Multi-species habitat use and distribution outside protected areas in the Maasai Mara landscape, Kenya






Mara Cheetah Project

Kenya Wildlife Trust

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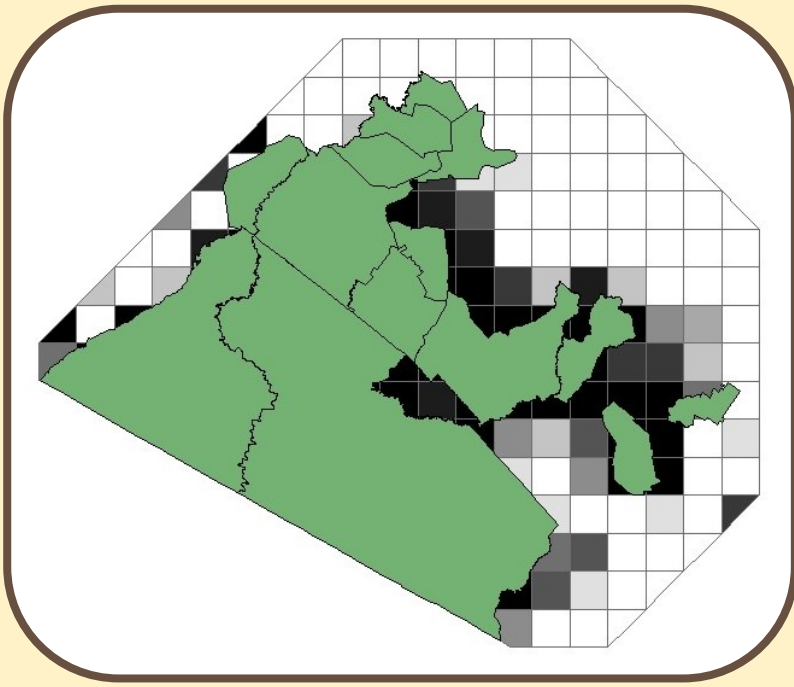
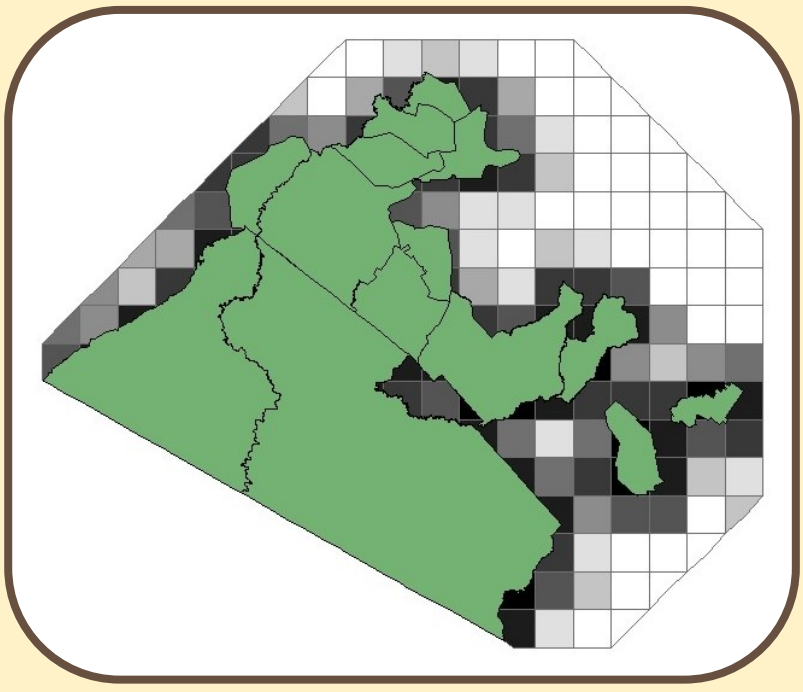
There is a continued desire to expand the conservancies around the Mara but it is important to ensure that the areas chosen are actually beneficial to wildlife. In June/July 2015 an interview survey was conducted in the areas surrounding the protected areas to collect information about the presence of 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.



