

## The Rufford Foundation Final Report

---

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to [jane@rufford.org](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

---

Grant Recipient Details	
Your name	Belinda Low Mackey
Project title	Warriors Monitoring Grevy's Zebra in Northern Kenya
RSG reference	18120-1
Reporting period	September 2015 – September 2016
Amount of grant	£4,890.00
Your email address	belinda@grevyzebratrust.org
Date of this report	14 September 2016

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
To enhance community-based wildlife monitoring through geo-referenced photographic documentation			✓	The inclusion of photographic documentation has enhanced community-based wildlife monitoring through providing: 1) stripe-identification images of Grevy's zebra that allows greater understanding of the patterns and processes driving population trends at both an individual and population level; 2) greater understanding of the environment and how this drives Grevy's zebra distribution; 3) accurate records of other wildlife sightings and their interactions with Grevy's zebra; 4) verification of the Warriors' written records enhancing the reliability and accuracy of results; and 5) a greater understanding and unique insight of the environment the Warriors operate in, illustrating different forms of human presence, and the Warriors' interactions with other communities.
To increase our knowledge of the Laisamis Grevy's zebra population and its critical resources through photographic monitoring			✓	Photographic data collected by the Warriors has illustrated the critical resources present in each of the monitoring locations. Through categorising the amount of vegetation cover based on image data, we have a greater understanding of the factors driving the distribution of Grevy's zebra. Relating the Grevy's zebra sighting data, both from images and written records, to the vegetation analysis

				<p>results, highlights the areas that have sufficient resources for the species, areas that require management interventions such as planned grazing, and key foaling areas which need to be continuously and rigorously monitored .</p>
<p>To secure dry season water access for Grevy's zebra and other wildlife</p>			✓	<p>Dry season water access was identified for management in three locations (Laisamis, Manyatta Lengima and Nchorro). Camera trap data illustrates that Grevy's zebra were the most abundant species at Laisamis River, and were also present at Manyatta Lengima and Nchorro. A high diversity of other wildlife species including cheetah, mongoose, striped hyena, civets and caracals were also present. The presence of the water monitors at these water points kept livestock away from the water resources at night and ensured access for all wildlife species.</p>
<p>To reduce the proportion of Grevy's zebra and other wildlife mortality from lethal mud flats</p>			✓	<p>No Grevy's zebra mortalities occurred as a result of the lethal mud flats during the reporting period; however, one hyena mortality was documented in May 2015 after getting stuck in the mud flats. There were also three separate rescue incidents involving domestic livestock in January 2016. The high abundance and diversity of wildlife species captured by the mud monitors' photographs in the vicinity of the mud flats highlights the need for continual monitoring of the area to reduce the potential for wildlife mortalities.</p>

**2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).**

The addition of image data, the quantity of which has been much higher than expected, posed a challenge in terms of data management. To help overcome this, a Samburu student from Karatina University was brought in to help manage and organise the data. A volunteer from Disney in the US also helped remotely with data management. This enabled our analysis to meet the reporting deadline and built local capacity for the Samburu research student.

Large herds of Grevy's zebra can sometimes be too widely dispersed to capture total herd size in a single photograph and this presented a challenge during data analysis. The image data management program from Small Wild Cat Conservation (<http://smallcats.org/CTA-executables.html>) requires a user defined minimum time interval between pictures to determine the total number of independent pictures that will be used in further analysis. Although a time interval of 2 minutes, which should allow multiple numbers of pictures of the same herd to be treated as an independent picture, will provide a reliable estimate, future training of the Warriors in how to take panoramic pictures to capture full herds will further increase the accuracy of the results obtained.

A challenge in analysing the Warriors' images also arose as not all the pictures taken had GPS data attached to them. Out of the total of 1,527 images of Grevy's zebra, 423 images were not geo-referenced. In the majority of cases the Warriors did not allow enough time for the cameras to capture satellite signal, once the camera was turned on, before taking the picture. The Warriors will be advised to continue taking photographs of the animal until the GPS is activated. However, if the animal disappears before this activation, it will not be possible to collect a geo-referenced image of that sighting.

The national Grevy's zebra stripe-identification database is currently housed on one laptop and is being used by three other organisations. Efforts are underway to ensure that each organisation can independently upload their photographic data to the database and analyse it in-house. However, at the time of writing this report, access to the database has not been possible and therefore no stripe-identification analyses have yet been conducted for the reporting period.

### 3. Briefly describe the three most important outcomes of your project.

#### **Outcome 1: Grevy's Zebra Trust (GZT) can identify which water and grazing resources should be prioritised for management.**

Through meeting objectives 1 and 2 described in the table above, critical resources for Grevy's zebra and other wildlife have been identified. The geo-referenced photographic component of the Warriors' data collection provides verification of their observations and also provides an otherwise unattainable understanding of the environment in which the Warriors operate, highlighting areas where resources such as pasture and water are available. This allows GZT to understand how the distribution of these resources influences Grevy's zebra dispersal and breeding (see Appendix I for details). Analysis of the data illustrates that bare ground is the most dominant state at each of the locations; however, the quantity of bare ground varies between locations. Focal issues for potential management have been identified for each location and will be addressed with the Warriors and our partners through community workshops:

