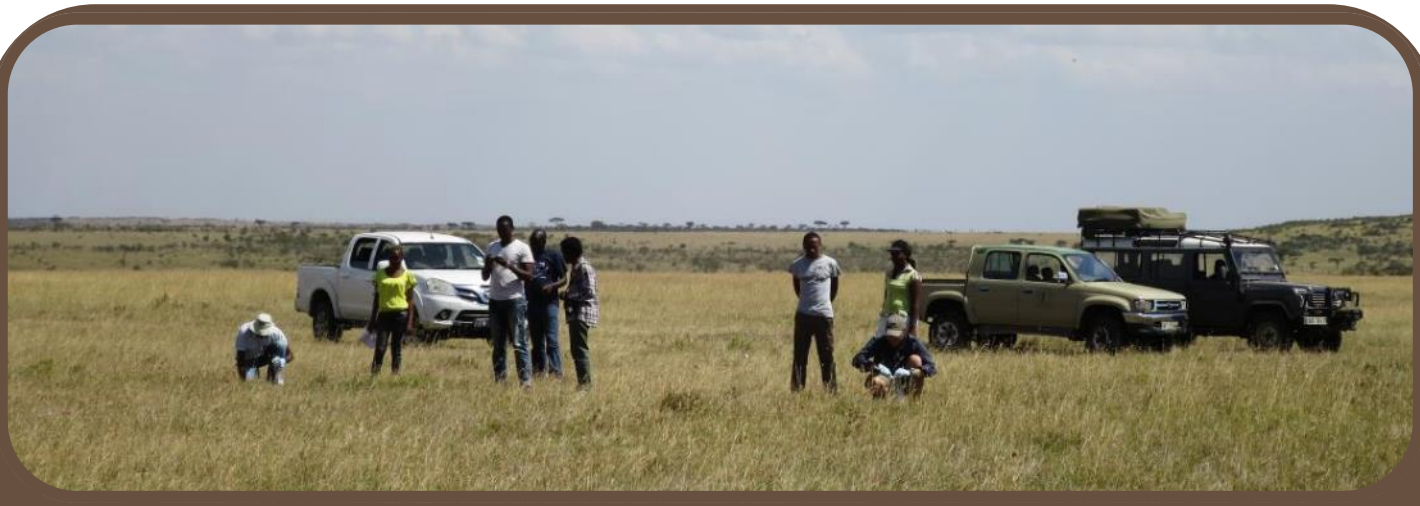
This lion left Naboisho Conservancy with his two brothers. After spending some time in Olarro North, he travelled to the Loita Hills. Unfortunately the collar is no longer transmitting data, but the lion is still in that area.

Environmental DNA (eDNA)

Obtaining detailed knowledge about how human activities may alter the state and distribution of biodiversity is a key element in conservation. However, traditional biodiversity survey methods are based on visual detection and counting of species, which are time consuming, costly and are unable to detect the majority of species.

A relatively new approach involves the use of environmental DNA (eDNA). This technique extracts DNA from water, soil, or even air and represents an efficient, non-invasive sampling approach. eDNA allows researchers to assess how species composition, and even the relative abundances of certain species, differ between land-use or habitat types. To date, the majority of eDNA work has been conducted in freshwater and marine ecosystems. However, the application and potential value of eDNA in terrestrial ecosystems remains largely unknown, particularly in Africa, but it is now being tested in the Mara ecosystem for the first time as part of the AfricanBioServices project.

AfricanBioServices is an EU funded project focusing on ecosystem services in the Greater Serengeti -Mara Ecosystem. Understanding how land-use change in and around the ecosystem affects biodiversity, ecosystem functioning, and in turn, the provision of ecological services, is an important component of the work. In June, Dr. Craig Jackson from the Norwegian Institute for Nature Research (NINA) and the Norwegian University of Science and Technology (NTNU) joined forces with the Mara Cheetah Project, the Mara Lion Project and the Kenya Wildlife Service to collect soil and water samples in the Maasai Mara. These samples will be used to assess how the extraction of eDNA from these samples may assist in cataloguing the ecosystem's biodiversity. This approach will consequently contrast biodiversity within well-protected wildlife habitats with neighbouring areas that support far greater livestock and human densities. During the first phase, there is a strong emphasis on testing sampling methodologies in an attempt to optimize survey techniques. After that the hope is that we will be able to create species lists of vertebrates and invertebrates for the Mara. The team will also be assessing how eDNA may be used to assess the variability in large carnivore distribution and density, particularly in response to land-use type. This is a novel application of the technique and we are excited to see what the results will yield!



Dr. Craig Jackson collecting eDNA samples in the Maasai Mara to determine

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 year we are repeating the survey to try and see if there is a change 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 on the 15th of May we organised a training session at the Tony Lapham Predator Hub. A majority of the interviewers were the same people who carried out the interviews in 2015 and so consistency is maintained. 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 Lion Project and the Peregrine Fund.

