

Ol Kinyei Conservancy Collaring Report

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Collared female lion Nenkume

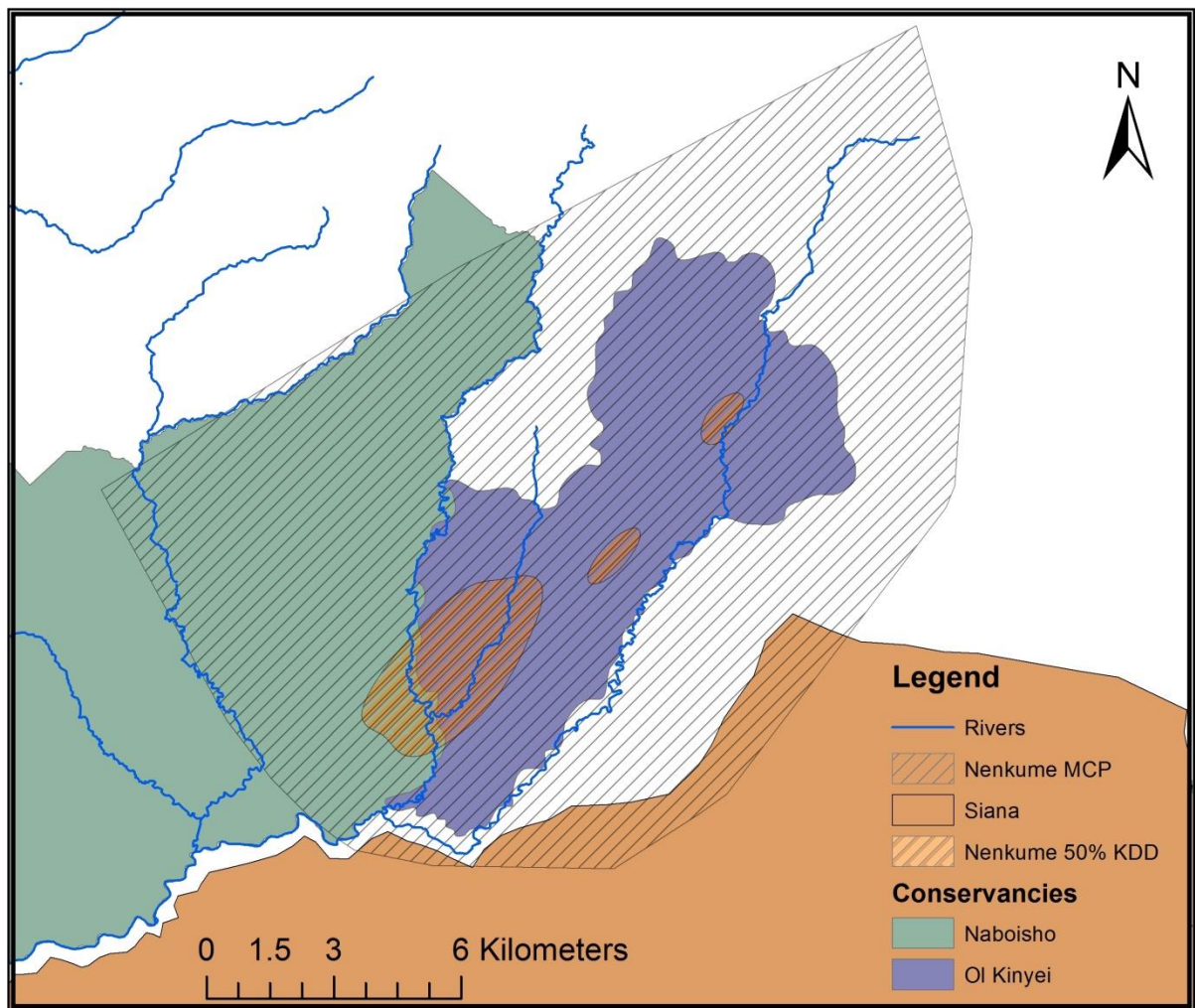
Date of collar deployment: October 15th, 2013

Place of deployment: Ol Kinyei Conservancy

Pride: Ol Kinyei

Duration of collar: 2 years, 1 month (dropped-off November 15th, 2015)

