



Ministry of Tourism & Wildlife



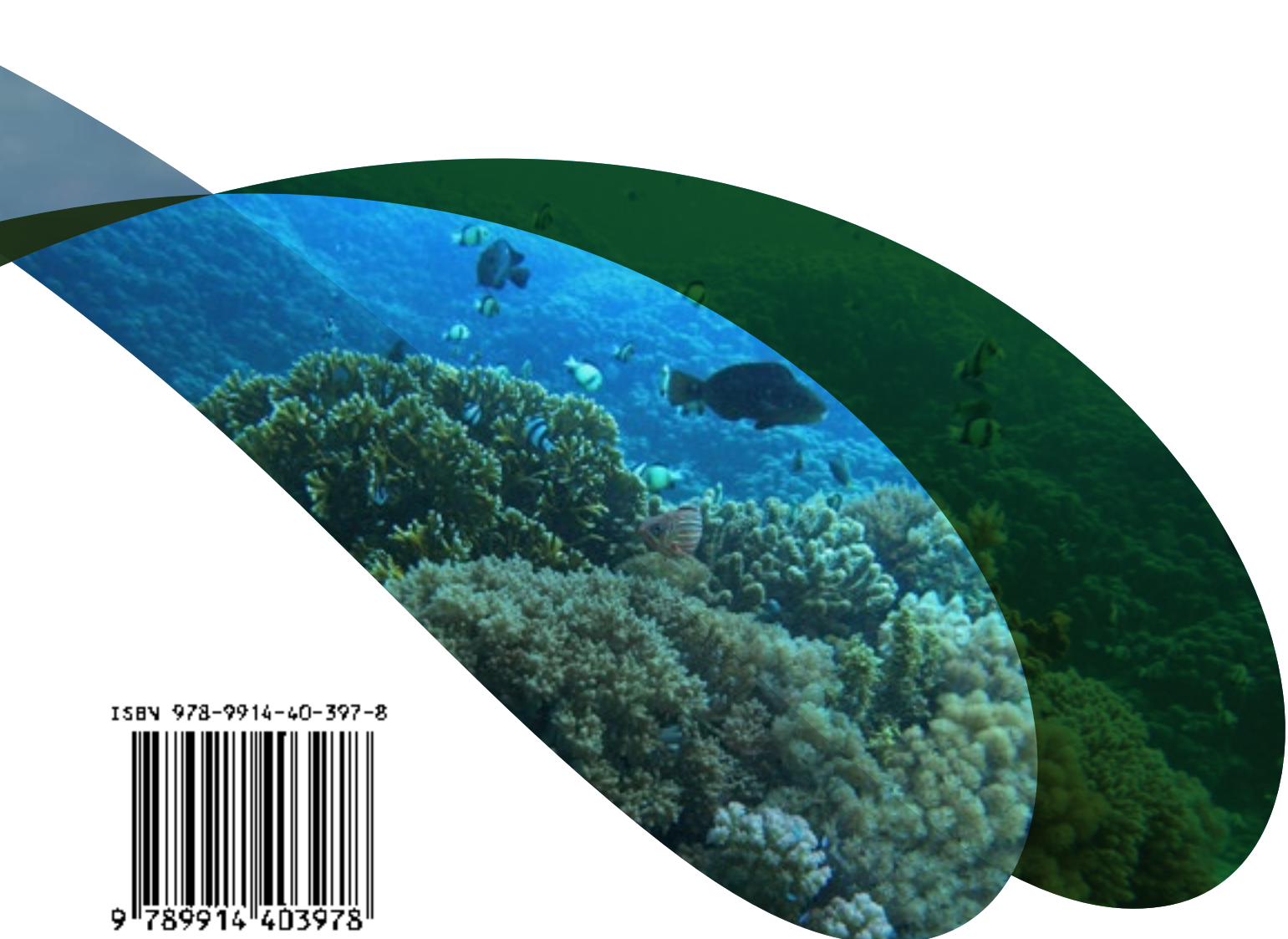
NATIONAL WILDLIFE CENSUS 2021 REPORT

Abridged Version



Wildlife
Research
& Training
Institute





ISBN 978-9914-40-397-8



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Published in July 2021 by the Wildlife Research and Training Institute (WRTI) and Kenya Wildlife Service (KWS)

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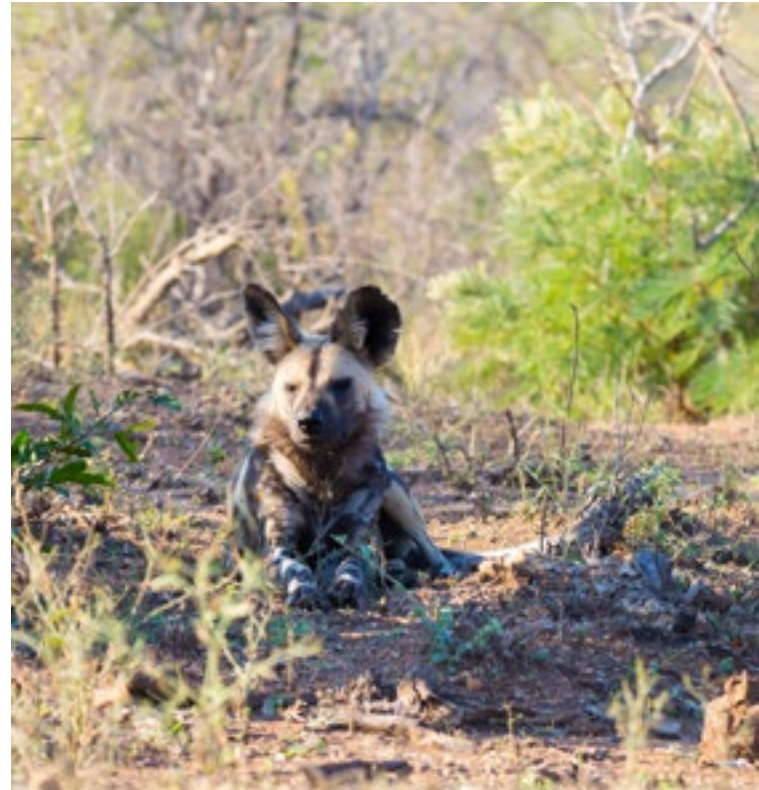
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ABBREVIATIONS

AED	African Elephant Database
AME	Amboseli-Magadi Ecosystem
ANP	Amboseli National Park
ASALS	Arid and Semi Arid Lands
CBD	Convention of Biological Diversity
CCA	Coast Conservation Area
CITES	Convention on International Trade of Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
DRSRS	Department of Resource Censuss and Remote Sensing
ECA	Eastern Conservation Area
GEC	Great Elephant Census
GoK	Government of Kenya
HCP	Hirola Conservation Programme
HEC	Human Elephant Conflict
IUCN	International Union for Conservation of Nature
KFS	Kenya Forest Service
KWCA	Kenya Wildlife Conservancies Association
KWS	Kenya Wildlife Service
LNNP	Lake Nakuru National Park
LSMM	Laikipia-Samburu-Marsabit-Meru
MCA	Mountain Conservation Area
MIKE	Monitoring the Illegal Killing of Elephants
MNP	Meru National Park
MT&W	Ministry of Tourism and Wildlife
NCA	Northern Conservation Area
NGO	Non-Governmental Organization
NMK	National Museums of Kenya
NNP	Nairobi National Park
NRT	Nothern Rangeland Trust
PA	Protected Area
SCA	Southern Conservation Area
SHIFOGA	Shimba Hills Forest Guides Association
SHNR	Shimba Hills National Reserve
TCA	Tsavo Conservation Area
TENP	Tsavo East National Park
TWNP	Tsavo West National Park
WCA	Western Conservation Area
WCMA	The Wildlife Conservation and Management Act, 2013
WCS	Wildlife Conservation Sociey
WRTI	Wildlife Research & Training Institute

EXECUTIVE SUMMARY

Kenya has a rich wildlife resource which is the main tourism product, a key economic pillar of vision 2030. However, the country is not receiving maximum benefits from the wildlife resource due to inadequate knowledge on the status and distribution of the country's wildlife populations as censuses are ecosystem and species based with no comprehensive nationally coordinated wildlife census undertaken.

The Wildlife Conservation and Management Act (WCMA) - 2013 requires the Cabinet Secretary to submit and report biannually to the National Assembly a National Wildlife Conservation Status Report as well as provide the status of wildlife monitoring every five years.

The Ministry of Tourism and Wildlife (MoT&W), n Kenya Wildlife Service (KWS) and the Wildlife Research and Training Institute (WRTI) undertook the national wildlife census for a period of 3 months (April-July 2021). The specific objective of the national census was to establish a National baseline of wildlife species. The census targeted terrestrial and aquatic ecosystems. The census enumerated land and water mammals, key birds and endangered primates. This was achieved through total aerial counts, sample aerial counts, ground counts, individual identification and indirect methods such as dung counts and use of camera traps and desktop review of previous census. The census involved the use of aircrafts (fixed-winged and helicopters), boats, vehicles, dictaphones, cameras, camera traps and used Geographic Information Systems (GIS) to record and analyse observations.

The census was officially launched by the Cabinet Secretary, Ministry of Tourism and Wildlife Hon. Najib Balala on the 6th May 2021 at Shimba Hills National Reserve. A total of 100 personnel were involved in various census sites and were drawn from Government Agencies at National and County levels, conservation partners, private and community conservancies, local communities among other stakeholders.

The census covered over 343,380km² (total aerial = 186,296km² and sample aerial = 157,084km²). This represents 59% of Kenya's land mass. A total of 1158.23 hours was flown (940.80 hours and 217.43 hours for total and sample aerial censuses respectively).

Over 30 species of mammals, birds and marine species were counted in various ecosystems during the census. Some of the iconic species counted were elephants (n=36,280), black rhino (n=897), white rhino (n=842), northern rhino (n=2), lions (n=2,589), hyenas (n=5,189), Cheetahs (n=1,160), wild dogs (n=865), buffalo (n=41,659), Maasai giraffe (n=13,530), reticulated giraffe (n=19,725), Nubian's giraffe (n=938), common zebra (n=121,911), Grevy's zebra (n=2,649), eland (n=13,581), hartebeest (n=7,332), wildebeest (n=57,813), Grant's gazelle (n=66,709), Thomson's gazelle (n=18,277), hirola (n=497), topi (n=8,627), impala (n=25,541), oryx (n=11,765), kudu (n=2,524), gerenuk (n=13,400), waterbuck (n=1,071), warthog (n=8,013), hippo (n=1,788), Maasai Ostrich (n=2,354), Somali Ostrich (n=6,483), roan antelope (n=15), sable antelope (n=51), Mountain bongo (n=150), Sitatunga (n=473), Tana river Mangabey monkey (n=1,650) and Tana river red colobus monkey (n=1,219), among other terrestrial species.

Key marine species counted were, sea turtle nests (n=340), dugong (n=2), whale shark (n=9), Humpback whales (n=63), Indo- Pacific bottlenose dolphin (n=354), Blue whale (n=2), Scalloped Hammerhead shark (n=222), Silky Shark (n=495), Giant Guitarfish (n=89), Bowmouth guitarfish (23), Mobula rays (n=11), Oceanic whitetip shark (n=358), Long comb sawfish, narrow snout sawfish or green sawfish (n=60), Great white shark (n=29) and Tiger shark (17) among other marine species.

Among the water fowl birds counted were: the lesser flamingoes (n=97,8005 individuals), greater flamingoes (n=748 individuals), great white pelicans (n=523), pink-backed pelicans (n=360), great comorants (n=4,292 individuals), long-tailed comorants (n=733 individuals), African darters (n=639), African fish eager (n=57 individuals), yellow-billed stork (n=720 individuals), Egyptian geese (n=963) and red-knobbed coot (n=692 individuals).

The census recorded an increase on some of the charismatic species such as: elephants, rhinos, lions, giraffe, Grevy's zebra, hirola among others and established baseline number for other species. However, there was relatively lower records of the plain game species.

A number of anthropogenic activities such as livestock incursions, logging, charcoal burning, settlements and fires were observed in conservation areas.

The report identifies some of the challenges such as habitat loss, land use and land tenure systems change, exponential human population growth, and accompanying demand for land for settlement and infrastructure as the reasons for low densities of plain game.

This report gives an overview of the national wildlife census results. More detailed technical reports for each ecosystem can be availed on request from Wildlife Research and Training Institute (WRTI).

Results from this national census has provided important baseline data to inform policy to sustainably conserve and manage Kenya's wildlife resources for current generations and for posterity and propose the following recommendations:

1. The National Wildlife Census to be conducted after every three years in line with wildlife ecological cycles. In this regard, a budgetary allocation by the National Treasury during the budget cycle every three years is critical.
2. An annual budget is required to support annual and active monitoring of rare and endemic species such as roan antelope, sable antelope, mountain bongo, rhino, Grevy's zebra, hirola and sitatunga
3. An immediate budget support is required to establish status of species currently threatened by illegal trade and bush meat such as pangolins, dik diks and gazelles and those species that were not covered during this census such as leopard, small carnivores and non-human primates
4. There is need for review of legislation to recognize community conservancies as protected areas as they constitute important wildlife range
5. To improve the ecological integrity of dormant parks and reserves, there is need to enhance public-private partnerships
6. A budgetary support is required to establish a data portal and access mechanism at the Wildlife Research and Training Institute to inform wildlife management as part of its mandate
7. For the endangered, rare and endemic species such the black rhino, mountain bongo, roan antelope, sable antelope among others, there is need for budgetary allocation to support development and implementation of their recovery plans.
8. Deliberate efforts to secure existing rhino population and additional space for rhinos due to the huge investment costs, security and management requirements
9. Invest in new innovations, modern census equipment and software to improve efficiency in undertaking wildlife censuses.
10. The County Governments to incorporate the census findings in the development of the County Integrated Development Plans (CIDP) and spatial plans.
11. The WRTI to pilot models of wildlife utilization programme as part of management of common species to enhance benefits to land owners who live with wildlife.
12. Fast track the full operationalisation of the WRTI which is the corporate body mandated to undertake and coordinate wildlife research.
13. Undertake a national classification of species with low populations in consultation with IUCN.

