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N/a'an ku sê Foundation
3RD QUARTER 2024
RESEARCH REPORT

With the support of IUCN Save Our Species, co-funded by the European Union

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N/a'an ku sê Research Programme

Quartey Report – June 2024

We would like to acknowledge our donors, supporters, and partners and the significant contribution you make to N/a'an ku sê's research projects. Without your support, we would not be able to undertake our crucial work. So, from us, and the wildlife we conserve and protect - THANK YOU.

We are always in need of equipment such as GPS collars, camera traps and batteries. If you would like to become a donor or make further donations, you can do so via the website:

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Disclaimer: This summarised report describes research activities carried out in the second quarter of 2024 and is intended for a public audience. The report is by no means comprehensive. It presents a selection of some of the most important research activities. Results are preliminary and must be understood as such. Moreover, results are for informative purposes only. No content of this report shall be copied or reproduced by any person, institution, or organization under any circumstances without prior written approval from the N/a'an ku sê Foundation. All work is carried out with the necessary government permits. Any questions or inquiries regarding this report should be addressed to the author at research@naankuse.com.

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1.Introduction

This comprehensive report outlines the collaborative efforts of the research team at N/a'an ku sê over the past three months, covering various sites including the N/a'an ku sê wildlife sanctuary and reserve, Zannier Reserve, TimBila Nature Reserve, Kanaan Desert Retreat, Neuras Wine and Wildlife Estate, Harnas Wildlife Foundation, and the Coastal project. Noteworthy contributions came from individuals such as Marlice van Vuuren, Dr. Rudie van Vuuren, Sonja Samuels, and Tanja Baetcke-Vilho, who not only led the compilation of the report but also contributed to sections on Human-Wildlife Conflict, N/a'an ku sê Sanctuary, and Zannier Reserve. Additionally, Heaven Ndatipo, Romeo Sikulo, and Mathias Mwaetoko focused on research within N/a'an ku sê Sanctuary and Zannier Reserve, while Lourens Grobler concentrated his efforts on the TimBila Reserve and Sarafine Conrad contributed with her knowledge on the research work at Harnas.

Moreover, Simasiku Muyatwa provided insights into the Kanaan Desert Retreat section, Strydom Milho compiled the Neuras Wine and Wildlife Estate section, and Stephen Croucamp led initiatives within the Coastal project. Together, these individuals have collectively contributed to advancing the mission of wildlife conservation and research at N/a'an ku sê, highlighting the dedication and collaboration within the team towards the protecting wildlife and conserve landscapes.

2.Research project updates and highlights

This section provides updates on the ongoing research projects. A comprehensive overview of each project can be found in Chapter 8. Additionally, each research site will highlight notable achievements and developments from the last quarter (16th June to 15th September), the latest occurrences and advancements from all sites are detailed in this chapter for reference.

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2.1 N/a'an ku sê Sanctuary and Zannier Reserve

Introduction of Moses Baka as Rotational Research Coordinator

We are pleased to announce the newest addition to our research team, Moses Baka, who has recently assumed the role of "Rotational Research Coordinator" (Figure 1). Moses has been with the organization for approximately eight years, beginning his journey as an animal handler before advancing to the position of Wildlife Coordinator. His unwavering commitment to learning all aspects of wildlife, vegetation, and conservation has allowed him to excel and secure this new role. The team is eager to benefit from the wealth of knowledge and experience that Moses brings to the table.

Figure 1: Moses

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Collaborative Pilot Study with NCSU: Evaluating Drone and Ground-Based Wildlife Counting Methods

Figure 2 & 3: The game count ground team (left). Launch of believer drone for game count (right).

The research team is collaborating with a student group from North Carolina State University (NCSU) to integrate drone technology into wildlife counting methods. In the pilot study, a simultaneous game count was conducted on the wildlife sanctuary, with a drone surveying from the air (Figure 2) while a ground team carried out the count from a vehicle (Figure 3). The objective of the study was to compare the results from both methods(Figure 4 & 5) and assess their accuracy to determine which game counting technique is most suitable for this landscape.

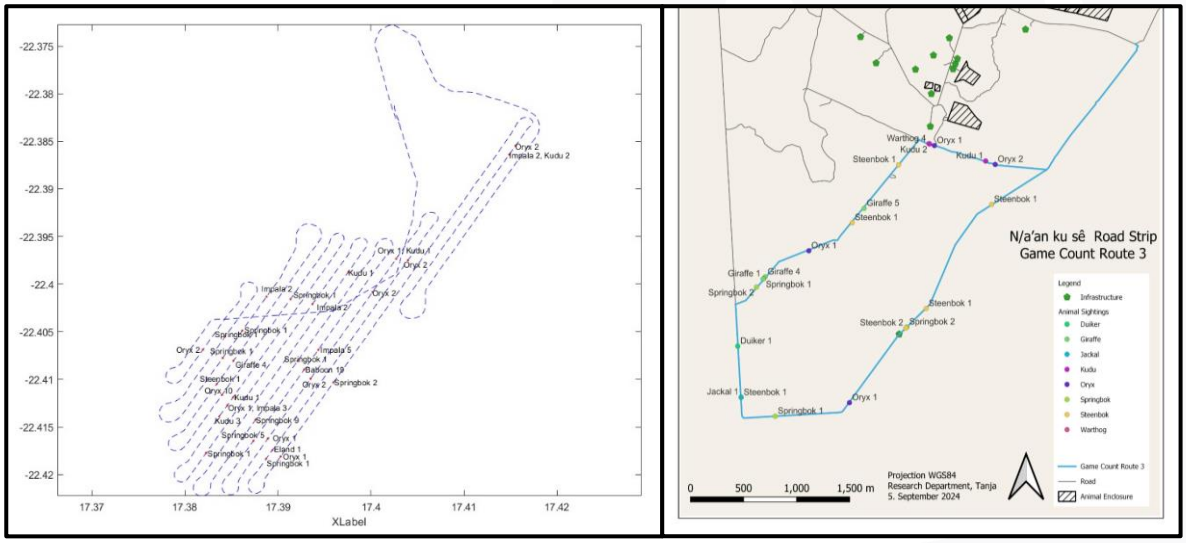

Figure 4 & 5: Drone transect and sightings for game count (left). Route and sightings of the road strip game count (right).

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Developing Reliable Techniques for Capturing and Collaring Cheetah in the Zannier Reserve, N/a'an ku sê

Introduction

Cheetah (*Acinonyx jubatus*) are large felids known for their speed and distinctive spotted coats. They inhabit various African savannas and some parts of Iran. Cheetah use marking trees (Figure 6, 7 & 8), often referred to as a "cheetah scent-marking trees" or "cheetah posts", as a specific tree or post that cheetah use to mark their territory and communicate (Kusler et al., 2019; Cornhill & Kerley, 2020a). These trees play a crucial role in the social and territorial behaviour of cheetahs. Male cheetahs use marking trees to establish and communicate their territory to other cheetahs (Cornhill & Kerley, 2020a). They spray urine, which contains pheromones and other chemical markers, onto the tree (Mosotti, 2004). This scent marking helps to delineate boundaries and reduce conflicts between rival males (Melzheimer et al., 2018). The markings left on these trees convey information about the cheetah's identity, reproductive status, and health (Cornhill & Kerley, 2020a). Other cheetahs who encounter the markings can interpret this information, which influences their behaviour and movements. Marking trees are usually located in prominent and strategic locations within a cheetah's territory and visited often but irregularly (Caro 1994; Kusler et al., 2019). These spots are visited by cheetahs for re-marking and checking on the status of other cheetahs in the area. While marking trees are primarily associated with male cheetahs, female cheetahs may also use these trees for scent marking, though less frequently (Cornhill & Kerley, 2020a).

Figure 6, 7 & 8: Example of a known cheetah marking tree. These images show examples of hair left on the bark, claw marks on the tree, along with dark spots towards the base of tree indicating urine/ secretion marking.

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These trees are important for the ecological dynamics of cheetah populations. By understanding and identifying these trees, researchers can gather valuable data on cheetah territories, movements, and social structures. Overall, cheetah marking trees are vital to the communication and territorial behaviour of cheetahs, facilitating their ability to navigate and thrive in their natural habitats.

Cheetah marking trees have also been used as reliable places to capture cheetahs (Nghikembua et al., 2016; Melzheimer et al., 2018; (Melzheimer J, 2018). We aim to identify one or more cheetah marking trees for the purposes of capturing and attaching a GPS collar to a cheetah in the Zannier reserve by N/a'an ku sê (hereafter Zannier reserve) to monitor its range and health, as well as tracking it for tourism purposes. The new gained knowledge of how to identify cheetah marking trees and how to capture cheetah can be used for human-wildlife conflict cases that involve cheetah.

Aim: To develop reliable techniques for capturing cheetahs at scent-marking trees.

Objectives:

- Develop a reliable methodology for identifying cheetah marking trees.
- Capture and fit a GPS collar on a cheetah.

Significance of the study

The study contributes to the literature on how to develop reliable techniques for capturing cheetahs. Reliable capture techniques are crucial for monitoring cheetah populations. This includes tracking their numbers, health status, and genetic diversity, which are essential for conservation efforts. Capturing cheetahs allows researchers to fit them with GPS collars, VHF radio collars, and/or accelerometers facilitating the study of their movements, hunting patterns, territory ranges, and social structures. In areas where cheetahs come into conflict with human activities, capturing and release with collar as well as relocating conflict cheetah can help reduce tensions and prevent retaliatory killings. In addition, we will be testing the dog's ability to detect and follow scent trails of cheetah urine.

Materials and Methods

A collaborative effort between the research team, volunteers and K9 anti-poaching unit of N/a'an ku sê utilized QGIS and QField to locate and follow various transects within the Zannier Reserve to efficiently locate cheetah marking trees. QField is an application that allows the user to track their movements and update QGIS maps once back from the field. This is useful for ensuring efficient coverage of an area for

the dog handler. A cell phone equipped with QField was given to the dog handler and tracking is enabled once they reach the beginning of the transect. Transects ranged from 620m to 1750m long by 50m wide dependent on the location of each transect. 1-2 camera traps (Spartan Lumen Dual Flash Scouting Camera Model: SR3-CX) was placed at known marking trees to learn the behaviour, frequency, and timing of the cheetah visits so we can determine which trees are the best candidates for box traps.

Study design

We deployed a systematic sampling approach where transects were placed across areas of interest in the study area. K9's trained on how to detect cheetah urine were used to locate cheetah marking trees. Teams of at least 1 K9 and handler, 1 researcher, and a group of volunteers walked along transects that are based on the areas of interest. Transects location were chosen dependent on cheetah sightings, tracks, accessibility, and camera trap photos. One preliminary transect was made along the Northwest border of the Zannier reserve to test the detection skills of the dog. To test the dog's detection ability, we placed cheetah urine and scat samples at varying distances (5-50 m) from random points on the preliminary transect. Each point on the transect was at least 50 m apart from one another. Urine samples were pieces of bark coated in urine collected from scent-marked trees in cheetah enclosures at N/a'an ku sê (Figure 1-3).

Furthermore, 90 transects (Figure 9) were created along roadsides, within drainages and alongside edge habitat to increase the likelihood of locating marking trees. This allows us multiple options depending on the location of lions (*Panthera leo*) within the reserve to avoid conflict with the dogs. The transects include either 1 or 2 adjacent transects with dimensions of 620-1750m x 50m. The dog detection team will follow the predetermined transects using QField (a GPS tracking and mapping app) to ensure proper navigation through the bush. For each scent-marked tree and pre-placed urine sample, we will note the transects we run, date, time of day, temperature, humidity, wind speed and direction, tree species, height and circumference, habitat (open, semi-open, encroached), presence of cheetah sign, other animal sign, and the coordinates of the marked tree.

When a dog signals that they have detected cheetah sign, the researcher marked the coordinates, and the team followed the scent trail. If the trail ends at a tree/scent post, the site was investigated for other cheetah sign (scat, dark spots on base of tree, hair, spoor etc.) to determine if it is in fact a cheetah marking site. Coordinates of successfully identified marking trees are noted down. If multiple marking trees are identified during the K9 searches, we determined which sites are the best candidates for

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placing a capture cage by installing camera traps at the site to monitor the frequency that the cheetahs use the tree and to note their behaviour. Capture cages **(**235 cm x 100 cm x 87 cm) with a trigger plate in the centre will be used to capture a cheetah at marking trees without the use of scent attractants or bait. The use of live bait is an arguably unethical practice so we will use a boma to surround the marking tree(s) which will funnel the cheetah into a two-door capture cage, eliminating the need for any lures/bait. Once the capture cage has been deployed in the field, the research team will check the trap at least twice a day, once in the morning and again in the late afternoon to ensure that the animal caught is not trapped for an excessive period of time. Finally, in the event of a successful capture, the cheetah will be sedated, collared and released at the capture site.

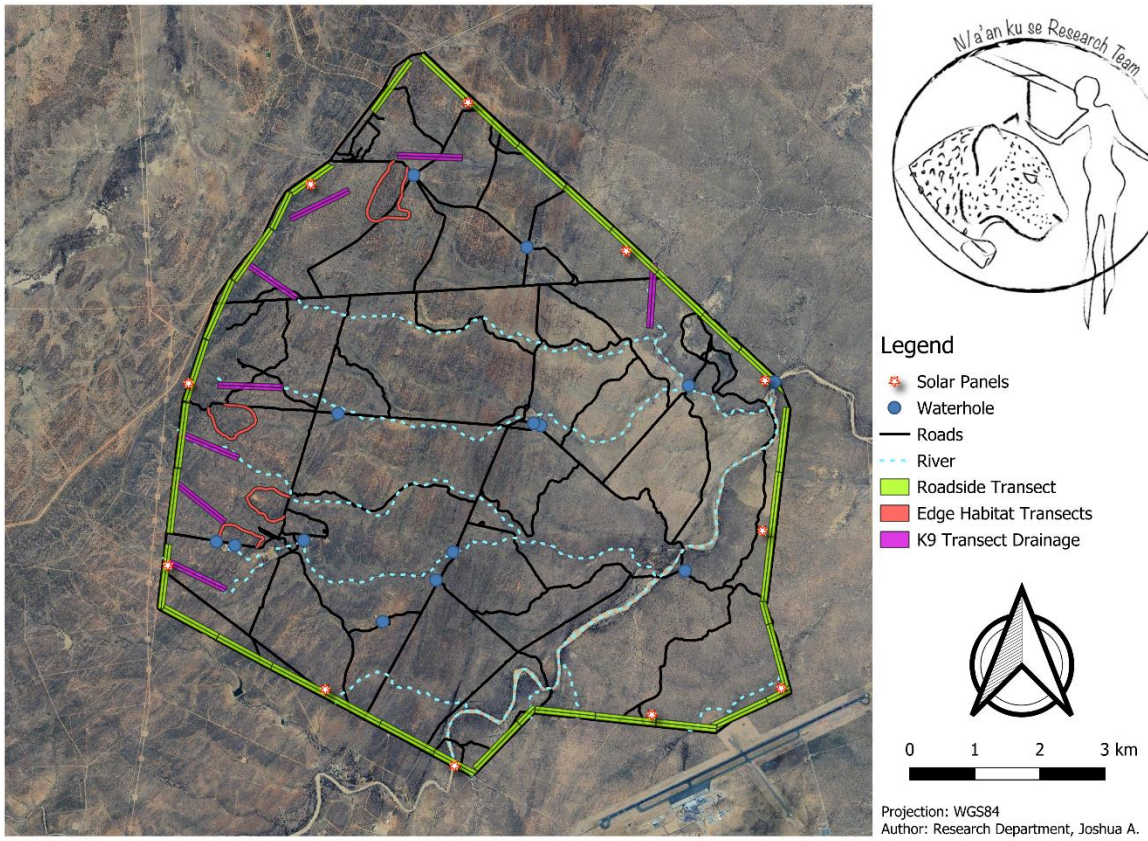

Figure 9: Overview of transects that will be run with detection dogs to find scent-marking trees along the roads, through drainages, and around edge habitat of Zannier reserve. Transects can be selected and changed based on the weather conditions and presence of lions.

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Results and Discussions

A total of 90 transects were established for the search, with 34 of these having been surveyed. From these efforts, seven (7) cheetah marking trees, and one (1) marking rock were identified. Most of the cheetah marking trees were located along the road in the western section of the reserve, with only one found in the northern section. Two of these trees were identified opportunistically by the research team through observations of cheetah signs, such as urine and scat, around the trees. In our study we observed that the shepherd tree (*Boscia albitrunca*) was the most frequently marked plant species by the two cheetah brothers.