This year we are repeating the questionnaire survey that we conducted in 2015. The aim of the questionnaire is to quantify human-wildlife conflict and people's attitudes towards wildlife, particularly predators. In addition, the data will be used to identify conflict hotspots and animal presence outside the protected areas.

Holistic Assessor Programme

This quarter we have expanded out Holistic Assessment programme by adding another zone. Our newly recruited team member, Mr. Dominic Yiankere, will cover the hills in Pardamat. While the hills are unlikely to be suitable for cheetahs, collar data from sub-adult male lions is showing that this is potentially an important area for them.

Our other five Holistic Assessors have increased their data collection which augments our fieldwork in the protected areas. They now carry out similar monitoring where they record livestock, predators, people and many other aspects which will enable us compare data collected in protected areas to those collected in community areas.

Last quarter we reported on our activities with relation to boma construction and the availability of poisonous substances. This quarter we presented that information back to over 200 community members during barazas (meetings). Attendees commonly expressed their desire to use more sustainable poles, such as plastic poles, and also to use less toxic substances for controlling fleas.

Wildlife Clubs

The Wildlife Clubs in the six schools are actively engaging in the planned activities in their curriculum. Other schools are now also interested in the Wildlife Clubs and we are hoping that we will be able to extend our programme to four new schools in the next quarter. One of the biggest challenges that we faced this quarter was that funds from donors were not released in time for us to carry out a majority of the planned activities which included the annual visits to the conservation areas. We are hoping that we can do this in the coming quarter.

Community meetings (*barazas*)

Last quarter the project's Holistic Assessors conducted a small survey to determine what materials people use to construct their *bomas* (livestock enclosures) and the quantify the use of Marshall, a potent pesticide which is locally used to kill fleas in livestock but sometimes abused to poison predators (see previous Quarterly Report for the findings).

In April and May we organised five community meetings (*barazas*), in the five areas where the survey was carried out, to discuss our findings with the community members. The five feedback sessions were attended by over 200 participants! The participants showed an interest in switching to plastic poles to build their *bomas*, which would minimize deforestation of the Mau forest. In the coming quarter we will purchase plastic posts to build a demonstration *boma*. The participants were also interested in finding an alternative to Marshall that will kill fleas but that will not harm their livestock and predators.

Over 200 people attended our community meetings to discuss the use of plastic poles to construct *bomas* and finding alternatives to Marshall, a pesticide that is occasionally used to poison wildlife.

Narok County Natural Capital Assessment workshop

Michael Kaelo took part in a three day workshop which was geared at engaging experts in modeling a natural resource plan for the Narok County Spatial plan. The workshop, which was organised by WWF and Narok County, brought together more than 40 experts from various organisations and interest groups to discuss the future of natural resources in the county. The workshop helped participants to model a "Worse case scenario" a "Status quo scenario" and a "Best case scenario" to identify factors that shape the future of natural resources in Narok county.

Poison Protocol Review workshop

Since last year we have been working with partners to put together a nationwide protocol on best practices for dealing with wildlife poisoning. On 8th June, this process took a major step forwards as we took part in a workshop to review the protocol. The workshop, which was held at the KWS headquarters in Nairobi, was attended by many other stakeholders who presented their opinions focused at improving the protocol. The workshop focused on various recommendations, including policy and legislation sections that require consultation with legal experts, a need for a database for emerging poisons and the KWS veterinary team to supply the literature of laboratory details of commonly used poisons and evidence from literature review to back up the protocol. We look forwards to seeing this progress further.

Last year we helped co-ordinate a Poison Response workshop. In parallel, together with the same partners (KWS, Nature Kenya, Peregrine Fund and Bird Life, we have been working to formulate a countrywide poison protocol to deal with wildlife poisoning.

Visiting Lion Guardians

This quarter the project's Community Team were offered an opportunity by one of our collaborators, Nature Kenya, to visit Lion Guardians in Amboseli. The purpose of the visit was to exchange knowledge and experiences about preventing and tackling the poisoning of wildlife.

The two day visit incorporated various other stakeholders from the Maasai Mara including Chiefs, Friends of Maasai Mara and a representative of the Buffalo dancers. From our team (MLP/MCP), Dominic, Michael and our six Holistic Assessors attended. The visit offered the team a great chance to engage with the Lion Guardian's warriors working to conserve lions, and learn how they track lions in the wild and how they prevent retaliatory killings after a conflict incident has happened.

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.

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 fieldwork focused on how the Maasai and their livestock affected lion behaviour.

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.

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.

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.

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.

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.

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.

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.

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
- Enonkishu 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:

Ankie Stiasny
Tomas Kindler

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