Keywords: *Wildlife Census, Aerial Total Count, Aerial Sample Count, Ground Count, Protected Areas, Marine Ecosystem, Terrestrial Ecosystems, Community Conservancies*



Message From The President

Kenya's heritage of natural beauty and scenic splendour is made infinitely richer because of our diverse wildlife. Across the globe, our Nation is renowned for our rich bio-diversity that spans air, water, and land; natural wealth that makes us a conservation and tourism destination second to none.

As the world grapples with both climate change and human activities that threaten botanical and zoological life as well as their habitats, Kenya is leading the way by implementing bold and decisive actions to conserve and promote our ecological wealth.

It is against that backdrop that the inaugural nationwide wildlife census has been conducted. This national endeavour is a historic opportunity to develop an annotated inventory of our wildlife resources, in recognition of their place as strategic national assets. The report arising from this noble national effort provides the required information to guide future conservation and management of our wildlife resources, in a manner that minimizes human-wildlife conflict and also promotes sustainable development.

As we continue to uphold our sacred duty of protecting our wildlife for current and future generations, I call on all players within the Government as well as in our private sector to make this report a central cog of all plans and actions within wildlife conservation and management.

Uhuru Kenyatta, CGH
President of the Republic of Kenya and
Commander-In-Chief of the Defence Forces



Foreword

The National Wildlife Census 2021 is a proud undertaking by the Kenya Government. It is indeed a historical achievement of documenting the first comprehensive report on the status of our wildlife as one data layer. This milestone is also a noteworthy reflection of the potential of collaboration and testimony to the capacity of our local institutions. This inaugural undertaking was coordinated by the Kenya Wildlife Service and the newly established Wildlife Research and Training Institute, who will be the repository for the National wildlife conservation status data.

The Ministry is required to report biannually to the National Assembly through the National Wildlife Conservation Status Report on the status of efforts to develop and implement recovery plans for all nationally listed species and on the status of all species for which such plans have been developed.

In the past, Kenya in collaboration with partners has undertaken site or species specific wildlife censuses. Markedly, this is the first one-off national wildlife census that has been carried out aimed at establishing the most comprehensive baseline on wildlife status and distribution in the country.

Obtaining this level of information of a vital natural resource allows for better policy, planning and assessment of areas that require focus in our interventions to maintain or improve our National conservation efforts. This also guides the strategic deployment of vital resources aimed at increasing numbers where declines are evident as well as drawing attention to areas that require mitigation measures to avert potential or real human-wildlife conflicts and eradicating the threats posed by poaching and illegal bush meat trade.

The findings of this report will also provide a scientific basis for programmes dedicated to saving our endangered species and their habitats for future generations.

Evidence from the census illustrates the social-economic impacts of activities such as agriculture, human settlements and infrastructure development on wildlife movements and loss of space for wildlife. This will require more attention if we are to avert the danger of secluding wildlife in pockets of Protected Areas. The world-renowned success of the Kenya's model of free-ranging wildlife is based on our ability to allow as much unhindered movement and distribution of wildlife. It is imperative that we continue to strive to maintain this model while taking into account the demands of a growing human population and the need for clear benefits.

It is important to recognize and appreciate that maintaining this successful model has a huge cost in terms of both finances required and impact on humans. It is therefore vital that the global community takes this cost as a shared responsibility. This calls for increased investment by development partners and also by the private sector in taking up a bigger role in the form of Public-Private Partnerships in biodiversity conservation and protected areas.

We conserve this magnificent heritage for the posterity of Kenyans and the entire World.

Hon. Najib Balala, EGH

Cabinet Secretary, Ministry of Tourism and Wildlife



Preface

Kenya is developing at a fast rate with new and major infrastructural projects (road networks, railway lines and urban centres) being completed or in the process of being developed. Also, emerging incompatible changes in land use and land tenure systems, especially in rural areas that are important wildlife ranges, have serious implications for wildlife numbers and distribution.

These are exacerbated by the ever increasing human population that increases demand for shared and limited resources. The areas have also been experiencing erratic weather conditions resulting in droughts as global climate change impacts are felt in Kenya. This is likely to impact negatively on wildlife population for certain species. Understanding wildlife population status, trends and distribution in relation to developments is key to initiating species specific and habitat conservation actions. Therefore, this national wildlife census has provided information on the wildlife numbers, their trends, distribution and threats to guide development of such conservation actions. In addition, the information will be used to guide policy and decision making processes as well as advice on the appropriate management actions required to ensure stable and increasing wildlife populations including expansion of wildlife range.

The national census results will also enhance understanding of the connectedness of the key landscapes. For example, past monitoring has shown extensive cross landscape wildlife movements between the Amboseli and Tsavo Ecosystem, Meru and Laikipia ecosystem as well as Laikipia and Marsabit ecosystem. Isolated populations reduce genetic diversity and health of ecosystems and therefore connectivity mitigate problems associated with fragmentation by joining isolated wildlife populations. It is expected that by having a one-off census, clear understanding of national and ecosystems wildlife population status and distribution will be understood. The data will form the basis for future wildlife population monitoring as well as establishing real economic value of wildlife capital for reflections in the national budgeting process.

Peer reviewed scientific methods for wildlife censuses for different target wildlife species were used to gather and provide data used in this report. The report provides population status, trends and distribution of different wildlife species, which include elephants, rhino, sable antelope, roan antelope, buffalo, giraffe, Grevy's zebra, common zebra, giraffe, eland, topi, kudu, impala, hirola, gerenuk, warthog, hippo, ostrich, crested mangabey, red colobus monkey, sitatunga, oryx Grant's gazelle, Thomson's gazelle.

This report will guide efforts toward reversing the declining wildlife population as well as develop strategies to grow stagnant populations. The implementation of outcomes from this report and future one-off censuses will require financial and human resources support. Therefore, I call upon our development partners, conservation NGOs and other stakeholders to support the WRTI and the KWS to ensure the implementation of the outcomes and future censuses are realized.

PROF. FRED H. K. SEGOR, CBS

Principal Secretary, State Department for Wildlife

Acknowledgement



**Brig. (Rtd) John M. Waweru, EBS
Director General
Kenya Wildlife Service**



**Dr. Patrick Omondi, OGW
Ag. Director/CEO
Wildlife Research and Training
Institute**

The Country undertook for the first time a one-off national wildlife census to establish the status of her wildlife resources to facilitate planning for the resources. Successful implementation of the National Wildlife Census with the slogan #CountToConserve# was undertaken with budgetary allocation from the Government through the National Treasury. We thank HIS EXCELLENCY HON. UHURU KENYATTA, C.G.H., PRESIDENT OF THE REPUBLIC OF KENYA AND COMMANDER IN CHIEF OF THE DEFENCE FORCES for prioritizing the wildlife census and allocating financial resources to undertake the exercise despite the tight budgetary constraints to various sectors amidst impacts of the COVID-19 pandemic.

We thank The Cabinet Secretary Hon. Ambassador Ukur Yatani, EGH Cabinet Secretary, National Treasury & the Ministry of Planning for the timely dispatch of funds to facilitate the census.

We also thank the Cabinet Secretary, Ministry of Tourism and Wildlife Hon. Najib Balala, CBS for policy guidance on the entire process and officially launching the National Wildlife Census in Shimba Hills National Reserve on 6th May 2021, The Chief Administrative Secretary, Ministry of Tourism and Wildlife Mr. Joseph Boinet, the Principal Secretary, State Department of Wildlife, Ministry of Tourism and Wildlife (Prof. Fred Segor) and staff of Ministry of Tourism and Wildlife for their technical and logistical support. The Ministry of Interior and Coordination of Government is highly appreciated as the County Commissioners ensured smooth operation of the teams by ensuring the teams' security and informing communities about the census through the elaborate networks of administrators across the Country up to the village level. All other Government Ministries who provided support to facilitate implementation of the census are also appreciated in particular the Kenya Defense Forces, National Air Support Department (NASD) for aviation support and logistics, Department of Resource Census and Remote Sensing, Kenya Forest Service, Kenya Maritime Authority, State Department for Fisheries, Kenya Marine Fisheries Research Institute, Kenya Coast Guards, National Museums of Kenya, Institute of Primate Research, Lake Victoria Basin Authority and Community Scouts under the Government economic stimulus package.

The County Governments are thanked for facilitating the census in their respective counties whose outcome will be key in informing County spatial planning process and inform areas of collaboration.

We thank the Conservation Alliance of Kenya, particularly the following Non-Governmental Organization (NGOs), Conservancies and Individuals: World Wildlife Fund(WWF) for Nature- Kenya, Africa Wildlife Foundation(AWF), Save The

Elephants(STE), Space for Giants(SFG), Mara Elephant Project(MEP), Amboseli Elephant Trust (AEP), Tsavo Trust, Sheldrick Wildlife Trust, Big Life Foundation, Amboseli Ecosystem Trust, Wildlife Conservation Society, Coastal Oceans Research and Development in the Indian Ocean, Arocha Kenya, Nature Kenya, Tropical Sea Life, Community Based Environmental Conservation, Olive Ridley, Maasai Wilderness Trust, Stand Up Shout Out, Lewa Conservancy, Loisaba Conservancy, Olpajeta Conservancy and Northern Rangeland Trust and Maasai Mara Wildlife Conservancies Association Captain Wangai Kimeria, Captain Justin Mathews and Captain Mark Ross for supporting the census with aircrafts and personnel. Kenya Wildlife Conservancies Association and its membership are also appreciated. We also thank Community Based Organizations among them Watamu Turtle Watch, Diani Turtle Watch, TIWI Turtle Watch Police, Beach management units, Friend of Arabuko Soke Forest and Shimba Hills Forest Guides Association.

Institutions of higher learning, research institutions and projects are also appreciated in facilitating and participating in the census in particular Technical University of Mombasa, Kenyatta University (Mombasa Campus) and Mpala Research Centre.

The media fraternity and the census digital and documentary team is acknowledged for documenting and disseminating information to both the wider public and international community and for putting together digital records for future reference. Special thanks go to Digimatt Solutions and Dharkemmy Corporate Communications Limited (DCCL) for their cooperation in this regard.

Finally, special thanks go to the National Wildlife Census Planning Committee, Kenya Wildlife Service and Wildlife Research and Training Institute staff for ensuring articulate planning, organization and implementation of the census. The team that prepared the report is also acknowledged for working round the clock to ensure the national census report was finalized and submitted within the required timelines.





CHAPTER

1

General
Introduction



1.1 | BACKGROUND

Kenya's rich wildlife resource is one of the key economic pillars of the country. Wildlife-based tourism is a cultural service that is an important source of revenue accounting for about 10% of the Gross Domestic Product (GDP) of Kenya in 2010 (Kibara et al., 2012; GoK, 2010). However, the country has not been receiving optimized wildlife-based benefits as anticipated due to inadequate knowledge on the status of the country's wildlife resources as well as factors influencing their abundance and distribution. This is because there has been no one-off and comprehensive scientific data on wildlife population to inform sound policy direction. To achieve this, the National Government provided funding to facilitate a coordinated national wildlife census in all regions that harbour wildlife including protected areas, conservancies, private and community areas. The information generated will support development and implementation of sound wildlife conservation policies. In addition, the information will be used to guide evidence-based decision support tools for adaptive wildlife management, integrated cross sectoral and wildlife conservation, multi-scale planning and sustainable development to optimize wildlife benefits to the country. This will be more so to the wildlife species listed in schedule six (6) of the Wildlife Conservation and Management Act (WCMA) - 2013 hereafter referred to as WCMA-2013.

The number and distribution of species listed in schedule six (6) of the WCMA - 2013, (i.e., rare, endangered and threatened species) whose population status and distribution has not been evaluated recently require urgent update. Such updates on these species population status and distribution can be achieved using different methods. These include; aerial total census, aerial sample census, ground census using vehicles and indirect methods like the dung count and use of camera traps (Norton-Griffiths, 1978; Douglas-Hamilton, 1996). Aerial censuses are commonly undertaken in savannahs, arid and semi-arid ecosystems and requires use of fixed wing light aircrafts and helicopters. Within the forested ecosystems, the use of indirect dung count methods and camera traps targeting elusive forest species are commonly adopted.

After the enactment of the WCMA-2013, wildlife censuses become a mandatory legal requirement. Section 64(3) of the WCMA 2013 stipulates that the Cabinet Secretary (CS) responsible for wildlife matters is required at least once every five years, submit to the National Assembly (NA) a wildlife resources monitoring report showing the

achievements made in the implementation of the past or subsisting national wildlife conservation and management strategy and avail the said wildlife resources monitoring report to the public. Therefore, this Government initiative to provide financial support to undertake the National Wildlife Census aims to fulfil the legal requirement as stipulated by the WCMA - 2013. Previous censuses were undertaken using both Government funds as well as from conservation partners and Non-Governmental Organizations (NGO).

Aerial total censuses have been carried out over the years in the larger ecosystem including the Tsavo, Amboseli, Maasai Mara and Laikipia-Samburu-Marsabit extending to the Meru Conservation Area (MCA) in 2002, 2005, 2006, 2007, 2011, 2014, 2015, 2017 and 2018 (Omondi et al., 2002; Chase et al., 2015; Thouless et al., 2016; Ngene et al., 2017; Kyale et al., 2018; Ngene et al., 2018). These regular censuses have become a manager's tool to determine wildlife trends, establish national wildlife databases, manipulate the range, condition, productivity, and the species numbers, including distribution and provision of space and grazing. Furthermore, security and tourism are also influenced by the numbers within and outside protected areas. Besides, human-wildlife conflict issues are also adequately addressed as well as resource allocation towards conservation and monitoring of the same.