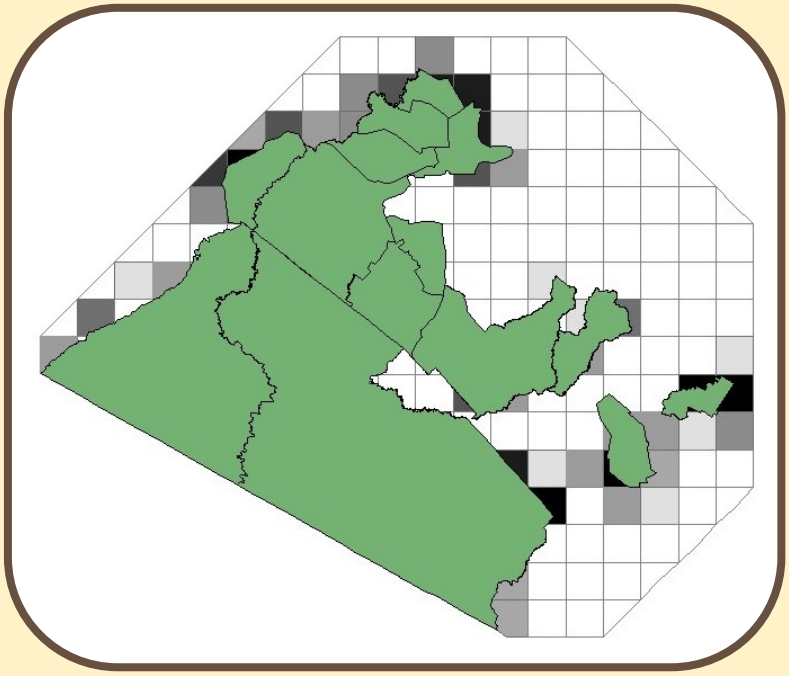


Lion

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.

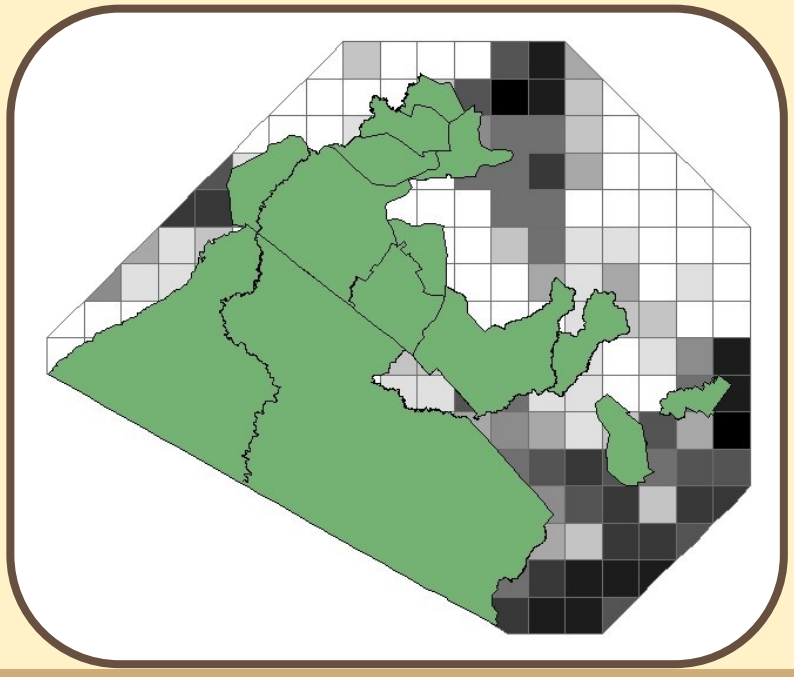
Leopard

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.