- Korr: this location had some of the larger herd sizes observed between all locations and also had the lowest amount of vegetation cover suggesting displacement of Grevy's zebra as they are pushed out of areas with more favourable resources.
- Logologo and Kamatonyi: these areas had the highest amount of vegetation cover and also some of the largest Grevy's zebra herd sizes, indicating that these areas have relatively good grazing, which should be maintained through planned grazing. The high number of lactating females in Kamatonyi also confirms that water was accessible throughout the monitoring period. In contrast, results from January through August 2015, showed that Logologo was the area with the highest number of lactating females and foals. Despite having the highest ground cover of all the locations in 2016, Logologo had few lactating females and foals, suggesting limited access to water, which will be a priority issue to be address going forward.
- Naimarei: this location had the highest diversity of other wildlife species, indicating that the area is a wildlife haven and its resources should be prioritised for continued management to allow it to continue to support this diversity.
- Lependera: this location has had consistently low sightings of Grevy's zebra. In order to increase Grevy's zebra in the area, both water and grazing resource availability will have to be improved.

**Outcome 2: Grevy's Zebra Warriors are able to collect quality data on Grevy's zebra and effectively engage their communities.**

Determining conservation management plans for Grevy's zebra and deciding how to meet them needs to be informed by a diversity of local conditions. Thus, understanding the population of Grevy's zebra in the various locations in Laisamis, as illustrated and described by the results presented under outcome 1, has provided key information to further understand the population as a whole throughout northern Kenya. The addition of the camel patrols to the Warriors' regular monitoring has resulted in GZT having an understanding of the Laisamis Grevy's zebra population during the dry seasons. Previously, this data was absent as a result of the Grevy's zebra's shifting distribution patterns to the plateaus during the dry season. The large increase in Grevy's zebra sightings during the camel patrols means that year round quality data on Grevy's zebra and other wildlife is being collected. The expansion of the Warriors' wildlife monitoring toolkit to include GPS enabled digital cameras has enabled us to verify the Warriors' written observation records, allowed the addition of stripe-identification data to be collected, allowed observations of other wildlife species present in Laisamis to be documented, and enabled us to quantify ground cover. Their images allow us to better understand the relationship between Grevy's zebra and the environment as well as their interactions with other wildlife and livestock that utilize the same resources. Better understanding of these interactions and relationships can help us manage the environments and the resources that are vital for Grevy's zebra survival.

The addition of the cameras has also provided an avenue for engagement with communities. Not only have the Warriors been capturing images of the community members they engage, but they have also captured images of each other's community outreach. The cameras and the images provide a starting point for discussions about Grevy's zebra and how their future survival depends on the wider community's attitudes and behaviours towards their environment.

**Outcome 3. GZT and its partners make informed decisions about conservation planning for Grevy's zebra and other wildlife.**

Through the Grevy's Zebra Warrior workshop that was held in November 2015, the results from the Warriors' monitoring were shared with the Warriors themselves and other conservation partners. One of the main goals of the workshop is to discuss how the results relate to observations on the ground and what the results mean for Grevy's zebra populations in northern Kenya. The addition of local knowledge in explaining some of the results is an invaluable addition to understanding the factors influencing Grevy's zebra populations and their distributions. Local knowledge such as conflict and migrating human populations, factors that are not recorded in any

formal data collection, yet have a significant impact on the species' distribution, are highlighted and discussed during the workshop. The workshop provides an in depth profile of the Laisamis Grevy's zebra population and allows conservation actors to gain a valuable and genuine grassroots perspective on the results obtained.

A vital component of GZT's conservation program is to build the capacity of communities to manage their resources. Thus results from the annual workshop, feed into smaller, more intensive community workshops. The community workshops are 4-day events that are held with our partner communities, focusing on environmental stewardship with elders, women, warriors and youth. Both wildlife and people share the same challenges in this landscape, as both depend on the same forage and water resources. GZT therefore focuses on improved land management through teaching holistic rangeland management principles. The results have been significant, with three communities now planning their settlements to facilitate better control over grazing, and setting aside seasonal grazing areas to allow other areas to recover. These results have been evident in Kamatonyi which had improved pasture in 2016. In the long-term this will increase the potential of the land to sustain generations of wildlife and people to come. As highlighted under the first outcome, from this project, GZT has been able to identify focal areas for management that will be addressed through these community workshops going forward.

#### **4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).**

The communities around Laisamis have benefited from the project in several ways.

1. Employment in the service of conservation – there are a total of 21 people employed by GZT to improve conditions for Grevy's zebra survival in Laisamis, and to monitor the species (one Regional Coordinator, 10 Grevy's Zebra Warriors, four water monitors, one camera trap manager, four mud rescue monitors and one camel herder)
2. Capacity has been built through workshops, as described above, to plan sustainable grazing for both wildlife and livestock. An additional action that has come out of the workshops is for communities to unite in managing their resources. The most encouraging aspect of these workshops is that communities are empowered to make their own plans. Although GZT may assist with logistics from time to time, the communities are leading the implementation of their plans, and thus community ownership is very strong, which will ensure sustainability.
3. When GZT built the wildlife sand dam, trough and pan, a Water Resource Users Association (WRUA) for the Laisamis River was established by GZT, Melako Community Conservancy and the Northern Rangelands Trust. The

mandate of the WRUA is to control people's use of the river's water, and to address issues such as hygiene and sanitation, sand harvesting, and pollution. By addressing threats to the river and to human health, the people living along the river are benefitting.