Transects on the western side of the Zannier Reserve were surveyed by handler Zulu and Emmanuel, using K9s Mufasa, Nala, and Trigger. Each transect took approximately 26 minutes to complete. In contrast, only two roadside transects were conducted on the Northwest Road with handler Petrus and K9 Angel, marking their first collaboration with the research team (Figure 10). The first transect took 42 minutes and the second 22 minutes, likely due to the distinct work style of this handler and K9 pair. Angel exhibited more thoroughness compared to the other K9s, alternating between ground scent tracking and lifting her nose to detect scents carried by the wind.

We've also noticed that every K9 deployed in the field has its own strengths and weaknesses. Some dogs, like Trigger, prefer working at a fast pace, while others, like Angel, take their time. This is influenced by both their training and individual personalities. It's crucial to use a K9 with a keen sense of smell and strong focus while on the lead, and it's preferable for each dog to be handled primarily by one handler. These dogs and their handlers are mainly trained to search for human signs. Conducting searches early in the morning was important to minimize time spent in the heat.

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Figure 10: shows handler Petrus and K9 Angel near an identified cheetah marking tree in action.

Two bomas were constructed using black thorn acacia (*Acacia mellifera*) around two confirmed cheetah marking trees, one near the western road and the other about 30 meters off the northeastern roadside. The bomas, ranging from 4 to 7 meter in diameter, were designed with a gap for placing a capture cage with a trigger plate (Figure 11). These were constructed to direct cheetahs toward the traps when they visit the marking trees. The traps were installed the next day, and additional thorns were used to fill any gaps. For now, the traps remain open with the trigger safety on to monitor cheetah behaviour and see if the boma construction impacts their movement patterns.

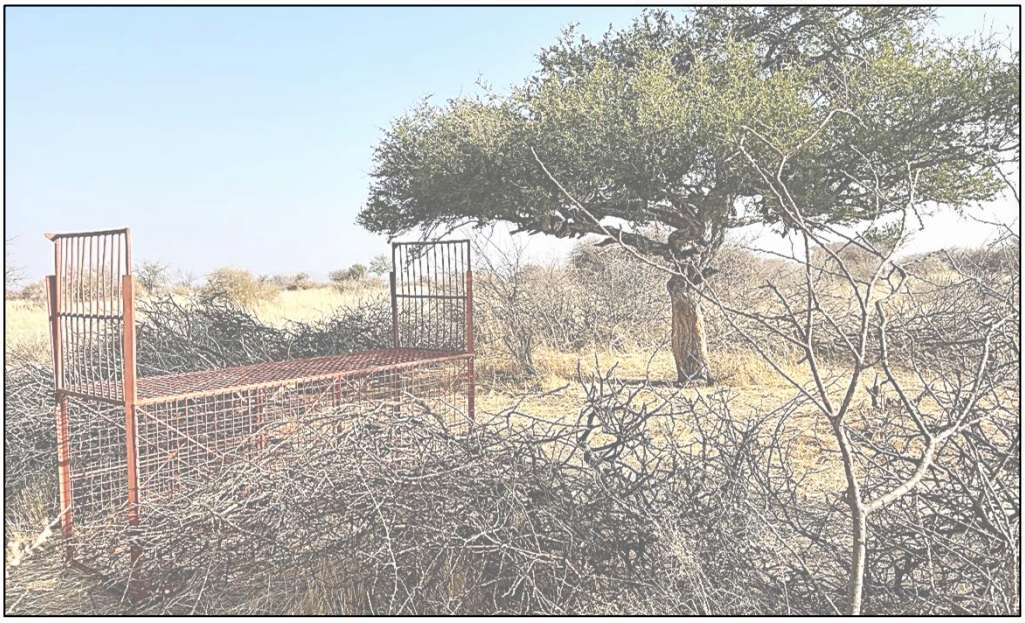

Figure 11: shows a boma and a cage trap constructed on our cheetah marking tree in the north section of the reserve.

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Update on the baboon rehabilitation and release project

In the past three months at Naankuse, the research team has been working on the processes of the welfare translocation of chacma baboons from captivity into the wild. Due to the high intelligence, dexterity and overprotective behaviours of chacma baboons toward troop members, the research team has thoroughly gathered information to design a capturing method with minimal risks.

The capturing of baboon troops is necessary throughout the research process, starting from the translocation of the selected troop from the captive baboon camp to an isolated rehabilitation camp for monitoring where the behavioural observation and troop formation will begin and then the translocation of the suitable cohesive troop to the release location for soft-release monitoring.

Cage and net traps are the most popular methods to capture non-human primates mainly in the wild. However, applying these methods to capture selective baboons poses a high risk to people during trap setting and when removing the captured baboons by getting counter-attacked by the other troop members and causing stress on the baboons. We planned to design a proficient capturing camp for the baboon by constructing a small enclosure measuring 40 metres long and 10 metres wide attached to the main enclosure.

The capturing camp will have entrances to allow baboons to access the camp for habituation until the time we decide on capturing them by immobilising them and conducting health checks before transporting the individuals selected for release to the rehabilitation camp.

The groundbreaking to construct the three camps namely the capturing camp, an isolated rehabilitation camp and the soft-release camp at the release location has not yet started therefore the capturing and translocation will be implemented upon the completion of the camps.

2.2 TimBila

Habitat Sampling

The research team has **completed 16** habitat sampling plots, from 16 June 2023 to 15 September 2024. Our primary focus is on long-term elephant plots to assess their impact on the habitat. We are currently selecting new high-frequency plots for annual checkups to monitor habitat changes and damage over time.

Volunteers are a tremendous help with habitat sampling. While it can take several hours for one person to complete a plot, a larger group can finish the task quicker (Figure12).

Figure 12 Habitat Sampling.

2.3 Harnas

Bird survey

The Harnas Wildlife Foundation is home to a diverse range of bird species, providing an optimal location for birdwatching and research. This report presents the findings from a recent bird survey conducted on

the Harnas farm, highlighting the species identified. The survey was conducted over several weeks, with volunteers assisting in identifying and recording bird species. While a portion of the data were gathered through direct observation, the use of volunteer cameras with appropriate lenses was instrumental in capturing detailed photographic records of the species observed.

Table 1: Bird species identified at Harnas.

Common name (s)	Scientific name(s)
African Grey Hornbill	*Crinifer concolor*
African white backed vulture	*Gyps africanus*
Black eyed bulbul	*Pycnonotus nigricans*
Cape turtle dove	*Streptopelia capicola*
Coral billed ground cuckoo	*Coracias caudatus*
Fiscal flycatcher	*Laniarius atrococcineus*
Fork tailed drongo	*Dicrurus adsimilis*
Helmeted guineafowl	*Numida meleagris*
Masked weaver	*Ploceus velatus*
Yellow billed hornbill	*Tockus leunelas*

2.4 Neuras

The winter months are over even though the cold has stayed for a bit longer than anticipated. Our camera traps are going strong, and game sightings and numbers are increasing. Animals on Neuras do not look hungry due the Naukluft mountains acting as a pantry for them where they can find a good supply of food. Even though Neuras does not have any food for the game the game numbers are increasing with game counts yielding more and more game. This might be a good sign for a good rainy season to come.

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2.5 Kanaan

Figure 13: Installation of braided wire.

We have had some busy months working with the volunteers, as usual. We proceeded with the fence material collection, as there is still some more fence material to be taken down and collected (Figure 13). It is essential that outdated fences be taken down and gathered to allow animals to enter and exit Kanaan without restriction. In doing so, we are increasing wild spaces and reestablishing habitat connectivity, giving the species that call Kanaan home hope for their long-term survival. Wildlife deaths can be directly caused by fencing when animals run into it or become entangled in it. Fences have a detrimental effect on a species' long-term survival by isolating populations, raising the possibility of inbreeding and lowering genetic diversity. According to recent studies on populations of wildebeests ranging from Kenya to South Africa, the DNA of those that were still able to migrate differed and was in better health than that of their cousins who were unable to move. In South Africa's Addo National Park, elephants have lost their tusks over multiple generations due to inbreeding, which is another genetic effect of isolated populations created by fencing. This increased movement of wildlife helps to maintain healthy ecosystems by allowing species to access diverse habitats, find mates, and minimize overgrazing in specific areas. The removal of fences will also help to reestablish natural predator-prey dynamics, allowing both predators and prey to act more organically. Connecting previously scattered areas expands the reserve and provides numerous benefits for biodiversity. It gives species broader, more diverse habitats, which is critical for their survival in the face of climate change and other environmental threats. By reducing internal barriers,

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we are building a more resilient ecosystem capable of overcoming the difficulties of a changing world.

Whilst we are removing the old fence materials, the braiding and installation of wire around Kanaan boundaries is also continuing. To stop locals and tourists from driving in and out of the reserve, at the same time to allow animals to move in and out freely and without getting entangled in the fence. We carried out our weekly routine, which consists of two treks to educate our volunteers about the area, the plants and animal species that we have in the area, this is just what we call educational hiking's. Two game counts (North and South of the reserve), a game count, often known as a census, helps identify trends in animal population density, farm stocking rate, and veld condition. By doing game counts, you collect crucial information on the number of animals in different species, the spatial distribution of game species on a farm or reserve. Trends in game numbers (some species may be thriving while herd numbers of other species may be dropping - due to environmental conditions, etc.), habitat health, particularly identifying problem spots. Data sorting from camera traps, camera traps can yield insightful data regarding the variety, habits, and preferred habitats of animals. This not only helps us make better judgments about how to protect wildlife, but it also gives us an understanding of how humans affect it. Recognizing species diversity can uncover new or endangered species in the area and aid conservationists in their assessment of the health of the ecosystem.

A few weeks ago, and earlier this month we also cleaned and did some maintenance work on our waterholes with the help of volunteers to provide very much needed water for the animals. Due to draught, it is very dry in the reserve, animals depend on the water supply that we provide them, so it is very crucial to properly maintain these waterholes (Figure 14). They also

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Figure 14: Volunteers cleaning and doing some maintenance work at Puffadder dam.

performed some basic maintenance including burying waterpipes which had raised above the surface caused by hyenas that dig up the water pipes and biting on them causing massive repairs and it is expensive in terms of money because every now and then water pipes must be bought. A few recreational activities are also included in the program as sleepouts, sandboarding, sunrise breakfast with an amazing sight of nocturnal animals, sundowners, cocktail nights, hikes and horseback riding. The Volunteers are actively encouraged to take part in the conservation activities and learn about the Namibian nature and wildlife.

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2.6 Coast

From June 16th to September 15th, 2024, our team, alongside 8 volunteer groups, collected a total of 1,6499 kg of waste. The average weekly collection during this 8-week period was 206 kg. Over the span of 60 weeks with volunteer involvement, we have accumulated a total of 19,483 kg of waste, averaging 330 kg per week (Figure 15).

Figure 15: Collected waste from the beach.

Several challenges were encountered during the collection period, including adverse east winds, limiting cleanup efforts to shorter sessions. Additionally, some volunteers participated in shorter stays. A severe ocean storm pushed water inland, complicating cleanup efforts as smaller debris became more prevalent and larger items were more deeply buried, making them difficult to locate.

As we approach Swakopmund, we are encountering increasing amounts of fishing line left behind by fishermen. The largest contributor to the collected waste remains broken glass.

Currently, our progress is slower, covering distances between 500 m and 900 m per week. Recently, we experienced a quiet week with minimal trash collection, primarily consisting of plastic waste. Our highest weekly collection was during the New Year, amounting to 515 kg.

Table 2: Amount of waste collection during the past three month.

Month	Week	Amount (Kg)	Total (Kg)
June	53	123	303
	54	180	
July	55	159	536
	56	104	
	57	273	

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August	58	144	144
September	59	151	666
	60	515	
Grand Total			**1649**

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3. HUMAN - CARNIVORE CONFLICT - Rapid Response Unit (RRU)

Human Wildlife Conflict (HWC) is one of the biggest conservation threats to large carnivore populations in Namibia. With more than 40% of land use in Namibia dedicated to privately owned commercial farms, human-carnivore conflict is not only likely, but inevitable. Carnivores are widely persecuted by landowners who believe they are predating on livestock. N/a'an ku sê started its Rapid Response Unit (RRU) in 2008 to mitigate human-carnivore conflict and conserve large carnivore populations in Namibia.

The RRU works with farmers across Namibia to offer practical, effective, and affordable solutions to mitigate human-carnivore conflict and help farmers to co-exist with carnivores on their land. Advise to farmers on livestock protection strategies, education on large carnivore behaviour and ecology and, where necessary, fit GPS collars on suspected livestock killers.

Since 2008 the collaring method has proven to be the most effective method to mitigate conflict; daily updates to participating landowners and jointly determine whether the animal is predating on livestock. In 90% of the cases the GPS data has proven that the collared individual is in fact not a conflict animal, which in turn leads to increases in tolerance of free-roaming carnivores, reductions of indiscriminate persecutions, and creates more safe space for carnivores in Namibia. Wherever possible our aim is to release any captured carnivore immediately back into its home range. The RRU team has worked with more than 1,300 local people that are effected by HWC.

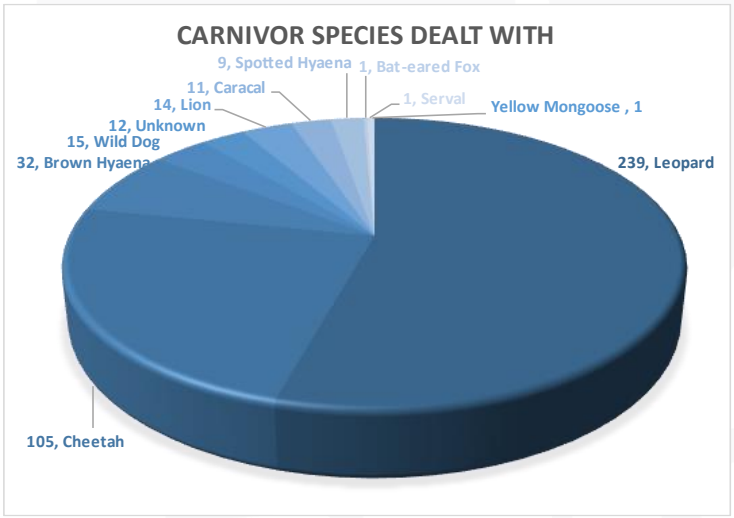

Figure 16: Chart indicating the species involved in the RRU

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A total of 440 RRU consultations were conducted between May 2008 and September 2024. Out of these calls, 239 were specifically related to leopards, accounting for 54% of the total. Additionally, 105 calls (24%) pertained to cheetahs, while 32 calls (7%) were specifically about brown hyenas. There were 15 calls connected to wild dogs (3%) and 14 instances related to lions (3%). Caracals were the subject of 11 cases (3%), while spotted hyenas had 9 cases (2%). In 12 cases, the animal involved could not be identified and is noted as 'unknown' (3%) (Figure 16).

Of the 440 calls, 189 calls were from farmers requesting assistance and advice (43%). Calls from farmers who had captured a carnivore and were requesting either advice or direct intervention by the RRU constituted 238 calls (54%), while a further 14 calls (3%) were regarding animal rescues (Figure 17). A total of 316 calls (72%) were from farmers contacting us for the first time, while 125 calls (28%) came from individuals with whom we had previously worked (Figure 18).

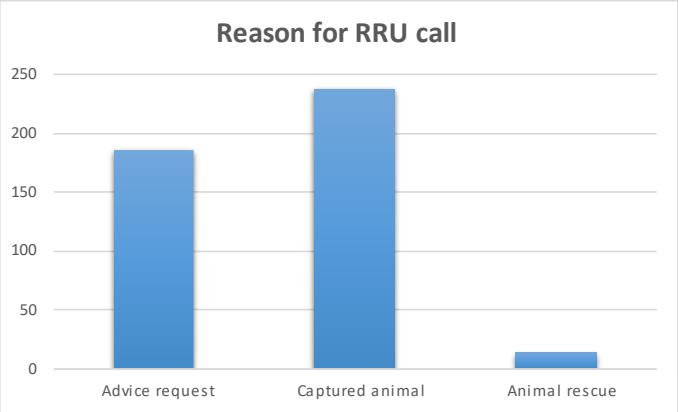

Figure 17: Chart showing the reason for each call.

