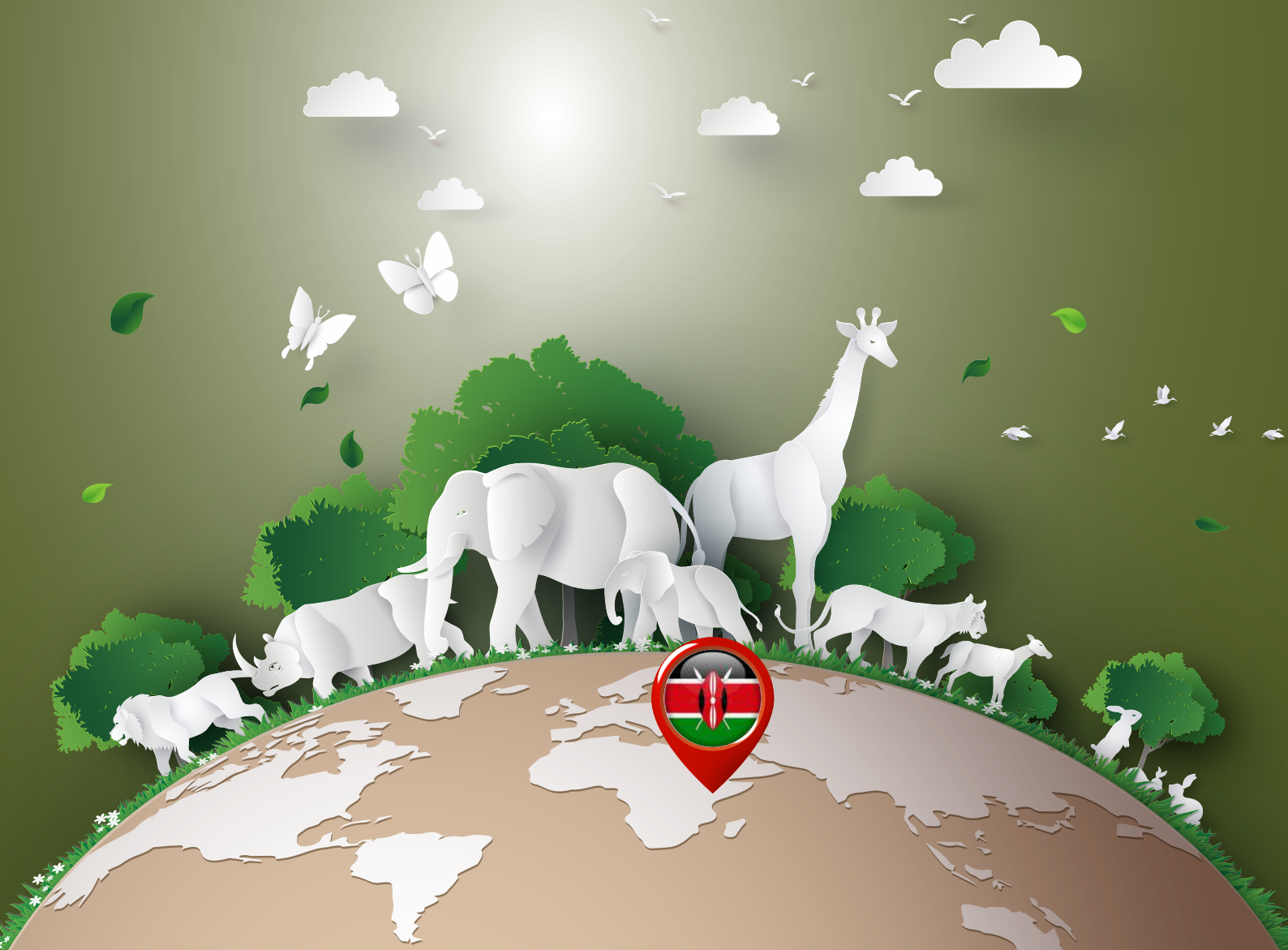


# THE NATIONAL WILDLIFE CONSERVATION STATUS REPORT

2015 - 2017



Republic of Kenya

Ministry of Tourism  
and Wildlife

[www.tourism.go.ke](http://www.tourism.go.ke)



# FOREWORD



*Hon. Najib Balala (EGH),  
Cabinet Secretary,  
Ministry of Tourism and Wildlife*

The Wildlife Conservation Management Act of 2013 (WCMA, 2013) requires the Ministry to prepare and present to Parliament a Wildlife Status report. I am pleased to present the second National Wildlife Conservation Status Report (2015-2017). The wildlife sector is facing numerous challenges and threats that require continuous assessment of our resources and adjustment of the intervention mechanisms to address the issues

The government continues to be committed to support the sector and particularly Kenya

Wildlife Service in managing and protecting this resource. During this period the government financed the wildlife sector to the tune of Ksh 6.8 billion for both recurrent and development expenditures in addition to Kshs 513 million for compensation of human wildlife conflict cases.