Kenya has never undertaken a one-off national census to establish a baseline of the wildlife population status and distribution across country. It was therefore important to undertake this national census to gather the baseline data on the current wildlife population status and distribution as well as future use to understand wildlife population trends and shifts in their distribution. During the census, terrestrial, fresh water, marine mammals, key birds (ostrich and kori bastards), endangered primates (Tana Mangabey and Tana red colobus) and reptiles (crocodiles) were counted. Different scientific methods were applied depending on the species and the habitat types following standard methods. Aerial census techniques were used to count large mammals in savannah, arid and semi-arid regions while dung count methods were used in forested ecosystems. For the wetland ecosystems, both aerial and ground count methods were applied. Existing data of other species of wildlife was collated from different conservation institutions and synthesized to produce this census report. This report presents the finding of the first ever National Wildlife Census (NWS) in Kenya.

1.2 | GOAL AND OBJECTIVES

The goal of this aerial total and sample censuses was to establish a national baseline of wet season wildlife population status and distribution in Kenya. The specific objectives of the National Wildlife Census were to:

- a. Determine Kenya's wildlife population abundance and distribution
- b. Identify threats to wildlife conservation and management in Kenya's landscapes
- c. Establish the suitability of use of drones in aerial censuses in open savanna ecosystems
- d. Establish a national wildlife database and data portal
- e. Establish resource capacity for undertaking wildlife censuses
- f. Suggest strategies for effective wildlife conservation and management across Kenya's landscapes.
- g. Determine Kenya's wildlife population trends over time
- h. Provide data and information for use to prepare a national wildlife status report

1.3 | PROJECT JUSTIFICATION

Kenya's human population has grown 5.95-fold from 8 million people in 1963 to 47.6 million in 2019, however the available surface land remains the same. Increased human population has led to increase in demand for land for human settlements, infrastructure, and agriculture. This has resulted in land use changes and tenureship which have important implications for sustainable wildlife conservation in this country. Competing and non-compatible land uses threaten biodiversity conservation in Kenya, and therefore understanding wildlife abundance and distribution in relation to these developments is key to initiating habitat conservation actions.

Key wildlife landscapes in Kenya have been experiencing challenges in terms of land tenure, land use system, increased livestock and poor husbandry practices, reduced rainfalls and increased droughts occasioned by global climate change amongst others. This is likely to

impact negatively on certain wildlife species populations. This national census is expected to provide information on the wildlife numbers and trends in all the ecosystems, and therefore propose appropriate management actions.

The census enhanced understanding of the connectivity of the key landscapes. For example, past monitoring has shown extensive cross landscape wildlife movements between the Amboseli Ecosystem and Tsavo Ecosystem, Meru Ecosystem and Laikipia Ecosystem as well as Laikipia Ecosystem and Marsabit Ecosystem. It is expected that by having a one-off census, clear understanding of national wildlife population status and distribution will be understood. The data forms the basis for future wildlife population monitoring. In addition, the data forms a basis for establishing real economic value of wildlife capital for reflections in the national budgeting process.





CHAPTER

2

Materials
and Methods



2.1 | STUDY AREAS

The census was carried out in the following ecosystems, protected areas, wetland areas and counties: Tsavo ecosystem; Amboseli-Magadi ecosystem; Athi-Kapiti ecosystem; Naivasha-Nakuru ranches ecosystem; Laikipia-Samburu-Marsabit-Meru ecosystem; Nasalot-South Turkana-Rimoi ecosystem; Shimba Hills-Mwaluganje ecosystem; Lamu - Lower Garissa and Tana River ecosystem, Mwea National Reserve; Ruma National Park; Lake Nakuru National Park; Nairobi National Park; Rift

Valley Lakes; Sitatunga range in wetlands within Western and Central Rift Conservation Areas; Garissa County; Wajir County; Mandera County; and, Turkana County. Together, these areas constitute some 343,380 km². These sites correspond with the Kenya Wildlife Service (KWS) Conservation Area Network. Figure 1 below shows the census areas in Kenya. Detailed description of each census region is provided in the separate reports of each census site.

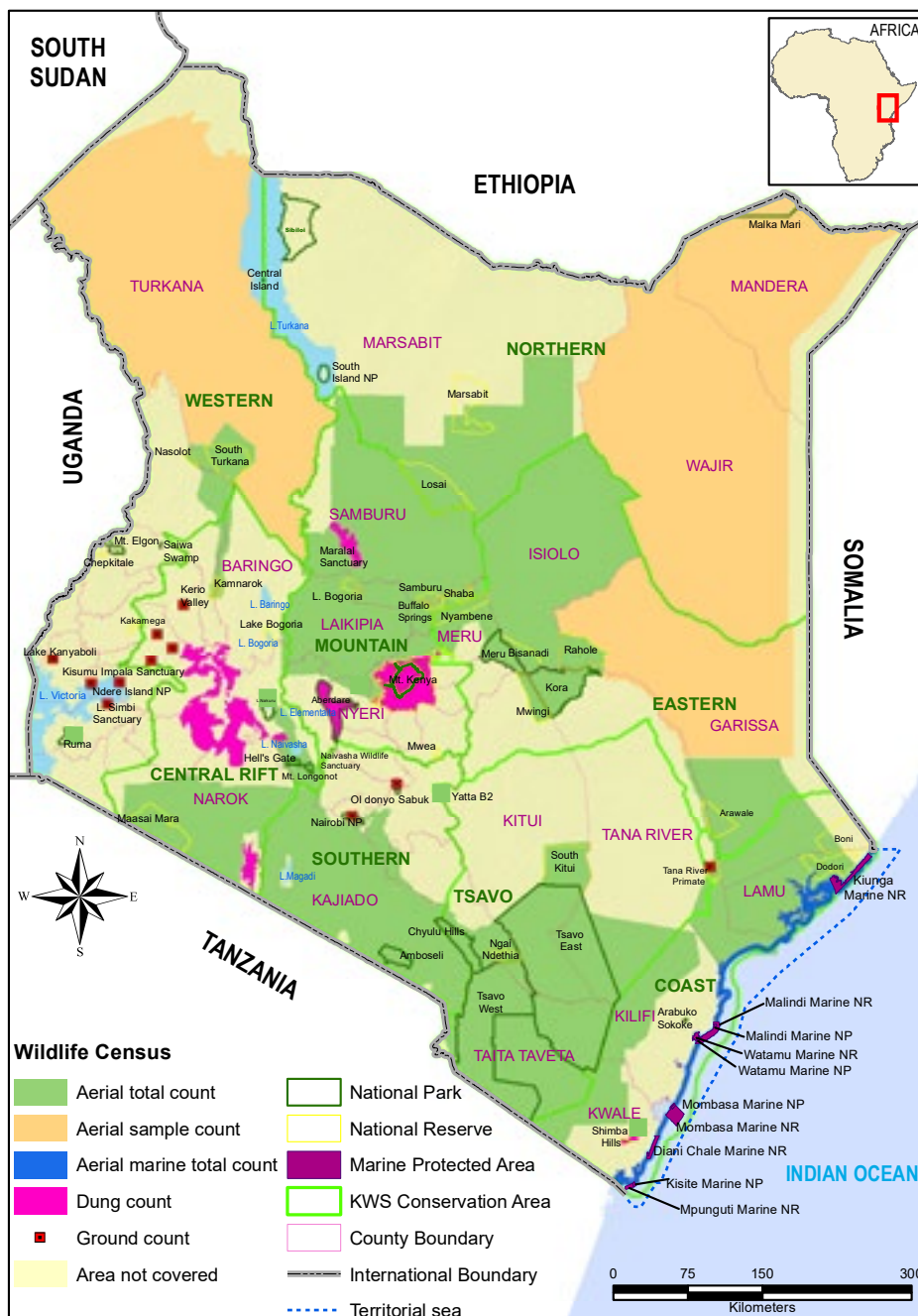


Figure 1: A map showing the Kenya Wildlife Service Conservation Area where the census took place between April and July 2021

2.2 | METHODS

The following standard methods were used during the National Wildlife Census to count different species of wildlife in different conservation areas:

1. Aerial total census method was used in Tsavo, Laikipia-Samburu-Marsabit-Meru-, Isiolo, Amboseli-Magadi, Athi-Kapiti, Maasai Mara, Lamu - lower Garissa and Tana River, Kerio Valley and Nasolot ecosystems; Rift Valley lakes; Ruma, Sibilo, and Lake Nakuru National Parks; Mwea National Reserves, and Shimba Hills National Reserve and Mwalungaje Sanctuary; and Solio Ranch following procedures described in details by Norton-Griffiths (1978) and Douglas-Hamilton et al. (1996).
2. Elephants in forested ecosystems of Aberdare National Park, Kipipiri Forest Reserve, Mount Kenya National Park & Reserve, Mount Elgon National Park, Chepkitala Forest Reserve, Shimba Hills National Reserve, Kirisia Forest, and Loita Forest were counted using the indirect dung count method as described by Barnes et al. (1997) and modified by Vanleueew (2008).
3. Censuses for rhino meta-populations hosted in 19 smaller populations in public, private, county and community areas were undertaken through ground, aerial, water hole census and camera traps. Detailed methods are describe in the separate reports on population status and distribution of rhinos in Kenya.
4. Ground census was carried out to establish the population of roan antelope in Ruma National Park, sable antelope in Shimba Hills National Reserve, endangered primates within Tana River forest complex ecosystem. Walking transects were used to count the roan antelope, sable antelope, red colobus and the crested mangabey. In small protected areas like Nairobi and Oldonyo Sabuk National Parks, transect counts using vehicles and on foot respectively were undertaken to establish the population status and distribution in the two protected areas. Wetland birds were also counted using standard ground census methods. All the ground census methods followed standard procedure as outlined in details by Norton-Griffiths (1978). Detailed methods are described in respective chapters outlined in this report.
5. Censuses for wildlife species within wetlands and lakes (e.g., crocodiles, hippos and waterfowl birds) was carried out along transects using aircrafts and boats following standard methods outlined in details by Kanga et al.(2019).
6. The exercise also involved digitization of all collected scientific data, preparation and compilation of publications and databases.
7. The data was summarized using Argis 10.0 as described by ESRI (2010) and analyzed following procedures described by Zar (1996).
8. Drone technology was piloted in 5 sites of Tsavo, Mwea, Nairobi, Nakuru and Ruma, the results of the pilot to inform future applicability.