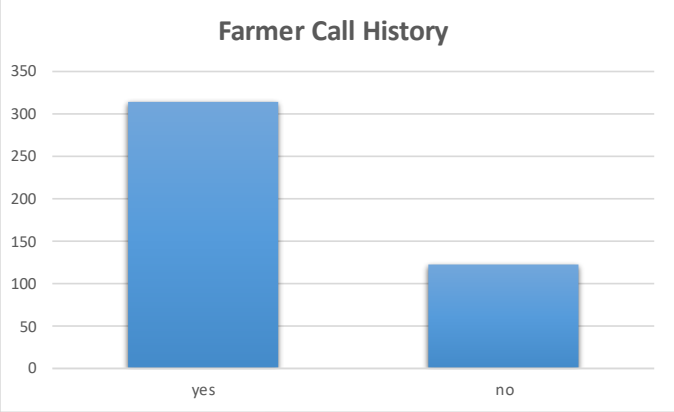

Figure 18: Graph depicting the number of first-time vs repeat callers.

The results of these calls include the release of 106 large carnivores (24%) on site. Out of these, 39 carnivores were released on site without collars (9%), while 67 (15%) were fitted with GPS tracking collars for intensive monitoring. The coordinates of these collared individuals were shared with the respective affected landowner(s) (Figure 14).

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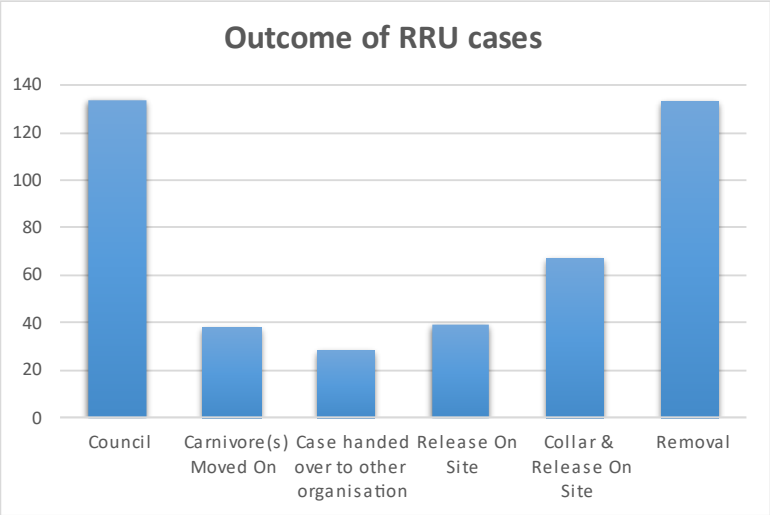

Figure 19: Chart indicating the outcomes of the RRU cases.

Hundred and thrity four of the cases requested only counseling (30%), while 38 cases reported that the presence of the carnivore no longer appeared in the area during a follow-up contact (9%) (Figure 19). Twentyeight cases were handed over to the Ministyr of Environment, Forestry and Tourism (MEFT) or other nature conservation organisation (6%), and 133 cases resulted in the removal of the large carnivore from the territory (30%).

During one RRU case, the farmer received support through multiple methods (Figure 16). Over the past 15 years, the RRU provided advice to affected locals 283 times, which accounted for 68% of the total calls (Figure 20). Since 2018 camera traps were set up on the farm on 19 occasions (5%), and thorn bush bomas were constructed on nine farms (2%). The team successfully released 103 large carnivores back onto the farm where they were captured (25%), with 67 of them being collared (16%).

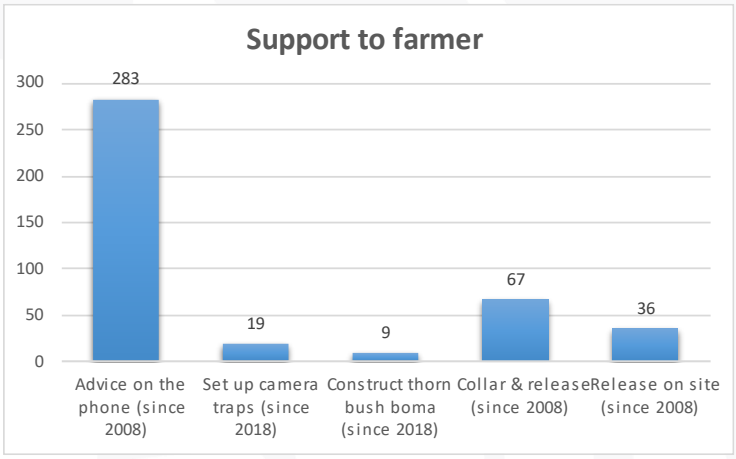

Figure 20: Support given to farmers.

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3.1 N/a'an ku sê HWC Management and Mitigation

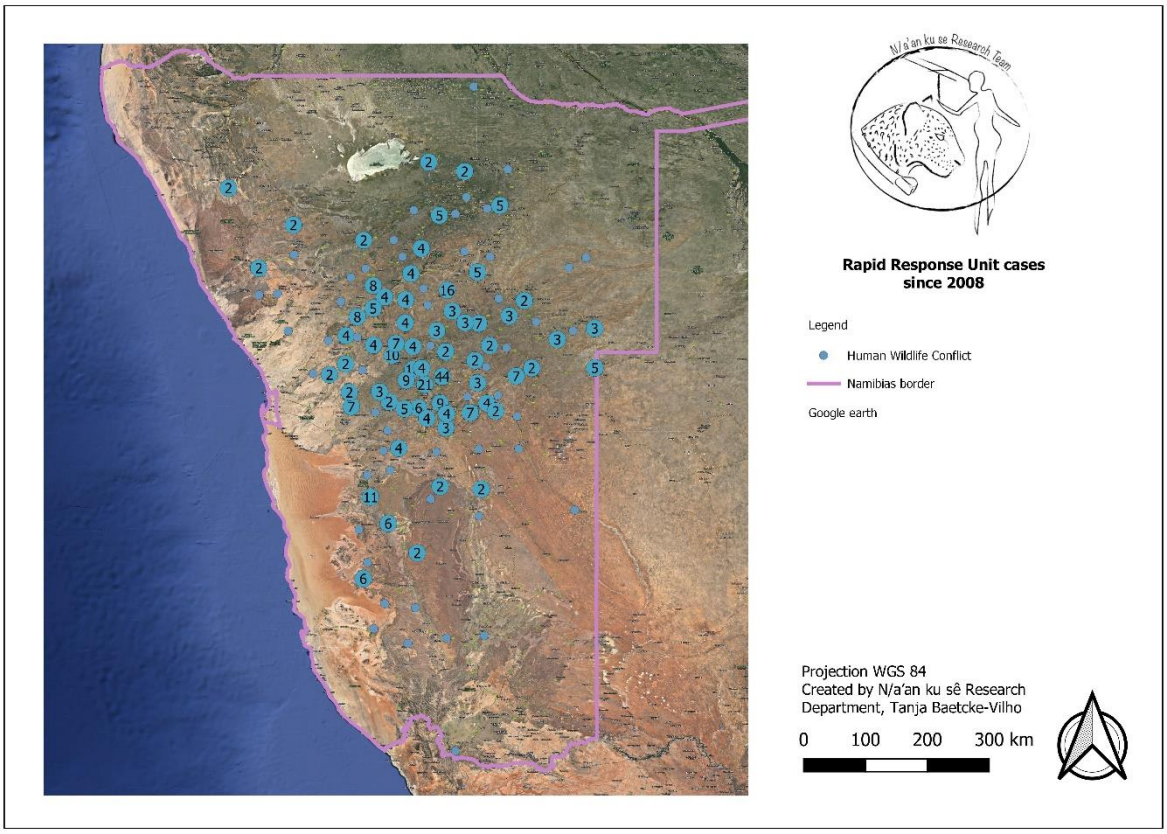

Figure 21: Map shows the conflict calls that the N/a'an ku sê RRU team received from 2008 until 2023.

The research team at N/a'an ku sê monitors several GPS collared predators on commercial farmland around Namibia (Figure 21). The data received from these GPS satellite tracking collars provide an accurate update daily on the animals' movements. This information is emailed to the landowner on whose property the animals were caught and collared, as well as to affected and interested neighbours. This allows farmers to know exactly where these large predators are and manage their livestock appropriately. Multiple species on different farmland throughout the country are monitored, most of which are listed as ***Vulnerable*** or ***Endangered*** by the International Union for Conservation of Nature (IUCN).

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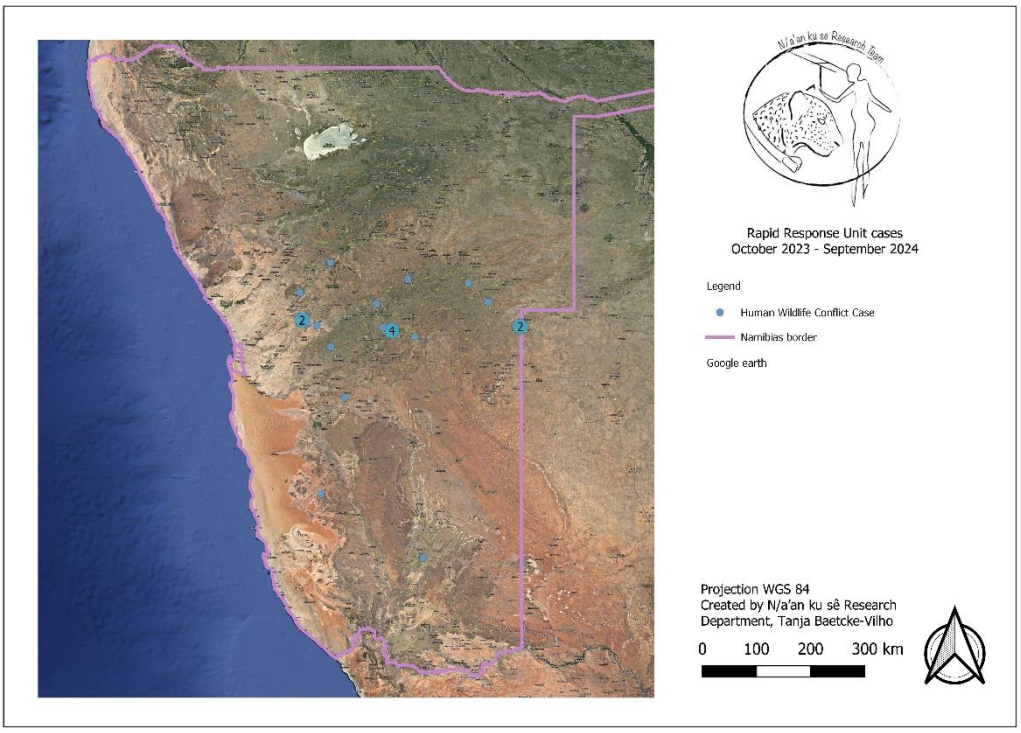

Figure 22: Map showing the locations in Namibia from where we received the highest number of conflict calls between October 2023 and September 2024. Each blue dot represents a call, and the clustering of calls is indicated by the number within the circle.

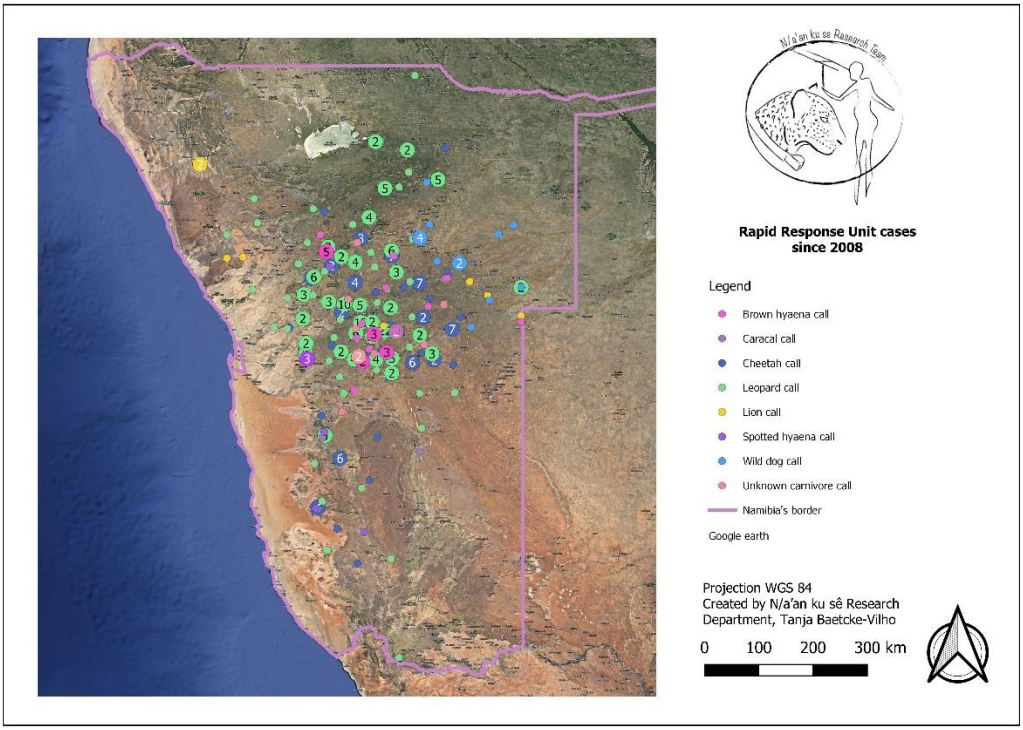

Figure 23: Map showing the locations in Namibia from where we received calls, classified by the suspected carnivore species.

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3.2 HWC Rapid Response Unit (RRU) Cases during the fourth quarter of 2023

During the past 3 month, between 16th of June and 15th of September, the Rapid Response Unit (RRU) received 9 carnivore conflict calls.

Case 1: Advisory on Leopard Predation Incident Involving a Calf

The sister of a farm owner contacted the rapid response unit to seek support in resolving a human-wildlife conflict. Her objective was to prevent the lethal removal of a leopard from her sister's farm. We proposed two potential interventions: fitting a GPS collar on the leopard to monitor its movements and determine if it is a habitual livestock predator and translocating the leopard if it is confirmed to be responsible for livestock predation.

The farmer reported finding a dead calf along with the footprints of a leopard and her cub nearby, suggesting repeated visits to the carcass. Despite the initial communication and our offers of assistance, the farmer did not follow up as promised.

Case 2: Rescue, Rehabilitation, and Release: A Case Study of a Female Banded Mongoose

In July, a female banded mongoose was brought to the N/a'an ku sê Foundation Wildlife Sanctuary after being rescued by farm owners. Initially, the mongoose was kept on the farm, but due to predation on small piglets, she was considered problematic. At the sanctuary, she was introduced to a young male mongoose, and the two formed a strong bond. Their release is planned following the onset of the first rains.

Case 3: Support for a Leopard-Human Conflict Near Karibib

A farmer near the town of Karibib reported a leopard in July, responsible for the predation of a cow, a calf, and the farm dog, which was found dragged into a tree. The farmer requested the animal's translocation, and the RRU is currently managing the case and waiting for feedback from the farmer.

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Case 4: Brown Hyena Misattribution: Successful Release Following RRU Intervention Near Karibib

A farmer near Karibib contacted the Rapid Response Unit (RRU) after capturing a brown hyena in a cage on the property, suspecting the animal to be responsible for recent losses of waterbuck and impala calves. Upon assessment, the hyena was identified as a female with cubs. The RRU informed the farmer that brown hyenas are primarily scavengers, not active hunters, suggesting that the animal may have been misattributed to the predation. Following the RRU's advice, the farmer released the hyena back onto the property.

Case 5: Mitigating Leopard Predation through GPS Collar Deployment: A Collaborative Approach to Cattle Management in Drought Conditions

The Rapid Response Unit (RRU) team was contacted by a farmer experiencing predation issues with leopards on his farm, located 130 km northwest of Windhoek. The farmer discovered both his herding dog, and several calves dragged up into a tree, evidently preyed upon by a leopard. Historically, he has kept his pregnant cows close to the homestead as a deterrent against leopard attacks. However, due to depleted grass resources in the vicinity of the homestead, he has been forced to move his cattle closer to rocky outcrops, which are recognized as prime leopard habitat. The ongoing drought and scarcity of grazing options have further necessitated nighttime grazing, which inherently increases the risk of leopard predation. In response, we have proposed deploying a GPS collar on the leopard present on the property, enabling the farmer to monitor its movements and adjust his cattle management strategies accordingly. We are collaborating closely with him on this mitigation effort.

Case 6: Translocation and Release of a Captured Male Caracal: A Strategic Approach to Wildlife Management

The RRU was approached by a plot owner, that manages a herd of approximately 50 goats, which are monitored daily by a herder. Despite the herder's presence, a group of caracals — consisting of an adult male, an adult female, and three juveniles—was observed attacking four goats. The male caracal was subsequently captured, and we were requested to assist with its translocation. Considering the current caracal density on the Zannier Reserve, we considered it appropriate to release the animal.