The sixth schedule, lists 245 endangered species and each requires a recovery plan to be developed. Currently only 22 endangered species have recovery plans developed. In the next period we shall be working with the various partners and stakeholders to expedite the development and implementation of endangered species recovery plans while reviewing the species listed in schedule three. The IUCN lists 463 endangered species of flora and fauna in Kenya.

Section 44(1-4) requires all wildlife conservation areas to have Gazetted management plans developed and implemented in a participatory manner. This will inform development in protected areas. During this period three management plans were gazetted by my ministry and we intend to get more.

It is expected that the output of this report will enhance the formulation and implementation of the Wildlife Policy and guide the formulation of guidelines related to wildlife management and conservation in its entirety. The threshold in terms of report as set out in the WCMA, 2013 section 49 is quite high but realistic and requires government and donor support, high level scientific input and appropriate technology to guide policy formulation and especially species status classification. Technology can enhance efficiency, reduce operational costs and release resources to other areas where needed. I call upon all stakeholders to join efforts to support wildlife conservation in the country.

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# P R E F A C E



*Dr. Susan J. Koech  
Principal Secretary  
State Department for Wildlife*

This National Wildlife conservation Status report presents an opportunity to audit the wildlife sector especially in terms of resource allocation and utilization.

Allocation of resources to conservation sector will be informed by efforts by all stakeholders to deliver the desired conservation outcomes as presented in this and subsequent reports. There is an urgent need to upscale management efforts to reverse the present declining trend of listed species in the schedule by developing and implementing endangered listed species recovery plans and conservation area management plans.

We will continue to engage all key stakeholders in a deliberate and concerted effort to ensure the conservation agenda receives the necessary support. It is also critical to dedicate more resources and efforts on proactive measures to address human wildlife conflict; such measures will include working with the relevant state and non-state actors.

Special focus will also be put on those areas that have abundant wildlife but are presently not designated as wildlife conservation areas as such areas will be the next frontier in wildlife conservation in the country.

Finally we call upon all Kenyans to be on the forefront in conserving our wildlife for posterity.



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# ACKNOWLEDGEMENT



*Brig. (Rtd) J.M. Waweru, EBS, ndc(K). psc (K)  
Director General,  
Kenya Wildlife Service*

I acknowledge the exemplary work done under the able leadership of the Cabinet Secretary Tourism and Wildlife Hon Najib Balala in ensuring compliance to the implementation of the WCMA, 2013 which by itself forms the legal basis of this report. In compiling this report, various divisions within the Service were involved under the stewardship of Director Biodiversity, Research and Planning.

The Writing of this report was supported by the United States Agency for International Development(USAID) and African Wildlife Foundation (AWF) who by themselves have been strong partners in matters related to Wildlife Conservation. Our Principal Secretary Dr. Susan Koech interrogated the document and gave very useful guidelines on the final output of the report. Similar support came from The National Museums of Kenya (NMK), Department of Resource Survey and Remote Sensing (DRSRS), Kenya Forest Service (KFS), Kenya Fisheries Service and Kenya Marine and Fisheries Research Institute (KEMFRI).

The Kenya Wildlife Conservancies Association (KWCA) gave invaluable information on Conservancies in the Country. Virtually all reserves were contacted directly or through secondary means-including their publications. The World Conservation Union (IUCN) was heavily relied on in reporting on Birds. Local conservation bodies such as Watamu Turtle Watch and others of similar caliber all over the country provided invaluable information as the team traversed the country. Many experts in our local universities and other institutions of learning also gave very useful inputs. Lastly but not least I want to acknowledge the technical team who compiled this report. The team work exhibited resulted in the report coming out within the set timeframe.

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# EXECUTIVE SUMMARY

The WCMA, 2013 in schedule 6 lists 245 wildlife species under various categories of threats ranging from critically endangered to protected species. The WCMA, 2013 requires that the status of these species be reported to the National Assembly every 2 years and the recovery measures being implemented to restore the said species be indicated. This 2015/17 wildlife status report is a response to this requirement.

The report gives the status of the listed species in terms of population, location and trend of each species. The status of the protected areas where these species are found has also been highlighted. The report further enumerates the threats and challenges to the species and their habitats while stating the management measures in place to counter the factors that contribute to negative growth in population of these species. The general outcome indicates that the magnitude of these threats is severe resulting in the decline or stagnation in population of the listed species. Some of the species have reached a level where the remaining population is non-viable whereas a few are no longer being reported as being sighted.

From the report the greatest challenge facing wildlife population increase in the country is encroachment, invasive species, poaching and infrastructure development besides other threats. The resultant effect especially of encroachment has been loss of gazetted wildlife areas, wildlife corridors and dispersal areas leading to fragmentations of wildlife habitats. Wildlife diseases is an emerging major threat.

