Report on boma attacks and human-wildlife conflict hotspots

Mara Cheetah Project & Mara Lion Project

Kenya Wildlife Trust

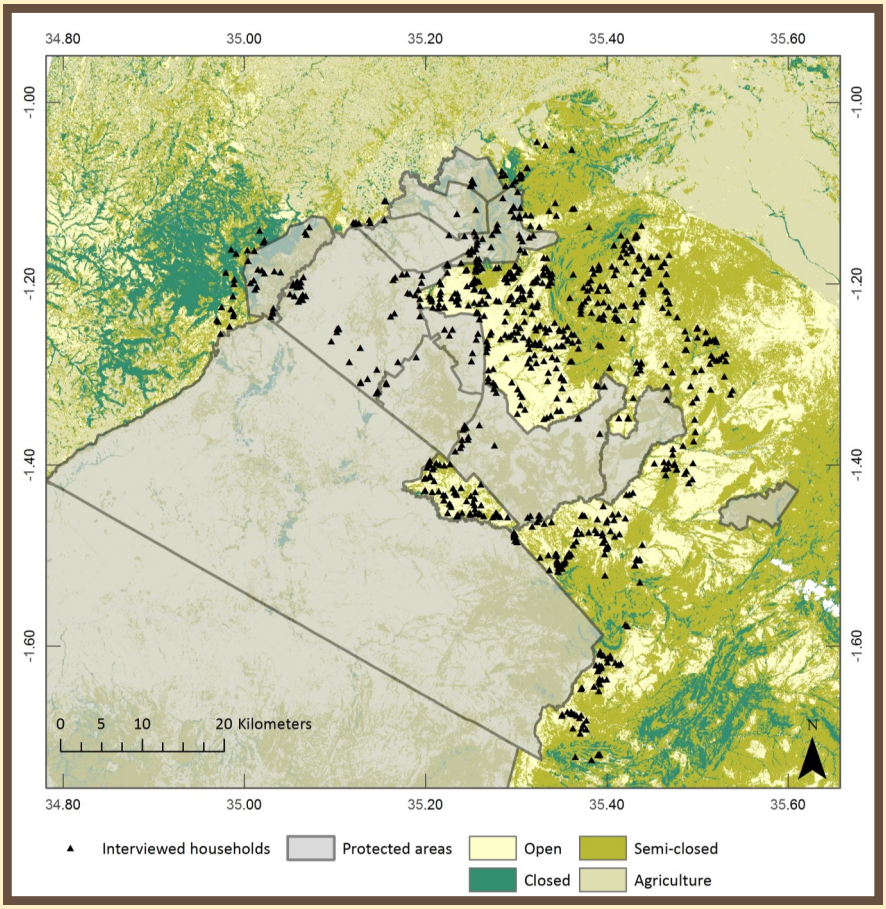
November 2017

Background

Human-carnivore conflict is a primary driver of carnivore declines worldwide and can inflict substantial costs on local communities. Resolving and mitigating these conflicts is therefore of primary concern to carnivore conservation and human livelihoods. However, resources to mitigate human-carnivore conflicts are limited and should be focused on areas where conflict risk is highest. It is therefore important to determine which factors influence the likelihood of livestock depredation for mitigation measures to have maximum impact for both carnivores and people.

In June and July 2015 we conducted 820 semi-structured interviews with community members living within and adjacent to wildlife areas in the Maasai Mara ecosystem, Kenya to:

1. Determine the extent of human-carnivore conflict.
2. Determine which livestock husbandry techniques minimise attacks on livestock enclosures (*bomas*).
3. Determine which environmental variables increase the risk of attacks on livestock enclosures (*bomas*) and use this to identify areas that are at risk of depredation by creating a conflict hotspot map.
4. Identify areas most at risk of livestock depredation based on livestock husbandry and environmental factors.