The release site was carefully selected by the RRU team based on key ecological factors, including the availability of water, high prey density, sufficient shelter, and low levels of conspecific competition. Throughout the translocation process, the caracal exhibited signs of fear without displaying aggression and fled upon release from the capture cage into the habitat upon release.

Case 7: Misidentified Predator Tracks: Resolving Farmer Concerns Through Remote Assessment

A neighbouring farmer contacted us with concerns about the presence of a lion on their property, as farm workers had observed large carnivore tracks. The fear of encountering a lion made them hesitant to tend to their cattle in the field. Upon reviewing photos of the tracks sent via WhatsApp, we were able to confirm that they belonged to a leopard, not a lion. Reassured by this clarification, the farm workers resumed their activities in the field without further concern.

Case 8: Subadult Oryx Rescued from Wire Entanglement

During a routine game count on Thursday, September 12, 2024, we discovered a subadult oryx pulling a coil of wire that weighed around three kilograms (Figure 24). It appears from the severity of the injury that it has been dragging the coil of wire for a few weeks. We brought the oryx to the Farmhouse for observation and care, when it is well and able to walk normally, we will put it back in its native environment. This instance highlights the significance of the fence material collection work that we are currently undertaking with the volunteers.

Figure 24: The rescued oryx.

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Case 9: Rescue of a Disoriented Bank Cormorant

On September the 11th, 2024, we saved a bird, it appeared to be a Bank cormorant (*Phalacrocorax neglectus*) that had fallen onto our property due to navigational difficulties, it got drifted inland by strong winds and lost (Figure 25). This incident occurred in the same week that we saved the oryx. Living in and near coastal waters, the Bank cormorant, also called Wahlberg's cormorant, is a medium-sized cormorant that is native to Namibia and the western shore of South Africa. Due to some flying difficulties, we kept it for a few days before sending it to our veterinarian at the sanctuary.

Figure 25: RRU team member holding the bank cormorant.

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4. Plans for the next quarter of the year

In this section, each site outlines their proposed initiatives and plans for implementation in the upcoming quarter.

4.1 N/a'an ku sê Sanctuary and Zannier Reserve

Elephant Tracking

Over the next three months, the research team will continue regular tracking of collared elephants on the Zannier Reserve to gain a deeper understanding of their movement patterns, body condition, musth, habitat preferences, behaviours, mood and activity, direction of movement, sighting duration, weather conditions, and attitude towards observers. These data will be recorded using Earth Ranger.

Cheetah Marking Tree Project

The research team successfully identified cheetah marking trees and has deployed camera traps to monitor activity at these locations. Additionally, two thorn bush bomas, each containing a capture cage, have been constructed to acclimate the cheetahs to the modified environment. The goal is for the cheetahs to enter the cages when the traps are activated. This initiative is designed to gather more comprehensive data on cheetah territorial behaviour.

Camera Trapping Survey

Camera trapping efforts will be intensified by expanding coverage through the installation of new camera traps in previously unmonitored areas. This will broaden the scope and area of observation.

Chacma Baboon Project

The Baboon Project is focused on the rehabilitation and release of captive baboons into their natural habitat. In the coming three months, efforts will concentrate on fundraising to construct two essential rehabilitation enclosures for baboons that have been deemed suitable for release.

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4.2 TimBila

At Osera (Figure 26) (The Volunteer Project), we're developing a self-sustainable garden. Situated 1,500m above sea level on the southern side of Osera Mountain, the area experiences no frost in winter, making it ideal for a wide variety of crops to withstand Namibia's harsh climate. The project includes a 2,000m² fenced camp for fruits and vegetable garden (Figure 27) and a 3,000m² orchard for fruit and vegetable trees (Figure 28). Osera runs entirely on solar power and benefits from a natural spring that supplies clean water. We will use recycled material like old wooden poles/posts and old steel bars from the internal fences that were removed when TimBila was built, to make raised beds for planting crops. We also have a 160 000-litre reservoir where we will start aquaponics for the crops.

Figure 26: Osera.

Figure 27: Osera Garden.

Figure 28: Osera Orchard.

4.3 Harnas

During the past quarter, we conducted line transect game counts to monitor wildlife populations. To enhance the accuracy of game numbers, we plan to implement full moon game surveys starting in early October and continuing through the end of December. Additionally, with the onset of the rainy season, we will initiate a comprehensive vegetation survey to assess the area's ecological conditions.

4.4 Neuras

Neuras will temporarily rely on the closed game viewer, but we are exploring the possibility of borrowing an open viewer from Kanaan to ensure all research activities on the property can continue smoothly.

We are planning to conduct a comprehensive habitat survey at Neuras to systematically investigate the flora and fauna within the area.

4.5 Kanaan

To get started with the research project, "Distribution of small vertebrates and invertebrates on different ecosystems on Kanaan Desert Retreat", to identify and catalogue the diversity of small vertebrates (e.g. small lizards, geckos etc) and invertebrates' species (like insects) present in the area, including their ecological roles. And, to identify the environmental factors (e.g., soil type, vegetation cover etc) that influence the distribution patterns of both small vertebrates and invertebrates at Kanaan. A species list for reptiles and small vertebrate and invertebrate exists already. This project will concentrate on their adaptation, physiology etc. This will be a very educative research report to the community of Kanaan and the guests that we host. The data collection process can be incorporated into volunteer activities.

4.6 Coast

The objective for the next quarter is to increase the weekly coverage to enhance the amount of waste collected. The degree of cleanliness varies across different areas, with some being significantly more polluted than others. In addition to waste collection, we plan to begin systematically recording data on animal sightings and other ecological factors. This data will be collected using the Earth Ranger software during our cleaning activities.

Additionally, we are working to engage corporate partners interested in contributing to beach and environmental conservation. Plastic Packaging has committed to providing reusable bags to help us transition away from single-use plastics. Furthermore, we are looking into instalment of additional waste bins on the beaches. Plastic Packaging will supply the bins, and the N/a'an ku sê Coastal Project will be responsible for their installation. The bins will be branded with the Plastic Packaging and N/a'an ku sê logos as part of our ongoing efforts.

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5. High profile species tracking and monitoring

The high-profile species inhabiting our reserves comprise the African elephant and lion. Regular monitoring of free-ranging individuals occurs via vehicle tracking for food provisions and observational purposes. Selected individuals are equipped with GPS collars to facilitate tracking. Subsequent chapters will present and analyse GPS data collected over the past three months, detailing the movements of these species.

5.1 Zannier Reserve Wildlife Tracking and Monitoring

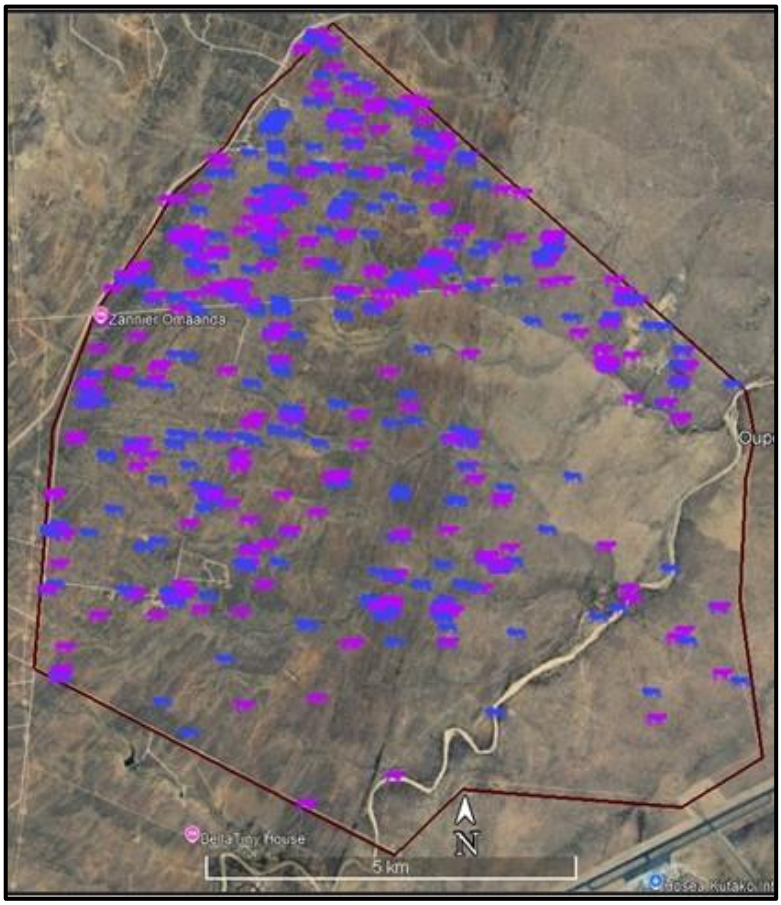

Figure 29: Map showing the movement of the collared lions on Zannier reserve, over the third quarter of the year.

At Zannier, we observe three African elephants and four free-roaming lions. All three elephants are fitted with an Iridium satellite collar incorporating GPS and VHF components. Additionally, two of the lions are outfitted with Iridium satellite collars.

Lion (*Panthera leo*)

No significant changes were observed in the movement patterns of the lions over the past quarter, compared to the first and second quarters of the year. The lions continue to utilize a large proportion of the reserve, and GPS data indicate that their distribution remains uniform throughout the area **Error! Reference source not found.**. Several factors can explain this unchanged movement pattern. The first factor is stable prey distribution. Lions tend to follow the distribution of their prey, and if prey

species are consistently spread across the reserve without significant seasonal migrations, the lions may not need to shift their territories or hunting grounds, resulting in more uniform movement patterns. The second factor is environmental stability. If the environment within the reserve remains relatively stable throughout the year, with no major changes in vegetation, water sources, or climate, the lions are less likely to alter their movements, maintaining a consistent range over time. Finally, the uniform distribution of water sources, shade, and other essential resources across the reserve can lead to predictable lion movement patterns. When survival needs are consistently met, there is little need for the lions to change their movement behaviour.

African Elephants (*Loxodonta Africana*)

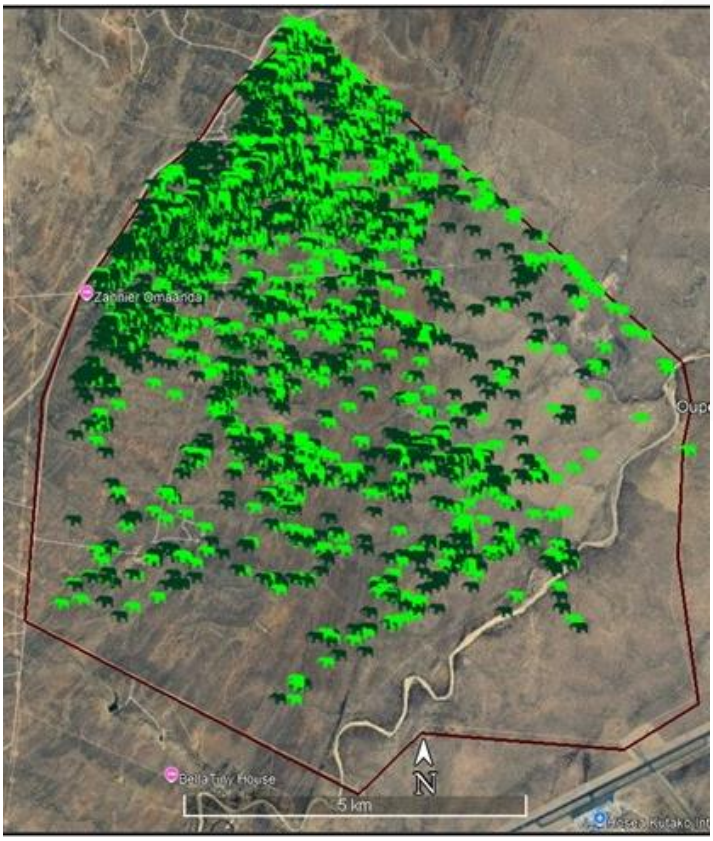

Figure 30: Map showing the movement of the collared elephants on Zannier reserve over the third quarter of the year.

The elephant trio continued to utilize a significant portion of the Zannier Reserve during the third quarter of the year. GPS data revealed that they spent considerable time in the northern section of the reserve, with their movement patterns primarily centralized in that area **Error! Reference source not found.** 30. While they occasionally ventured into the southern section, their GPS data showed a sparse distribution across this part of the reserve. Compared to the second quarter, the elephants' preference shifted from the northeastern section to the northwestern part of the reserve. The northwestern area is characterized by denser vegetation and larger Acacia trees, whereas the northeastern area has smaller bushes and less cover. Given that the third quarter coincides with the winter season, this movement shift

can be attributed to various factors. The primary reason for the shift is likely related to foraging needs. As resources like grasses and small plants become scarce in winter, elephants may move to areas with larger trees, where they can access more nutritious food sources such as bark, leaves, and branches. Additionally, the dense canopy and vegetation in the northwestern area create natural windbreaks, offering better microclimates and providing refuge from the cold and winds typical of winter.

5.2 TimBila Reserve Wildlife Tracking and Monitoring

Lion (*Panthera leo*)

TimBila Reserve is home to three distinct prides which consists of 13 lions. The lioness Sara from Anabeb. The Torra pride is comprised of two males, Thor and Thar, along with a female named Terra and her two cubs. Lastly, the Huab pride includes lions 133 and 135, along with UM and their four cubs born in the beginning of 2023.

We diligently track the movements of the lions across the reserve using GPS points, allowing us to closely monitor their territories and preferred habitats. This thorough observation enables us to gain insights into their behaviour and identify key areas where they frequently reside and roam.

Sara (Figure 31) consistently moves up and down the western fence and frequently hunts at Porcupine Pos and the area south of it.

Figure31:5 Sara.

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The southern region is the home range of the Huab pride (Figure 32), with Thor and Thar frequently patrolling their territory. The pride primarily spends its time at Okazambuka Dam, located in the southeast of the reserve.

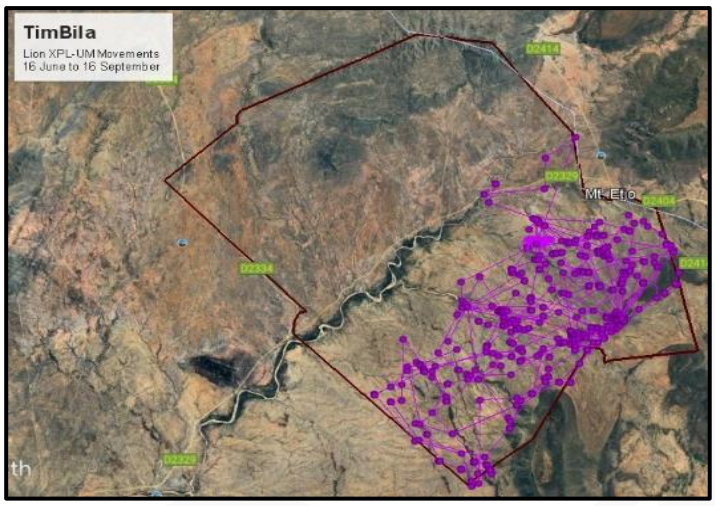

Figure 32: XPL-UM.

Table 3 Kill Sites Found.

Date:	Tribe:	Species:	Area:
17-Jun-24	Huab Pride	Giraffe	South of Eland Pos
28-Jun-24	Sara	Oryx	Northern Border Fence
01-Aug-24	Huab Pride	Oryx	South of Villa Hugel
20-Aug-24	Sara	Unknown	West Border Fence near Solar Dam
29-Aug-24	Sara	Oryx	Porcupine Pos
31-Aug-24	Huab Pride	Warthog	South Border Fence of Farmstead
10-Sep-24	Huab Pride	Unknown	Omaruru River at APU-Barracks

African Elephants (Loxodonta Africana)

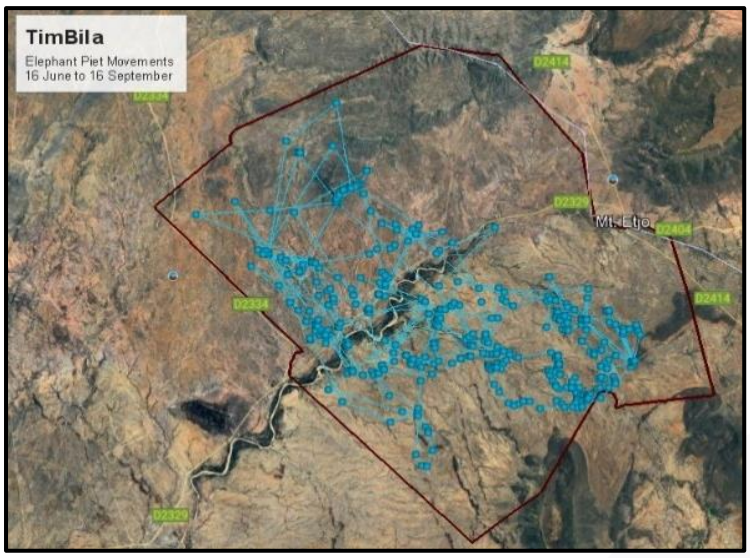

Figure 33: Piet.