Although management measures prescribed in the WCMA, 2013 are being taken to address the threats and subsequent decline in listed wildlife species population, the said measures need to be reenergized to become more proactive rather than reactive. There is therefore need to use available resources in a more innovative manner to accelerate the management measures such as in wildlife diseases, management plans, poaching, securing more space for wildlife and even genetic engineering. Presently only three protected areas in the country have management plans that are gazetted and this is a major impediment in the deployment of resources in the said areas. This situation is more pronounced in the Conservancies and National Reserves.

Whereas the listed number of species in schedule 6 is 245, only 31 species recovery plans have been developed out of which 13 have since expired. Concerted efforts need to be put in place to accelerate the development and implementation of species specific recovery plans especially for the species that are critically endangered.

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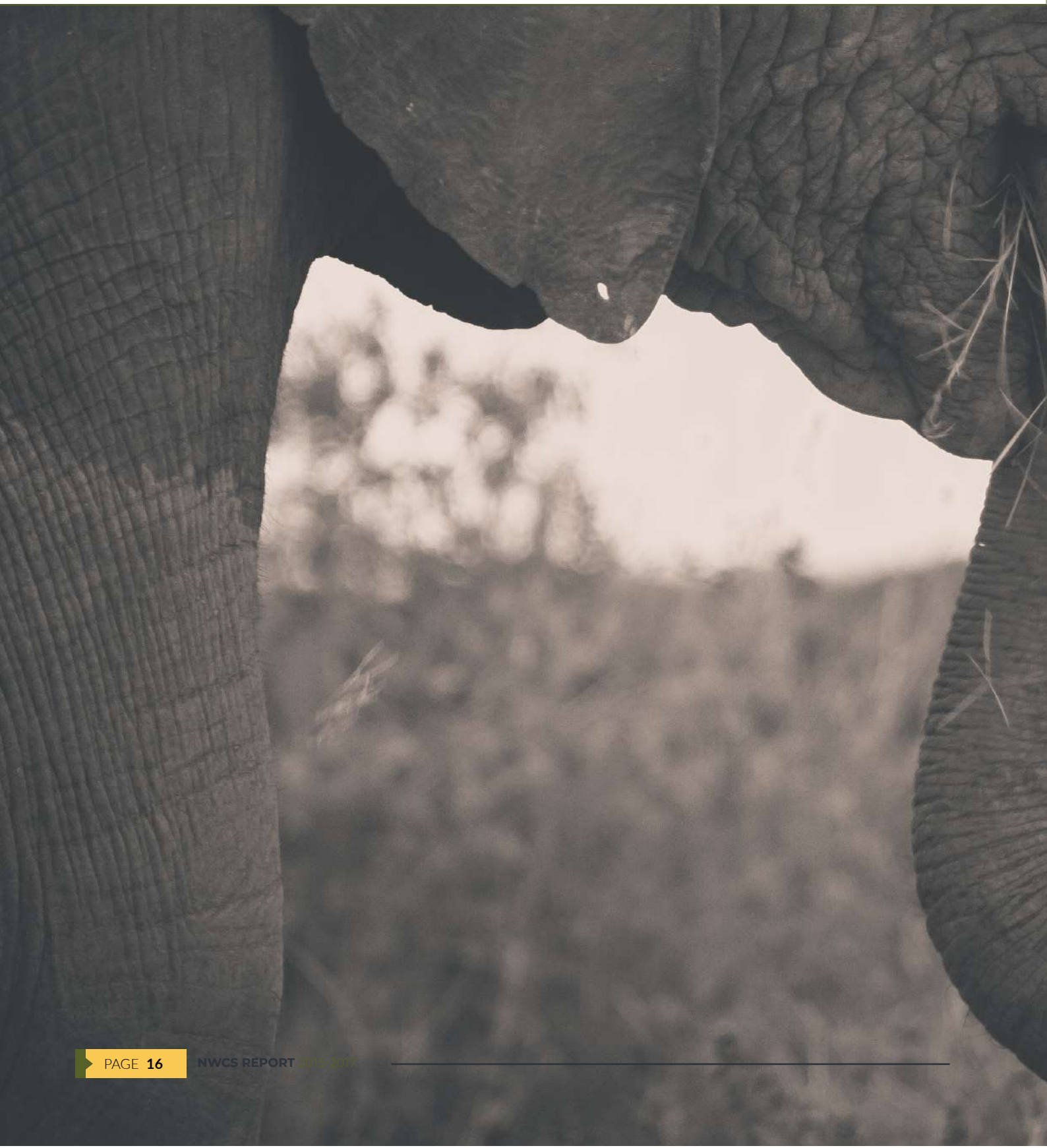
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# ACRONYMS

