



ATHI KAPITI LANDSCAPE GAME COUNT REPORT CONDUCTED ON 4TH JUNE 2023

Ephie Lumumba & Marco Pruiksmā
7-5-2023

Appreciation

First and foremost, we want to recognize and appreciate the invaluable efforts of the Athi- Kapiti Conservancies and Ranches - **ILRI Kapiti, Swara plains/Game Ranching, Machakos ranching, Lisa Ranch & game sanctuary, New Astra, Olosira conservancy, Naretunoi conservancy, Maanzoni owners Association, Lukenya Wildlife Conservancy (Malinda B@T), Kasanga Ranch (Lukenya Hills Nature Sanctuary) and Konza Technopolis**. Your unwavering commitment to organizing and coordinating volunteers played an instrumental role in ensuring the smooth and efficient execution of the game count.

A special word of thanks goes out to the **Kenya Wildlife Service (KWS)- Machakos County Warden and the Rangers** for their outstanding support in deploying rangers to accompany our dedicated volunteers during the game count. Your presence not only enhanced the safety of the participants but also inspired a sense of confidence and security as we conducted this vital task.

To **The Wildlife Foundation (TWF)**, we extend our appreciation for your commendable role in coordinating the game count on triangle 1 and 2. Your expertise and meticulous planning were crucial in ensuring that the data collected during the count will be accurate and invaluable in guiding future conservation efforts.

We also want to express our gratitude to **Save Giraffes Now (SGN)** for actively participating in the game count in Swara Conservancy.

Finally, we want to extend a heartfelt thank you to all the volunteers who dedicated their time, energy, resources, and passion to make this game count a success. Your enthusiasm and willingness to be part of this conservation effort are genuinely inspiring. We hope you enjoyed the experience and that it leaves a lasting impression on your hearts.

AKWCA EXECUTIVE COMMITTEE

.

EXECUTIVE SUMMARY

The Athi Kapiti conservancies and ranches wildlife game count was conducted on 4th June 2023. The count aimed at establishing the current wildlife population and spatial distribution in the Athi Kapiti landscape following concerns raised by landowners of declined wildlife populations in the area after a severe drought and increased human activities. Subsequent counts will help in identifying wildlife trends and possible impacts of the expanding and continuous anthropogenic activities that peril wildlife existence in the landscape.

The game count was conducted in eight conservancies. Each conservancy established blocks to guide in data collection totaling to 43 blocks. The participants were divided into groups with each block having at least 3 participants; a driver, an observer and a recorder. For each block data were recorded in a data sheet and on a mobile phone in the CyberTracker app.

The highest number among herbivores were respectively recorded for common zebra (N=3787), Thomson's gazelle (N=3022), Grant's gazelle (N=1531) and impala (N=1167). Lower numbers were recorded for Masai giraffe (N=374), eland (N=214), warthog (N=226), wildebeest (N=171), Coke's hartebeest (N= 17), gerenuk (N=44), lesser kudu (N=10) and stein buck (N=1). The Coke's hartebeest and wildebeest recorded a low number compared to the usual numbers that have been observed before the severe drought. Among birds, a select number of birds were recorded. Ostriches recorded the highest on the count among birds (N=530). Other birds observed were grey crowned crane (endangered), Kori bustard (near threatened), martial eagle (endangered), tawny eagle (vulnerable), grey heron (least concern) and Ruppel's vulture (critically endangered). Five species of carnivores were recorded: bat eared fox (N=3), black backed jackal (N=42), hyena (N=166), cheetah (N=2) and lion (N=1). One python was recorded. Baboons (N=209), Sykes monkey (N=93) and vervet monkey (N=92) were also observed. Small mammals such as rock hyrax, mongoose, ground squirrel, African hare and porcupine were recorded as well as ad hoc observations during the game count.

Maanzoni, Lukenya wildlife conservancy (Malinda ranch) and Kasanga ranch conducted a game count on 7th May 2023 which is a month prior to the joint game count. The three conservancies used the same methodology used during the 4th July game count. The data of the three conservancies' game count is summarized separately and well stipulated in this report.

1.0 INTRODUCTION

Wildlife counting is a fundamental practice in conservation and wildlife management to enable wildlife population estimation and identify distribution patterns and trends. This ecological approach informs conservationists, landowners and policy makers on factors that may affect a given species such as drought, disease, land use changes etc. It can assist to maintain the wildlife population at a given range through interventions related to land use change, disease eradication and mechanisms or mitigations against drought. Continuous monitoring of wildlife population provides intelligence on the regulating factors on the abundance and distribution of species and wildlife trends.

The Athi Kapiti landscape is an important biodiversity area which is a dispersal area for wildlife connecting Nairobi National Park, Oldonyo Sabuk National Park, the Amboseli ecosystem and the Masai Mara. Additionally, the landscape serves as a breeding site for wildebeest. The landscape is currently facing pressure from human population increase and expansion of the urban areas. The landowners within Machakos county, Kajiado county and Makueni county have continuously protected this area through ranching which allows both wildlife and livestock to use the land resources. To document the critical importance of this landscape for wildlife, the Athi Kapiti Wildlife Conservancies Association (AKWCA) organized a joint game count to account for the wildlife population, its distribution and possibly the impact of the severe drought experienced in the area between November 2022 and March 2023 as well as the impacts of increased human activity. Landowners and volunteers were involved in the count adopting a citizen science approach, which is increasingly used by ecologists in wildlife data collection. The approach is based on the concept of the 'wisdom of the crowd' that ensures collective reasoning.

1.1 Game count goal and objectives

This game count was conducted with the aim of establishing the spatial distribution and abundance of wildlife within the Athi Kapiti plains. Continuous game counts will help monitor and establish wildlife distribution patterns, population trends and possibly the effects of extreme weather and anthropogenic activities.

2.0 STUDY AREA

The Athi Kapiti landscape is on the southern side of the Nairobi National Park bordering the Ngong hills on the west and stretching between six counties, namely Nairobi, Machakos, Kajiado, Makueni, Kitui and Kiambu. The Athi Kapiti plains cover an estimated area of 4,000 square kilometers. The area has an altitude that ranges between 1533 metres (5,030 ft) and 2145 metres (7,037 ft - the peak of Ol Donyo Sabuk National Park). Its vegetation is characterized by rolling savannah grasslands, bushlands and subsections of forest vegetation. It is covered with ridges, seasonal and permanent rivers, open savannah plains, and hills that border both the west and the east side of the landscape.