Our oldest elephant bull, Piet (Figure 33), has become noticeably more relaxed around vehicles and people compared to the past, largely because we've shown him that we mean no harm and can be trusted. Piet primarily spends his time around Riet Dam and the Central Reserve. While he rarely moves with the herd, he is often accompanied by two other bull elephants when he separates from the group.

5.3 Mangetti Elephant Monitoring

In comparison to the 2nd there was no significant in the movement patterns of NDC1and her herd over the past quarter of the year. They continue to remain and utilize a substantial portion of the Kavango Cattle Ranch (KCR). Her GPS data illustrates that she avoided the Namibia Defence Force (NDF) area (blue), east of the KCR, and the Mangetti West Farms (green), west of the KCR. From 16 June to 15 July (grey), NDC1 and the herd stayed in the south-central section of the KCR, spending a significant amount of time in Blocks 33, 34, and 37. From 16 July to 15 August, (blue) her movements were more centralized in Blocks 37 and 40. Lastly from 16 August to 15 September (green), the GPS data shows that the movement of the herd was more centralized in Blocks 24, 28 and 31 (Figure 34).

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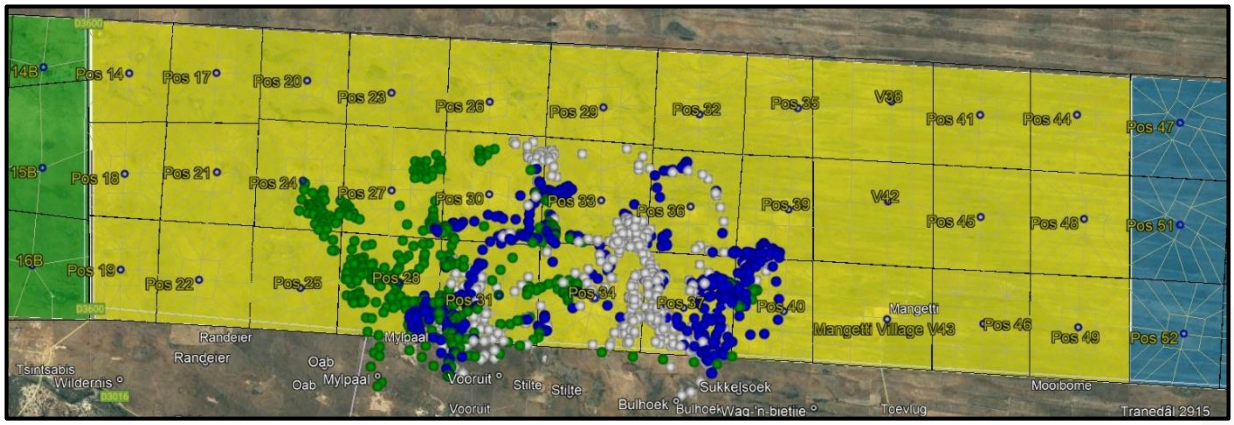

Figure 34:Complete movements of elephant cow NDC1 and her herd (grey – June 16th to July 15th, blue – July 16th to August 15th, green - August 16th to September 15th) in the study area from June 16th, 2024, to September 15th, 2024.

Over the 3rd quarter of the year Individual 4574 only moved within the Namibia Defense Force area (blue). He utilized a large portion of the area, predominantly in the central, east and southeastern sections of the NDF. His GPS data shows that he avoided the Kavango Cattle Farm area west of the NDF and the Mangetti National Park (MNP) (red) east of the NDF. From 16 June to 15 July (grey), his movement he spent a substantial time in the eastern section of the NDF between Blocks 57 and 60. From 16 July to 15 August (blue), his movement patterns shifted south, and he mainly stayed in Blocks 55 and 58. Lastly from 16 August to 15 September (green), he shifted more central with his movement concentrated within Block 54 (Figure 35).

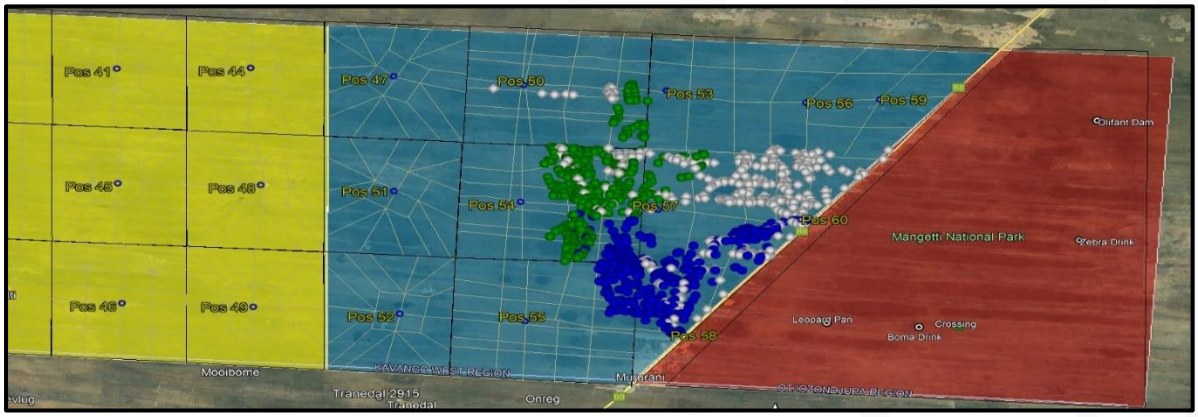

Figure 35:Complete movements of elephant bull Individual 4574 (grey – June 16th to July 15th, blue – July 16th to August 15th, green - August 16th to September 15th) in the study area from June 16th, 2024, to September 15th, 2024.

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During the 3rd quarter of the year, Individual 4575 utilized a major portion of the Kavango Cattle Ranch. He occasionally crossed onto the commercial farms west and southwest of the KCR, mainly Vooruit, Mylpaal, Oab, and Randeier. From 16 June to 15 July (grey), his movement patterns were centralised in the southwestern corner of the KCR, mainly in Blocks 19 and 22. From 16 July to 15 August (blue), the GPS data show that his movement patterns were exploratory and widely spread within the KCR and the commercial farms west and south of the KCR. From 16 August to 15 September, his movement shifted to the southwestern section of the KCR with majority of the time spent within Blocks 15 and 28 (Figure 36).

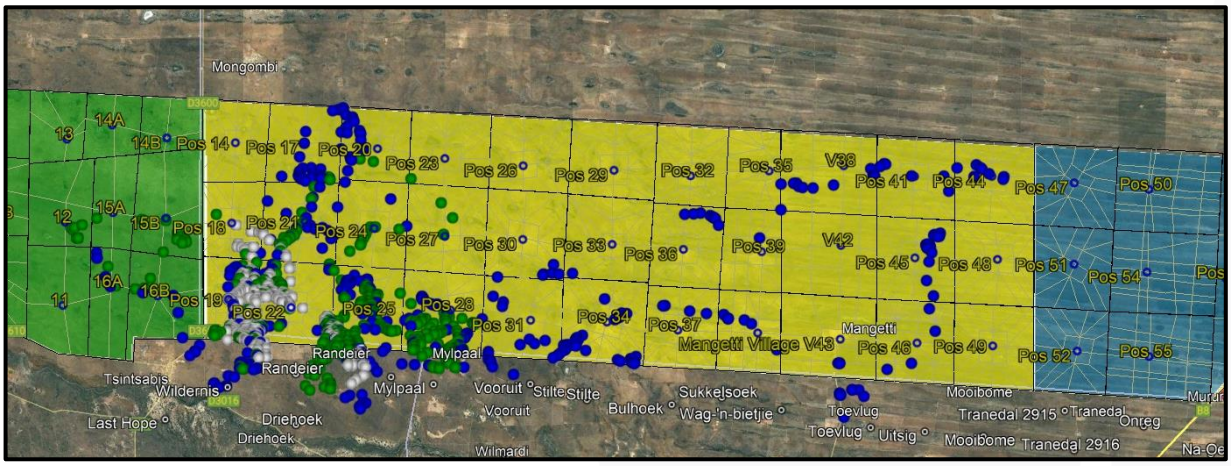

Figure 36: Complete movements of elephant bull Individual 4575 (grey – June 16th to July 15th, blue – July 16th to August 15th, green - August 16th to September 15th) in the study area from June 16th, 2024, to September 15th, 2024.

6. Camera Trap Monitoring and Animal Sightings

Camera traps are an invaluable tool for research, enabling non-invasive monitoring of wildlife to gather presence data, as well as behavioural and interaction data. Over the past three months, the volunteer teams have replaced batteries and SD cards of cameras within the reserve. They have also sorted the images by species and conducted quality checks to ensure that species have been correctly sorted and placed into the appropriate folders. Please see below a selection of camera traps from the different research sites.

6.1 N/a'an ku sê Sanctuary and Zannier Reserve

Figure 37: Leopard walking along a road on the reserve.

A leopard was captured by one of our camera traps, as it walked along a road on the Zannier reserve (Figure 7). Their rosetted coat, a beautiful pattern of black spots on a tawny background, are not just for show it provides excellent camouflage, allowing them to remain nearly invisible in the underbrush. Due to the elusive and nocturnal behavior of these predators, leopard activity is rarely sighted or recorded and therefore the appearance of a leopard during camera traps always brings excitement to the volunteers. Despite their rare sightings, these formidable hunters successfully inhabit the property with their footprints occasionally picked up by the guides and the research team when on the reserve.

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Activity of a Black-backed Jackal was recorded as it was captured walking along one of the roads on the reserve while having a piece of raw meat clenched firmly between its jaws (Figure). Black-backed jackals are known for their remarkable adaptability, the meat dangling from its mouth was evidence of a successful hunt or perhaps, more likely, a scavenging opportunity. Always ready to take advantage of whatever it finds, their opportunistic way of feeding plays a pivotal role in their ability to thrive in the harsh and unpredictable environment of the reserve. In addition to their successful hunting behavior, jackals need to remain vigilant and stealth, because they themselves can fall prey to larger predators such as lions and leopards.

Figure 38: Black-backed Jackal walking with meat in the mouth.

Figure 39: Family of bat-eared foxes.

A family of bat-eared foxes were recorded by a camera trap placed near an old aardvark hole (Figure). Aardvark burrows are often repurposed by other animals, and for the bat-eared foxes, this abandoned home was an ideal sanctuary. This aardvark hole was located near a waterhole and well hidden amongst the tall grass of the reserves, provide the ideal living conditions for the family. They can easily cool off and quench their thirst at the waterhole and rapidly retreat for safety in any sight of danger. Waterholes often attract a variety of insects and since bat eared foxes primarily feed on insects and termites, living near a waterhole increases their food abundances.

Activity of caracal was recorded as this elusive feline was captured by a camera trap while it moved along a road on the reserve (Figure). Being relatively small and solitary hunters, caracals are masters of stealth and surprise. Unlike its larger competitors that rely on strength, the caracal's strategy is one of precision and speed, whether stalking birds, small mammals, or even larger animals like young antelope, the approach of a caracal is always the same silent, patient, and deadly. Caracals are not just skilled hunters but also masters of survival. They are known to cache food when they have more than they can eat, hiding it in bushes or covering it with soil to return to later, allowing them to thrive in environments where food may be scarce or unpredictable.

Figure 40: Caracal walking along a road on the reserve.

Figure 41: Aardwolf on the reserve.

An aardwolf was captured by one of our camera traps as it walked along a road on the reserve (Figure). Being rarely sighted by the team and volunteers when on the reserve, it always brings excitement to the volunteers when these insectivores are seen during camera trap sorting. Their solitary and nocturnal lifestyle further reduces their visibility, making them less likely to be targeted by larger carnivores. This makes it difficult for the team to monitor their activity on the reserve. However, camera traps play a

pivotal role in aiding the research team to obtain an idea of their population sizes and dynamics on the reserve.

Himezembi, the lone male lion on the reserve was recorded by a camera trap during his regular territory patrols (Figure). Territoriality is a crucial aspect of the lion's survival strategy. By marking his territory with scent, through urine and scratching trees, he sends a clear message to the other carnivores that this area was claimed. Being the only male lion in the area, he regularly goes on territorial patrols along the roads to check for intruders and reinforce the scent markings. His role as the protector of the pride was essential, not only to defend the females from potential danger from competitors but his presence also allowed the females to hunt efficiently and without fear knowing they were safe under his watchful eyes.

Figure 42: Himezembi.

Figure 43: Porcupine walking on a road.

Porcupine activity was captured by a camera trap placed on a road junction (Figure). Relatively small but formidable force in the vast, untamed world of the reserve. They are one of the most successful species on the Zannier reserve. Its quills, though formidable, were not its only adaptation. The porcupine's strong, clawed feet are perfect for digging, whether it is to search for roots and tubers or to create a burrow for shelter. Its sharp teeth, ever-growing, are ideal for gnawing on tough vegetation, bark, and even

bones, which provided the porcupine with essential minerals. Their survival strategy is simple but effective: be cautious, be prepared and rely on its formidable defences if necessary.

There was a lot of enthusiasm from volunteers during camera trap sorting, as one of the camera traps recorded a fight between two rhinos on the reserve (Figure). The reason for this battle was clear: territory. Male rhinos are highly territorial, and this road may have marked the boundary between their domains. The dominant male needed to assert his control over the territory, ensuring that he maintained access to resources like food, water, and mates. The rival male, likely younger and seeking to carve out his own territory, was challenging the older male's claim. These fights are rarely to the death, but they are not without risk, serious injuries could occur, and the weaker rhino would eventually be forced to retreat.

Figure 44: Rhinos fighting.

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Figure 45: Kudu crossing a road.

A sub-adult Kudu was captured as it walked past a camera trap placed on a road junction (Figure). Being a sub-adult, the horns of the kudu were still short and not spiralled. The long-spiralled horns of kudus were not just ornamental; they were an adaptation honed over millennia, used for both defence and displays of dominance during the breeding season. Their absence meant the young kudu's survival depended on its keen senses and avoid direct confrontation from both competitors and predators. He relied on his ability to detect danger early and his incredible speed and agility to escape.

A solitary oryx was caught on camera as it came to quench its thirst at one of the waterholes on the reserve (Figure). Solitary life is typical for older oryx males, who often roam alone or in small bachelor groups, separate from the larger herds. Solitude allows the oryx to avoid competition for food and water, which can be scarce in this harsh landscape. Solitary males may establish and defend a territory, which includes access to food and water

Figure 46: Oryx at a waterhole.

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resources. This territorial behaviour helps them avoid conflicts with other males and ensures they have sufficient resources to survive. Being solitary they are more vulnerable and hence are always extremely vigilant and cautious to detect danger early, giving them time to flee or defend themselves.

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6.2 TimBila

TimBila serves as a sanctuary for an extensive array of wildlife, ranging from the iconic oryx to the elusive nocturnal leopard. At TimBila, we've recently discovered a captivating collection of camera trap images spanning the past three months. These images reveal a variety of species, from the happy hippos to the heaviest flying bird in Africa, the Kori bustard, highlighting the unique and thriving ecosystem at TimBila.

Figure 47: Ostrich and Warthog at the waterhole.

At Riet Dam, we have warthogs *(Phacochoerus africanus)* and ostriches *(Struthio camelus)* (Figure 47). Warthogs play a vital role in promoting plant growth by churning up the soil as they feed on grass roots and stems, naturally aerating the ground and dispersing seeds. Meanwhile, ostriches, known for their three stomachs, utilize their glandular stomach, or ventriculus, to store pebbles and rocks that help break down food, aiding in their digestion process.

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Figure 48: African elephant.

At Riet Dam, elephants *(Loxodonta Africana)* (Figure 48) can often be seen enjoying a siesta and having a drink at the waterhole, creating a serene and majestic sight. Currently, there are three elephant bulls that have separated from their herd and now wander together, exploring the area as a small bachelor group. This behaviour is typical among elephant bulls, who often leave their natal herds to form smaller, more fluid groups as they mature.

Figure 49: Kori bustard.

Kori bustards *(Ardeotis kori)* (Figure 49) are ground-dwelling birds that spend most of their time walking in search of food, which includes insects, small vertebrates, seeds, and plant material. They are omnivorous and have a unique way of drinking by sucking up water without needing to tilt their heads back, unlike most birds.