ADC- Agriculture Development Corporation  
 AEWA- Agreement on the Conservation of African-Eurasian Migratory Water birds  
 AWF- African Wildlife Foundation  
 CBD - Convention on Biological Diversity  
 CBO- Community Based Organization  
 CITES – Convention on International Trade in Endangered Species of Flora and Fauna  
 CMS- Convention on the Conservation of Migratory Species of Wild Animals  
 COP- Conference of Parties  
 CWCCC –County Wildlife Conservation & Compensation Committee  
 DRSRS – Department of Resource Surveys and Remote Sensing  
 DVS- Directorate of Veterinary Services  
 EIA – Environmental Impact Assessment  
 EMCA- Environmental Management and Coordination Act  
 EMP – Environmental Management Plan  
 ESMS- Electronic game trophy Stockpile Management System  
 FAO -United Nations Food and Agriculture Organization  
 FMD - Foot and Mouth Disease  
 GEC - Great Elephant Census  
 HCP- Hirola Conservation Programme  
 HPAI - Highly Pathogenic Avian Influenza  
 ICIPE- International Centre for Insect Physiology and Ecology  
 IFAW- International Fund for Animal Welfare  
 ILRI- International Livestock Research Institute  
 IOSEA-Indian Ocean and South-East Asia  
 IUCN- World Conservation Union  
 JKIA – Jomo Kenyatta International Airport  
 JKUAT- Jomo Kenyatta University of Agriculture and Technology  
 KALRO- Kenya Agriculture and Livestock Research Institute  
 KECOBO- Kenya Copyright Board  
 KEFRI- Kenya Forestry Research Institute  
 KENGEN- Kenya Electricity Generating Company  
 KEPHIS – Kenya Plants Health Inspectorate Service  
 KFS- Kenya Forest service  
 KIPI – Kenya Industrial Institute  
 Ksh- Kenya Shillings  
 KWCA- Kenya Wildlife Conservancies Association  
 KWS- Kenya Wildlife service  
 LATF- Lusaka Agreement Task Force  
 LPAI- Low Pathogenic Avian Influenza  
 MAT- Mutually Agreed Terms  
 MIKE- Monitoring the Illegal Killing of Elephants  
 MOP- Membership of Parties  
 MTA- Material Transfer Agreements  
 NACOSTI- National Council for Science Technology and Innovation  
 NEMA – National Environment Management Authority  
 NMK – National Museums of Kenya  
 NRT – Northern Rangeland Trust  
 PAC- Problem Animal Control  
 PIC – Prior Informed Consent

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RCMRD- Regional Centre for Mapping Resource for Development  
RhODIS- Rhinoceros DNA Indexing System  
RSPB- Royal Society for the Protection of Birds  
SOPs - Standard Operating Procedures  
UNESCO – United Nations Educational, Scientific and Cultural Organization  
WCMA- The Wildlife Conservation and Management Act, 2013  
WWF- World Wildlife Fund



A close-up, low-angle shot of an elephant's head and tusk. The elephant's skin is dark and heavily wrinkled, with a large, circular ear visible in the upper left. The tusk is light-colored and curves downwards. The background is a soft, out-of-focus landscape with trees and a hazy sky.

# CHAPTER 1:

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## INTRODUCTION THE NATIONAL WILDLIFE CONSERVATION STATUS REPORT



A Wildlife conservation status report is a time-bound report of the audit of all factors human or otherwise that affect species health in totality in a defined area.

The National Wildlife Conservation Status Report is a requirement in the Wildlife Conservation and Management Act (WCMA, 2013). Part VI- CONSERVATION, PROTECTION AND MANAGEMENT, section 49 (4) states that:

*"The cabinet secretary shall report biannually to the National Assembly through the National Wildlife Conservation Status Report on the status of the 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"*

Section 87 sub section (b) of the WCMA, 2013 states;

*"The Service shall maintain registers of- National Parks, National Reserves, Wildlife Conservancies and Sanctuaries established under this Act and management thereof".*

In section (c) it notes that;

*"The Service shall maintain registers of all community scouts involved in the Conservation and management of wildlife".*