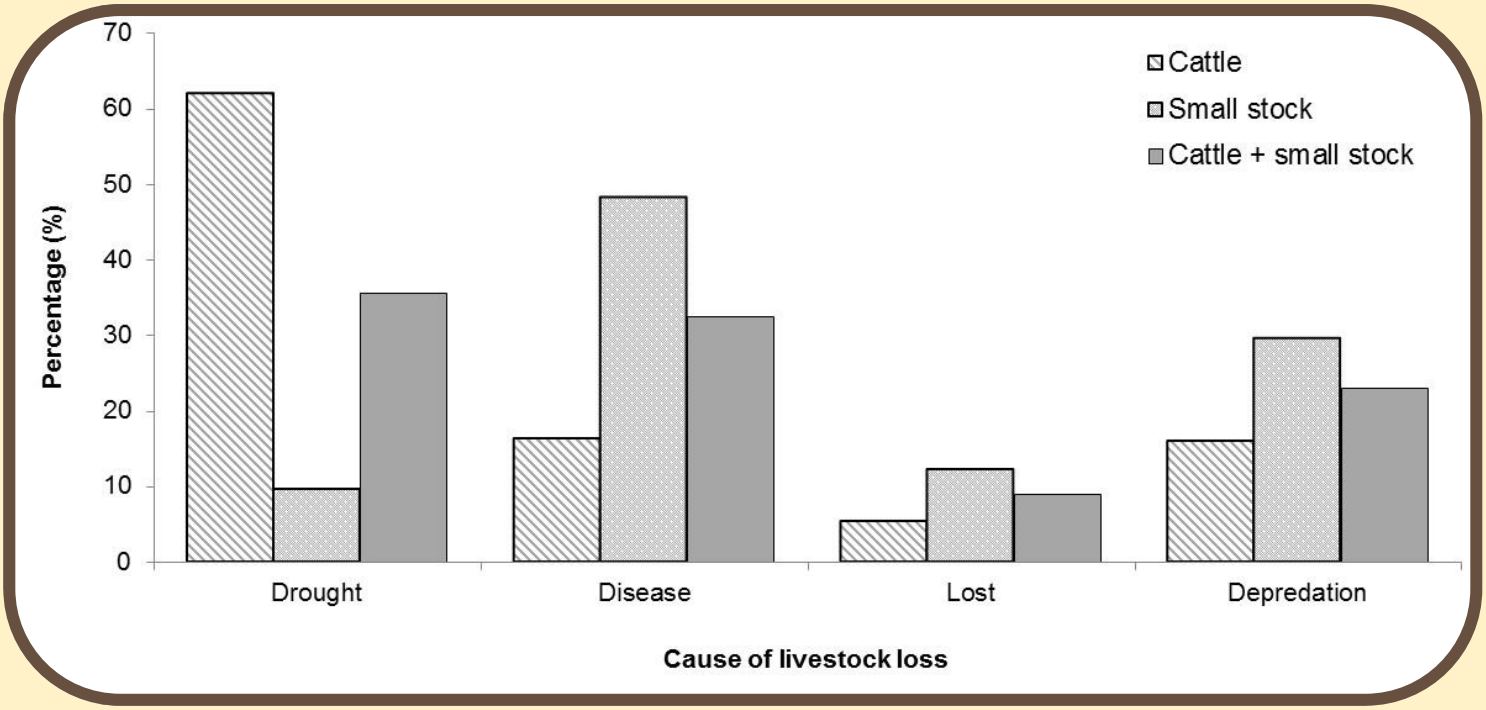


The map above is of the study extent with interviewed households marked as black triangles. Only those protected areas that were established at the time that the interviews were conducted are shown.

Livestock and livestock losses

Of the 820 households interviewed, 805 reported to have experienced at least one livestock loss during the previous three months, with a total of 37,290 livestock deaths. Drought was the major cause of death for cattle whereas for goats and sheep it was disease.

Of these losses, depredation accounted or 23% (8,551), drought for 36% (13,255), disease for 33% (12,151), and 9% (3,333) of livestock were lost and not found (Figure below). Most households had lost at least one head of cattle (60%, range 0–100) or at least one head of small stock (67%, range 0 –150) to depredation in the previous three months. The number of cattle and small stock reportedly kept within the 820 households was 86,599 (range 0–1,600) and 157,018 (range 0–1,200), respectively. With 2,959 cattle and 5,581 small stock lost to depredation, this equates to a loss of 3.4% and 3.6% of respondent's cattle and small stock, respectively, during the previous three months.



Husbandry practices

The types of bomas that livestock are kept in ranged from from low (<1 meter), weak barriers made from whistling thorn acacia (*Acacia drepolobium*) branches to tall (>2 meters), strong barriers made from cedar (*Juniperus procera*) posts, placed close together, and surrounded by chain-link fence. We found that **people with strong bomas were less likely to lose livestock from depredation**.