rhinoceros







CHAPTER

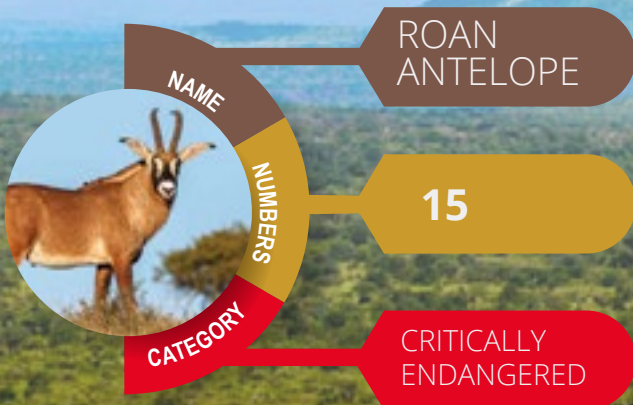
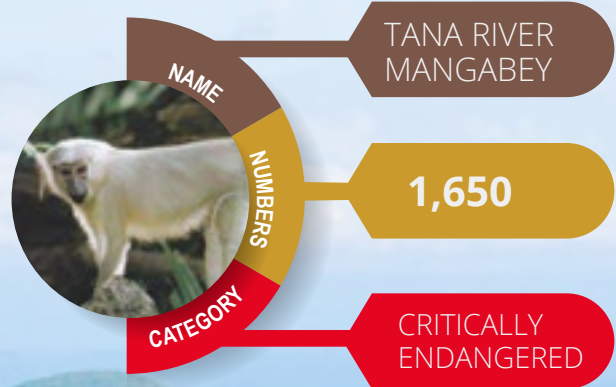
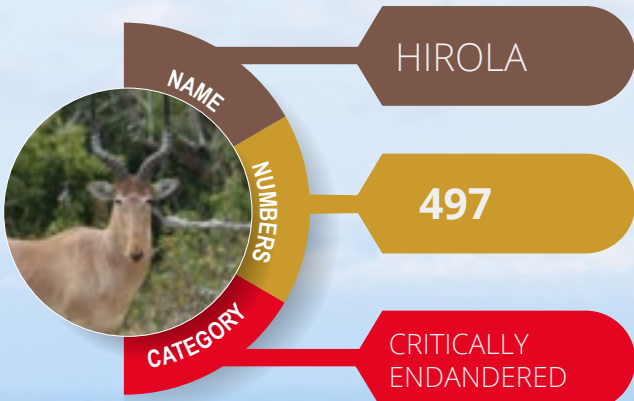
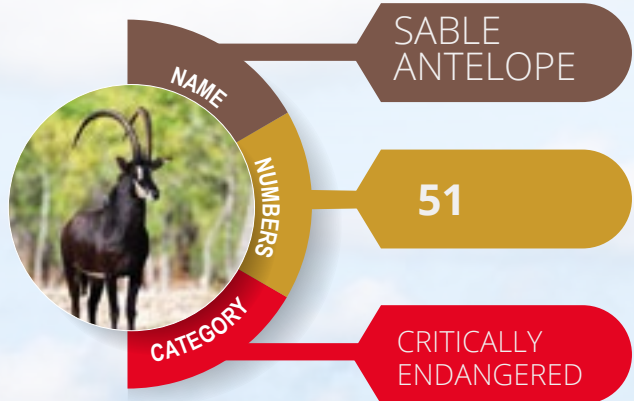
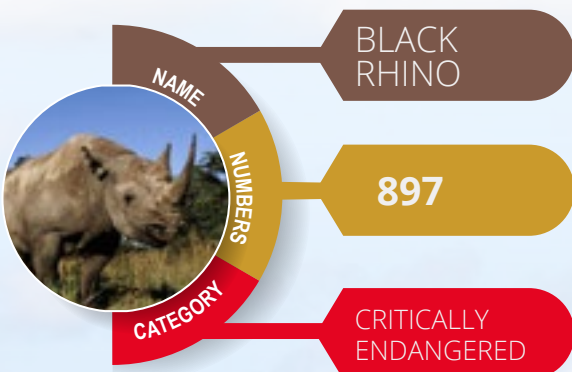
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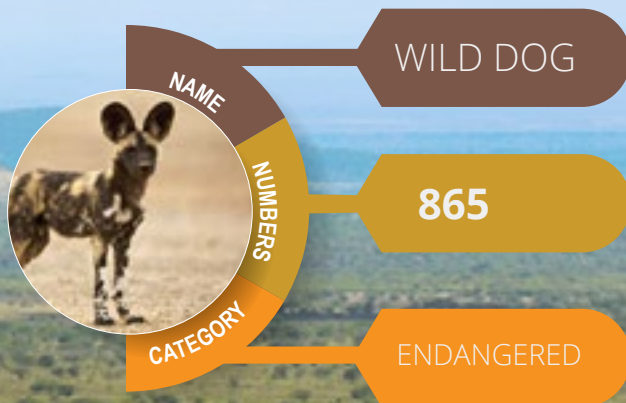
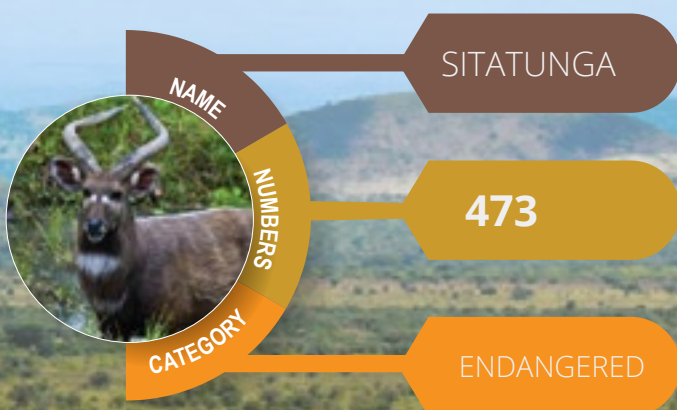
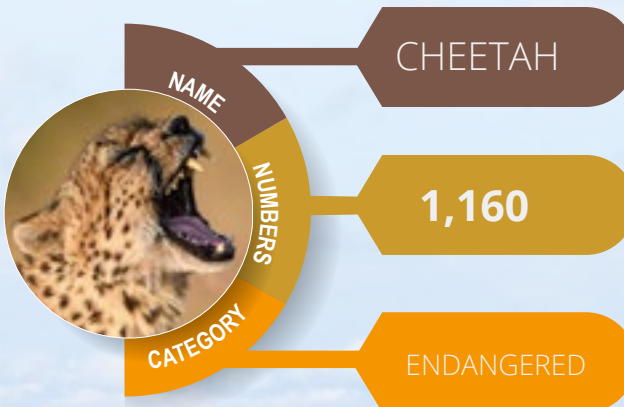
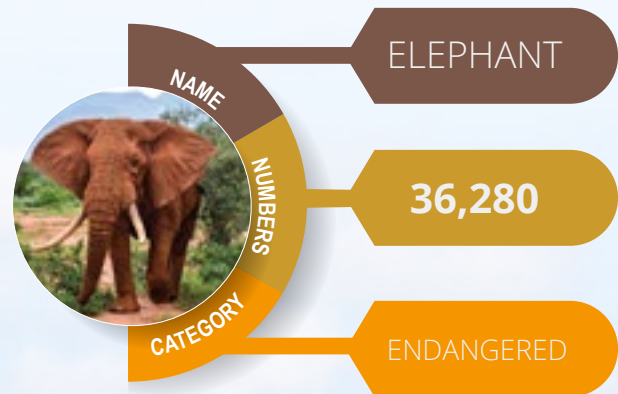
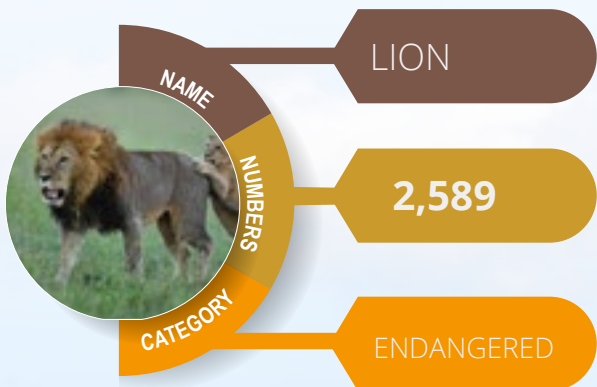
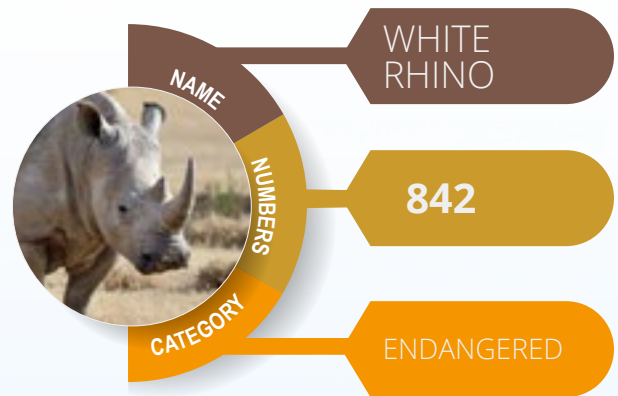
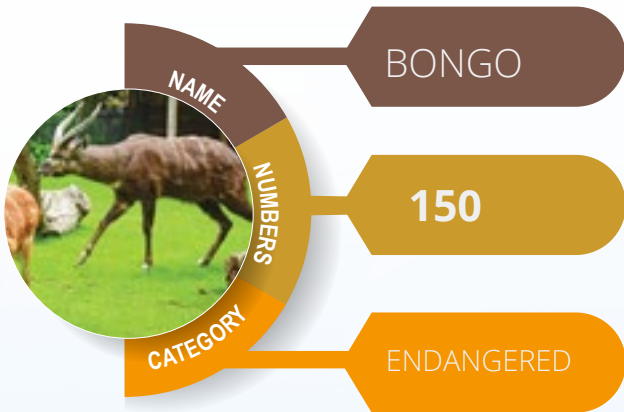
2021 Wildlife
Census Results
Summary

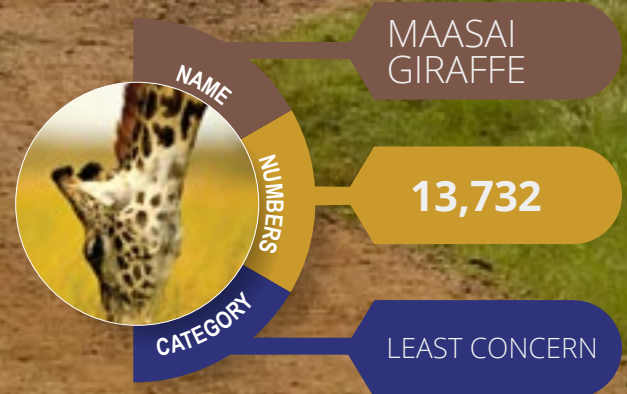
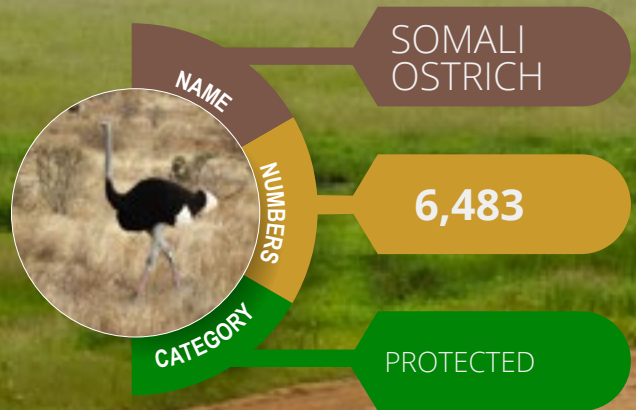
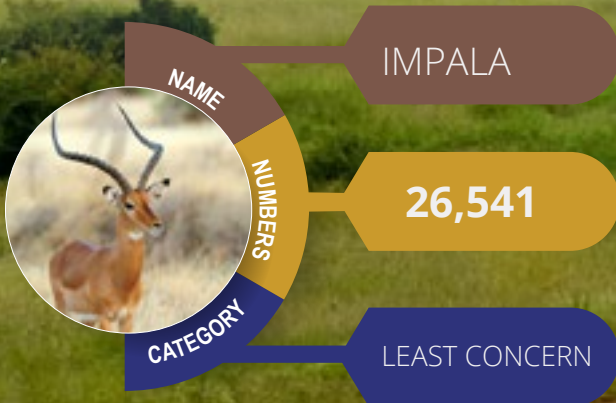
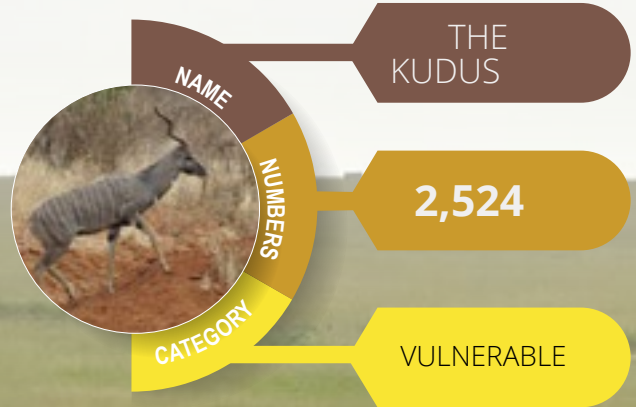
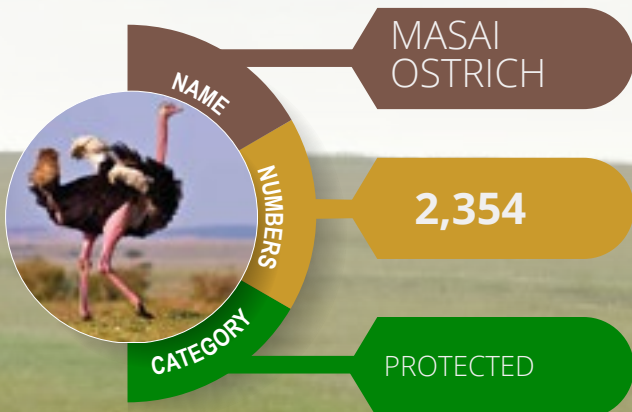
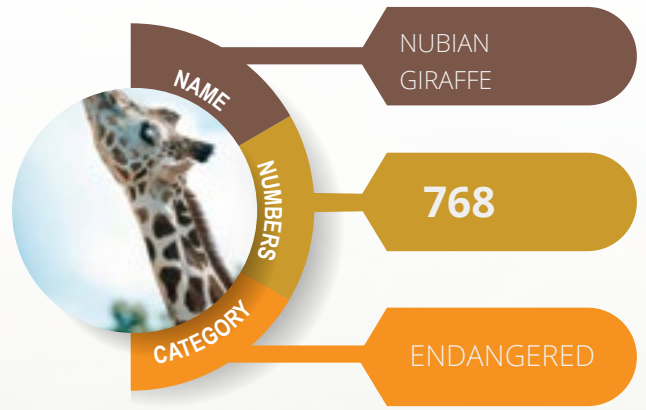
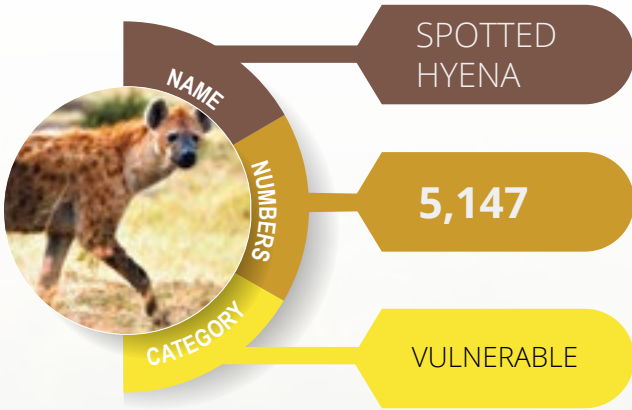