Males are known for their elaborate courtship displays, puffing up their feathers, inflating their necks, and producing a low booming call to attract females. Due to their size and distinctive behaviour, they are often considered one of Africa's most iconic bird species.

This is one of the two hippos *(Hippopotamus amphibius)* at TimBila (Figure 50)—a calf of a cow, to be precise. Currently, they are residing at the Villa's waterhole after Rooi Dam has dried up. Hippos typically give birth to only one calf at a time.

Figure 50: Hippo.

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Two Damara dik-diks *(Madoqua kirkii)* (Figure 51) are spotted at Klipspringer Pos, with the male on the left and the female on the right. The raised hair on the male's head indicates he is showing interest in mating with the female.

Figure51: Damara dik-dik.

Here is Terra with her two cubs (Figure 52 & 53). Terra's collar stopped working a few months ago for an unknown reason. She was captured at Riet Dam and has also been photographed at Zebra Pos and Klimaks Pos.

Figure 52 & 53: Lioness Terra and cubs.

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An incredible moment was captured as a waterbuck calf *(Kobus ellipsiprymnus)* suckled from its mother (Figure 54). Waterbucks have large, oily scent glands under their skin that give them a strong odour, which can make their meat less desirable for predators.

Figure 54: Waterbuck.

Here is a tower of giraffe *(Giraffa angolensis)* (Figure 55), giraffes have a high melanin content in their tongues, giving them a dark colour, which helps prevent sunburn. This adaptation is crucial because they spend up to 20 hours a day eating, primarily using their tongues to reach leaves from tall trees.

Figure 55: Giraffe.

A harem of plains zebra *(Equus quagga)* (Figure 56). Zebras' coats are short and coarse, helping them withstand the heat of the African savannah. They also have specialized sweat glands to help regulate their body temperature.

Figure 56: Plains zebra.

6.3 Harnas

During the reporting period, three camera traps were deployed at frequently visited waterholes to monitor the presence of animal species within the reserve. The accompanying graph (Figure 57) illustrates the number of images captured per species at each waterhole.

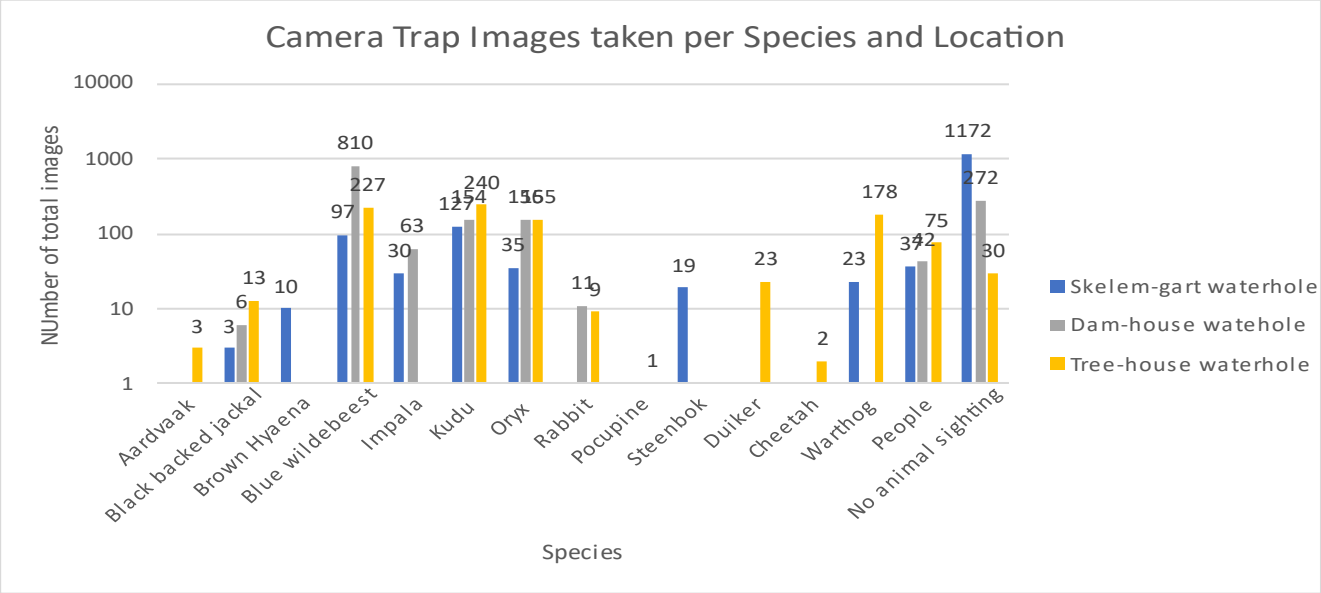

Figure 57: presents the number of images captured per species by the camera traps installed at three different waterholes.

Harnas is proud to detect a free roaming cheetah at tree house waterhole on the property (Figure 58).

Figure 58: Free roaming cheetah on Harnas.

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6.4 Neuras

The camera traps are doing well as more wildlife has flooded into Neuras. The camera traps are still capturing many photos of Hartmann mountain zebras but we have also seen an increase of greater kudu and oryx. Predators are however still in very low numbers with only a few instances of spotted hyena visiting our waterholes. Please see pie charts for more information (Figure 59).

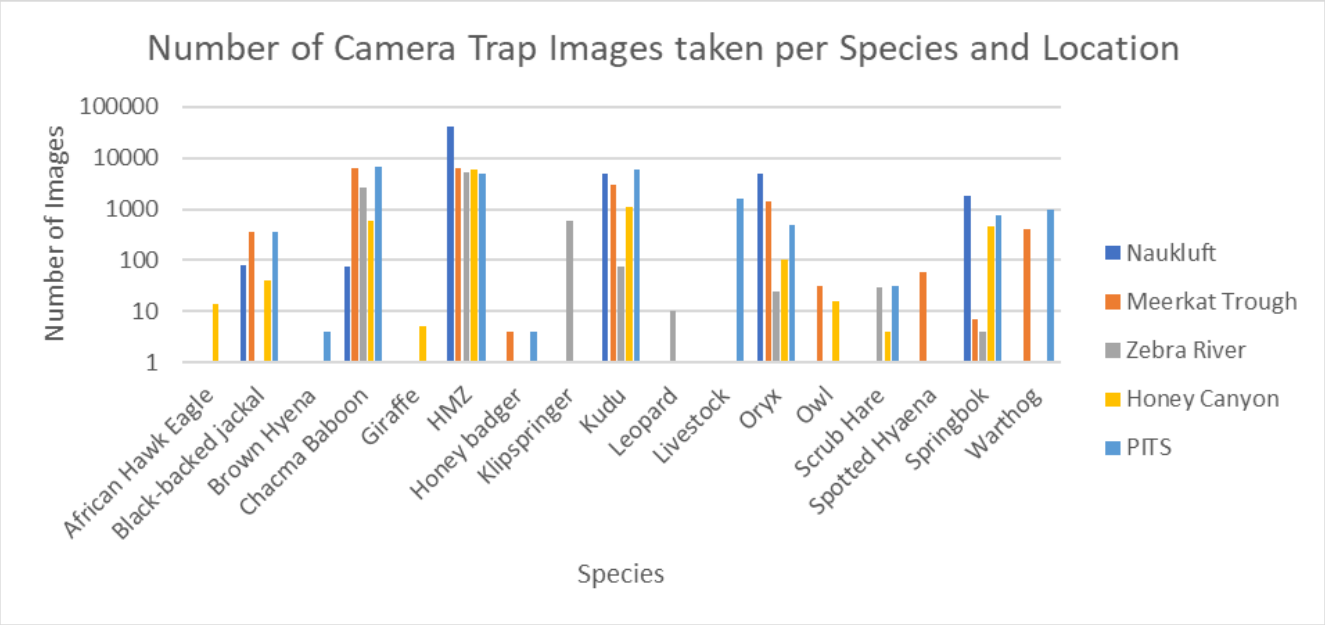

Figure59: This graph presents the number of images that ware taken by the installed camera traps per species and location.

The spotted hyaena is the only remaining large carnivore species inhabiting Neuras. Its movements are primarily concentrated in the northwestern region of the property, near the Naukluft Mountains, an area that also corresponds with the highest concentrations of game activity (Figure 60).

Figure 2: Spotted hyaena.

Among all our camera traps, the only one to capture footage of Klipspringers is located at Kudu Springs along the Zebra River. This camera is strategically positioned to monitor a man-made spring, where a pump supplies fresh water into a natural rock cavity (Figure 61).

Figure 61: Klipspringer at Zebra River.

6.5 Kanaan

During bi-weekly review of camera trap data, no new animal species have been documented since our June report. As we wait impatiently for the first summer rains maybe October/November to arrive in Kanaan, the reserve is extremely dry. As a result, animals travel great distances to find waterholes in order to quench their thirst. The cameras capture thousands of images of ostriches and oryx since they spend hours at the waterholes before leaving to return to their foraging regions. A timer was chosen to enable the camera to only capture pictures from twilight to just after dawn when the predatory animals like

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Leopard, Cheetah, and Spotted hyena are most active. This prevented the camera's storage from being loaded up with pointless images.

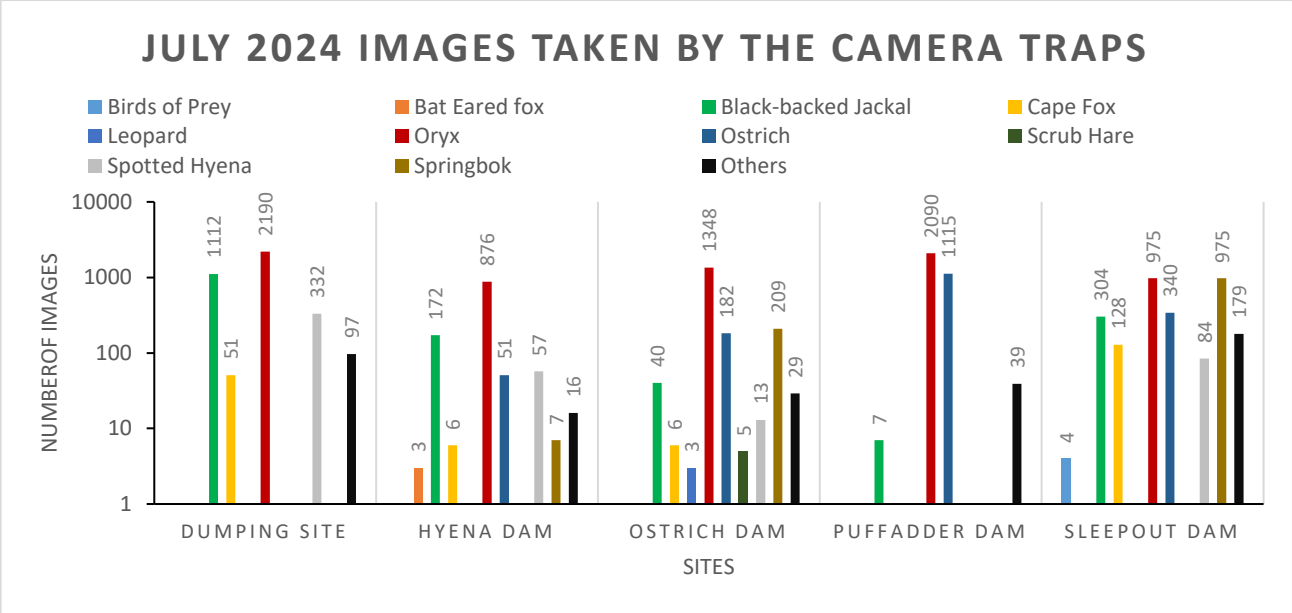

Figure 62: Shows number of images taken in July at Kanaan at five different sites.

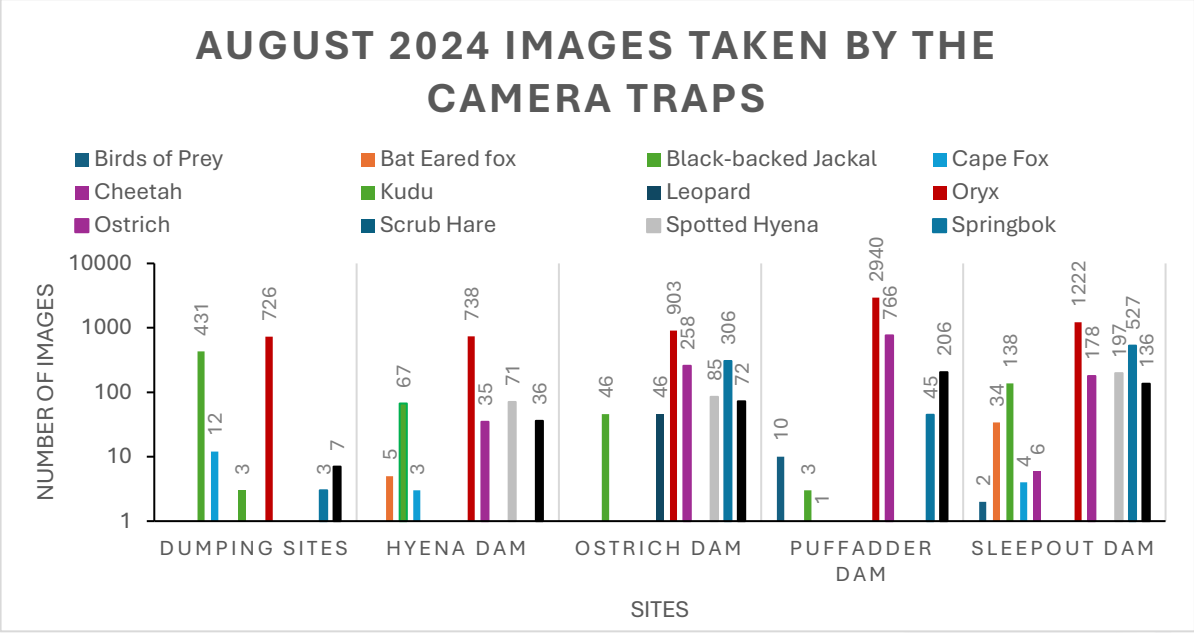

Figure 63: Shows number of images taken in August at Kanaan at five different sites.

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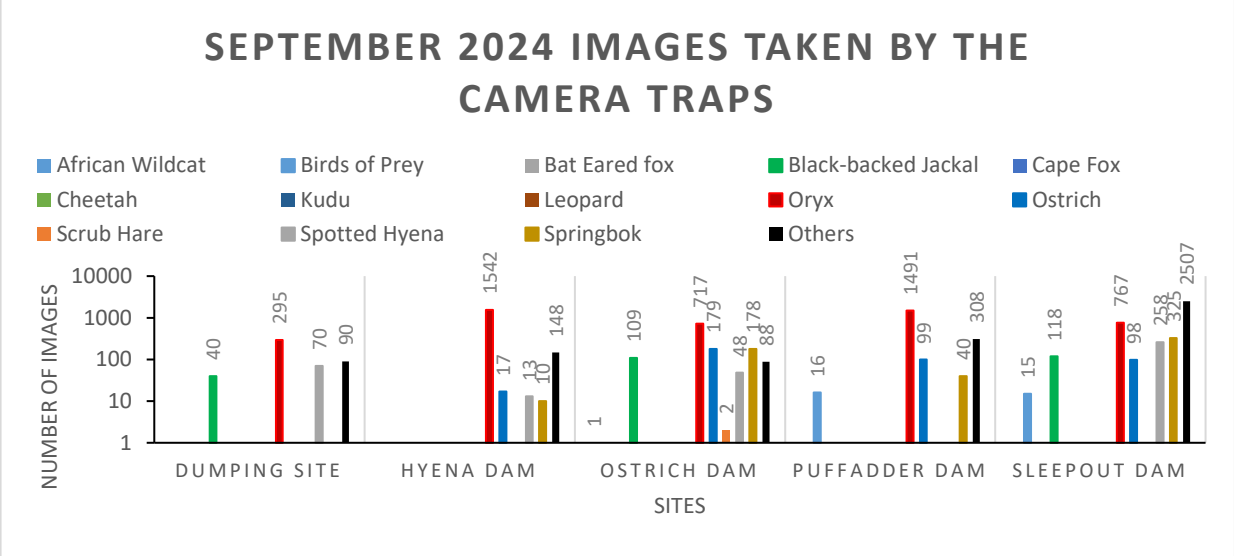

Figure 64: Shows number of images taken in September at Kanaan at five different sites.