The Nairobi National Park and Athi Kapiti ecosystem dispersal area is recognized as a Key Biodiversity Area (KBA). The Status of the system is classified as “Critically Endangered” in Kenya’s fifth national report to the Conference of Parties to the Convention on Biological Diversity. The Athi Kapiti Landscape is critical to wildlife and rangeland conservation. It plays an essential and unique role in connecting the wildlife populations of Nairobi National Park to the Amboseli, Magadi, Ol Donyo Sabuk, Tsavo ecosystems and to the Masai Mara-Serengeti ecosystems. It hosts a wide variety of East Africa’s ungulates, predators, and over 500 species of birds.

The landscape is home to several endangered wildlife species, including the White-backed Vulture, the black rhino, wild dogs, and the Masai giraffe. Part of the reason why Athi Kapiti plains are preferred by most ungulates is the vast open plains with shorter grass that is more nutritious than the old hard and unpalatable long grass within the Nairobi National Park. Wildebeests and zebras also prefer vast open and short-grass characteristic during the calving and wet seasons. This leads to ungulates preferring to graze in the open areas, south of the park that forms the Athi Kapiti. This ecosystem also helps in enhancing genetic variability in protected areas by helping to reconnect these isolated populations.

Traditionally, the Athi Kapiti landscape was inhabited by Masai pastoralists who used the vast plains to rear livestock alongside the existence of wildlife and the Kamba people who practiced subsistence farming, beekeeping and livestock rearing. With the region’s proximity to Nairobi, rapid urbanization and industrialization continue to threaten conservation objectives within the area as people and industries move out of the capital city into the suburbs, the Athi Kapiti landscape remains a favourite choice. Over the years parts of the Athi Kapiti plains have developed into an urban area inhabited by diverse cultures that have also dictated a change of land use and economic activities. This can be clearly seen with increased infrastructural developments and fencing that significantly impact wildlife habitats, movement and distribution. Wildlife dispersal areas have been considerably affected, thus threatening the wildlife populations in the region.

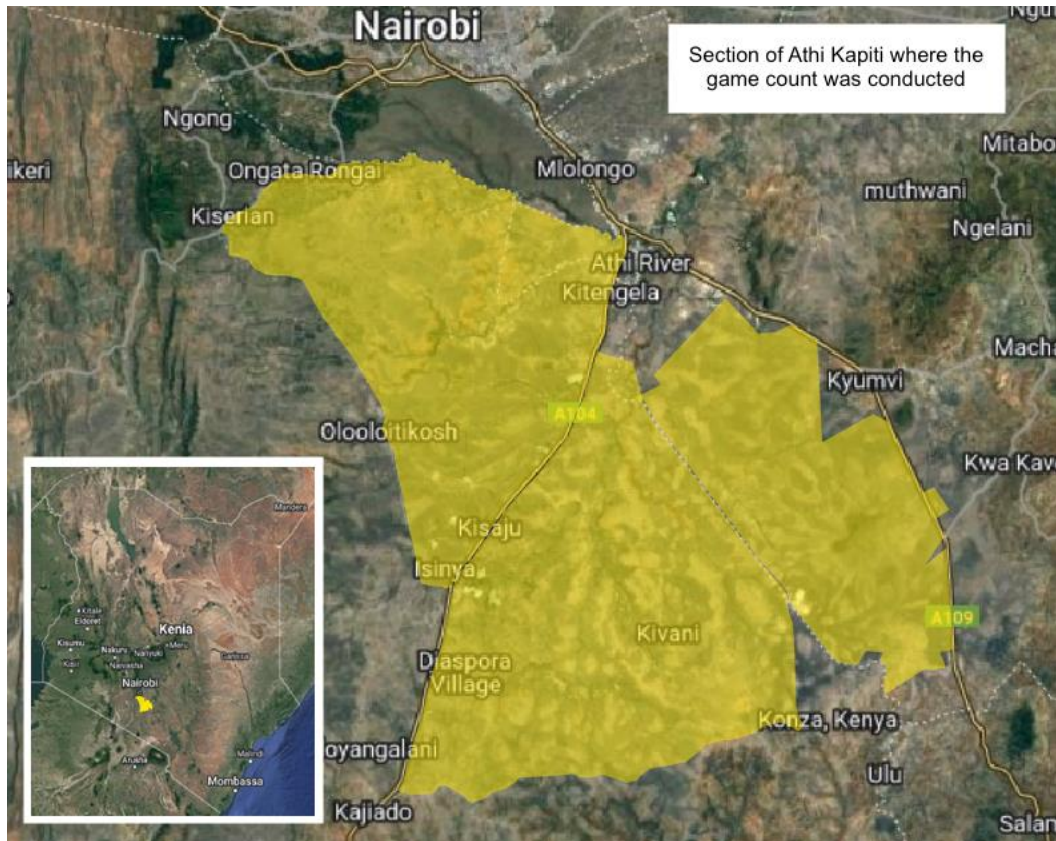


Figure 1 game count area map

3.0 MATERIALS AND METHODS

The Athi Kapiti plains consists of 13 conservancies and ranches in Machakos county, Makeni county and Kajiado county namely: Naretunoi conservancy, Olosira conservancy, Machakos ranching, Swara plains conservancy, ILRI Kapiti, Maanzoni wildlife estate, Lukenya wildlife conservancy, Kasanga ranch, Lisa ranch, Konza technopolis, New Astra, Yoani farm and Ulu conservancy. The game count was conducted on 4th of June 2023 with eight conservancies and ranches participating. For this game count, Malili area was added due to the abundant wildlife that has recently been observed in the area. For logistical reasons, Malili area was counted together with Lisa ranch and New Astra. To avoid double counting and to ensure systematic data collection, each participating conservancy or ranch delineated three to ten blocks: ILRI Kapiti (10 blocks), Machakos ranching (6 blocks), Swara plains (6 blocks), Lisa, New Astra & Malili (4 blocks), Konza technopolis (3 blocks), Olosira conservancy (6 blocks), Naretunoi conservancy (8 blocks) totaling to 43 blocks.

The materials needed for the count included a data sheet, camera, and a pair of binoculars, writing materials, a mobile phone with the CyberTracker app installed and a wildlife spotter guide. The participants had been trained on data collection and recording using the CyberTracker app and data sheet three days prior to the game count to allow time for cross checking and confirmation.