#### **5. Are there any plans to continue this work?**

This project successfully piloted the use of cameras to improve Grevy's zebra and other wildlife monitoring and will be continued, as it allows us to strategically plan interventions. The Grevy's Zebra Warrior Program itself is a long-term initiative and GZT will continue its operations, as it enables us to take a proactive conservation approach in the region, including scaling up grazing and water management interventions.

#### **6. How do you plan to share the results of your work with others?**

During the November 2016 Grevy's Zebra Warrior workshop we will share the results with the Warriors and other local partners on the ground. Following the workshop, meetings will be held with our partner communities for dissemination of the results and next steps.

The annual program report generated will be shared with national and international partners, including donors supporting the programme, as well as the Kenya Wildlife Service, Melako Community Conservancy, the Northern Rangelands Trust, and the Grevy's Zebra Technical Committee.

The current national Grevy's Zebra Conservation and Management Strategy for Kenya expires in December 2016. Workshops with stakeholders concerned with the different populations of Grevy's zebra across northern Kenya will be held to get local input to and ownership of the strategy. Results of the Warriors' data will be shared during that workshop and will inform the strategic vision for each region in the updated strategy which will be finalised in March 2017.

In February 2016, the Grevy's Zebra Warrior Program was showcased to a wide and diverse audience through an exhibition 'The Zebra People: Guardians of the Grevy's' at the National Museums of Kenya in Nairobi. Professional photographer Mia Collis captured beautiful portraits of all the GZT employees to raise awareness about their conservation work in Northern Kenya. The exhibition focussed strongly on the Warriors; under each of the Warriors portraits, their personal stories describing their past and present relationship with their environment were displayed, giving a unique insight into what has driven them to be conservationists. The exhibition also displayed some of the Warriors' most interesting images captured during their



patrols. A write-up of the exhibition was also featured in the Kenya Airways in-flight magazine "Msafiri". Plans are being developed for the exhibition to travel through the US to raise awareness and funds to support the Grevy's Zebra Warrior Program and GZT's wider work.

Facebook is the social media platform that GZT currently uses to share information. The images the Warriors capture are often posted to inform the public about their work.

**7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?**

The grant was used to support activities from September 2015 to September 2016. The Grevy's Zebra Warrior Program is a long-term project which started in 2012; the project supported by The Rufford Foundation was a pilot component of the larger program. Following its successful results, it will be adopted as a long-term monitoring method for the region.

**8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.**

Item	Budgeted Amount	Actual Amount	Difference	Comments
Annual Warrior Stipend @ £790 each x 10	3,950	3,945	-5	
Regional Coordinator subsistence costs @ £40 per month x 6	240	256	16	
Vehicle support to the project @ £263 per month x 6	700	690	-10	
<b>Total</b>	<b>4,890</b>	<b>4891</b>	<b>1</b>	

Exchange rate 24 September 2015: 1 GBP = 160 KES

**9. Looking ahead, what do you feel are the important next steps?**

The most important next steps include:

A water source survey to understand which sources, in addition to the three key sources already identified, are being used by Grevy's zebra, and which sources have potential to be used by Grevy's zebra. This survey will then inform a wildlife water development plan for the region. We would engage Marsabit County

government in this initiative as water management is a core mandate of the county and therefore we want to ensure that future developments planned by the county are wildlife-friendly, and accessible by wildlife.

GZT will carry out Grevy's zebra monitoring in the plateaus during the wet seasons to understand whether Grevy's zebra are using them year-round, or whether they are only a dry season refuge.

**10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?**

The Rufford Foundation logo was displayed in the PowerPoint presentation given during the Grevy's Zebra Warrior workshop and in the 2015 annual program report. The Rufford Foundation was listed on PowerPoint presentations to international audiences (including the Wildlife Conservation Network Expo presentation in San Francisco in October 2015 and the Houston Zoo/WCN Expo in April 2016), is listed in GZT's 2015 annual report, and was listed on GZT's poster presentation at the AZA annual conference that took place in September 2016.

**11. Any other comments?**

The introduction of cameras to the Grevy's Zebra Warrior team has been successful on multiple scales. Primarily, their images allow us to better understand the relationship between Grevy's zebras and their environment, as well as collect data on other wildlife. Secondly, the cameras encourage the Warriors to document other activities during their patrols, such as outreach. These outcomes have culminated in an unexpected and much greater success: the Warriors are creating a grassroots voice for Grevy's zebra conservation that can be shared with audiences beyond northern Kenya.

**Acknowledgements**

We are extremely grateful to the Rufford Small Grants Foundation for supporting the addition of GPS enabled cameras to the Warriors' monitoring toolkit. This has greatly enhanced the quality of our Grevy's zebra and other wildlife data as well as given us a unique insight into the daily lives of the Warriors as they carry out their work.