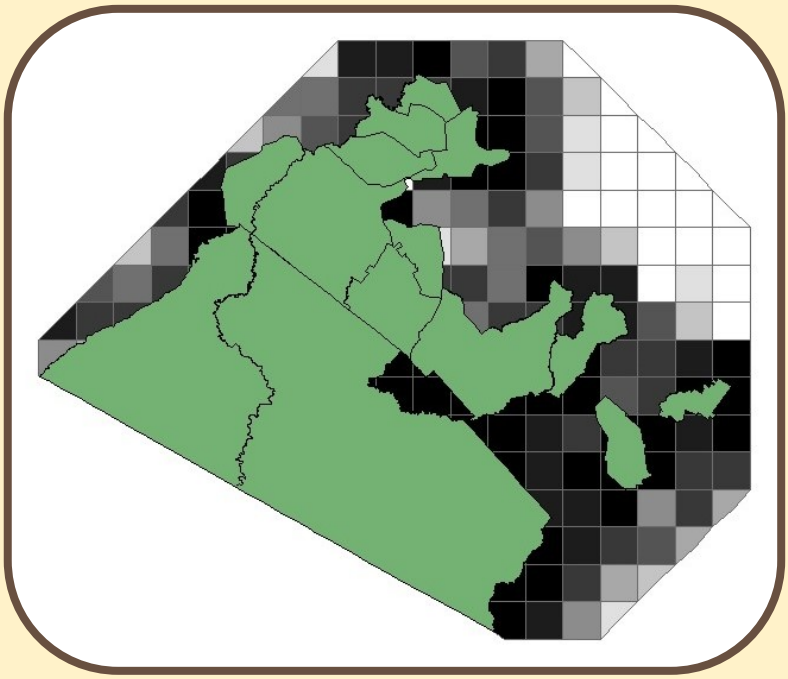
Wild dog

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.



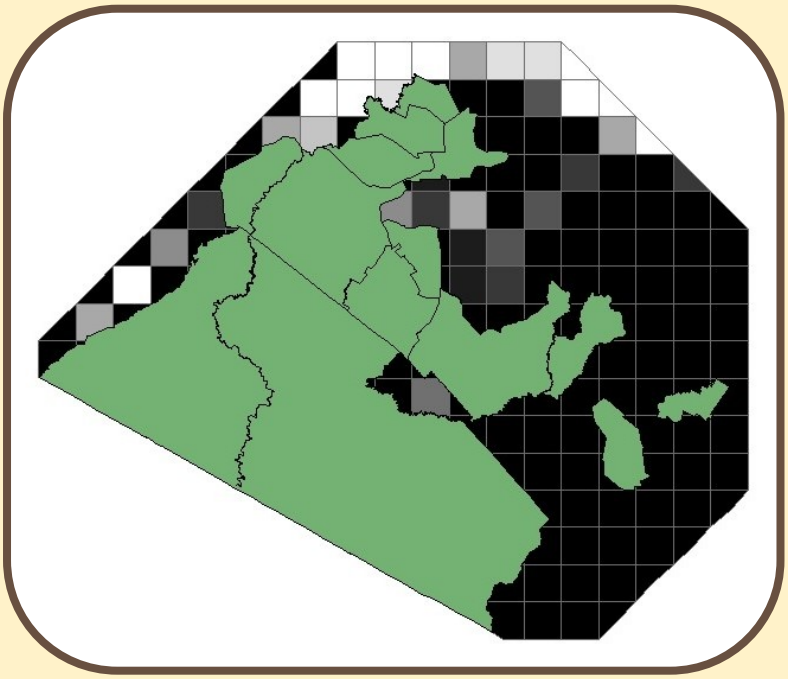
Elephant

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.