The game count was conducted on 4th June 2023 with participants leaving for their blocks at 0600hrs to be able to spot predators. Each group had at least three participants; a driver, a spotter and data recorder. The team drove/walked around their block counting the actual animals sighted as per counting protocols and recorded sightings in the data sheet and CyberTracker app which automatically geo-referenced the location of animals.

All herbivores and carnivores were systematically recorded on the datasheet and in the CyberTracker app. Among birds, a selection of large birds was recorded systematically as well whereas the option was provided for other birds of interest to be recorded *ad hoc*. The same applied for any other species of interest observed during the count not pre-listed on the data sheet or in the CyberTracker app.

After the count, data was downloaded, analyzed and for select species presented in distribution maps as shown in the results section. The distribution maps have hexagons measuring 500m by 500m showing the density of a given animal in the given location using color coding.

4.0 RESULTS

The results of the count are summarized in the table below indicating the number of individuals of each wildlife species counted per conservancy or ranch and the overall totals per species.

Conservancy/ Ranch	ILRI Kapiti	Kon za	Lisa, New Astra &Mal ili	Macha kos ranchi ng	Swa ra plai ns	Olosira conserva ncy	Naretuno i conserva ncy	Tota l
Herbivores								
Bushbuck	2							2
Dik-dik	3			20		4		27
Duiker			1	16				17
Coke's Hartebeest				15			2	17
Eland	78		30	9	34	4	59	214
Gerenuk	4		30		10			44
Grant's Gazelle	41	23	429	411	200	376	51	1531
Impala	100		48	380	223	58	358	1167
Lesser Kudu	3		7					10
Masai Giraffe	72		57	31	83	55	76	374
Stein buck					1			1
Thomson's Gazelle	235	34	386	468	353	903	643	3022
Warthog	34		4	82	93		13	226
Wildebeest			4	7	14		146	171
Common Zebra	332	64	813	251	589	660	1078	3787
Carnivores								
Bat eared-fox	1				2			3
Black backed jackal	1			29	10	2		42
Hyena	7			136	21	1	1	166
Cheetah				2				2
Lion							1	1
Primates								
Baboon	15			87	95		12	209
Sykes Monkey				93				93
Vervet Monkey				22	51		19	92
Other mammals								
African Hare	1		1	10		4	1	17
Ground Squirrel	1			11		5	1	18
Rock Hyrax			7	0				7
Mongoose			1	0				1
Porcupine				4				4

Birds								
African Fish Eagle	1			1	3			5
Black bellied Bustard	4	1		17				22
Black headed heron		2	2	6		38		48
Cattle egret	49			68				117
Egyptian goose	21	171	47	21		1	2	263
Grey Crowned Crane	12	2	41	18		75		148
Grey Heron		2		15		2		19
Guinea Fowl	11	5	79	264	39		5	403
Hadada Ibis							7	7
Kori Bustard	13	2	15	15	12	27	11	95
Marabou Stork						3	126	129
Martial Eagle					2			2
Ostrich	112	45	119	65	85	64	40	530
Ruppel's Vulture	11			34				45
Secretary Bird				7	2	3		12
Tawny Eagle	4			25		9		38
White Backed Vulture	14			17	96		9	136
White Bellied Bustard	6		5	22	5	2		40
Yellow-necked Spurfowl	14	2	13	27	2			58
Reptiles								
Python							1	1
TOTAL								133 83

The maps below show the abundance as well as spatial distribution of different species of herbivores as well as ostrich recorded in the study area.

Herbivores

Common zebra

Common zebra recorded the highest number (3787) with Naretunoi conservancy recording the highest at 1078 accounting for 28% of the total, followed by Lisa, New Astra & Malili (21%), Olosira conservancy (17%), Swara plains (16%), ILRI Kapiti (9%), Machakos ranching (7%) and Konza (2%).

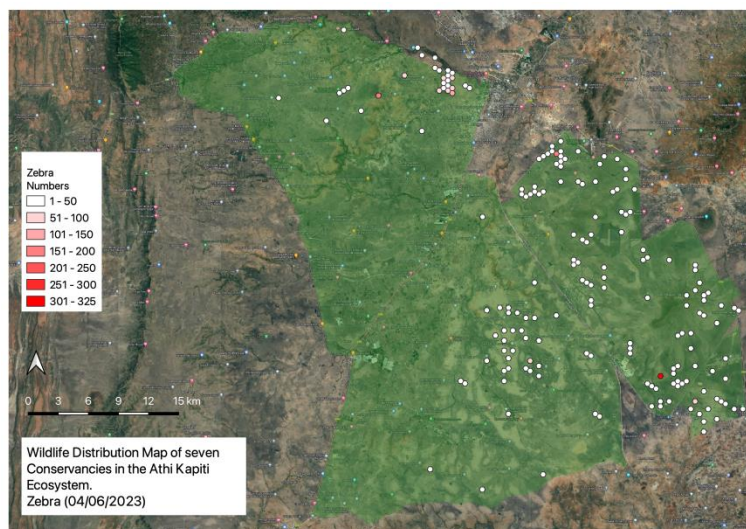


Figure 2 distribution map of common zebra

Thomson 's gazelle

Thomson's gazelle recorded the second highest number during the game count (3022) with Olosira conservancy accounting for the highest number recorded at 30%, followed by Naretunoi conservancy (21%), Machakos ranching (15%), Lisa, New Astra & Malili (13%), Swara plains (12%), ILRI Kapiti (8%) and Konza (1%). The Thomson's gazelle is fairly widely distributed in the conservancies.

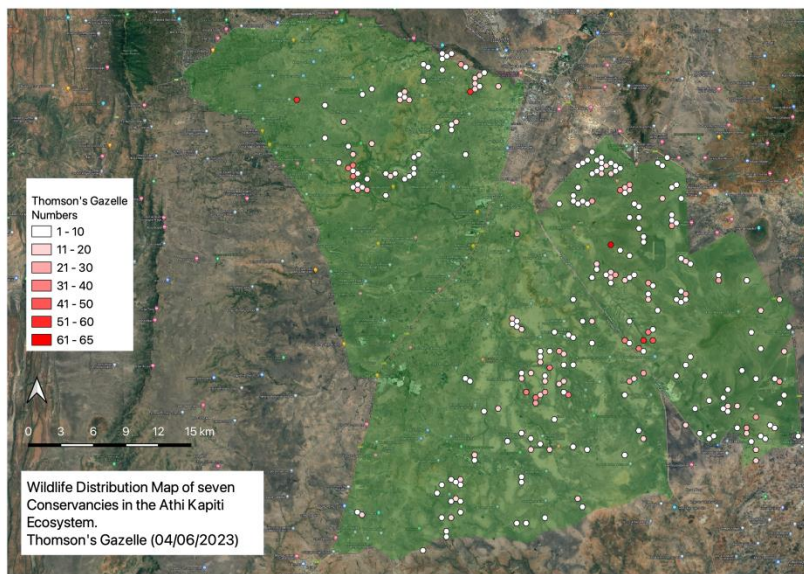


Figure 3 distribution map of thomson's gazelle

Grant's gazelle

A total of 1531 Grant's gazelle were recorded during the count with the highest number (28%) being recorded at Lisa, New Astra & Malili, and 27%, 25% and 13% accounted in Machakos ranching, Olosira conservancy and Swara plains respectively.