We also thank Disney Conservation Fund, Leiden Conservation Foundation, Phoenix Zoo, Saint Louis Zoo and Zurich Animal Protection Association which have also funded our work in Laisamis. We are grateful to our partners on the ground, specifically Melako Community Conservancy, Northern Rangelands Trust and the Kenya Wildlife Service for supporting the Warriors and collaborating with us on



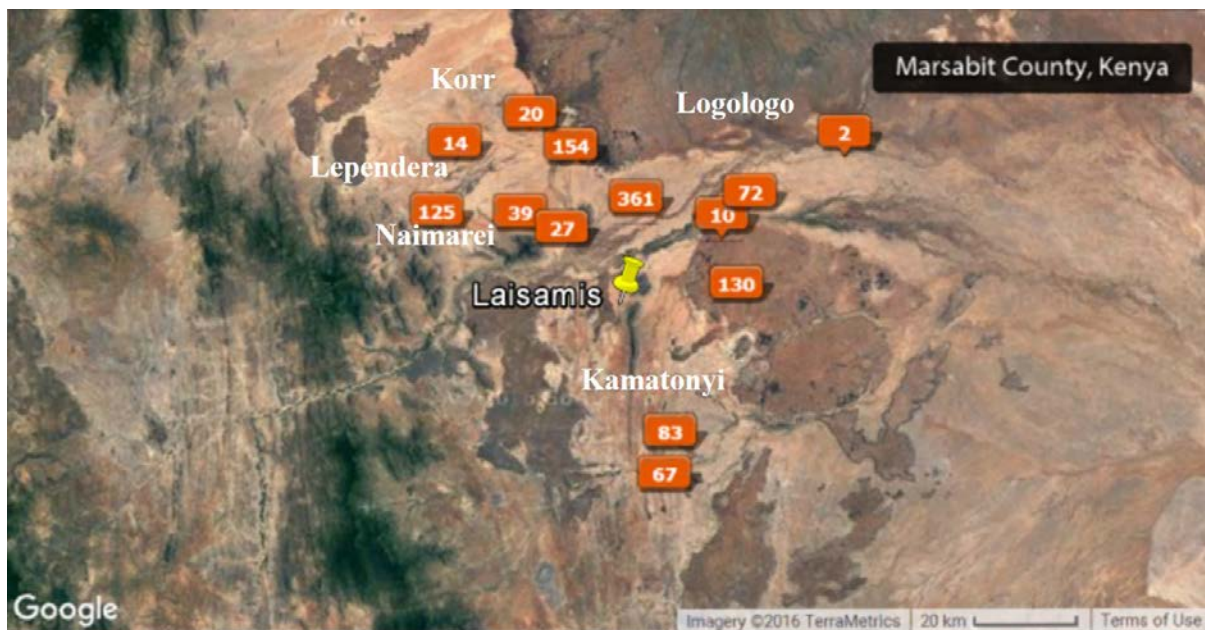
conservation actions for Grevy's zebra. Finally, we are indebted to our community partners who support the work of the Warriors, and are striving towards a better future for themselves and the wildlife they share the land with.

## APPENDIX I: SUPPORTING FINDINGS

Results from the Warriors' data are separated into sightings recorded in the five locations of Kamatonyi, Korr, Lependera, Logologo and Naimarei from November 2015 through June 2016, and into sightings recorded during camel patrols in the Sengereruwa and Rusarus plateaus in September and October 2015. These geographically distinct areas for monitoring follow the shifting distribution patterns of Grevy's zebra during the year and their move to the plateaus during the dry season which is when the camel patrols are undertaken.

### 1. The number and distribution of images collected by the Warriors in the five locations November 2015 through June 2016

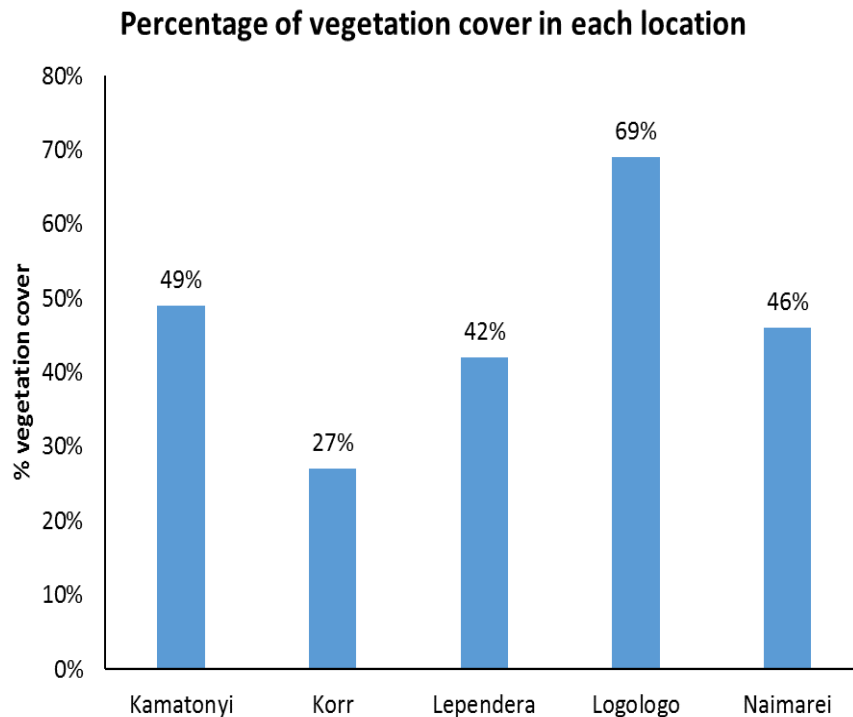
The map below shows the distribution of Grevy's zebra images captured by the Warriors from November 2015 through June 2016. From a total of 1,527 Grevy's zebra pictures, 1,104 had GPS data attached to them and could be mapped.