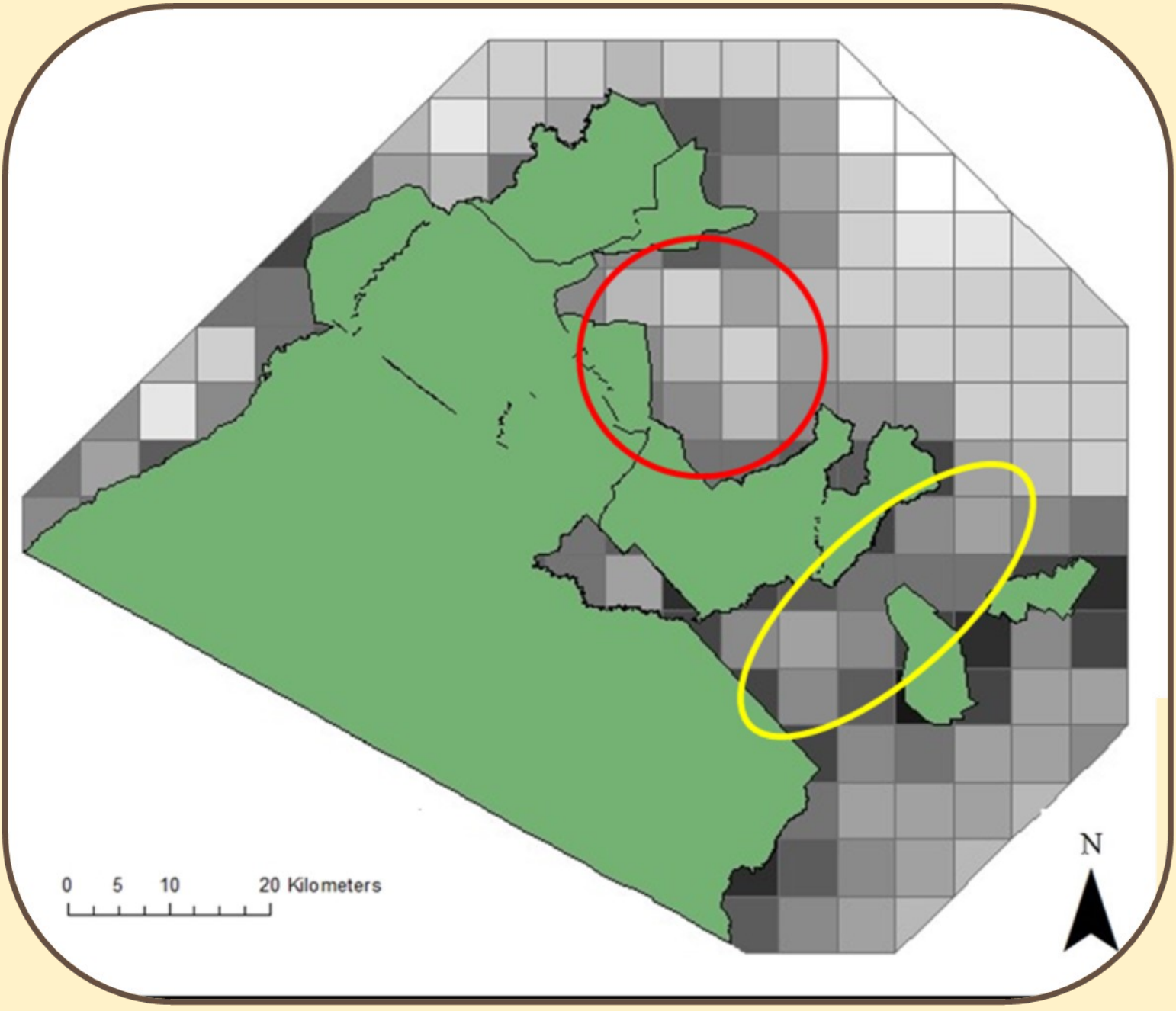


Spotted hyaena

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.



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If you would like to know more abut this study or other research that we are working on then please do not hesitate to contact us.

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