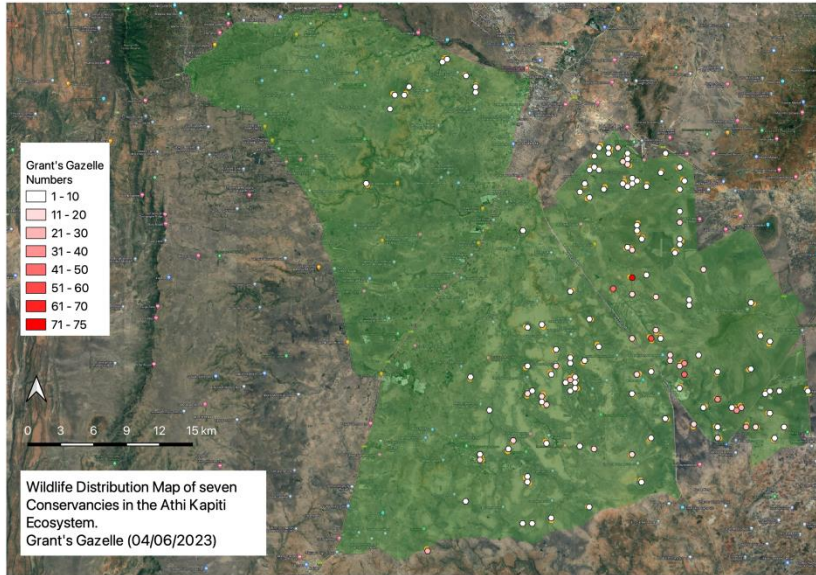


Figure 4 distribution map of grant's gazelle

Impala

A total of 1167 impala were recorded during the game count with Machakos ranching accounting for the highest number at 32%. Naretunoi conservancy, Swara plains and ILRI Kapiti recorded the remaining number of impalas translating to 31%, 19% and 9% respectively.

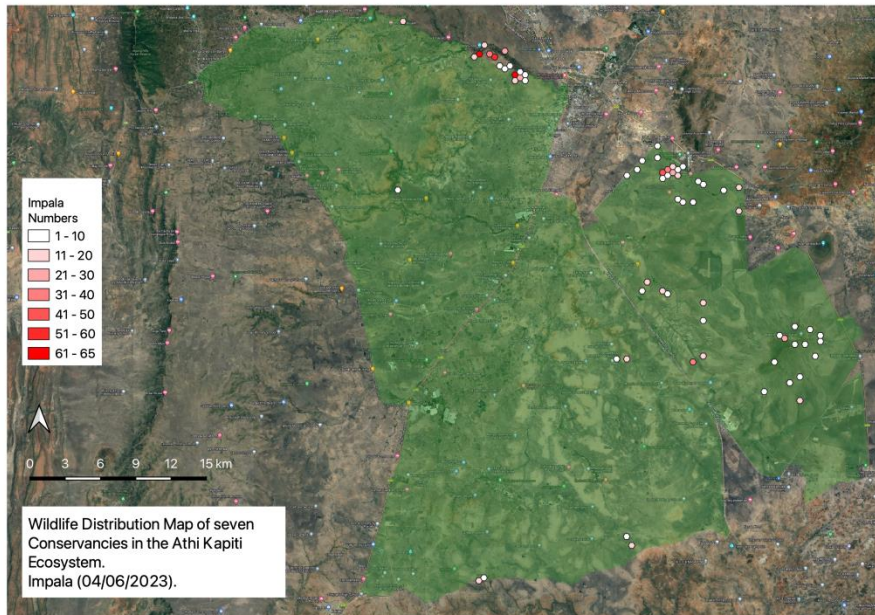


Figure 5 distribution map of impala

Masai Giraffe

A total of 374 giraffes were recorded during the count. The giraffes were fairly distributed in the conservancies. 22%, 21%, 19%, 15%, 15%, and 8% accounting for Swara plains, Naretunoi conservancy, ILRI Kapiti, Lisa (Astra & Malili), Olosira conservancy and Machakos ranching respectively.

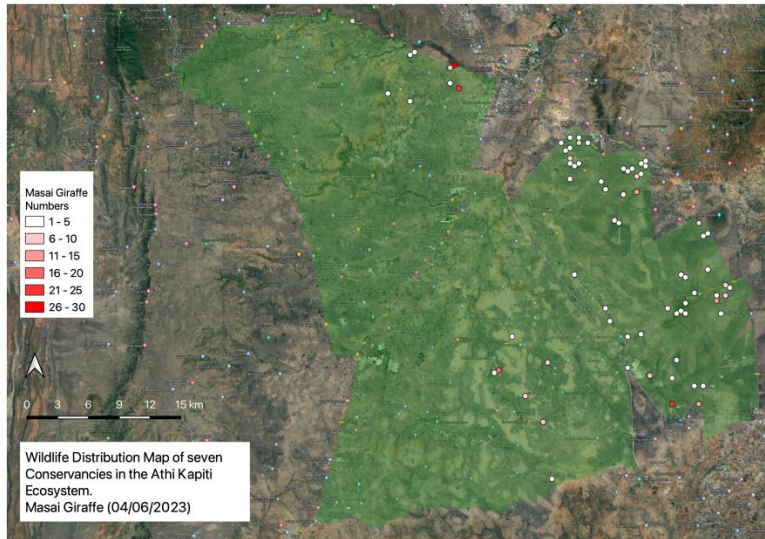


Figure 6 distribution map of Masai giraffe

Wildebeest

A total of 171 wildebeest were recorded during the count, with majority 86% counted at Naretunoi conservancy and 8%, 4% and 2% being counted at Swara, Machakos ranching and Lisa respectively.