### 2. The amount of vegetation cover in the five key locations, determined by the image data, from November 2015 through June 2016

To determine grazing resources available through the pictures, all landscape images collected by the Warriors were categorised as either 'bare ground' or 'covered ground' depending on the dominant state (50% or more) of the amount of vegetation on the ground. If vegetation cover was the dominant state, it was

hypothesised that the land was in relatively good condition and therefore likely to provide forage for Grevy's zebra.

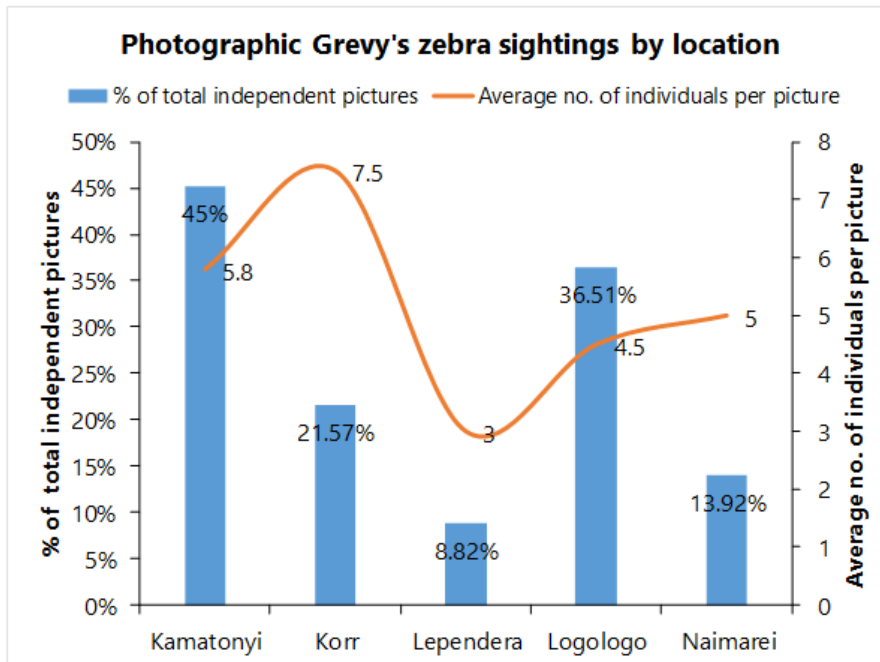


**Figure 1.** *The percent of vegetation cover in each location*

The results from figure 1 illustrate that vegetation cover at each of the locations, apart from Logologo, was less than 50% and bare ground was the dominant state. The amount of vegetation cover in Korr is only 27%, highlighting that this area needs to be targeted for rangeland management. When compared to the results from Grevy's zebra sightings by the Warriors, figures 2 and 3 show that both Logologo and Kamatonyi, which had the highest percent cover, also had the highest number of Grevy's zebra sightings, which suggests that locations with higher cover, will attract more Grevy's zebra.

### **3. Grevy's zebra sightings by location between November 2015 and June 2016**

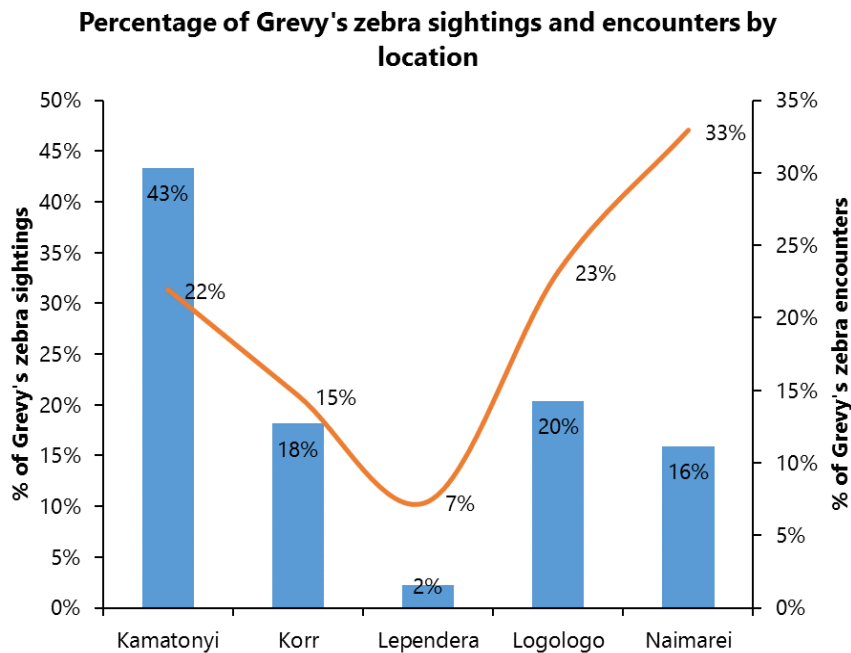
With the user defined minimum time interval set at 2 minutes to identify independent pictures, the Warriors had 143 separate encounters with Grevy's zebra during their patrols (figure 2). The highest number of encounters occurred in Kamatonyi (45%), followed closely by Logologo (36.51%). With just under 9%, Lependera had the lowest number of Grevy's zebra encounters.