In section (d) it notes-

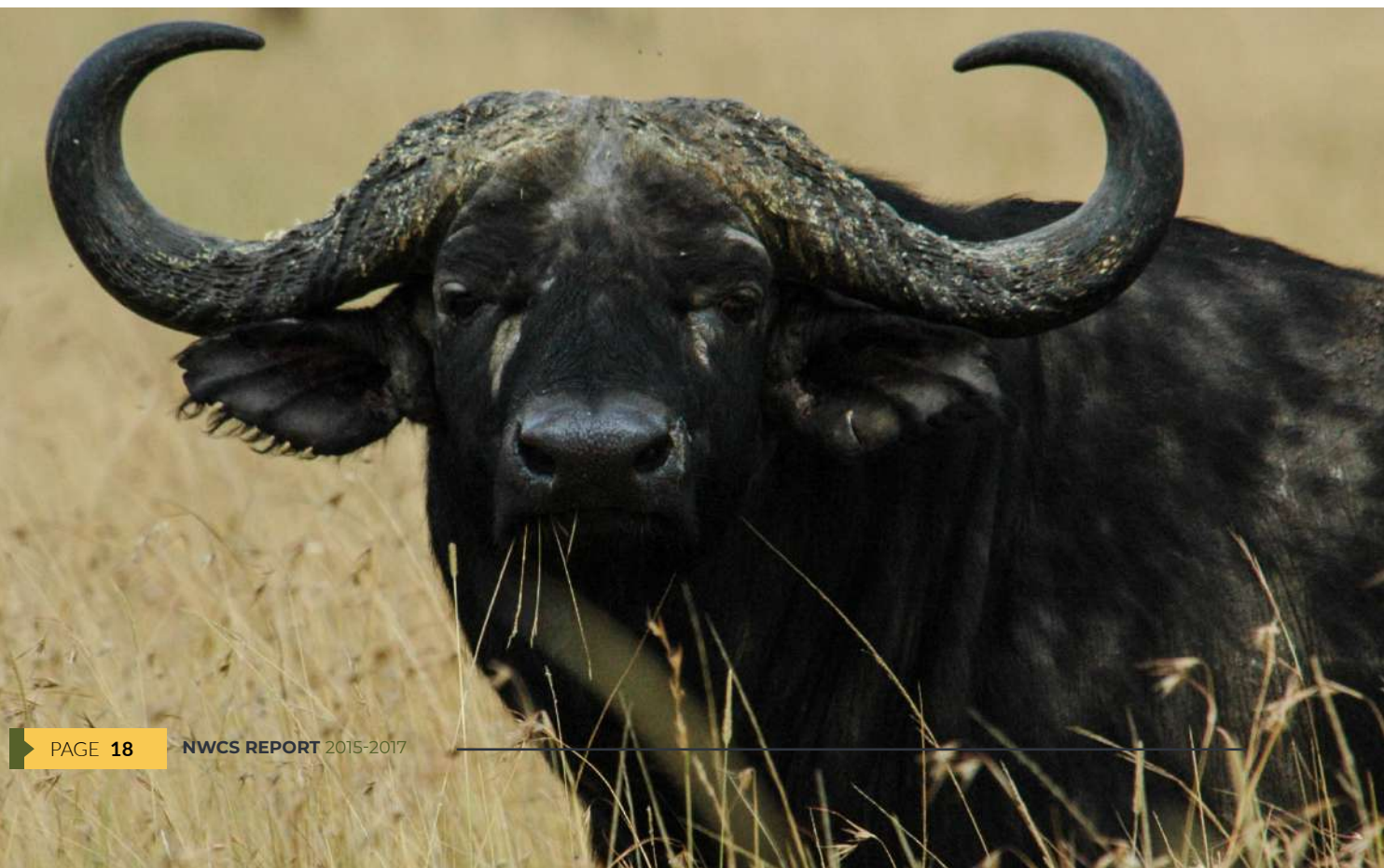
*"The Service will maintain registers of- all management plans developed pursuant to the provisions of this Act".*

The National Wildlife Conservation Status Report gives the status of: all National Parks and Reserves; Conservancies and Sanctuaries; community wildlife scouts in Conservancies; Management Plans; all listed species in Schedule 6 and 7 and their recovery status. Focus is given to the conservation status of endangered listed species, their habitats and factors that influence their population trends.

Besides the introduction the report has seven thematic areas namely:

- Status of Kenya's Wildlife Conservation Areas;
- Status of listed Wildlife species population and trends;
- Threats to Wildlife Conservation;
- Status of wildlife recovery plans;
- Wildlife management;
- Wildlife utilization; and
- Financing in the wildlife sector

A short synopsis of the salient issues and concepts captured in the National Wildlife Conservation Status Report is presented in the following pages:



## 1.1. Conservation Status

The status of wildlife species in Kenya constitutes factors that indicate the species viability over time and how the species is likely to become extinct in the near future if recovery measures are not put in place. These factors include; the current population and its viability, population trends, breeding success rates, threats, and management interventions undertaken.

### a) The World Conservation Union (IUCN) Red List of Threatened Species

The IUCN Red list, a widely used conservation

status listing and ranking system classifies threatened species into nine groups by the following criteria: rate of decline, population size and area of geographic distribution, degree of population and its fragmentation, reduction in population size, geographic range and population size. Also included are species that have gone extinct since 500 AD. When discussing the IUCN Red List, the official term “**threatened**” is a grouping of three categories: **Critically Endangered, Endangered, and Vulnerable**

#### ***Critically endangered (CR) - Extremely high risk of extinction in the wild***

Endangered (EN)                      High Risk of extinction in the wild

Extinct (EX)                          No Known individuals remaining

Extinct in the wild (EW)      Known only to survive in captivity, or as a naturalized

#### ***Population outside its historic range***

Vulnerable (VU)                      High risk of endangerment in the wild

Near Threatened (NT)              Likely to become endangered in the near future

Least concern (LC)                  Lowest risk. Does not qualify for a higher risk Category.