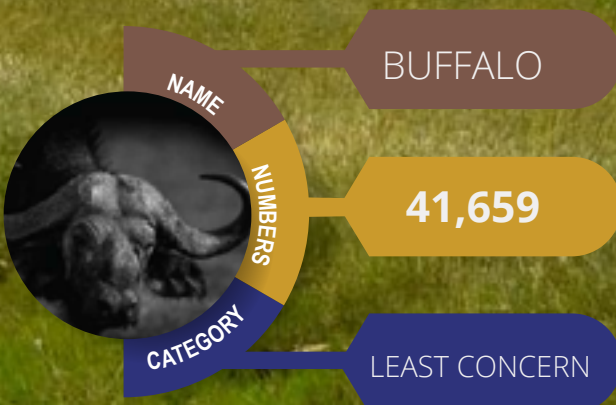
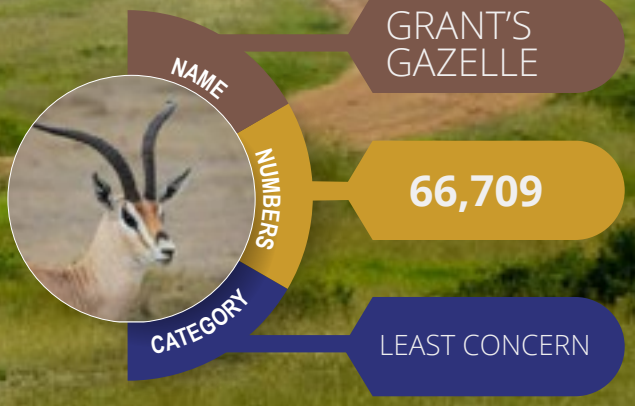
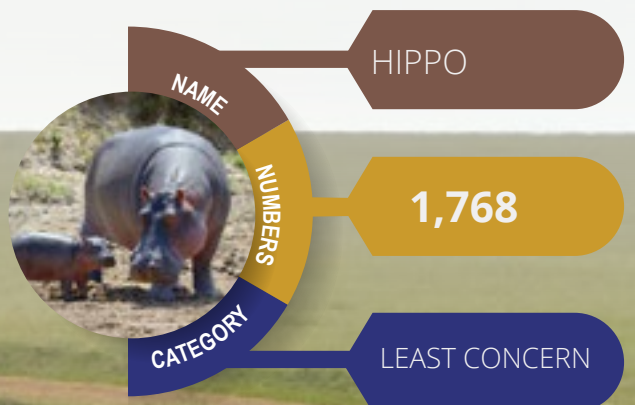
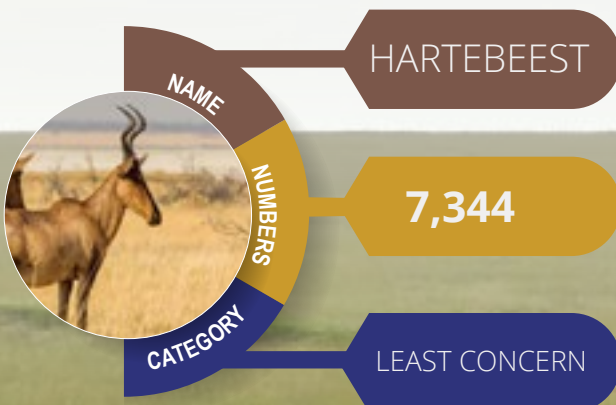
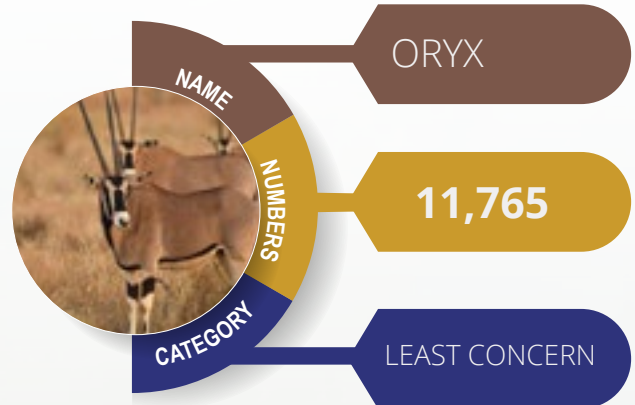
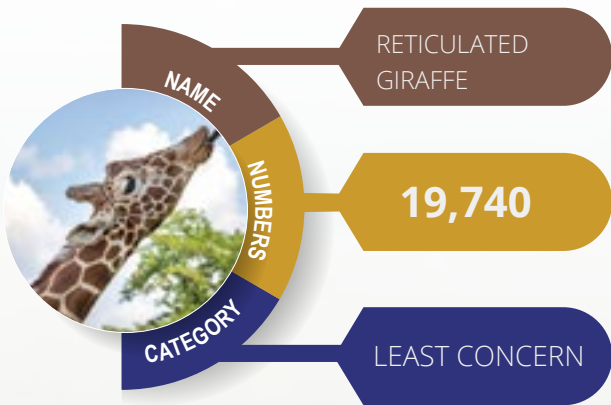


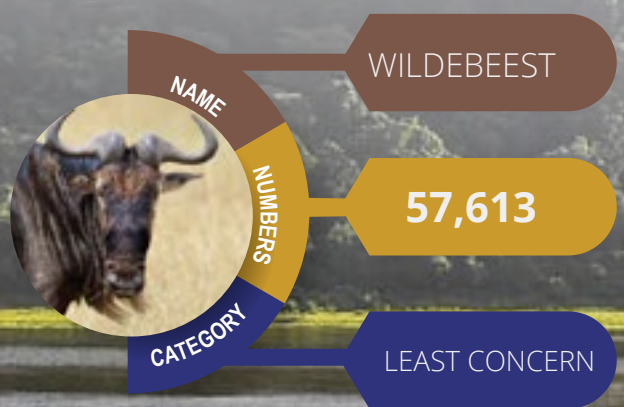
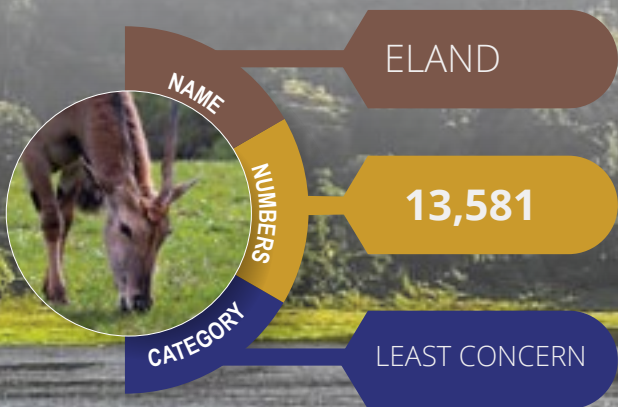
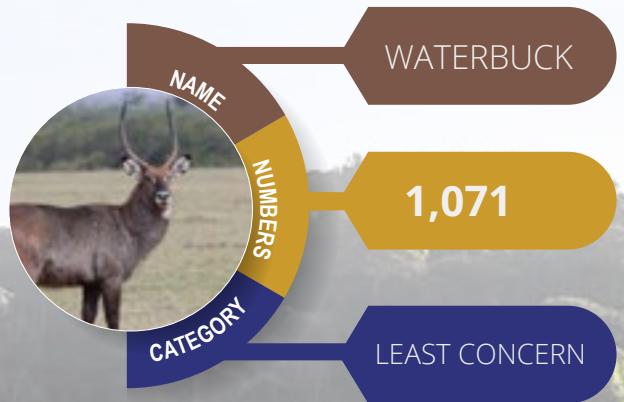
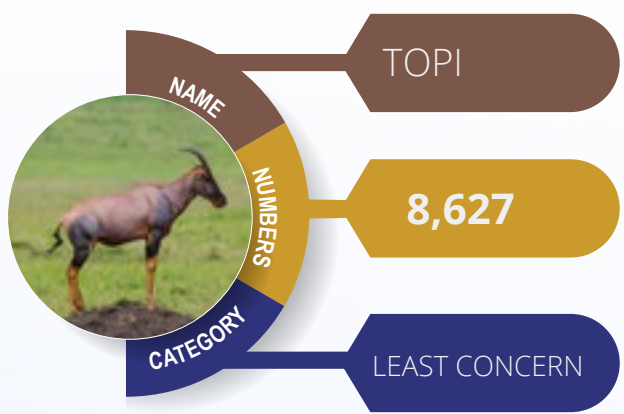
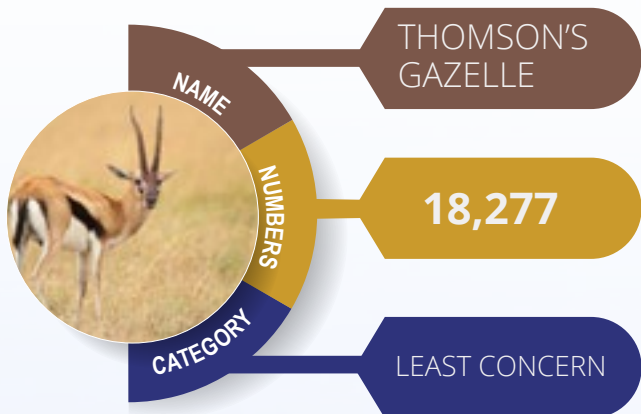
WILDLIFE NUMBERS AT A GLANCE











3.2 | KEY WILDLIFE SPECIES





AFRICAN ELEPHANT

Loxodonta africana



DID YOU KNOW?



Elephants have around **150,000** muscle units in their trunk.

Their trunks are perhaps the **most sensitive organ** found in any mammal.



UPTO **3.2M**



UPTO **6000KG**



EN

3.1.1 Elephant

Due to the charismatic nature of the African elephant, and its ability to modify its natural habitats, hence affecting the occurrence of other species where they range, monitoring elephant for provision of accurate and timely information on their population status is paramount. The Government of Kenya (GoK) through its arm Kenya Wildlife Service (KWS) is obligated to carry this function, in collaboration with relevant conservation partners.

Dispersal is a critical component of animal ecology that is poorly understood for most species. In particular, savanna elephants (*Loxodonta africana*) have been studied for decades in national parks across Africa, but little is known about their dispersal into new or unused habitats or their population dynamics in human dominated landscapes. This is exacerbated by the immiserating community livelihoods around elephant range areas.

Continued monitoring has led to the success in the identification and response to poaching and Human-Elephant Conflict (HEC). The monitoring has been facilitated by improvement on monitoring technologies and methodologies. Detailed genetic analysis of the elephant population has resulted to the recent confirmation of two distinct species of elephants, that is the forest elephant (*Loxodonta cyclotis*) and the savanna elephant (*Loxodonta africana*) (Hart et al. 2021). As aforementioned, the Kenya elephant population is therefore classified as

The Tsavo ecosystem accounts for more than 37% of the national elephant range, which is estimated at 49,000 km², followed by the Samburu-Laikipia ecosystem with 37,937 km². The Mara and Amboseli West Kilimanjaro ecosystems accounting for 11,681 km² and 37,937 km² respectively (Figure 2).



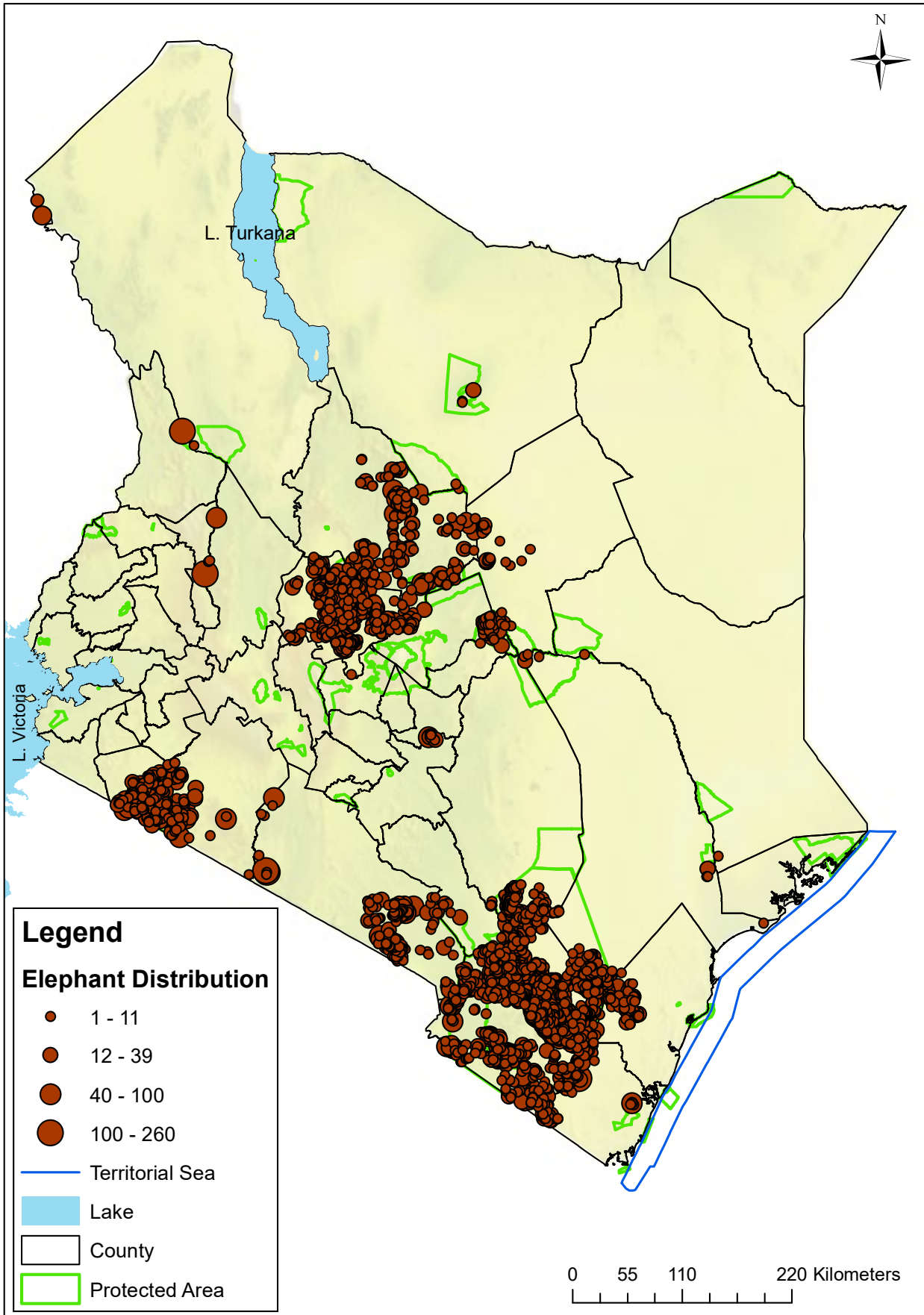
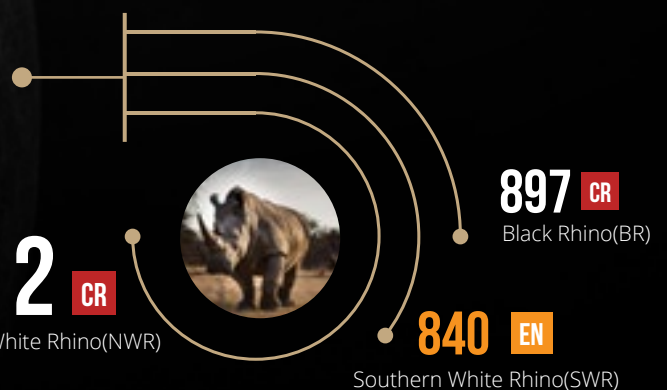


Figure 2: The Kenya National elephant range as at July 2021

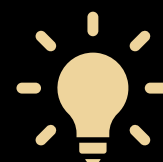


RHINOCEROS

Diceros bicornis michaeli (BR)
Ceratotherium simum (SWR)
Ceratotherium cotoni (NWR)



DID YOU KNOW?