**Figure 2.** Grevy's zebra sightings by location based on an analysis of the Warriors' picture data from November 2015 through June 2016

Grevy's zebra sightings as defined by the Warriors' images (figure 2), show the same trends as those described in figure 3 which are the results from the written data collected by the Warriors.

When compared to the results of data collected from January through August 2015, the distribution of sightings has changed, with a shift from Logologo to Kamatonyi, although both locations had the most sightings in both years. Lependera has had consistently low sightings of Grevy's zebra in both 2015 and 2016 suggesting that water and/or grazing may be limiting factors which requires further investigation.








**Figure 3.** A comparison between the percentage of Grevy's zebra sightings and the Grevy's zebra encounter rate between all locations from November 2015 through June 2016

**4. Grevy's zebra demography and herd size by location, determined by the Warriors' written records, from November 2015 through June 2016**

Table 1 shows the demographic breakdown of Grevy's zebra sightings recorded by the Warriors.

**Table 1.** *Percentage of Grevy's zebra sightings by reproductive class in each location*

Location	Territorial Males 	Bachelor Males 	Non-lactating Females 	Pregnant Females 	Lactating Females 
Kamatonyi	19%	17%	41%	46%	62%
Korr	13%	6%	16%	32%	25%
Lependera	10%	0%	0%	0%	0%
Logologo	21%	50%	30%	14%	8%
Naimarei	37%	27%	14%	5%	6%

Kamatonyi had a high percentage of vegetation cover when compared to the other locations, and the highest number of Grevy's zebra sightings (figure 3). Sightings of lactating females (table 1: 62%) and 0-3 month foals (table 2: 59%) also

occurred most in Kamatonyi, highlighting the area as a key breeding ground for Grevy's zebra and a priority for continued management. By comparison, in 2015, Logologo was the area in which most lactating females and foals were seen. Despite also having the highest amount of cover in 2016, there were much fewer lactating females and foals observed in the area, suggesting that water is the limiting factor and needs to be followed up.

**Table 2.** *Percentage of Grevy's zebra foal sightings by age class in each location*

Location	0-3 months	3-6 months	6-12 months
Kamatonyi	59%	57%	71%
Korr	24%	29%	21%
Lependera	0%	0%	0%
Logologo	18%	5%	0%
Naimarei	0%	10%	7%

Further analysis of the data, and discussions with the Warriors during the annual workshop in November 2016, is required to determine whether the presence of settlements and livestock are having an influence on the distribution of Grevy's zebra within each location.

**Table 3.** *Average Grevy's zebra herd size in all locations*

Location	Herd Size
Kamatonyi	8
Korr	5
Lependera	1
Logologo	3
Naimarei	2

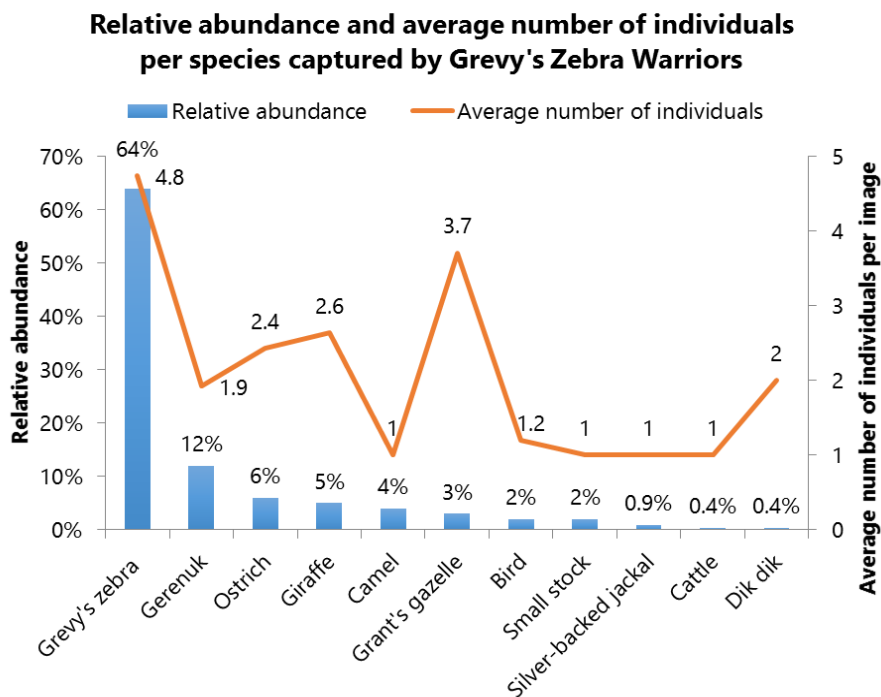
The largest herd sizes were observed in Kamatonyi and Korr with Naimarei and Lependera having the lowest herd sizes. These findings support the hypothesis that larger herds are present where the percent of Grevy's zebra sightings exceeds or is equal to the rate of encounter as illustrated in figure 3.