#### ***Widespread and abundant taxa are included in this category***

Data Deficient (DD)                  Not enough data to make an assessment of its risk of extinction

Not Evaluated (NE)                  Has not yet been evaluated against the criteria



**b) The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**

The convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Many countries require CITES permits when importing plants and animals listed by CITES.

## 1.2. Species Recovery Plans

An endangered species recovery plan is a document describing the current status, threats and intended methods for increasing rare and endangered species population sizes. Section 49 (1) of the WCMA, 2013 states: The Service may develop and implement recovery plans for the conservation and management of all the species listed under the sixth schedule (2)- The service shall, in developing the recovery plans, to the maximum extent practicable:-

**(a) Give priority to those rare, endangered and threatened species: and**

**(b) Incorporate in each recovery plan-**

- A description of such site-specific management actions as may be necessary to achieve the plan's goal for the conservation and survival of the species
- Objective, measurable criteria which, when met, would result in the species being removed from the list and
- Estimates of the time and the cost required to carry out the measures needed to achieve the goal of the plan

## 1.3. Schedule six of the Wildlife Conservation and Management Act: -

This schedule details the nationally listed critically endangered, vulnerable, nearly threatened and protected species. A summary of the listed species by taxa is presented in Table 1.1

**Table 1.1 Summary of the sixth schedule - Listed Species by Taxa**

Taxonomic group		CR	EN	VN	NT	T	Protected	Total
<b>Mammals</b>		7	19	36	0	0	0	62
<b>Birds</b>		2	12	13	30	0	37	94
<b>Fish</b>		7	4	15	0	0	0	26
<b>Trees</b>		0	2	6	0	0	0	8
<b>Insect</b>		1	0	0	0	0	0	1
<b>Reptiles &amp; Amphibians</b>	<i>Snakes</i>	0	1	1	0	0	10	12
	<i>Frogs</i>	1	5	1	0	0	7	14
	<i>Toads</i>	0	0	0	0	1	3	4
	<i>Tortoise</i>	0	0	0	0	1	0	1
	<i>Terrapin</i>	0	0	0	0	0	1	1
	<i>Gecko</i>	0	0	0	0	0	2	2
	<i>Skinks</i>	0	0	0	0	0	2	2
	<i>Lizard</i>	0	0	0	0	0	3	3
	<i>Chameleon</i>	0	0	0	0	0	6	6
	<i>Turtles</i>	1	2	0	0	1	4	8
<b>Total</b>		<b>19</b>	<b>45</b>	<b>73</b>	<b>30</b>	<b>3</b>	<b>75</b>	<b>244</b>

Source: WCMA, 2013 \*Sperm whale is repeated in the schedule

**A protected species is an animal or plant, of which the law forbids harming or destroying.**

## 1.4. Invasive Species

An “invasive species” means a non-indigenous species trans-located to a place outside its natural distribution range in nature and which dominates other indigenous species or takes over the habitat. The seventh schedule on invasive species lists 1 mammal, 7 reptiles and amphibians, 17 birds, 10 plants and 1 invertebrate. The impacts of invasive species are documented in Chapter four. Not listed in the schedule is the now fast spreading noxious weed *Parthenium hysterophorus* that has been documented to threaten biodiversity because of its aggressive dominance. Also missing is the top level predator Nile Perch (*Lates niloticus*) which has caused extinction or near extinction of several hundreds of native fish species in Lake Victoria. It was introduced in the lake in the late 1950's.

## 1.5. Management Plans in Protected Areas

A management plan for a conservation area is a time-bound and area specific document that provides an integrated planning framework. The WCMA, 2013 recognizes the management plan process (fifth schedule Part 1-General (3) which states that;

*“A management plan process includes the production of an annual compliance report and a 5 year third-party management report”. It also states that “No development will be approved in the absence of a management plan approved” (Section 44 sub section 4 of the WCMA, 2013). Sub section 3 states that “The cabinet secretary shall, by notice in the Gazette, publish the approved management plans in respect of National Parks, Marine Protected Areas, Wildlife Conservancies and Sanctuaries”.*

The management plan will be constituted by the following factors; a process (a plan is in the process of being done or reviewed), a Gazette notice, an annual compliance report and a 5 year third party report.

## 1.6. Wildlife Compensation

Section 25 of WCMA, 2013 describes the provisions for compensation for human injury, death, loss or damage to Crop, livestock and Property Damage occasioned by wildlife and the processes of seeking compensation thereof. The wildlife species in respect of which compensation may be paid are listed in the third schedule of the WCMA, 2013. It is likely that the upsurge in compensation is due to awareness and the inclusion of Property

Damage, livestock and Crop Destruction in the WCMA, 2013 unlike in the previous Act (Cap 376).