Black rhino has more or less the same coloration as white rhinos. Instead of the color, white rhinos are named after the Afrikaan word *wyd*, which describes the animal's **square upper lip**. Black rhinos have a **pointed upper lip**, named after the opposite color to easily differentiate them from white rhinos.

(Source: facts.net)



UPTO 1.3M



UPTO 1000KG



EN

CR

3.1.2 Rhino

The future of the black rhino is of critical importance to the Government of Kenya being a species of conservation concern following a dramatic reduction in their population in the 1970s and early 1980s from approximately 20,000 as a result of the illegal trade in their horn to fewer than 400 animals in 1987.

Kenya has the 3rd largest population of rhinos in Africa after South Africa and Namibia having a total rhino population of 1,605 (853 black rhinos, 750 southern white rhinos and 2 northern white rhinos) as at end of 2020. Kenya is home to the world's third largest black rhino population after South Africa and Namibia.

Kenya is implementing the 6th edition of the Black Rhino Action Plan (2017-2021) whose long term vision is: 'To have a meta-population of at least 2,000 black rhinos of the eastern African subspecies (*Diceros bicornis michaeli*) in Kenya, and in suitable habitats as a global heritage'. The overall goal is: 'To achieve a meta-population of 830 black rhinos by the end of 2021.

Kenya has already surpassed its goal in the Action Plan having achieved a population of 853 black rhinos as at 31st December 2020. The Black Rhino Action Plan which expires at end of 2021 is being reviewed for the period 2022-2026 with revised goals and activities.

Kenya remains the stronghold of the eastern black rhino subspecies conserving just over three quarters

(approximately 80%) of the wild population of the sub species. Kenya's meta-population has fifteen black rhino populations out of which 12 are rated as follows; four IUCN SSC African Rhino Specialist Group (AfRSG) rated Key 1 (>100 black rhinos), four Key 2 and four Important 1 populations that are of continental significance. Kenya's black rhinos are conserved in nine state, four private, one county and one community lands across the country

Kenya is for the first time developing the first White Rhino (*Ceratotherium simum*) Conservation and Management Action Plan (2021-2025) with the population of the southern white rhino having undergone rapid growth since introduction with current population estimated at 750 individuals from the 51 individuals introduced from Southern Africa in the 1960s, 1970s and 1990s thus the need to develop a separate strategy for the species to guide on best practice for conservation and management of the species.

Kenya rhino population is managed as a meta-population (A number of sub-populations of a species or sub-species managed collectively as one single population with occasional movement of animals from one sub-population to another) hosted in 17 rhino conservation sites spread across the country. Out of the 17 sites, 9 are in parks, 4 on private land, 3 on community land and





Figure 3: Map showing rhino conservation areas

AFRICAN BUFFALO

Syncerus caffer


41,659

GESTATION PERIOD

11.5 MONTHS

DID YOU **KNOW?**



African Buffalo will often kneel down and rub their necks and heads on the ground in a display of aggression to establish dominance.



UPTO 1.6M



UPTO 800KG



LC

(Source: <https://drewsproule.com/>)

3.1.3 Buffalo

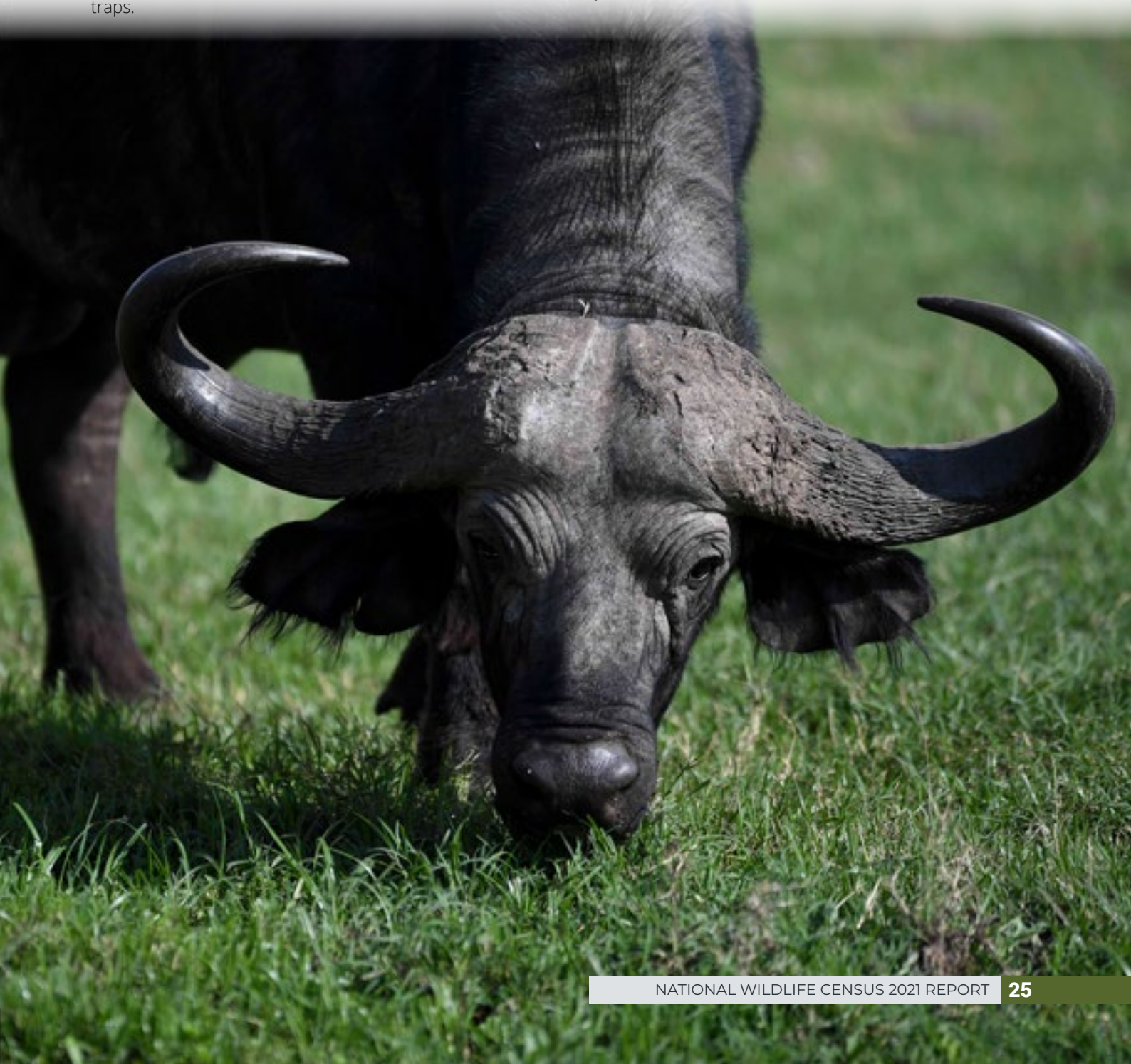
Introduction

Buffalo is one of the most abundant and widely distributed species in Kenya and among the big five iconic species. According to IUCN red list, the species is considered as of no concern. However in Kenya it's a species of interest because of conflicts with human through crop raiding, human attacks and disease transmission to livestock.

It occurs in both forested and open savannah ecosystems. During this census, only those in open Savannah ecosystem were counted using aerial total count method in 14 sites. Those in forested ecosystem were not counted as a different technique is applied to assess their population which requires more time. For example the use of camera traps.

Population status of buffalo

The population of buffalo counted in the open savanna ecosystems during the current national census were 41,659 animals. They were recorded in 14 sites (Table 9). The Maasai Mara ecosystem recorded the highest population of buffalo in the country (n=11, 604 buffaloes), which represents about 28% of the total buffalo population in Kenya. This is followed by Tsavo ecosystem (19%), Lake Nakuru National Park (15%) and then Laikipia-Samburu-Marsabit ecosystem (15%). These four ecosystems account for about 78% of the total Kenya's buffalo population. Small isolated populations of buffalo were observed in Ol donyo Sabuk NP (23), Shimba Hills NR (23), Athi-Kapiti ecosystem (30) and Mwea National Reserve (69).



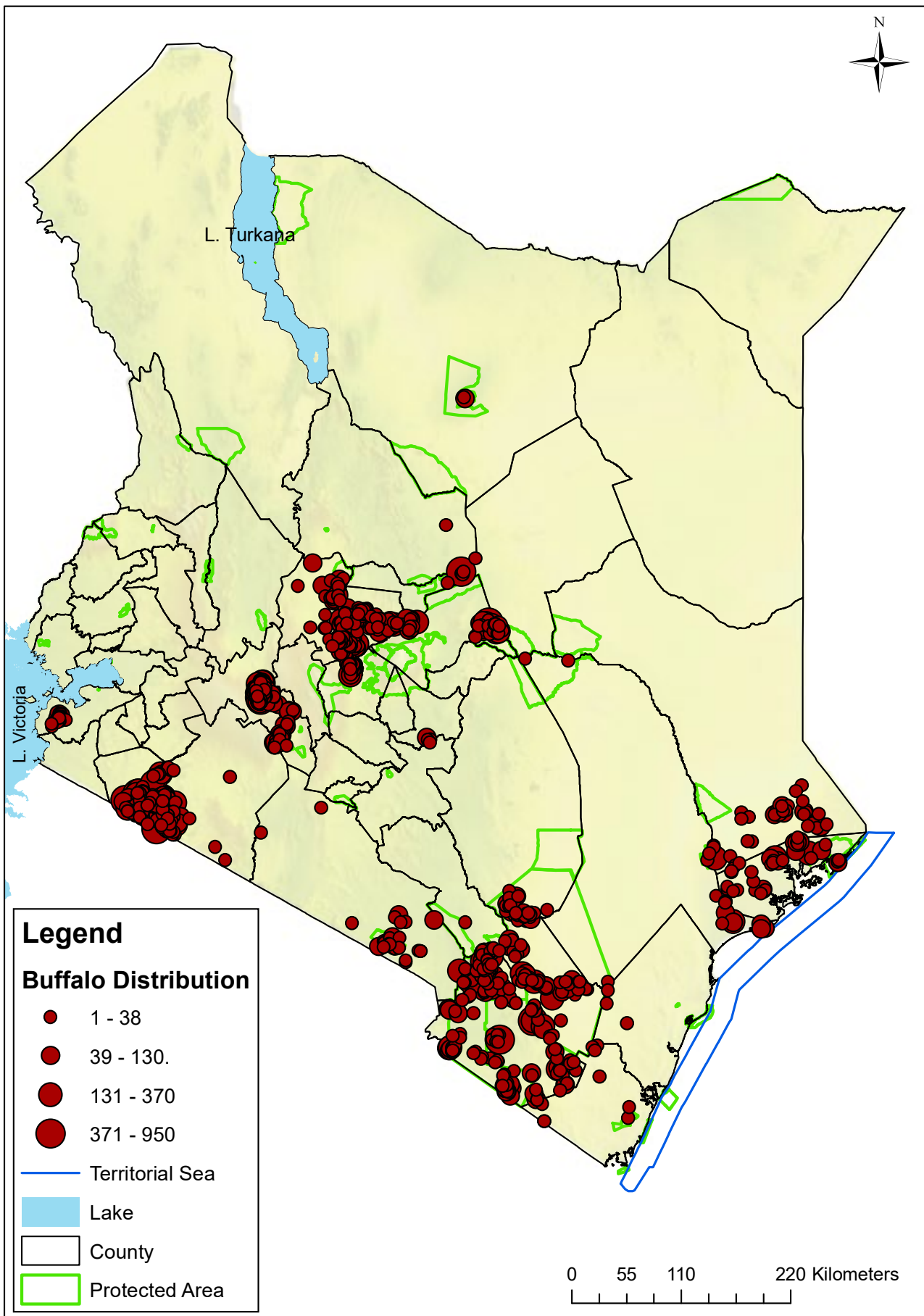


Figure 4: The distribution of buffalo in Kenya (2021)

GIRAFFE

G. tippeiskirchi (Masai Giraffe)
G. reticulata (Reticulated Giraffe)
G.c. camelopardalis (Rothschild's Giraffe)

768 EN
 Nubian Giraffe

13,732 LC
 Maasai Giraffe

19740 LC
 Reticulated Giraffe



DID YOU KNOW?



A giraffe's spots are like human fingerprints.

Aside from the fact that giraffes have seven vertebrae in the neck like humans, its spots in the body are much like human fingerprints.



Masai G.

Reticulated G

Rothschild's G.



UPTO 5.7M



UPTO 1200KG



LC

EN

3.1.4 Giraffe

Kenya is home to three species of giraffe, which include the Maasai giraffe, Reticulated giraffe and the Nubian giraffe. Their total population estimate is 34,240 animals (Maasai giraffe = 13,530 individuals; reticulated giraffe = 19,740 individuals; and, Nubian giraffe = 970 individuals. Table 10 below provides a summary of the population status of the three species in Kenya as at July 2021.