There were slight differences between herd sizes recorded by the Warriors (table 3) and the average number of Grevy's zebra seen in the images collected (figure 2), although the trend generally correlated. However, in Lependera, only sightings of single males were recorded by the Warriors, whereas the cameras captured an average number of three Grevy's zebra per picture. This will be further investigated to see on how many occasions this took place. Further training will be required for



the Lependera team to ensure that all photographic sightings are also recorded on paper.

During the camel patrols (September – October 2015), the Warriors took 5,955 geo-referenced images of Grevy’s zebra and other wildlife (figure 4). On average the images captured approximately 5 Grevy’s zebra. The most Grevy’s zebra in one image captured 28 individuals, however the Warriors’ monitoring data illustrates much larger herds. For these large herds, it is difficult to capture all the individuals in a single photograph and therefore it is likely that the average number of Grevy’s zebra per image will be lower than the average herd size observed and written down.



**Figure 4.** Relative abundance and average number of individuals per species captured by the Grevy’s Zebra Warriors during the camel patrols in 2015.

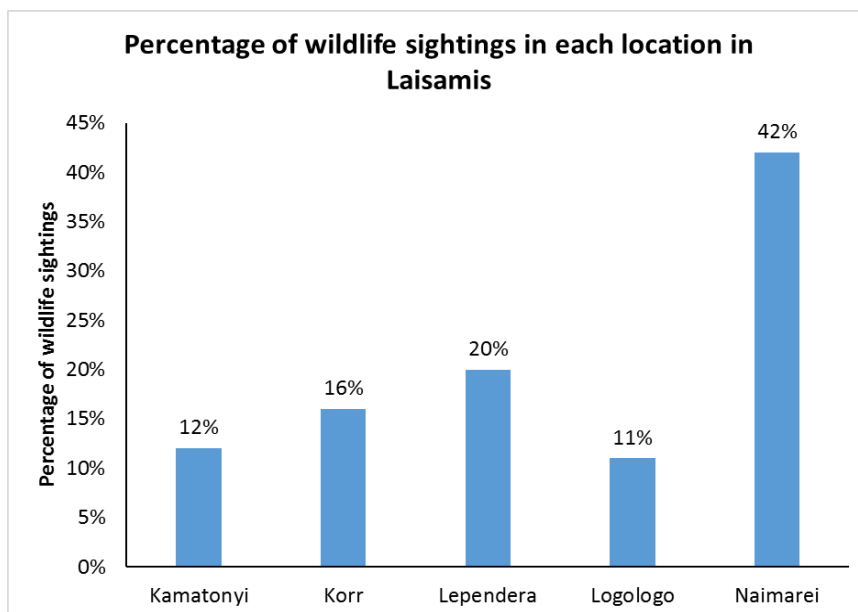
## 5. Grevy’s zebra and other wildlife sightings

The goal of this pilot project was also to photographically record other wildlife sightings to get a better understanding of species diversity within the landscape.

During the camel patrols, seven other wildlife species were observed by the Warriors (figure 4). However, given that this was their first patrol into the plateaus, their energy was focused on finding and photographing Grevy’s zebras. This year, more effort will

be put into photographing other species, and we will be able to compare whether they capture a higher diversity of wildlife in 2016 compared to 2015.

From November 2015 through June 2016, a total of 5,040 images captured Grevy's zebra and other wildlife in the five locations. Sixty different species were identified in Laisamis (table 4). The majority of these were captured in Naimarei where 43 different species were observed, followed by Lependera and Korr with 21 and 16 species captured respectively (figure 5). With 11, Logologo had the fewest number of species present. The diversity of species included at least 33 bird species, 18 mammal species, 8 reptiles and 1 arachnid. Some notable sightings include cheetahs, bat-eared foxes, caracals and honey badgers in Naimarei. The rufous-beaked snake, puff adders, monitor lizards and agamas were also observed in various locations. Many birds, including three species of vulture, eagles and falcons were also observed.



**Figure 5.** *The percentage of all wildlife sightings as captured by the Warriors' images in the five locations*

Using Menhinick's richness index, where the number of species is divided by the square root of the number of individuals in the sample ( $D = s/\sqrt{N}$  where  $D$ =Species richness,  $s$ =No. of species the sample and  $N$ =No. of individual organisms in the sample), species richness in Laisamis, at 0.873149, was relatively high.

Although the Warriors are instructed to capture all species observed, the results may be skewed by additional factors. In Naimarei which has the highest species diversity, the Warriors have a very close relationship with the community and are often called upon when there is a sighting of an unusual species. Their effort is therefore likely to

be greater than that of the Warriors in other locations. This will be further discussed during the annual Warrior workshop, to help us understand what other variables may influence these results.