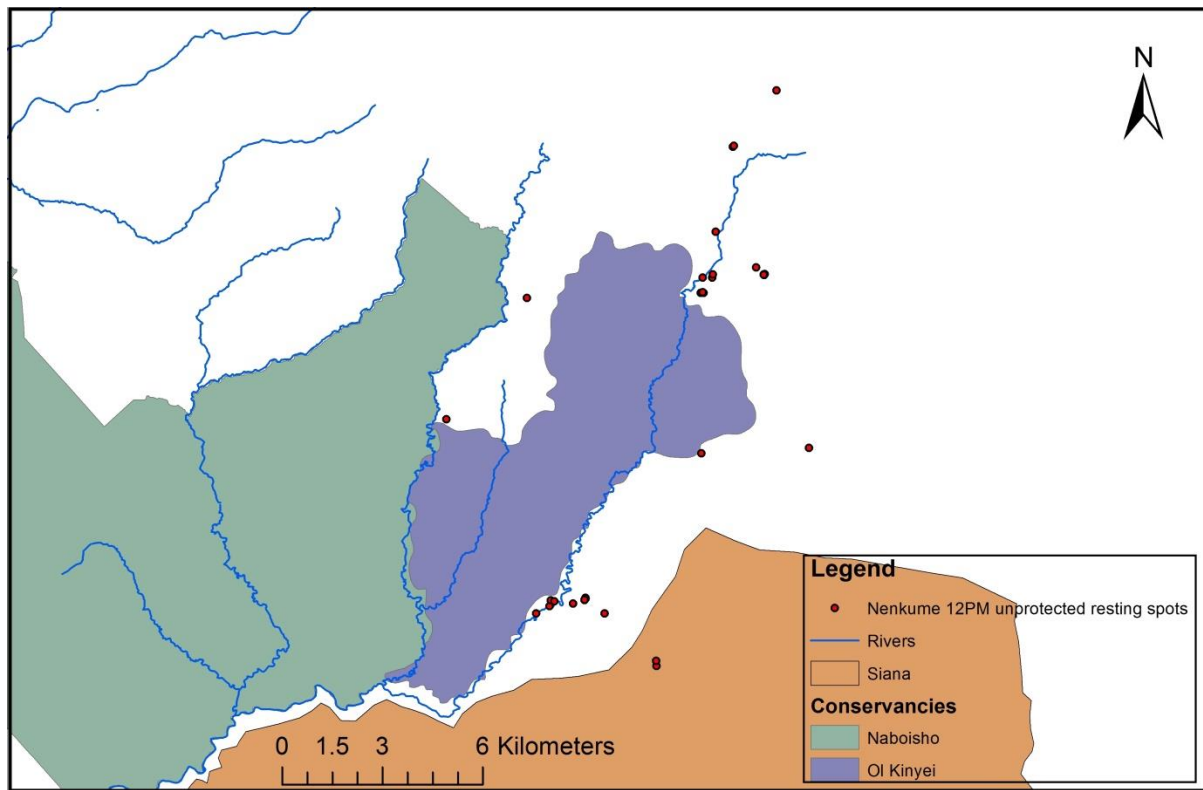
Collar outputs: For the time Nenkume was collared she had a home range of 243 km² as measured by the Minimum Convex Polygon (MCP). She had three core areas where she spent 50% of her time, analysed by using the 50% Kernel Density Distribution (KDD) method. These core areas have a combined size of 12km², most of which are inside Ol Kinyei Conservancy (Map 1).



Map 1: This map illustrates Nenkume's MCP (large shaded area) and 50% KDD (3 small shaded bubbles). Notice how her core areas transcend the centre of Ol Kinyei Conservancy.