Conclusion

The graphs demonstrate the variation in animal sightings specifically Black-backed jackal and Oryx from July to September (Figure 62, 63 & 64); in August and September, there were fewer sightings than in July—nearly half as many Black-backed jackal and oryx were spotted as in July. Ostrich dam had the highest species diversity in July and September whilst Puffadder dam and Dumping site had the least species diversity respectively. This may be because Ostrich dam is situated in a denser environment in terms of vegetation in comparison to the other sites, making it easier for animals to access food and water in a short time interval. This explains why there would be more animals' species at this site, and less at the Dumping site (situated in a mountainous area) and Puffadder dam (situated at the sand dunes) in terms of food, less vegetation, animals must travel long distances in search of food.

6.6 Coast

Along the coast, we have observed a variety of reptiles, including the shovel-snouted lizard, web-footed gecko, Namib burrowing skink, dune adder, and Namib sand snakes. These reptile sightings are primarily associated with our quad bike activities.

Mammal observations have included the black-backed jackal, heaviside's dolphins, and common bottlenose dolphins. Additionally, volunteers have spotted springboks and oryx en route to Sandwich Harbour.

Notably, there has been a significant increase in humpback whale activity in the area, with several sightings occurring close to our facility, visible from the deck (Figure 65).

Figure 64, 65 & 66: Cape fur seal (left), humpback whale(centre), great white pelican (right).

Recently, a fin whale tragically beached near our location (figure 67). Despite concerted efforts from volunteers, local residents, and assistance from a tugboat, attempts to return the whale to the water were unsuccessful. The operation was hampered by low tide and strong winds, and the whale had become deeply embedded in the sand. Additionally, marine biologists noted that the whale may have been compromised, possibly breathing with only one lung, which could have contributed to its stranding.

Figure 67: Wale rescue. N/a'an ku sê in action.

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7. Game Count Results

During the third quarter of the year 2024, routine game counts were conducted at TimBila, Harnas, and Neuras.

7.1 TimBila

Over the past three months, we conducted **26** game counts across eight routes, completing two counts each week and six per month. From 16th July to 15th September (Figure 68), we counted a total of **1,146** animals. The dry trees and the tendency of animals to stay near waterholes made the counts easier to perform.

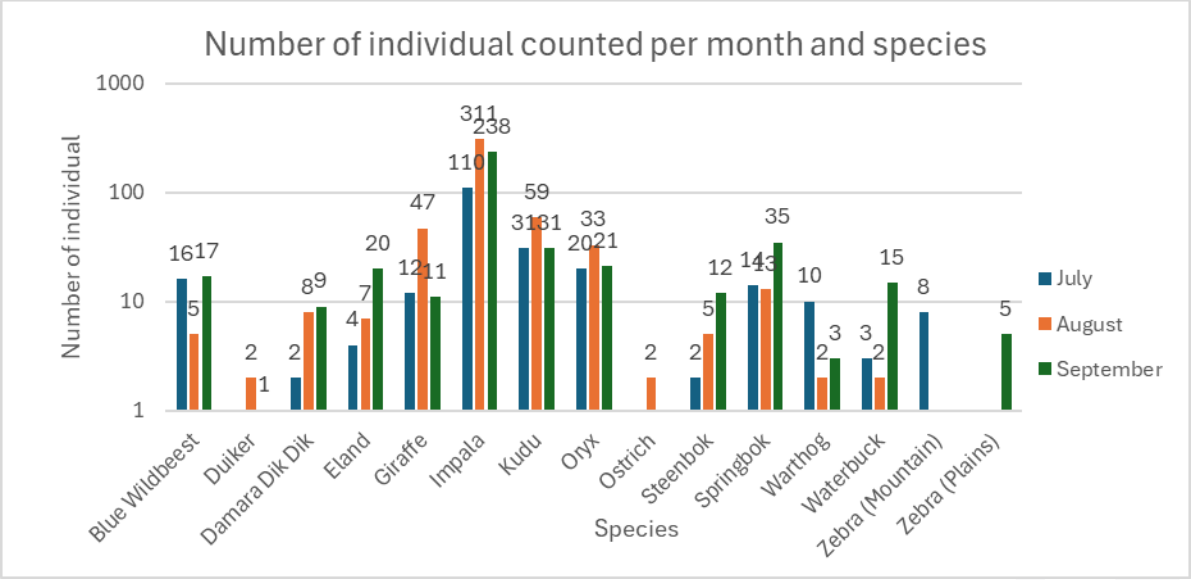

Figure 68: Game count results from 16th July to 15th September 2024.

7.2 Harnas

Game counts are crucial for effective reserve and field management, especially under the current drought conditions. Maintaining accurate data on wildlife populations and their health is particularly

important during such challenging periods. The data was collected over a span of three months, with totals recorded for each month (Figure 69).

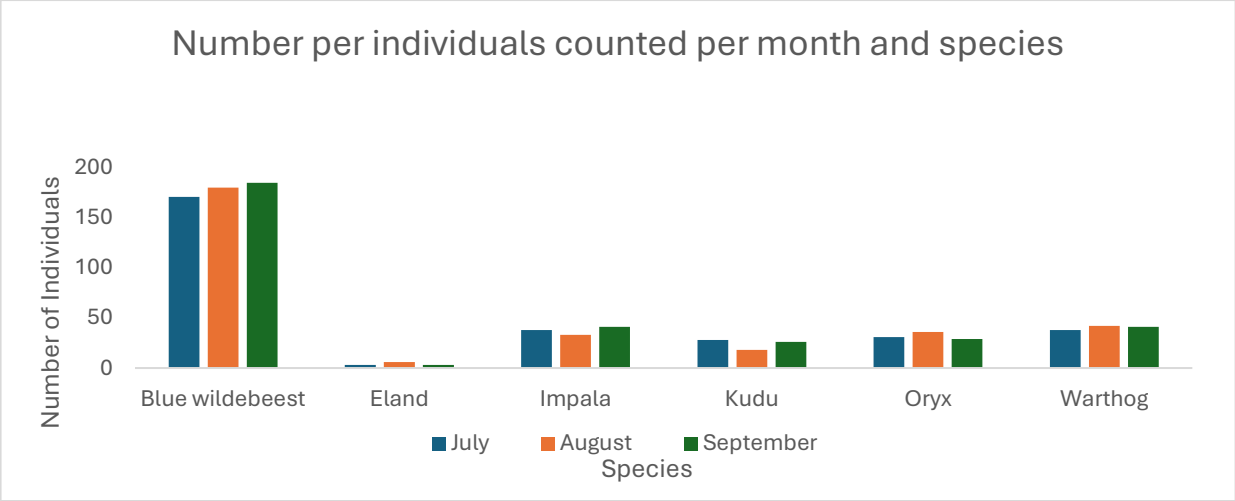

Figure 69: Game count results for the past three month.

A game count conducted over the three-month period of July, August, and September yielded the following results:

- **July:** Oryx 31, wildebeest 171, warthog 38, eland 3, kudu 21, and impala 38.
- **August:** Oryx 34, wildebeest 180, warthog 42, eland 3, kudu 18, and impala 38.
- **September:** Oryx 29, wildebeest 188, warthog 41, eland 3, kudu 29, and impala 41.

The cumulative totals for the three months were as follows: Oryx 94, wildebeest 539, warthog 121, eland 9, kudu 68, and impala 117, resulting in a total of 948 individual animals recorded across all species during the count.

7.3 Neuras

Game counts in the 3rd quarter have yielded better results as there are more game numbers on Neuras in this time (Figure 70, 71 & 72). Neuras is still being used by the game as a source of water where they then go around the neighbouring properties including the Namib Naukluft National Park for food. Only 3 routes have yielded data in this quarter.

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Please see the Graphs for the Data:

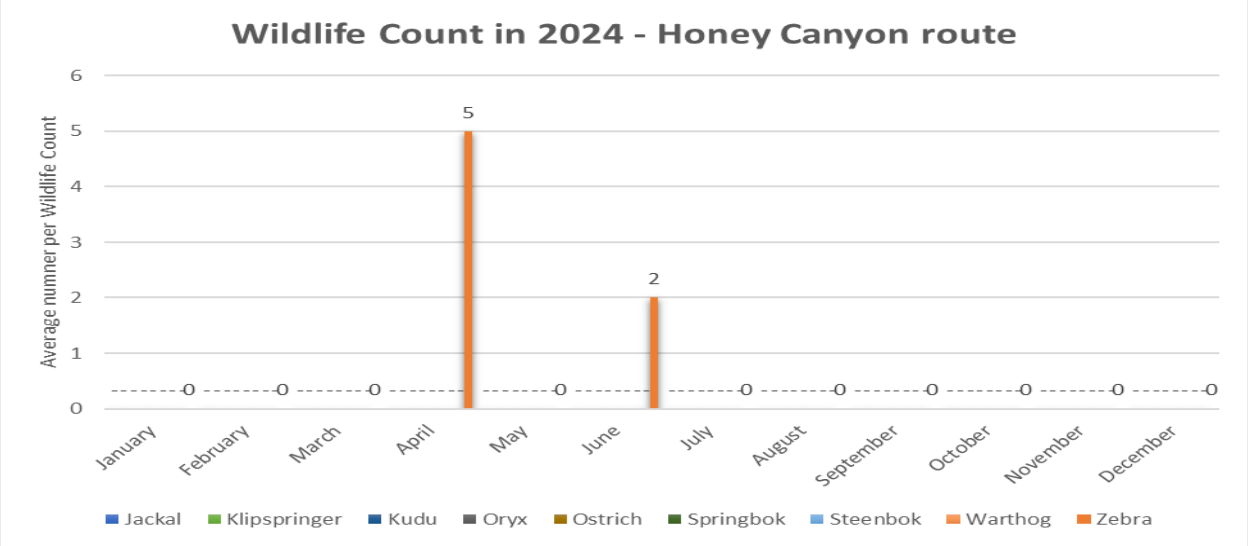

Figure 70: Number of animals counted per month and species on the Honey Canyon game count route.

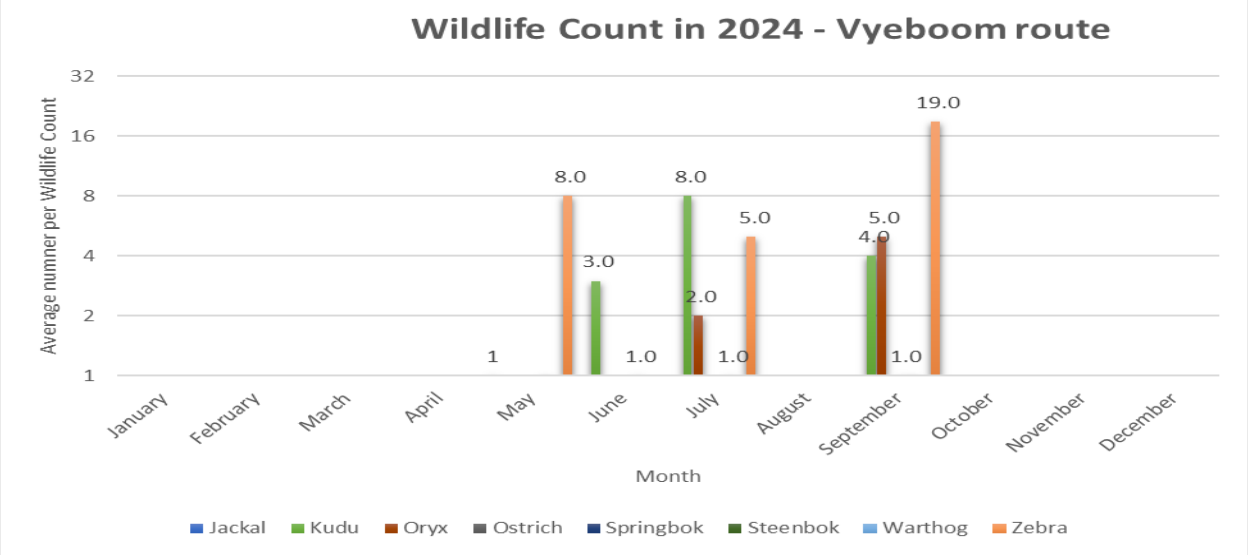

Figure 71: Number of animals counted per month and species on the Vyeboom game count route.

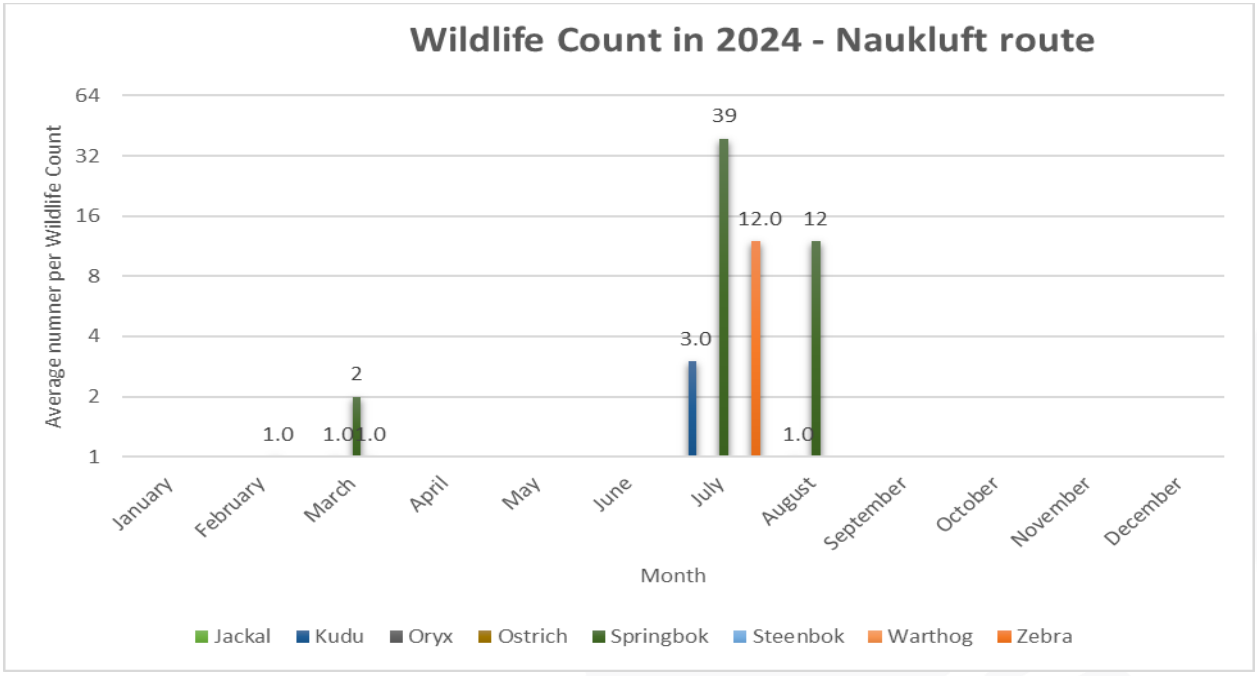

Figure 72: Number of animals counted per month and species on the Naukluft game count route.

No animal was spotted on the game count route Kyffhouser during the period from 16. July to 15. September 2024.

8.N/a'an ku sé Research Sites and Projects

In the subsequent chapters, detailed descriptions of the various sites and their respective research projects are provided. These sites are strategically located across the country, each nestled within distinctly different habitats. This diversity enables comparative analyses and offers researchers insights into the diverse forms of Human-Wildlife Conflict prevalent in different environments. Consequently, it fosters the exploration and implementation of practical solutions tailored to specific contextual requirements.

8.1 N/a'an ku sê Sanctuary and Zannier Reserve

The N/a'an ku sê Reserve is situated 45km east of Windhoek in the Khomas region and comprises 1800ha, making it the smallest of the properties managed by N/a'an ku sê. Established in 2007, it is a fully enclosed

reserve with electrified game fencing to contain the wildlife protected within its bounds in the African savannah. The property also hosts the N/a'an ku sê Sanctuary. With a dedicated team of conservationists and veterinarians at its helm, N/a'an ku sê strives to provide a safe and nurturing environment for its residents in captivity and on the reserve for a variety of game species, meso-carnivores, small carnivores and other small mammals. Beyond its role in wildlife rehabilitation, N/a'an ku sê is committed to community engagement and sustainable development initiatives, fostering harmony between humans and wildlife. Through its holistic approach to conservation, the N/a'an ku sê Sanctuary exemplifies the profound impact that dedicated individuals can have on safeguarding our planet's natural treasures.