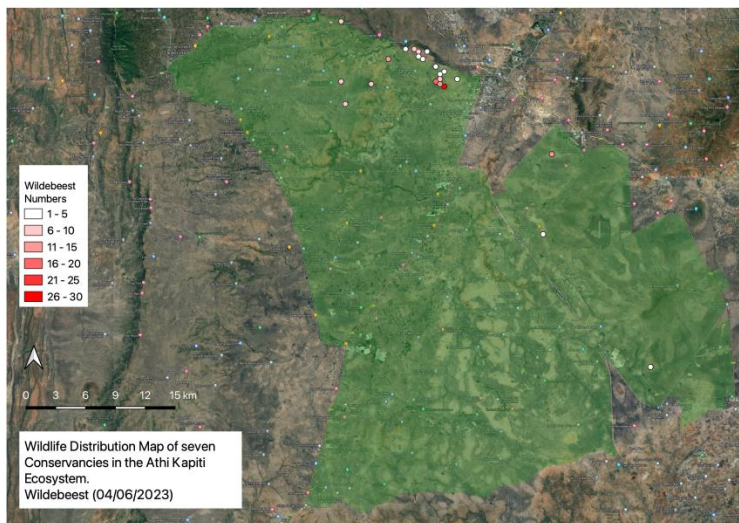


Figure 7 distribution map of wildebeest

Elands

A total of 214 eland were recorded with majority being recorded at ILRI Kapiti, Naretunoi conservancy, Swara plains and Lisa translating to 36%, 28%, 16% and 14% respectively.

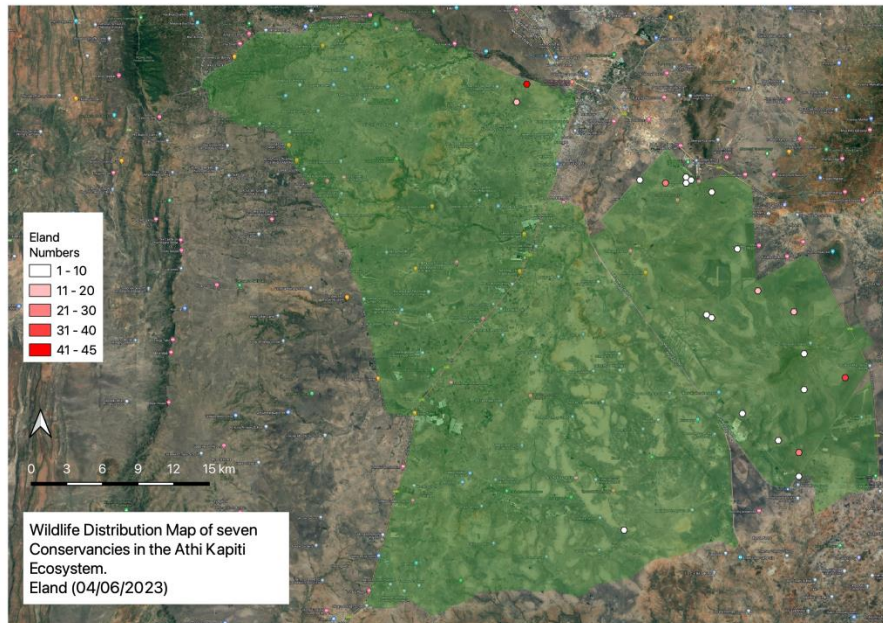


Figure 8 distribution map of eland

Carnivores

Five species of carnivores were recorded: bat eared fox, black backed jackal, hyena, cheetah and lion. A total of 166 hyenas were counted with majority being counted at Machakos ranching and Swara plains. A total of 42 black backed jackals were counted during the game count with majority at Machakos ranching and Swara plains. In total, 3 bat eared fox, 2 cheetahs and 1 lion were recorded during the game count.

Primates

Three species of primates were recorded: baboon, Sykes monkey and vervet monkey. A total of 209 baboons, 93 Sykes monkeys and 92 vervet monkeys were recorded.

Birds

Ostrich

A total of 530 ostriches were recorded during the game count. The ostriches were evenly distributed in the conservancies with majority being sighted at Lisa and ILRI Kapiti.

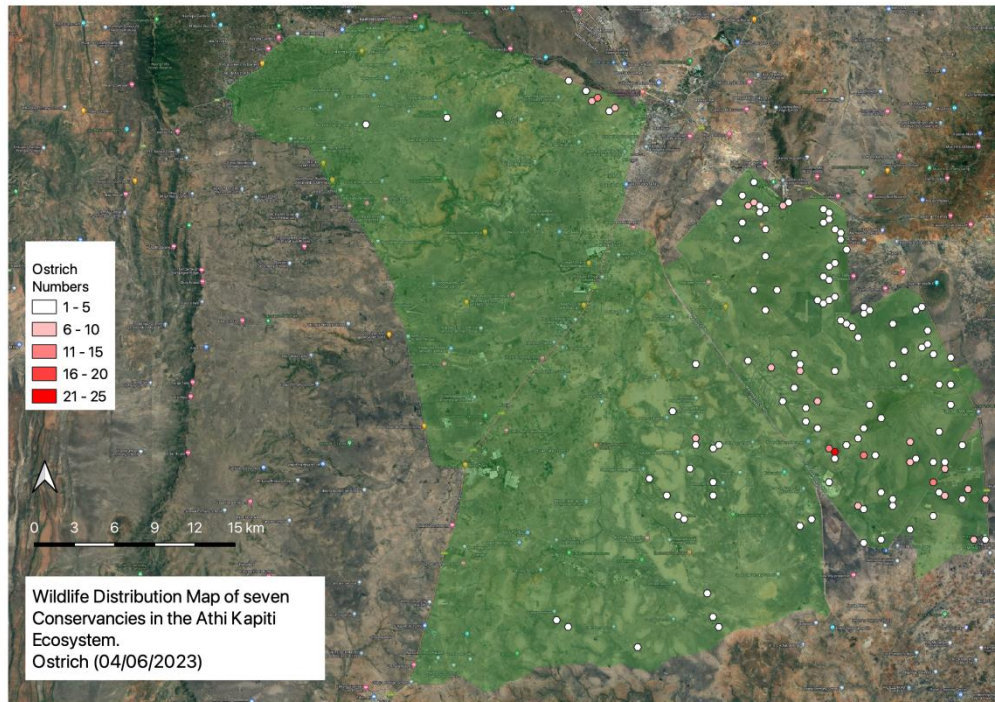


Figure 9 distribution map of ostrich

Other birds

A large number of bird species were recorded *ad hoc* in the conservancies. African fish eagle (N=5), black bellied bustard (N=22), black headed heron (N=48), cattle egret (N=117), Egyptian geese (N=263), grey crowned crane (N=148), grey heron (N=19), Guinea fowl (N=403), Hadada Ibis (N=7), Kori bustard (N=95), Marabou stork (N=129), martial eagle (N=2), Ruppel's vulture (N=45), secretary bird (N=12), Tawny eagle (N=38), white backed vulture (N=136), White bellied bustard (N=40) and yellow necked spurfowl (N=58)