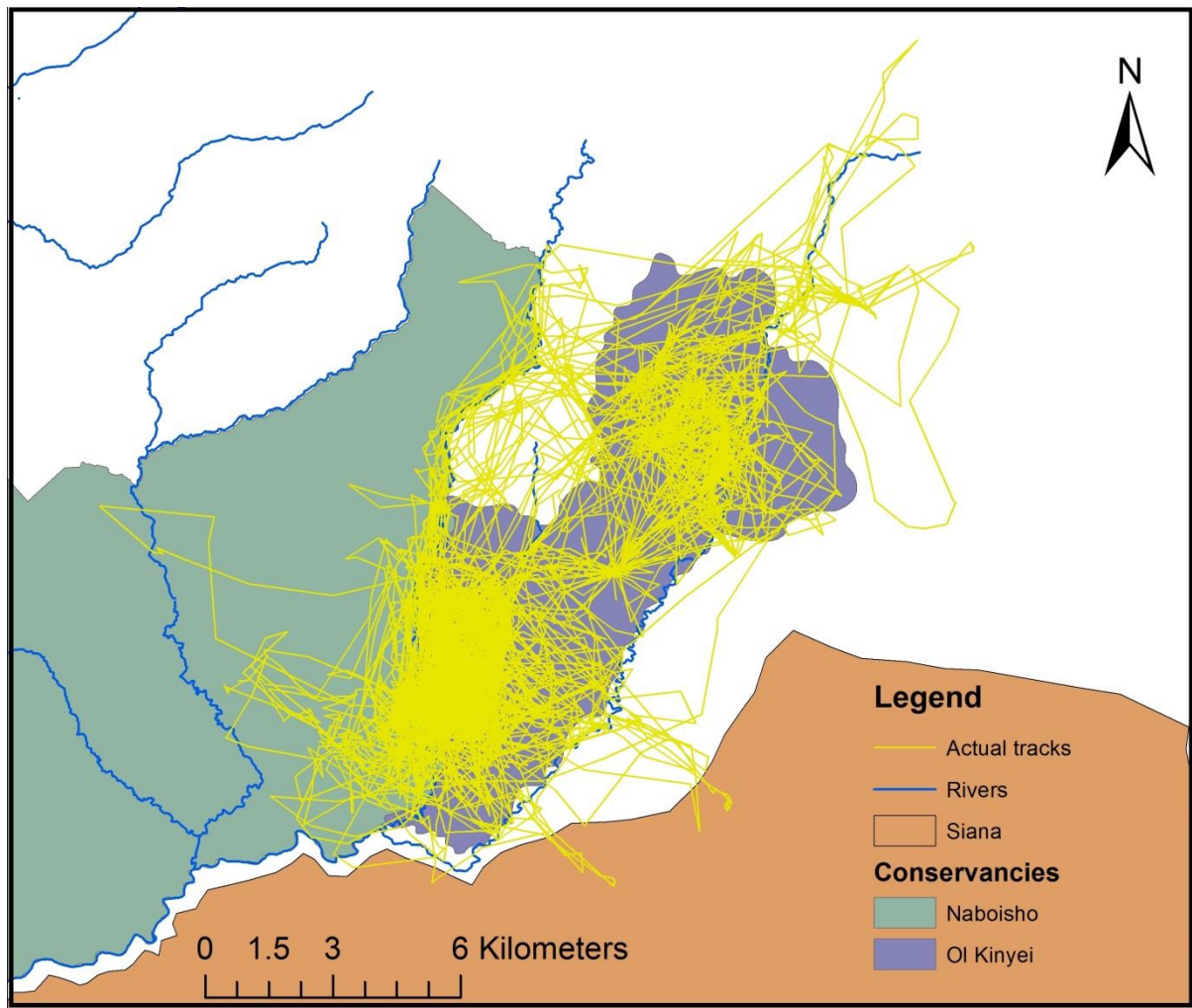
As these core areas all lie within the length of the conservancy, and keep a distance to the northern, southern, eastern and western sides of the conservancy boundaries, it indicates that this lion knows where she is safe.

Nenkume spent 92% of her time inside conservancy areas (Ol Kinyei & Naboisho Conservancies) during the period that she was collared. Only on 34 occasions did Nenkume spend her daytime resting periods on non-protected areas (Map 2).



Map 2: This map shows where Nenkume's has been resting during daytime outside protected areas. The points represent her 12 PM positions.

The majority of Nenkume's movements were confined within conservancies which can be seen by her actual tracks on map 3.



Map 3: This map shows Nenkume's actual track (raw data) for the entire collaring period.

Nenkume's activity was measured by an activity sensor in the collar. From this it is possible to compare her activities from when she was outside the conservancy (figure 1) and inside the conservancy (figure 2) during a 24h period. Figure 1 show how the lioness becomes active after dark and goes to rest before sunrise whereas in figure 2 you can see how she becomes active before sunset and is still active after sunrise. This shows that there is a change in Nenkume's behaviour by becoming strictly nocturnal when she is outside protected areas, suggesting that she understands the risks associated with being seen by people outside conservancies.