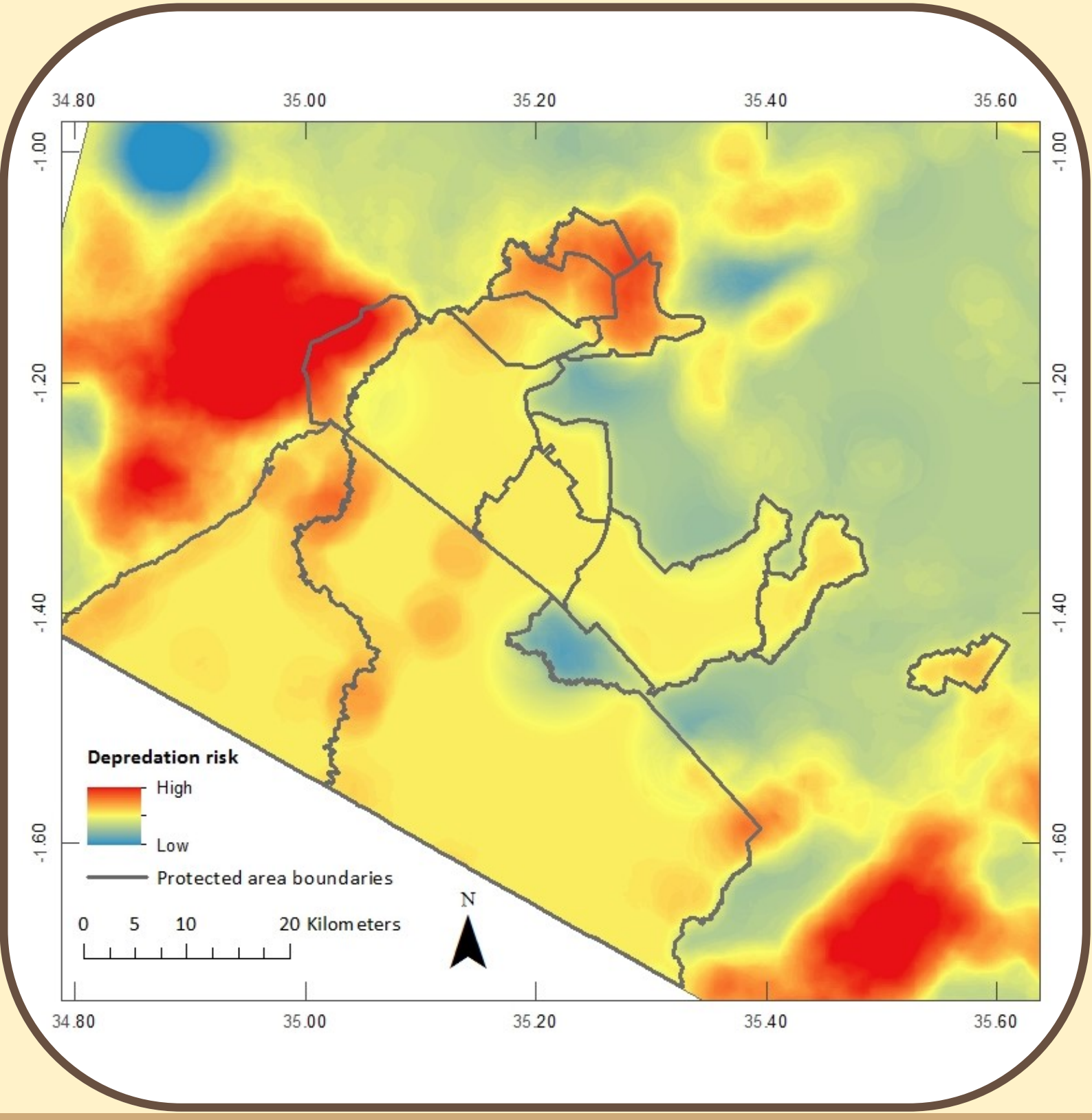
Depredation was less likely to occur at households that had a lot of dogs. However we caution against promoting them as a mitigation measure in the Maasai Mara as they can be a potential source for diseases, such as rabies and canine distemper virus, which once transmitted to predators, can result in catastrophic declines as has happened in the Serengeti.

Both **scare crows** and **lions lights** on the other hand were found to be **ineffective at minimising attacks on bomas.**

Conflict hotspots

Attacks on bomas were most likely to occur in areas with forests and closed vegetation and close to the protected areas. Based on this we have identified three high risk areas (red on the map below):

- Oloisukut and Nkweri forest
- Ol Chorro, Lemek and parts of Mara North conservancies
- Ol Derkesi conservancy and areas to the East and North-east of Ol Derikesi



Recommendations

In total, 21.40% of the study area is considered high risk, while 78.06% is medium risk and 0.53% is low risk. While we do not know the locations of all bomas across the study extent, 88 of the interviewed households were situated within high-risk areas. Of these, 53.41% had weak bomas and are therefore at extreme risk of livestock depredation.

Based on our findings we recommend the following:

1. Weak bomas in high-risk areas should be identified and improved as a matter of priority
2. Mitigation measures, such as boma reinforcement or lion lights, should be monitored to ensure they are effective at reducing livestock depredation and retaliatory killings.
3. High-risk areas may be indictors of good carnivore habitat and, as more areas are being set aside for wildlife with conservancy expansion, these areas should be further explored to ascertain their suitability as wildlife areas.

If you would like to know more about this study, or other research that we are working on, then please do not hesitate to contact us at either **femke@maracheetahs.org** or **nic@maralions.org**.

Acknowledgements

The data for this report were collected by the Mara Cheetah Project and the Mara Lion Project with funding provided by BaseCamp Foundation Kenya and the African Wildlife Foundation. We would like to thank Francis Sopia for providing feedback on the questionnaire and for the fruitful discussions, Clevers Tumuti Ntokoiwuan, Njapit Jeff Pariken, Miton ole Taki, Pesi Saning'o, Daniel Kipailoi Momposhi, Charles Letasuna Nkoitoi, Noosaron Jonathan Simoren, Wilson Musheni Rotiken, Danson Kaelo and David P. Naurori for conducting the interviews, and the respondents for volunteering their time. We would also like to thank Fiona Tande for assisting with data entry.

This report summarises the findings from the following peer-reviewed article:

Broekhuis, F., Cushman S. & Elliot N.B. (2017) Identification of human-carnivore conflict hotspots to prioritize mitigation efforts. *Ecology and Evolution.* DOI: 10.1002/ece3.3565