The three giraffes have distinct geographical location (figure 11) with Maasai giraffes occurring mainly in Kajiado, Narok, Makueni and Taita Taveta Counties. Reticulated giraffe were observed in the North-Eastern counties of Wajir, Garissa, Mandera, Turkana including Laikipia, Samburu, Lamu and Tana river while Nubian's giraffe was observed

mostly in Ruma National Park in Homa Bay county, Lake Nakuru National Park and Naivasha ranches in Nakuru county, Mwea national reserve in Embu County and Nasalot & Kerio valley valley in Baringo/Elgeyo Marakwet counties. Within captive facilities, a substantial population of 47 individuals of all species is conserved in different private facilities in Kenya.

The key stronghold for Maasai giraffe is Amboseli (n=6,425) and Tsavo ecosystem (n=4,314) while Reticulated giraffe is mostly found in Wajir, Garissa and Lamu Counties. Over 56.7% (n=550) of the Nubian giraffes in Kenya were observed in Ruma National Park.



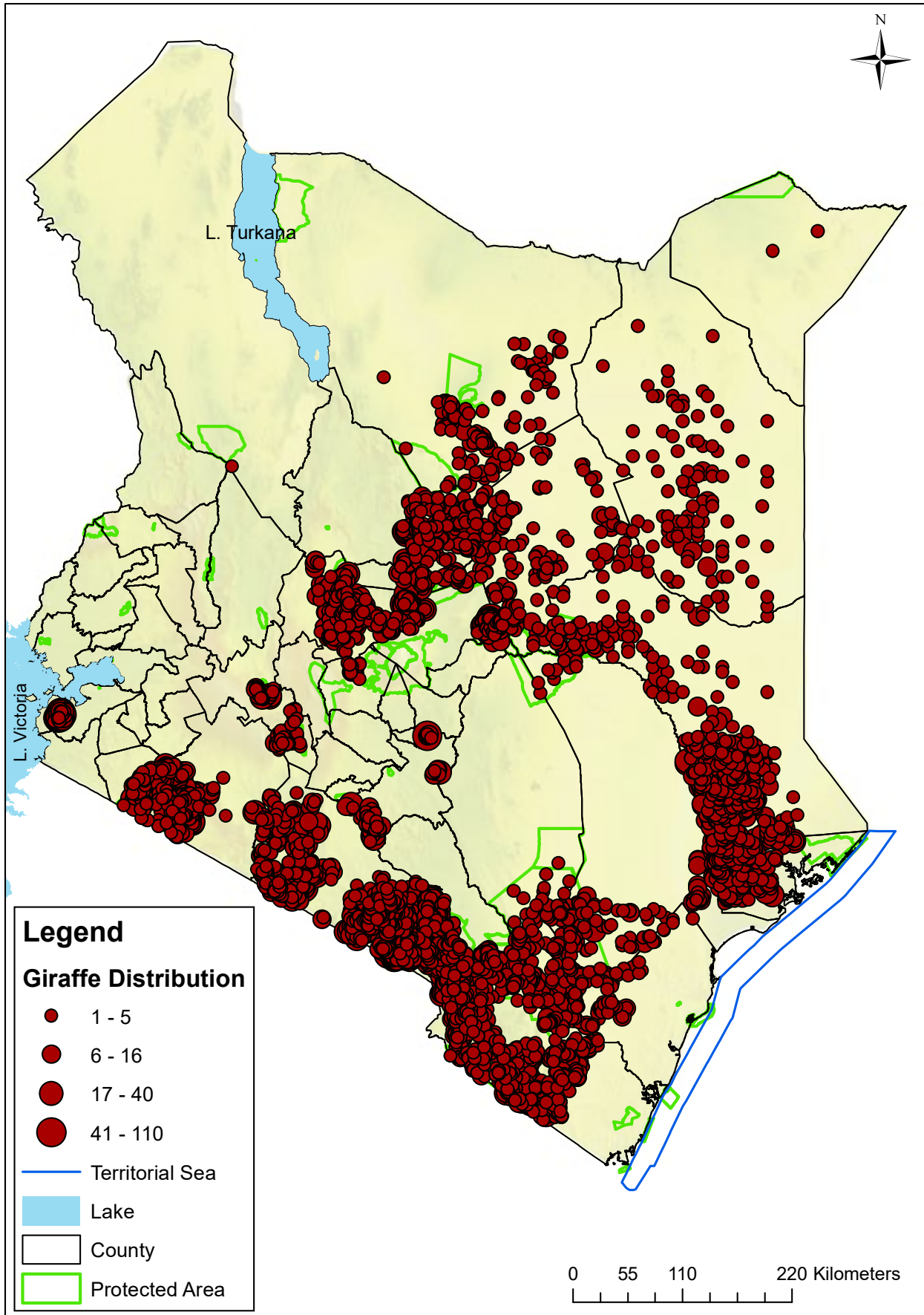
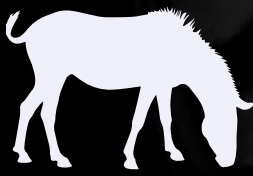


Figure 5: Distribution of Giraffes in Kenya

GREVY'S ZEBRA

Equus grevyi



2,649

GESTATION PERIOD



12 MONTHS

DID YOU KNOW?



Unlike the other zebras, Grevy's Zebra, also known as Imperial Zebra it is tall, its stripes are narrower, and has big ears. It can live up to five days without water.



UPTO 1.6M



UPTO 450KG



EN



(Source: facts.net)

3.1.5 Grevy's Zebra

The national grevy population estimates are displayed in Table 11 below. A total of 2,649 grevy zebras were counted with the majority (38 %) found in Laikipia County followed by Isiolo County with 703 individuals (27%). The least number were directly sighted in Garissa County. However,

it should be noted that the methodology used to count the grevy zebra in Wajir and Garissa counties was not the most ideal as the transects were spaced 5 Km apart. The Grevy's zebra population in Naivasha County are found in Oserian ranch.



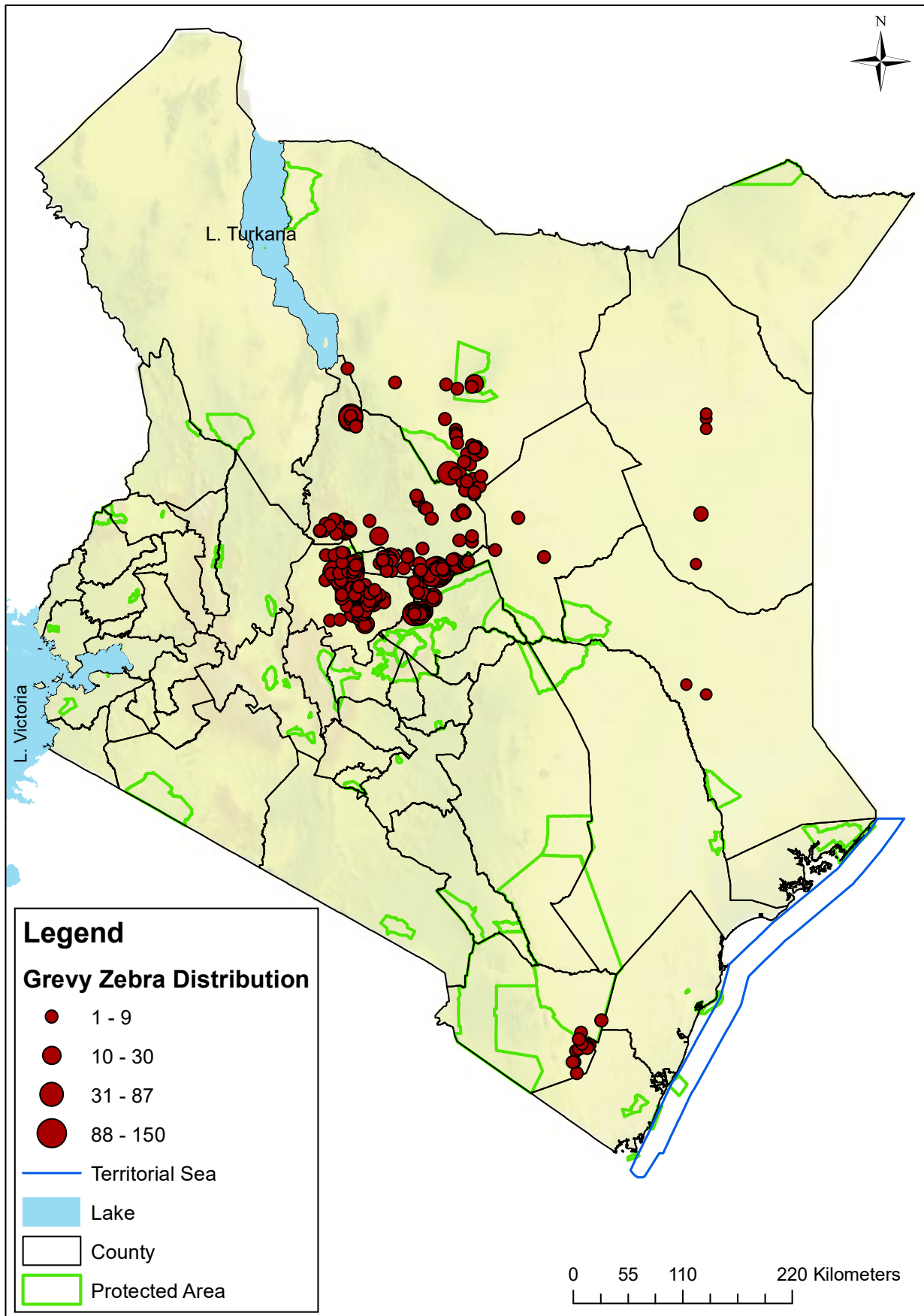


Figure 6: Grevy's zebra distribution map in Kenya

SABLE ANTELOPE

Hippotragus niger



GESTATION PERIOD



9 MONTHS

DID YOU KNOW?

Sable antelopes congregate in herds of 15 to 20 individuals with **matriarchal social structure**.

Within the group, the more dominant female is the leader. There is only one adult male (called a bull) in each herd. The juvenile males are exiled from the herd at about 3 years old.

(Source: <https://drewsproule.com/>)



UPTO 1.9M



UPTO 235KG



CR

3.1.6 Sable Antelope



A total of 51 sable antelopes comprising 2 males, 20 females and 29 unsexed individuals were counted in the latest Sable census (Figure 16). The population of sable established in this census could be considered the lower limit estimate since it was conducted during the wet season when the species sightings in the reserve are obviously low. This could explain the very low identification of species ending up with high number of unsexed individuals as compared to the 2016 census (Table 13) which recorded a minimum of 28 males and 58 females.

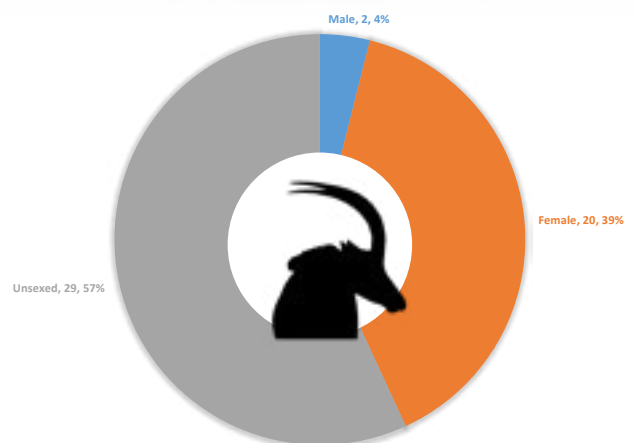


Figure 16: Sable antelopes counted in the last census in Shimba Hills ecosystem

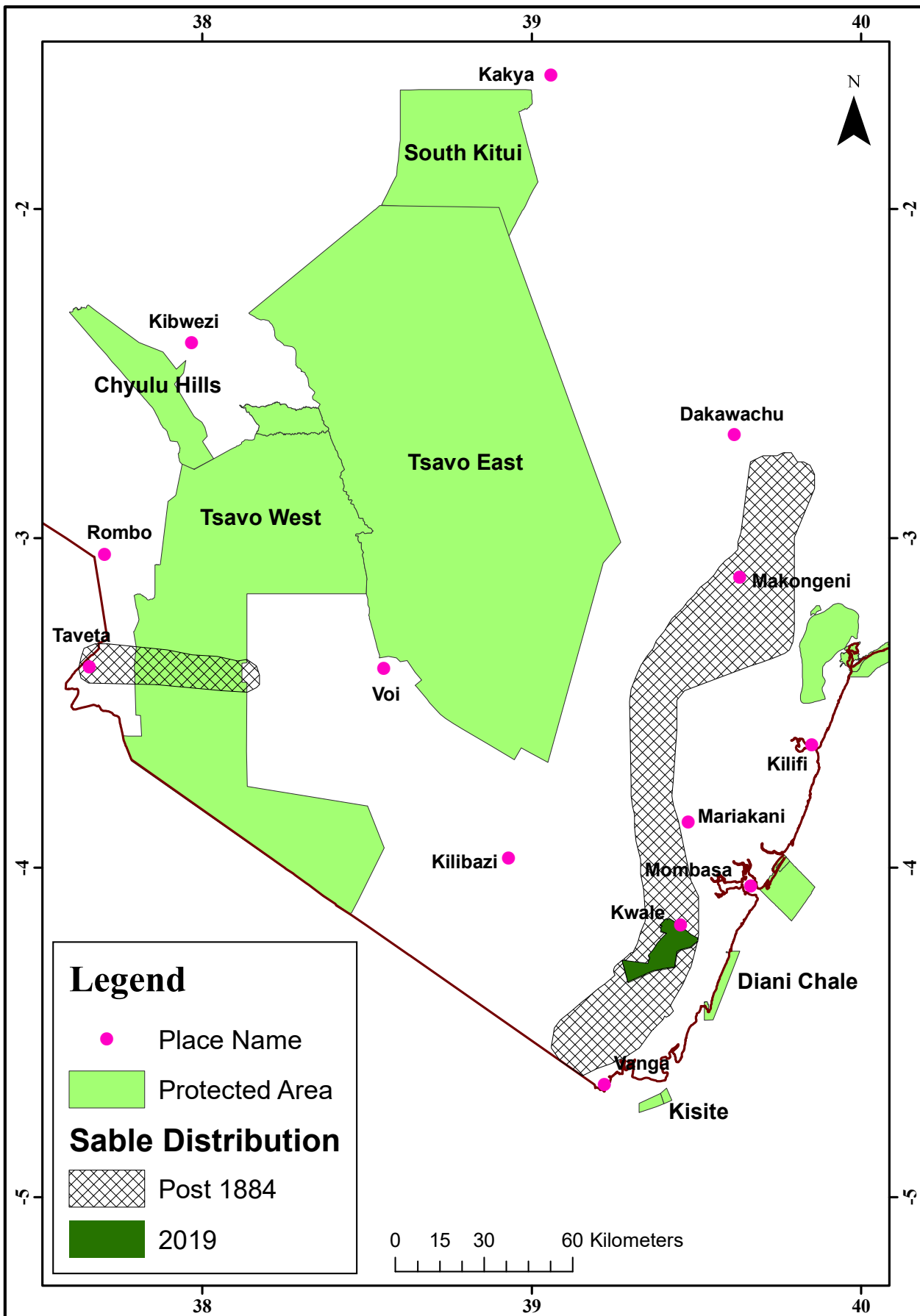


Figure 7: Historical distribution of Roosevelt's sable antelope in Kenya from 1884 to present (Source: Modified from Butynski et al., 2015)

MOUNTAIN BONGO

Tragelaphus eurycerus isaaci



GESTATION PERIOD



9 MONTHS

DID YOU KNOW?