— Nenkume.ADF, X, mean

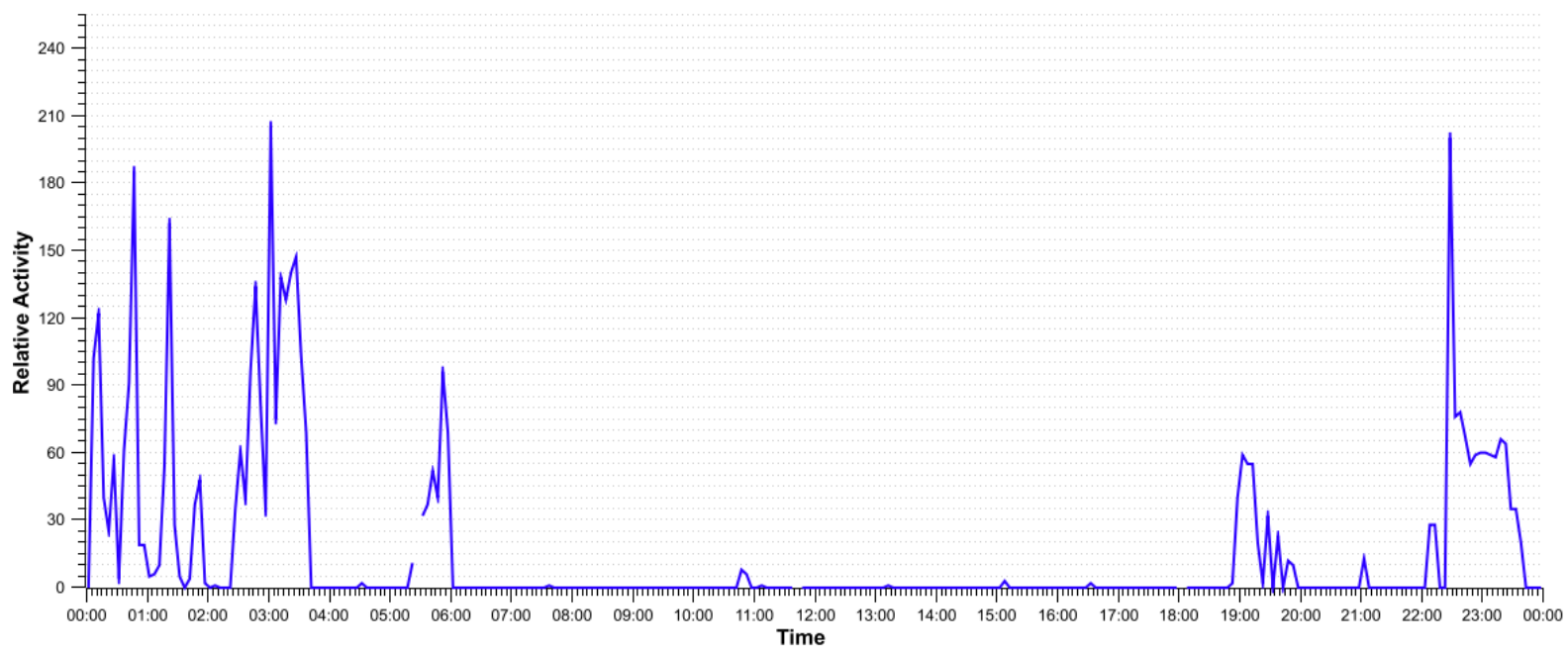


Figure 1: Nenkume's averaged activity pattern in five minute intervals from when she was outside the conservancy. She goes to rest before sunrise and only becomes active after sunset.