The Zannier Reserve by N/a'an ku sê is also situated east of Windhoek and sits adjacent to the N/a'an ku sê Reserve. The property encompasses 7500ha of land and is also fully enclosed with an electrified game fence with 6 strands of additional electrical lines running at a 45 degree angle on the inner side. Previously having been a game reserve, the property was bought by Mr Zannier in 2018 at which time N/a'an ku sê assumed management. This reserve is resident to known numbers of elephant, white rhino, and lion. Additionally, the reserve contains ungulates, ostrich, leopard, cheetah, brown hyaena, meso-carnivores, small carnivores, and other small mammals.

Research Projects and Activities

The ensuing paragraph elucidates the research initiatives and undertakings that are being pursued over an extended duration or with consistent continuity.

Behind the Scenes Tour at N/a'an ku sê

During the first quarter of 2024, tourism activities kept on going strong at N/a'an ku sê. The organization continued to host volunteers, with an average of 128 volunteers across the various sites. In terms of educational outreach, Behind the Scenes (BTS) presentations were given to 158 guests during this period.

The presentations conducted by the research team play a crucial role in enhancing the knowledge and understanding of N/a'an ku sê's research work among the foundation's guests. These presentations delve into the complexities of human-wildlife conflict and foster open discussions between the guests and the team. International guests display significant interest in learning about the challenges faced by Namibians, with real-life examples provided, such as livestock losses due to predators or crop damages

caused by elephants. Moreover, the presentations highlight mitigation measures that enable harmonious coexistence between farmers and wildlife.

Having the opportunity to interact with visitors not only allows them to see things from a conservation point of view but also enables the researchers to gain insights from the public's perspectives. It serves as a fresh reminder of "*what we do,*" "*how we do it,*" and "*why we do it,*" fostering constant reinforcement of our mission and promoting self-reflection.

Baboon Rehabilitation and Release project

The re-introduction of chacma baboons from captivity into a free-roaming natural environment is a lengthy process that requires a thorough consideration of all aspects both biotic and abiotic spheres. The team is collecting empirical evidence through the observation of the baboon troops that are held at N/a'an ku sê Wildlife Sanctuary to select baboons with suitable characteristics to be observed for release purposes.

Figure 73: Baboons beeing observed by researchers.

Chacma baboons (Figure 73) are highly social animals that live in an oligarchy hierarch system with multiple baboons of different age classes where females are philopatric in the troop while male leave their natal troop after the maturity stage. Living in a social group provides them with ecological benefits that include predator defence, cooperative foraging, mating opportunities, and reduced vulnerability to infanticide. We identified a sample of baboons that can be integrated and rehabilitated to successfully form a functional troop. The troop should be considered stable when it consists of adult females (5years and older) and males (7 years and older) mixed with subadults and a single dominant male.

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Based on the result obtained during the observation and identification of individual baboons, the sampled troop required to be transferred to a different camp set up specifically with natural blending in condition. Through conducting the proper literature review and collaborating with the wildlife researcher and veterinarian from South Africa, the research team explored cost-effective and less invasive methodologies to capture and translocate baboons.

N/a'an ku sê – Mangetti Elephant project

The African elephant (Loxodonta Africana) population residing in the Greater Mangetti Complex, located in the Kavango Region of north-east Namibia (Figure 74), confronts a range of challenges inherent to wildlife populations in highly anthropized areas, where human-wildlife conflict is prevalent. Recognizing the pressing need to address this issue, N/a'an ku sê has undertaken a comprehensive project aimed at assessing the nature and extent of human-wildlife conflict within the Greater Mangetti Complex, with the ultimate goal of identifying effective measures to mitigate such conflicts.

In the Greater Mangetti Complex, elephants are often perceived as a nuisance due to the significant damage they cause to infrastructure, including water installations and livestock fencing areas. Consequently, local inhabitants tend to have limited tolerance for these majestic creatures. However, it is crucial to approach the issue from a scientific standpoint,

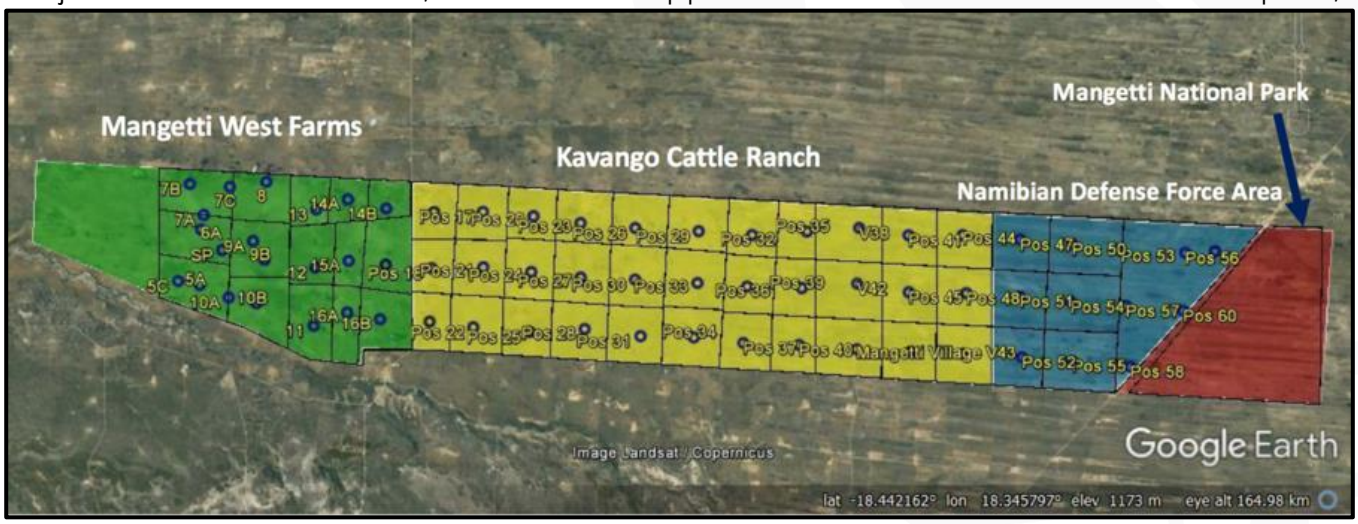

Table 74: Map of the Greater Mangetti Complex.

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considering the ecological significance of the African elephant and the importance of maintaining viable elephant populations.

The project implemented by N/a'an ku sê employs rigorous scientific methodologies to gain a comprehensive understanding of elephant behaviour, habitat utilization, and the socio-economic perspectives of local communities. By combining ecological research with community engagement, the project aims to develop evidence-based strategies and practical interventions that effectively address the underlying causes of human-elephant conflict. By promoting coexistence between humans and elephants, the project seeks to foster sustainable livelihoods, protect critical ecosystems, and contribute to the long-term conservation of the African elephant in the Greater Mangetti Complex.

In October 2014, N/a'an ku sê collared two African elephants to monitor their movements and behaviours. These elephants belonged to a herd known for damaging fences, including the veterinary quarantine fence, causing difficulties in livestock and veterinary management. In May 2018, one of the elephants was recollared due to battery failure, and in late 2020 and January 2023, the Ministry of Environment, Forestry, and Tourism (MEFT) collared additional elephants. The collaring data is shared with the research team of N/a'an ku sê to support affected farmers in mitigating human-elephant conflict. These efforts aim to improve our understanding of the dynamics between humans and elephants and develop effective strategies for coexistence.

Despite the current suspension of on-ground monitoring, the team is able to continue tracking the collared elephants using GPS data. They maintain regular contact with the farming community and provide daily updates to the landholders and stakeholders in the area.

The collar fitted to NDC1 failed in early September 2022, most likely due to the battery running out of power after more than four years of continuous use. NDC1 was recollared by the MEFT with collar 5793. She is a female elephant that has been collared since 2014 and is part of the largest herd in the area. On January 25, 2023, access to the data from her third collar was obtained, enabling the team to continue sharing information with the surrounding farmers.

Two new bulls were collared with a GPS collar (collar number 4574 and 4575) in January 2023 by MEFT.

8.2 TimBila

TimBila Nature Reserve was established in 2021 and is managed by N/a'an ku sê. The reserve is located 50km north-east of Omaruru in the Erongo Region of Namibia, (215km north-west of Windhoek). The reserve comprises 30, 500 hectares, with a diverse range of landscape including mountains, open planes, riverine forest, and rocky scrubland allowing for a greater diversity of wildlife to be present. TimBila is home to a range of flora and fauna species, which includes but not limited to: Sheperd tree (*Boscia albintrunca*), Black thorn acacia (Senegalia mellifera), Sweet karroo (Vachellia karroo), and an array of grass and herb species. Fauna species include but not limited; giraffe (Giraffa camelopardalis), white rhinoceros (Ceratotherium simum), eland (Taurotragus oryx), Hartmann's mountain zebra (Equus zebra hartmannae), blue wildebeest (Connochaetes taurinus), black wildebeest (Connochaetes gnou), greater kudu (Tragelaphus strepisceros), waterbuck (Kobus ellipsiprymnus), oryx (Oryx gazella), common impala (Aepyeros melampus), and Damara dik dik (Madoqua damarensis). Destined to be a home of second chances for conflict animals and ambassador animal species, TimBila is resident to, African wild dog (Lycaon pictus), white rhinoceros (Ceratotherium simum), African elephant (Loxodonta africana), rehabilitated African lion (Panthera leo) as well as preexisting free-ranging carnivores, including leopard (Panthera pardus), cheetah (Acinonyx jubatus), and brown hyaena (Hyaena brunnea).

Research Projects

Habitat sampling

June 2024 – September 2024

Habitat sampling assesses the impact of individual ecological factors, such as the type of habitat, on the presence of elephants and the destruction of habitat within the protected area. Additionally, this acts as a vegetation survey across the reserve, identify tree, grass, herb, and bush species. This research aims to predict the likely home range and movement of the elephants, their utilisation of specific areas within the reserve, and whether these behaviours are linked to habitat or food availability or both.

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Elephant Body condition scoring, sexing and ID photos

Volunteers assist the research team by providing photographs each month when they see the elephants (Figure 82-84) during their stay. Ethical procedures for viewing of the elephants should be always considered, with appropriate distances of a minimum of 50m from the elephants observed at all times. Any closer breaches ethical codes of conduct for elephant viewing (Elephant Specialist Advisory Group, 2017). Behaviour of the elephants should also be considered, during the observation. The limited grass availability in the reserve has forced the elephants (Figure 75 & 76) to rely more on tree material, which provides less nutrition. While there is no scarcity of trees, the elephants' condition isn't as optimal as during the rainy season. However, they are still in good health, with body scores ranging from 2.5 to 3 out of 5.

Figure75 & 76: The African elephant herd on TimBila.

Rhino identification

Volunteers and research staff assist from both the camera trap sorting each week, habitat sampling but also from any tracks and scat of any rhino sightings (Figure 77) and identification through the ear notches. This season offers the best opportunity to spot rhinos, thanks to the sparse leaves on trees and limited grass. Over the past three months, we've had more rhino encounters than ever before. While some rhinos quickly run off, not giving us enough time to identify their notches, others allowed us to properly identify them.

Figure 77: White rhino on TimBila.

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8.3 Harnas

Harnas Wildlife Foundation is a vast conservation area covering 8,500 hectares, located in the Omaheke region of Namibia, approximately 100 kilometre northeast of Gobabis. The foundation is divided into two primary sections: the Lifeline Reserve, spanning 8,000 hectares, and the Game Camp Reserve, which covers 500 hectares. Founded by Marieta van der Merwe, Harnas is dedicated to the protection and rehabilitation of wildlife, providing sanctuary for a wide variety of species, from large herbivores to predators and birds. The Lifeline Reserve provides an expansive habitat where animals such as oryx, blue wildebeest, and vultures roam freely, alongside beautiful vegetation like the grass species *Aristida congesta* and *Digitaria stipitata*, as well as tree species such as *Acacia erioloba* and *Terminalia sericea*. The game camp is primarily where the magnificent rhinos can be found.

Harnas is characterized by a semi-arid climate, with annual rainfall averaging between 200- and 400-mm. Rainfall is primarily concentrated during the wet season, from November to March, with January and February being the peak months. Despite this seasonal influx, overall precipitation remains insufficient to support a diverse and robust ecosystem. The limited rainfall contributes to poor vegetation growth, resulting in inadequate forage for herbivores. Many grazers struggle to find sufficient food, leading to starvation, which poses a significant threat to their populations and the overall health of the ecosystem. Additionally, the area is experiencing encroachment by certain invasive plant species, contributing to dense underbrush. This thickening of the landscape not only reduces the quality of habitat available for native flora and fauna but also hinders visibility. Poor visibility is particularly problematic for wildlife monitoring and research activities, such as game counts, making it difficult to collect accurate data on animal populations and health.

8.4 Neuras

Neuras Wine & Wildlife Estate is situated in the Hardap region of Namibia. The ecosystem is exceptionally harsh and arid, classified as semi-desert/Pro-Namib. Our average annual rainfall is approximately 50mm. The property spans approximately 14,500 hectares, with a primary focus on landscape preservation. Our terrain is rugged and predominantly composed of stones and boulders.

Surrounding the property is cattle fencing, carefully maintained due to neighbouring farms that rear cattle and sheep. However, the inner fences are removed to facilitate the free movement of game and

predators. Neuras also shares a border with the Namib-Naukluft National Park on the northwestern side of the property.

8.5 Kanaan

Kanaan N/a'an ku sê Desert Retreat is situated in the southwestern corner of Namibia, bordering the Namib-Naukluft National Park, nestled within the world's oldest desert, the Namib Desert (Figure 79). The Namib-Naukluft National Park spans almost 5 million hectares, making it the third largest national park globally. Despite Kanaan's smaller size, covering 35,200 hectares, its proximity to the expansive park presents significant potential for desert conservation and preservation, with wildlife freely moving between the two areas.

Kanaan offers stunning scenery and is surrounded by unique ecosystems harbouring distinct animal and plant species found exclusively within this environment.

Originally designated as agricultural lands, Kanaan was converted into a conservation area in 2014. The conversion and rehabilitation process required considerable time and effort. With assistance from volunteers originating from various corners of the globe, Kanaan has gradually transformed into a thriving ecosystem once more.

The initial phase involved dismantling internal camp fences, previously used for livestock management. Now, fences to other farms, the main road, and the national parks are being removed. Along the main road, the fence is being replaced by braided wire. This way, cars can be prevented from driving off-road, but animals will not be hindered from migrating. The fences presented a significant hazard to wildlife by disrupting natural migration routes of animals such as oryx and springbok. This disruption can lead to migrating animals getting stuck in the fence and dying (Figure 74). Following the removal of the fences, volunteers assisted in monitoring wildlife populations to assess whether the absence of barriers led to an increase in wildlife numbers.

Figure 79: Volunteers removing camp fences.

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Research Projects

Kanaan currently has five active camera traps situated, one at the Dumping site and four are situated at four main watering holes: Sleepout Dam, Ostrich Dam, Hyena Dam and Puffadder Dam. We plan to open two more watering holes, camera traps will be installed, to boost our efforts to learn more about wild animals, particularly predators. These predators are typically active at night, making it difficult to encounter them directly. The cameras also provide valuable information on smaller predators like black-backed jackals, African wildcats, and other animal species.

The images of predators collected from the various cameras will be used to identify different individuals within the respective Spotted Hyena, leopard, and cheetah populations. These species can be distinguished by comparing the spots on individuals from different images to find matches. Just like human fingerprints, each individual predator has a unique pattern of spots on its coat, which can be used for identification.

8.6 Coast

Our coastal setup offers a breathtaking view of the ocean, complemented by our camping trip where we spend two days each week at the Henties Bay beach while conducting waste collection activities. On Tuesdays, our focus shifts to waste collection along the coastline in front of Langstrand, ensuring cleanliness for the local residents.

Furthermore, our waste collection efforts have expanded to include Jackalsputz, where we have covered approximately 26 km of coastline, extending to Wlotzkasbaken (Figure 80). Additionally, we have successfully cleared the area between

Figure 80 & 81: The areas already cleaned.

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Swakopmund and Langstrand, spanning a distance of approximately 10 km (Figure 81). To date, our diligent efforts have resulted in the removal of 3322 kg of waste in this 10km over the course of 52 weeks.

In addition to rubbish collection, volunteers are offered a variety of enjoyable activities in the area that they can choose from. Activities include kayaking, quad biking, catamaran tours, skydiving, desert tours, and many more.

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9.Species List

The QR code below directs to a comprehensive list of mammalians, avian, insect, reptilian, piscine, and amphibian species across diverse habitats within the various research sites is provided. These lists are ongoing projects and are prone to expansion as more species are discovered. The compilation of species will undergo continuous refinement over time. The lists are arranged in alphabetical order, with the most recent addition located at the bottom.

SCAN & CLICK ON ME

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THANK YOU.