In order to swiftly maneuver through the dense forest vegetation, bongos tilt their chin up, causing their horns to lie flat

against their back. They take this position so frequently older bongos often have bald spots on their back from the tips of their horns rubbing away the fur.

(Source: <https://drewsproule.com/>)



UPTO 1.28M



UPTO 400KG



CR

3.1.7 Mountain Bongo



The Kenyan mountain bongo (*Tragelaphus eurycerus isaaci*) is a critically endangered tragelaphine antelope sub-species only found in Kenya endemic to the Aberdare, Mount Kenya, Cheranganis Hills and the Mau Forests Complex, with only a few individuals left in the Eburu, Maasai Mau and South Western Mau. The species numbers and range has undergone a drastic decline in all these forests with limited information on the exact number of animals, though inferential figures stand at less than 100 individuals mainly confined to the Aberdare and Maasai Mau (East, 1999; Reillo, 2002, unpublished report BSP 2016).

In 2003, bongo repatriation from the USA was initiated to establish a sustainable, in situ managed bongo population at the Mt. Kenya Game Ranch now referred as Mount Kenya Wildlife Conservancy (MKWC) from which multiple wild-population recovery strategies could evolve. The principal objective of this project was to establish an in situ captive breeding program, in a natural setting, as the first phase of several conservation steps required to reintroduce mountain bongos to the wild. The project aimed to re-establish a viable and self-sustaining population in the bongo's native habitat.

The mountain bongo is listed as Critically Endangered by the IUCN/SSC Antelope Specialist Group (IUCN, 2003) and listed on Appendix III of the Convention on International

Trade of Endangered Species of Flora and Fauna (CITES), which allows limited trade on the species. In Kenya, bongos are accorded full protection under the Wildlife Conservation and Management Act, 2013.

Kenya has developed the 1st National Recovery and Action Plan for The Mountain Bongo (*Tragelaphus eurycerus isaaci*) in Kenya (2019-2023) VISION: We envisage viable, free-ranging and genetically representative populations of mountain bongo, thriving across intact historic mountain ecosystem ranges, cherished by the Kenyan people and the global community. Goal: To secure minimum population size for mountain bongo within their ranges in Kenya, to achieve a national population of 730 individuals over the next 50 years

Census Methods

Mountain Bongo's are shy and skittish being found in thick forests thus difficult to be easily sighted and counted. Most of the sightings are opportunistic and use of indirect methods such as dung. Camera trap images for individual ID are used to estimate the wild populations in Masai Mau, South West Mau, Eburru, Aberdare NP and Ragati in Mount Kenya NP. For the captive population in Mount Kenya Wildlife Conservancy physical sighting and individual ID is used. The current Mountain Bongo range is shown in the map in figure 20 and population estimate is shown in Table 15

Mountain Bongo

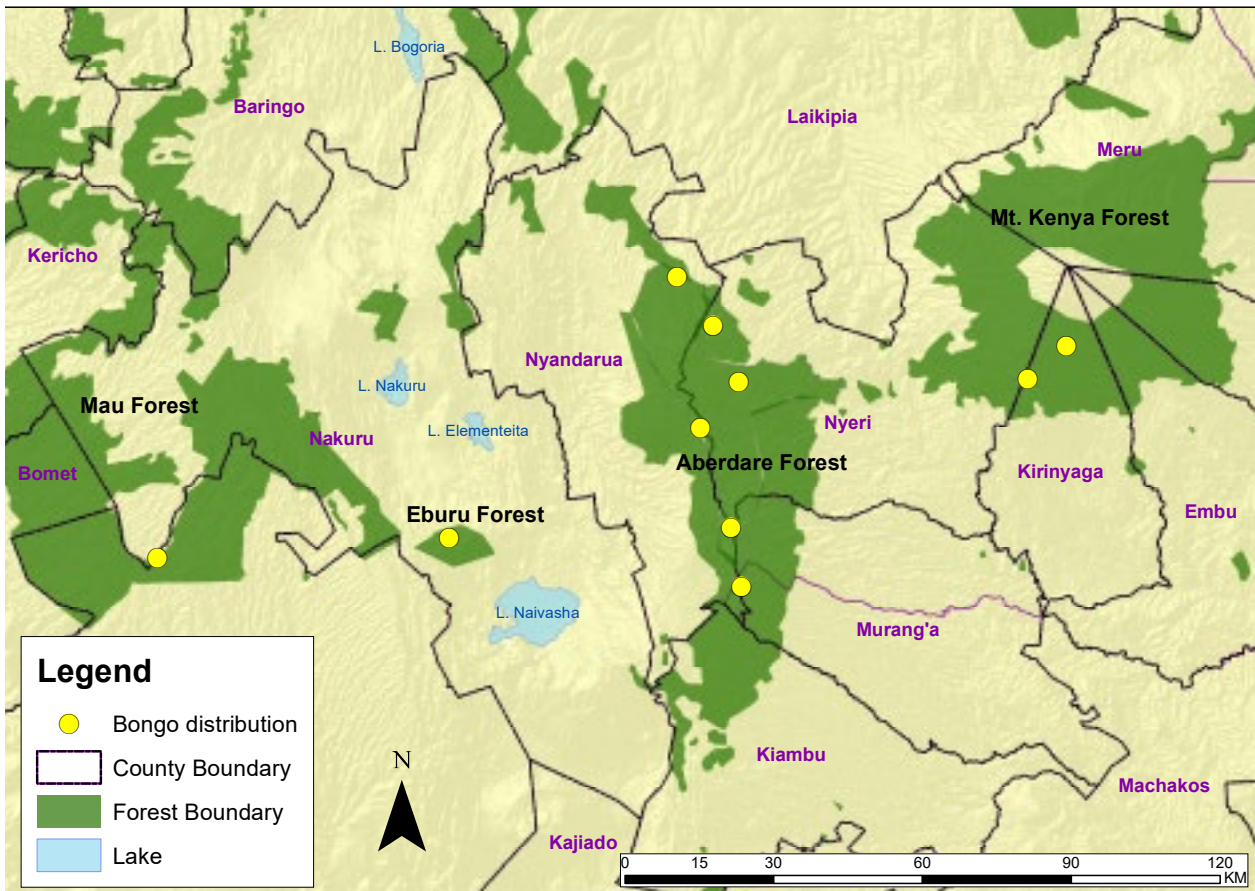


Figure 8: Map of current Mountain Bongo Range in Kenya

The mountain bongos are currently estimated at 150 individuals with 96 in the wild and 54 in captive facility in Mt. Kenya Wildlife Conservancy (MKWC) as shown in Table 15.



ROAN ANTELOPE

Hipotragus equinnus



DID YOU KNOW?



Roan antelopes have lighter underbellies, white eyebrows and cheeks and black face which is lighter in females.

The horns are ringed and can reach 1m long in males which are slightly shorter in female and hatch backwards



UPTO 2.4M



UPTO 300KG



CR

3.1.8 Roan Antelope



The WV antelope (*Hipotragus equinnus*) is a rare species, restricted to savannah woodlands of Africa. It was once widely distributed through 34 eastern, central, southern and West African counties but during the last 40 years it has declined rapidly, presumably as a result of poaching and conversion of natural land into agriculture. Currently, the species possibly remains only in 30 countries (Ansell, 1971). Studies indicate that two thirds of populations throughout Africa show a decrease, while only one third is either stable or increasing, predominantly in private reserves in South Africa. The species has been extirpated from Burundi, Eritrea, Gambia and Swaziland, whereas there are an estimated 76,000 roan antelopes globally. One-third of this is concentrated in four countries: Burkina Faso; Cameroon; Zambia; and Tanzania.

In East Africa, it was confirmed to exist in small numbers in

a few protected areas, with less than 30 in Ruma National Park in Kenya, less than 30 in Pian Upe Game Reserve in Uganda and in north-western Tanzania 260 in Burigi and Biharamulo Game Reserves (Magin and Kock, 1997). The Ugandan population was thought to have gone extinct by 2003 although a few individuals have lately been sighted in Pian Upe Game reserve, while the NW Tanzania population has been much reduced from the impacts of refugee camps after the genocide in neighbouring Rwanda. There were and are reports of roan in Akagera but these have not been confirmed. Around 5,000 may still occur in southern and central Tanzania, but it is not certain that these individuals are of the same subspecies. The current situation of *H. e. langheldi* in Rwanda and Burundi is unknown, but believed to be insecure.

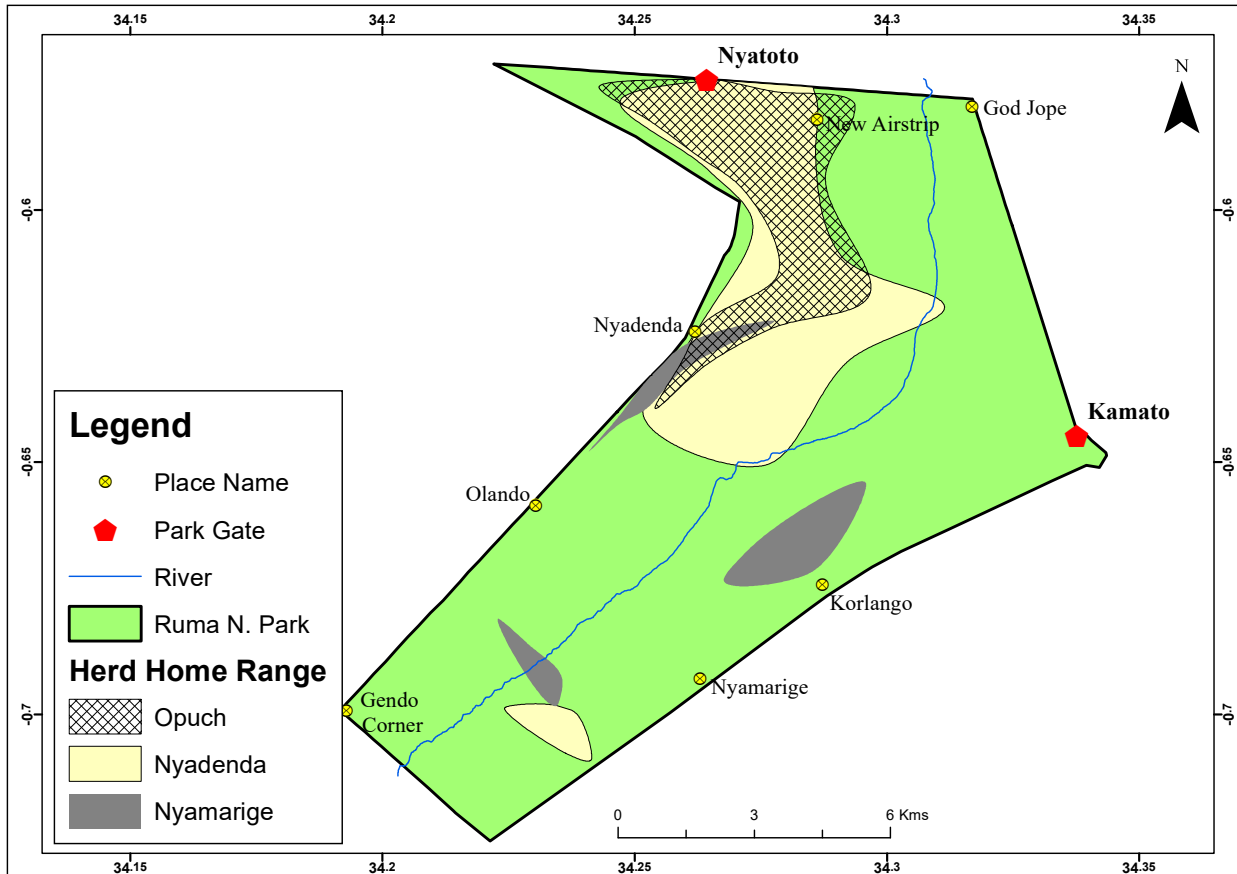


Figure 9: Roan distribution in Ruma N.P



Figure 10: Roan antelope sighting in Ruma NP