— Nenkume.ADF, X, mean

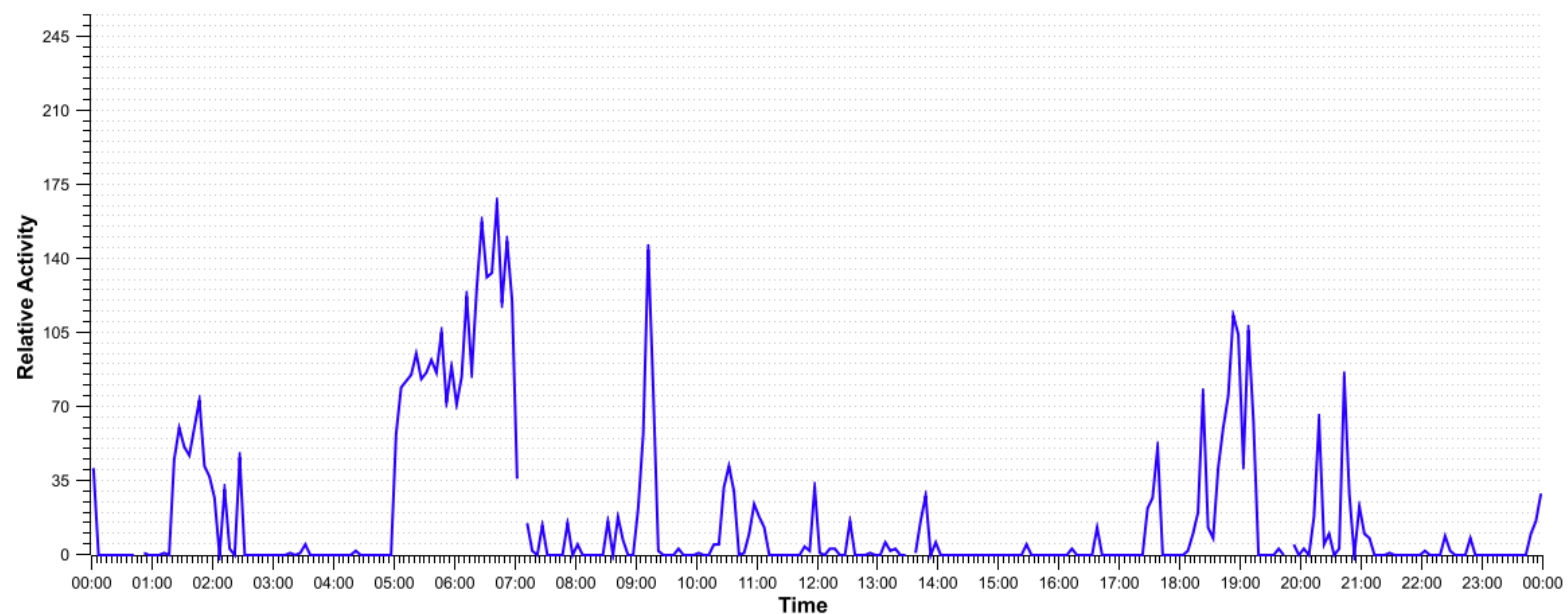


Figure 2: Nenkume's averaged activity pattern in five minute intervals from she was inside Ol Kinyei Conservancy . She was still active after sunrise and became active again before sunset.

Discussion and management implications

This GPS data represents the first fine-scale telemetry data from a lioness in Ol Kinyei conservancy.