Other species

One python was sighted at Naretunoi conservancy. Among other herbivores counted during the game count were bushbuck (N=2), dik dik (N=27), duiker (N=17), lesser kudu (N=10), stein buck (N=1) and warthog (N=226). Other mammals sighted were African hare (N=17), ground squirrel (N=18), rock hyrax (N=7), mongoose (N=1) and porcupine (N=4).

5.0 DISCUSSION

The game count conducted on 4 June 2023 established the spatial distribution and abundance of wildlife populations within the Athi Kapiti landscape. It was the first time a systematic count was done in all participating conservancies and ranches at the same time using the same methodology and as such was setting a baseline for various wildlife populations in the area.

The observation of a wide range of species, from big cats, to critically endangered birds, Masai giraffe and a python, confirm the critical importance of the Athi Kapiti ecosystem for wildlife.

As the distribution maps per species show, the highest diversity of herbivores was found in the northern and eastern parts of the study area. Common zebra, Thomson's gazelle and Grant's gazelle were fairly widely distributed in the conservancies and occurred in large numbers in the central parts as well.

In terms of total numbers, common zebra and Thomson's gazelle are most abundant with over respectively 3787 and 3022 individuals counted per species, followed by the Grant's gazelle with approximately half that number at 1531 – a species known for coping well with drought. For eland, warthog and Masai giraffe the total numbers were in the range of 214-374 individuals.

According to landowners, the Coke's hartebeest and wildebeest recorded a low number (17 and 171 respectively) compared to the usual numbers observed in previous years, most likely caused by the severe drought. The 17 Coke's hartebeest were recorded during the game count in only two conservancies; Machakos ranching and Naretunoi conservancy. Estimation of species and wildlife trends is challenging due to seasonal movements of wildlife. Continuous monitoring of wildlife population will provide more robust data on the abundance and distribution of species and changes over time. It will also provide insight on regulating factors.

Regular game counts will help monitor and establish wildlife distribution patterns, population trends and possibly detect the effects of extreme weather events as well as anthropogenic activities. Establishing wildlife trends and (projected) changes in distribution patterns can show the increased impact of human activities threatening wildlife in the landscape. It can provide the evidence-base to help design effective measures to mitigate such impacts and ensure the continued existence of healthy wildlife populations in the Athi Kapiti landscape.

6.0 MAANZONI, LUKENYA WILDLIFE CONSERVANCY AND KASANGA RANCH GAME COUNT

Background

Maanzoni, Lukenya wildlife conservancy (Malinda ranch) and Kasanga ranch are located North of the Nairobi-Mombasa highway. The three-conservancies amount to over 10,000 acres. The game count was conducted on 7th May 2023. Blocks were delineated in the conservancy to avoid double counting. Volunteers used the same methodology described above.

RESULTS

The results of the count are summarized in the table below indicating the number of individuals of each wildlife species counted per conservancy or ranch and the overall totals per species.

Conservancy/Ranch	Maanzoni	Malinda/Lukenya Wildlife conservancy	Kasanga ranch	Totals
Primates				
Baboon			26	26
Vervet Monkey	5		11	16
Grazer/Browser				
Common duiker			1	1
Dik-dik	5		4	9
Eland	46	34	4	84
Grant's Gazelle	80	19	13	112
Impala	85	55	40	180
Masai Giraffe	110	38	25	173
Mountain reedbuck			1	1
Squirrel		1		1
Thomson's Gazelle	114	106	41	261
Warthog	4		5	9
Wildebeest		1		1
Zebra	82	59	29	170
Birds				
Abasynia roller	1			1
Barn Swallow	1			1
Black headed lapwing		10		10
Black headed weaver	1			1
Brown headed weaver	3			3
Brown mousebird	3			3

Cattle egret		6		6
Common moorhen			1	1
Cordon bleu	3			3
Crowned Lapwing	1			1
Crows		6		6
Eastern chanting goshawk		2		2
Egyptian goose	2	21	10	33
Fork-tailed Drogo	3			3
Go away bird	5			5
Grey Heron		1	1	2
Guinea Fowl	2	2	2	6
Ibis	4			4
Kori Bustard	37	2		39
Little bee-eater			2	2
Little grebe			2	2
Long tailed shrike	9			9
Marabou Stock		1		1
Ostrich	20	14		34
Pied crow	1			1
Pigeon	16			16
Pin tailed wydah			1	1
Plover	12			12
Red billed teal			1	1
Redbill Billed oxpecker	1			1
Roufus sparrow	2			2
Sacred Ibis		19		19
Sand grouse	4			4
Secretary Bird			1	1
Shally's francolin		2		2
Sparrow weaver	5			5
Starling	14			14
Tawny Eagle		4		4
Thick knee	2			2
Three banded plover			1	1
Verraux eagle			2	2
Weaver	3			3
Weaver birds	2			2
White Bellied Bustard		2		2

White bellied go away bird			1	1
Yellow necked spurfowl	4	7	3	14
Yellow weaver	1			1
TOTAL				1333

Grazer/Browsers

Thomson gazelle

Thomson's gazelle reported the highest number among herbivores with 44%, 40% and 16% accounted for by Maanzoni, Lukenya wildlife conservancy and Kasanga ranch respectively. The Thomson's gazelles were fairly distributed in the three conservancies.