## 1.7. Wildlife Crime

WCMA, 2013 section 7 (k) gives the service powers to undertake and conduct enforcement activities such as anti-poaching operations, wildlife protection, intelligence gathering, investigation and other enforcement activities. Part (h) gives provision for security for wildlife and visitors in National parks, Wildlife conservation areas and sanctuaries.

## 1.8. Consumptive Wildlife Utilization Licensing and regulations

The WCMA, 2013 grants the right to anyone interested in dealing in a gainful (wildlife user rights) manner with specified wildlife (tenth schedule of the WCMA, 2013). Section 79 prescribes the process in terms of permits and licenses. This part of the WCMA, 2013 will be guided by licensing and regulation guidelines which are in the process of being gazetted. Section 80 of the WCMA, 2013 prescribes wildlife user rights while sections 81 and 82 deals with assignment of wildlife user rights. Section 80 sub sections 1 of the WCMA, 2013 states that, “the cabinet secretary may, upon successful registration of the applicant with the County Wildlife Conservation and Compensation Committee grant a general permit for non- consumptive wildlife user rights, including Wildlife based tourism, Commercial photography and filming, Educational purpose, Research purposes, Cultural and Religious purposes”.

Sub section 3 of the WCMA, 2013 states that the Cabinet Secretary will, upon successful registration of the applicant with the County Wildlife Conservation and Compensation Committee, grant a license in accordance with the provision set out in the Eighth schedule with regard to consumptive wildlife use activities, including- Game farming, Game ranching, Live capture, Research involving off-take, Cropping and, Culling. The game farming is restricted to the 21 species of plants and animals listed in the 10th schedule.

These comprise of 9 animals species (crocodile, Tortoise, chameleon, snails, frogs, lizard, butterfly snakes and other reptiles); 5 plants species (Aloe, Prunus Africana, East African sandal wood, White Ginger and Camphor Basil); 7 bird species (Ostrich, pigeon, doves, ducks, Helmeted Guinea Fowl, Vulturine Guinea fowl, Quelea).

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NB it is likely the intended bird species was quails (farmed for its meat, eggs and feathers) and not Quelea which is an agricultural pest.

### **1.9. Challenges and threats to wildlife conservation**

Section 48 of The WCMA, 2013 deals with restricted activities involving listed species. Section 48(2) a & b clearly points out the negative impacts associated with illegal dealings in wildlife species. Such activities would include trespass, encroachment, off take, pollution, water abstraction without a permit, illegal trade in wildlife products. Challenges to wildlife conservation would constitute lack or inadequate human or capital currency, diseases, natural disasters and legal and policy issues.

### **1.10. Financing Wildlife management in Kenya**

Financing of the Wildlife sector is covered under Part iii of the WCMA, 2013. It prescribes sources of funds and how they are to be utilized. It allows sourcing of funds from donors and establishment of an endowment fund. All conservancies have their own ways of sourcing for funds. The WCMA, 2013 however gives them a leeway in which they can utilize wildlife as a source of income through wildlife user rights in section 80. This includes consumptive and non-consumptive utilization.