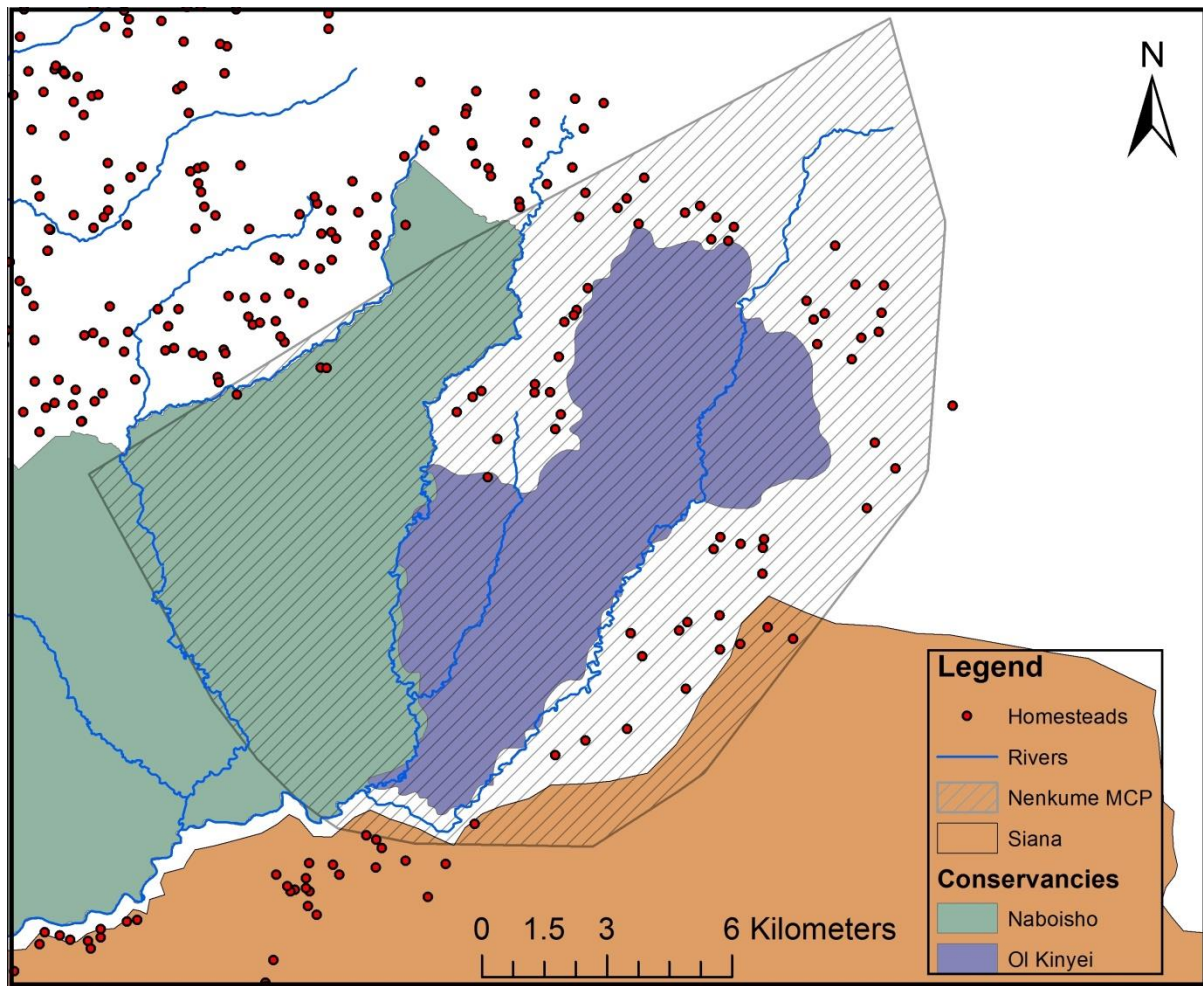
In total, we collected 13457 valid GPS fixes from Nenkume over a 25 month period. Despite her territory being located close to unprotected areas, this lion rarely ventured (8% of her time) into community lands.

The importance of conservancies

The conservancies surrounding the Masai Mara National Reserve have brought many benefits to the local community. These benefits are made possible through tourism, which in large part is flourishing due to the presence of high densities of lions. For the duration of this exercise, Ol Kinyei Conservancy accommodated one permanent lion pride.

The stability of this pride is essential to tourism, and therefore the communities. However, lions do not recognise boundaries and even those prides that spend the majority of their time within protected areas may venture into community lands.

Data from this collar has made it possible to document the extent to which a lioness in Ol Kinyei Conservancy moves out from the safety of the conservancy onto unprotected community land. However, one lioness' movements often represent a whole prides movements. When they do so, there is potential for them to come into contact and conflict with local people. The findings from this collar (combined with data from other collared lions in other neighbouring conservancies) show how important the community areas are for the lions as they roam beyond the safety of the conservancies. At the same time, considering the proportion of time spent inside conservancies, they also stress the vital role that they have in protecting lions. The data shown on the maps and activity figures indicates that this collared lioness knows where it is safe to roam, and spends the majority of her time there. Map 4 highlights the extent to which Nenkume's home range, as represented by her MCP, overlaps with Maasai homesteads (represented by red circles). This shows the importance of buffer areas for lions and the importance of tolerance of communities within this buffer zone.



Map 4: Nenkume's MCP overlapping with Maasai homesteads, represented by red circles.

All this information can be very useful as a conservation tool. Tourism Partners and conservancy managers are in a better position to justify the establishments of conservancies and to know which areas outside their boundaries are important for lion prides, and thus which areas to focus conservation and community relation efforts on. Documenting Nenkume's movements into Siana also supports the push for more formal conservation management in this area.

This collar data, along with data from other collared female lions in other Mara conservancies, suggests that adult female lions prefer to stay within protected areas, although we have documented that it is important that lions living in periphery areas are able to move beyond the borders of protected areas. Recognition of this need, emphasises the need for conservation areas to have good community relations. It is essential for communities to recognise benefits accrued from conservation,

understand the need for lions to occasionally share their parcels of land and not attack or retaliate against them.