**Table 4.** *Wildlife species observed by the Warriors in each location (November 2015 – June 2016)*

Species	Scientific name	Kamatonyi	Korr	Lependera	Logologo	Naimarei
<b>Birds</b>						
Abdim's stork	<i>Ciconia abdimii</i>	0	0	0	0	1
African hoopoe	<i>Upupa epops</i>	0	0	1	0	1
African white-backed vulture	<i>Gyps africanus</i>	0	0	0	0	1
Tawny eagle	<i>Aquila sp.</i>	0	0	0	0	2
Bee-eater	<i>Merops sp.</i>	0	0	1	0	0
Black-chested snake eagle	<i>Cercaetus pectoralis</i>	0	0	0	0	1
Black-winged stilt	<i>Himantopus</i>	0	1	0	0	0
Cattle egret	<i>Bubulcus ibis</i>	1	3	0	0	0
Common fiscal shrike	<i>Lanius collaris</i>	0	0	0	0	1
Crested francolin	<i>Dendroperdix sephaena</i>	1	0	1	0	0
Crow	<i>Corvus sp.</i>	0	0	1	0	0
Crowned lapwing	<i>Vanellus coronatus</i>	0	0	0	0	2
Eastern yellow-billed hornbill	<i>Tockus flavirostris</i>	0	0	0	0	2
Egyptian goose	<i>Alopochen aegyptiaca</i>	0	0	1	0	1
Fiscal	<i>Lenius dorsalis</i>	0	1	0	0	0
Golden pipit	<i>Tmetothylacus tenellus</i>	0	0	3	0	0
Goshawk	<i>Accipiter sp.</i>	0	2	2	0	1
Guinea fowl	<i>Numida sp. (potentially meleagris)</i>	0	0	1	0	0
House sparrow	<i>Passer domesticus</i>	0	0	0	0	1
Jackson's hornbill	<i>Tockus jacksonii</i>	0	0	3	0	2
Kori bustard	<i>Ardeotis kori</i>	1	0	2	0	8
Lappet-faced vulture	<i>Torgos tracheliotus</i>	0	0	0	1	1
Marabou stork	<i>Leptoptilos crumenifer</i>	0	0	0	1	0
Martial eagle	<i>Polemaetus bellicosus</i>	0	0	0	0	1
Ostrich	<i>Struthio molydophanes</i>	1	20	14	4	41

Species	Scientific name	Kamatonyi	Korr	Lependera	Logologo	Naimarei
Ruppell's Griffon vulture	<i>Gyps rueppellii</i>	0	0	0	0	1
Sacred ibis	<i>Threskiornis aethiopicus</i>	0	1	3	0	1
Stork sp	<i>Ciconia sp.</i>	0	0	0	1	0
Superb starling	<i>Lamprotornis superbus</i>	0	0	1	0	2
Vulturine guinea fowl	<i>Acryllium vulturinum</i>	0	0	1	0	4
Wahlberg's eagle	<i>Aquila wahlbergi</i>	0	1	0	0	0
White stork	<i>Ciconia</i>	0	0	1	0	0
White-headed buffalo weaver	<i>Dinemellia dinemelli</i>	0	0	0	0	2
Yellow-necked spur fowl	<i>Pternistis leucoscepus</i>	0	0	1	0	1
<b>Arthropods</b>						
Scorpion	Family: <i>Liochelidae</i>	0	0	0	0	1
<b>Mammals</b>						
Baboon	<i>Papio anubis</i>	1	1	3	0	0
Bat-eared fox	<i>Otocyon megalotis</i>	0	0	0	0	1
Caracal	<i>Caracal</i>	0	0	0	0	1
Cheetah	<i>Acinonyx jubatus</i>	0	0	0	0	2
Dikdik	<i>Madoqua sp.</i>	5	2	11	0	10
Dwarf mongoose	<i>Aelogale parvula</i>	1	0	0	0	0
Gerenuk	<i>Litocranius walleri</i>	16	34	103	11	122
Giraffe (reticulated)	<i>Giraffa camelopardalis reticulata</i>	4	4	0	0	1
Grant's gazelle	<i>Nanger granti</i>	0	47	1	15	22
Grevy's zebra	<i>Equus Grevyi</i>	28	33	15	23	44
Ground squirrel	<i>Xervus sp.</i>	0	0	0	0	5
Hare	<i>Lepus sp.</i>	0	0	0	0	6
Honey badger	<i>Mellivora capensis</i>	0	0	0	0	1
Lesser kudu	<i>Tragelaphus imberbis</i>	0	0	0	0	1
Oryx	<i>Oryx beisa</i>	0	1	0	0	8
Silver-backed jackal	<i>Canis mesomelus</i>	0	1	0	0	6
Spotted hyena	<i>Crocuta</i>	0	0	0	0	1
Warthog	<i>Phacochoerus sp.</i>	0	0	0	0	1
<b>Reptiles</b>						
Agama lizard	<i>Agama sp.</i>	0	0	0	2	0
Monitor lizard	<i>Varanus niloticus</i>	0	0	0	1	2

Species	Scientific name	Kamatonyi	Korr	Lependera	Logologo	Naimarei
Puff adder	<i>Bitis arietans</i>	0	1	0	3	0
Red-headed agama	<i>Agama</i>	2	0	0	0	0
Rufous-beaked snake	<i>Rhamphiophus</i> sp. (potentially <i>acutus</i> )	1	0	0	1	1
Skink	Family: <i>Scincidae</i>	0	0	0	0	1
Turtle	Family: <i>Cheloniidae</i>	0	0	0	0	1
<b>Total</b>		<b>62</b>	<b>153</b>	<b>170</b>	<b>63</b>	<b>316</b>