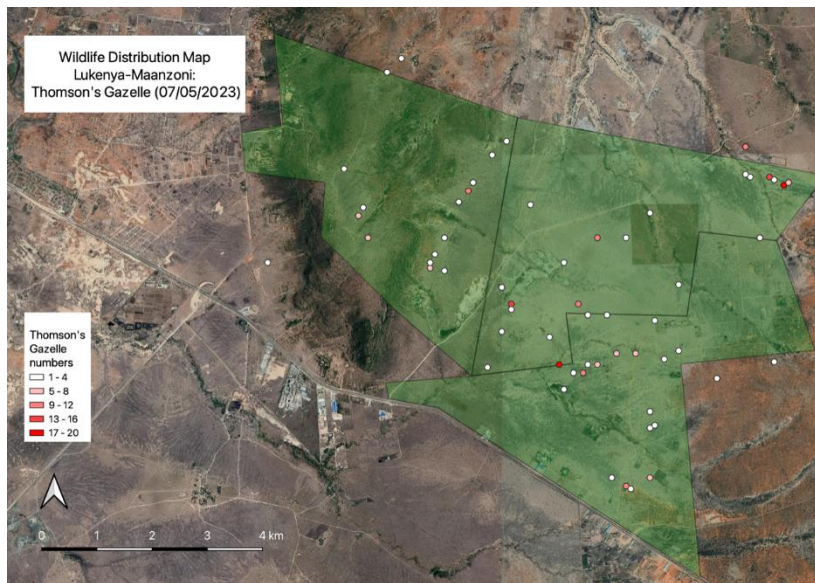


Figure 10 Distribution map of Thomson's gazelle

Impala

Impala recorded the second highest number of 180 among the herbivores with Maanzoni accounting for 47%, Lukenya wildlife estate 31% and Kasanga ranch 22%.

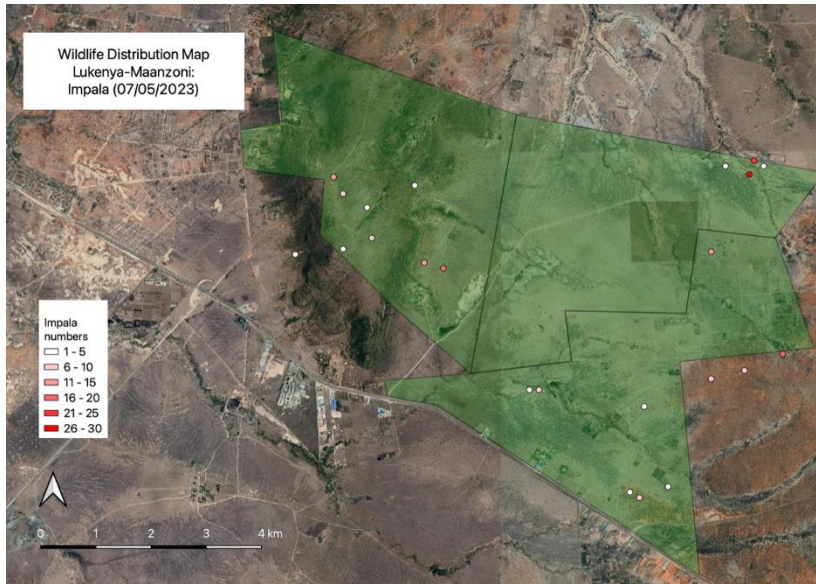


Figure 11 Distribution map of Impala

Masai giraffe

A total of 173 individual giraffes were observed during the count. 64%, 22% and 14% accounted by Maanzoni, Lukenya wildlife conservancy and Kasanga ranch respectively.

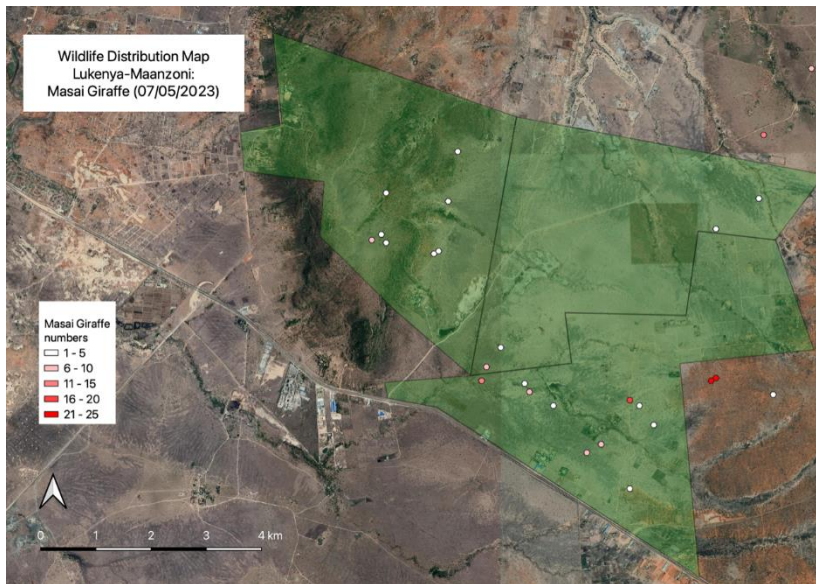


Figure 12 Distribution map of Masai giraffe

Zebra

A total of 170 zebras were recorded during the count with 48%, 35% and 17% being recorded in Maanzoni, Lukenya wildlife conservancy and Kasanga ranch respectively.

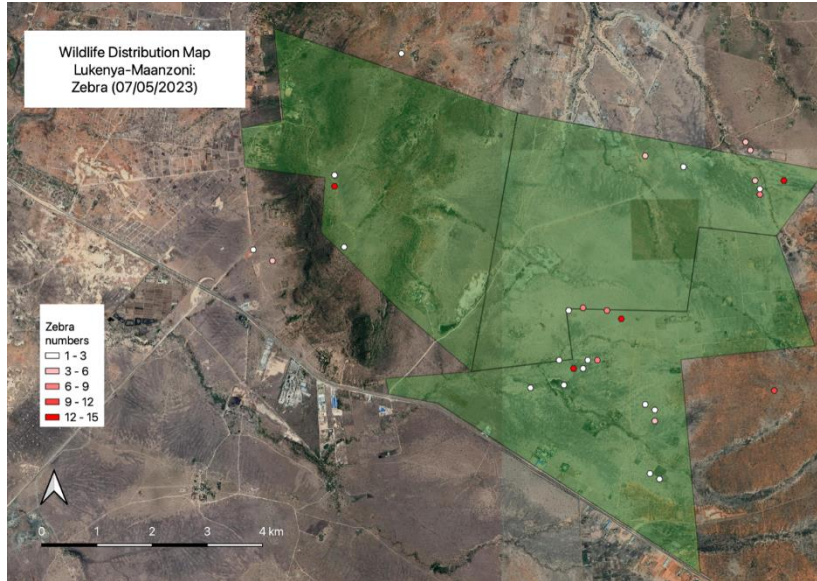


Figure 13 Distribution map of Zebra

Grant's gazelle

A total of 112 grants were recorded during the game count. 71%, 17% and 12% accounted by Maanzoni, Lukenya wildlife conservancy and Kasanga ranch respectively. From the density map below, a high concentration of grants was observed in Maanzoni wildlife estate.

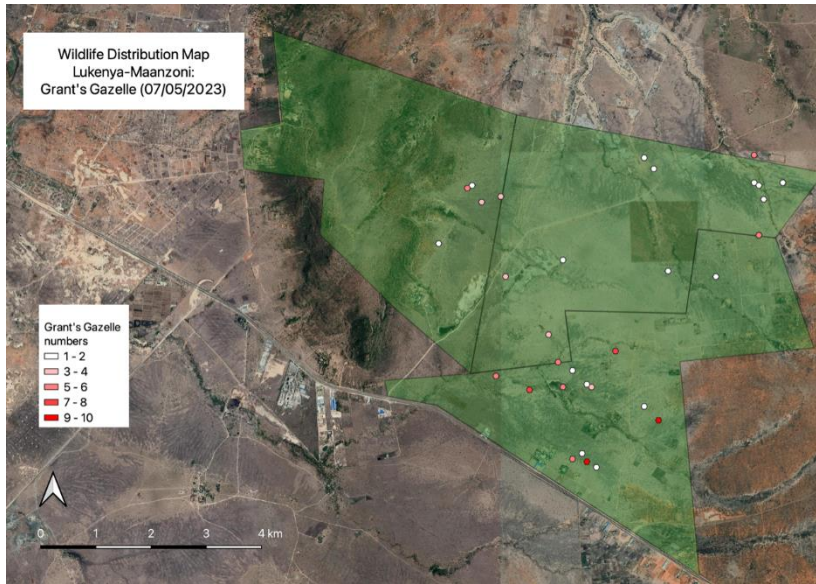


Figure 14 Distribution map of Grant's gazelle

Eland

A total of 84 elands were recorded during the game with Maanzoni accounting for 55%, Lukenya wildlife estate 40% and Kasanga ranch 5%.

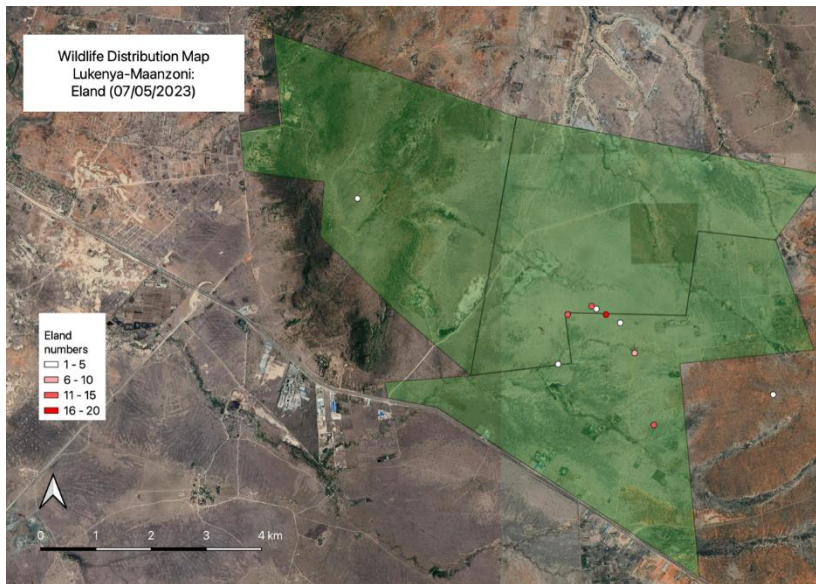


Figure 15 Distribution map of Eland

Other Herbivores

Only one wildebeest was observed during the game count at Lukenya wildlife conservancy. Other herbivores observed during the game count were; warthog (N=9), dik-dik (N=9), Mountain reedbeek (N=1), squirrel (N=1) and common duiker (N=9)

Primates

Two species of primates were observed during the game count. Baboons (N=26) and Vervet monkey (N=16).

Birds

Ostrich

A total of 34 ostriches were recorded during the game count with Maanzoni accounting for 59% and Lukenya wildlife conservancy 41%

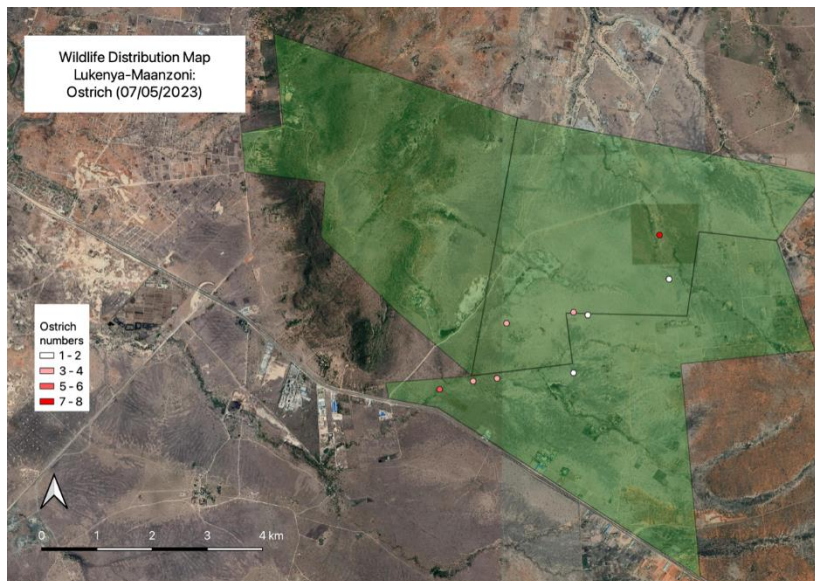


Figure 16 Distribution map of Ostrich

Other birds counted ad hoc included: cattle egret (N=6), grey heron (N=2), Kori bustard (N=39), Marabou stork (N=1), sacred ibis (N=19), secretary bird (N=1), tawny eagle (N=4), verreaux eagle (N=2), white bellied bustard (N=2) among others as shown in the summarized table above.