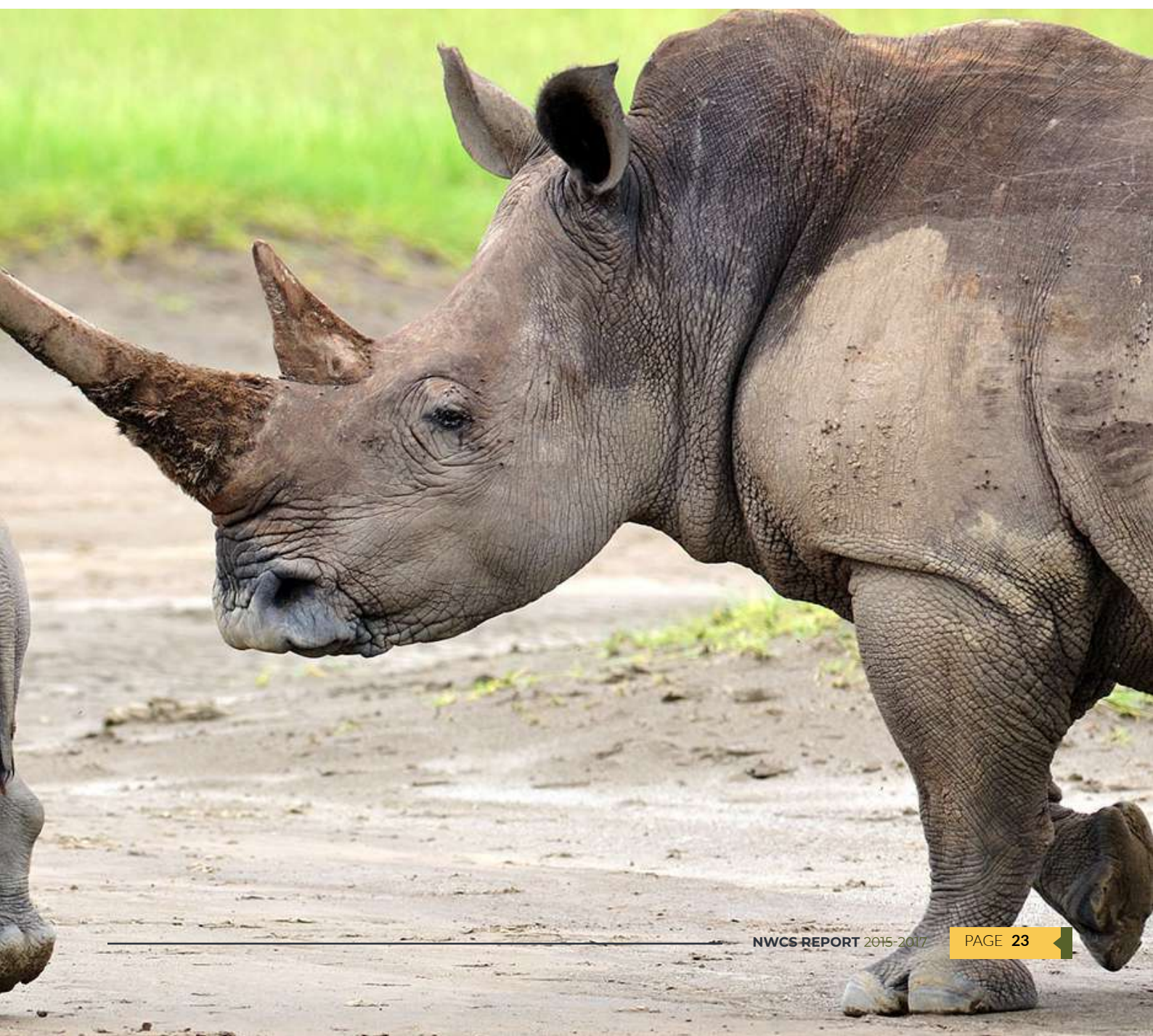


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# CHAPTER 2:

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## CONSERVATION, PROTECTION AND MANAGEMENT OF WILDLIFE IN KENYA



## 2.1. Policy and Legal Framework

The conservation and management of wildlife in Kenya is guided by various national laws and policies as well as international protocols. Some of the critical National and International legal frameworks that affect wildlife management and conservation are listed below.

### 2.1.1. National legal and Policy Framework

#### 2.1.1.1. The Constitution Of Kenya 2010

Wildlife is a national resource under the Constitution of Kenya. Section 69 of the Constitution obligates the State to ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources for the benefit of the people of Kenya. Every person has a right to reasonable access to wildlife resources and to enjoy the benefits accruing from them as governed by the WCMA, 2013, and other relevant national laws. Various national legislations as provided for under Section 72 of the Constitution are in place for the management of the environment, land and natural resources.

#### 2.1.1.2. Wildlife Conservation and Management Act (WCMA) 2013

This is an Act of parliament to provide for the protection, conservation, sustainable use and management of wildlife in Kenya and for connected purposes.

#### 2.1.1.3. Environmental Management and Coordination Act (EMCA) (Amendment Act 2015)

Section 26 of the WCMA 2013 in respect to conservation, protection and management of the environment provides that this shall be in conformity with the provisions of the Environmental Management and Coordination Act (EMCA). EMCA provides a framework for coordinated management of environment and development matters. It particularly provides instruments and tools for assessing proposed development activities to ensure they are economically viable, socially acceptable and environmentally sound. Section 52 of EMCA provides for consultations between NEMA and KWS while prescribing measures for conservation of biological resources. This Act of parliament under Section 58 gives the general provisions for the conducting of an Environmental impact Assessment (EIA). The Act gives NEMA the

overall responsibility of ensuring that institutions and businesses premises carry out EIA. Under this act, it is an offence for any person or body to commence, proceed with, execute or conduct any project specified in the second schedule without approval irrespective of whether any other approval had been granted by any other agency.

#### 2.1.1.4. Water Act 2016

This is an Act of Parliament meant to provide for the management, conservation, use and control of water resources and for the acquisition and regulation of rights to use water. This Act is also meant to provide the regulations and management of water supply and sewerage services and to repeal the Water Act 2002 and certain provisions of the Local Government Act and for related purposes.

#### 2.1.1.5. Treaty Making and Ratification Act 2012

This Act specifies provisions under which international instruments, conventions and agreements including those applicable to wildlife conservation, protection and management shall be ratified before implementation.

#### 2.1.1.6. Sessional Paper No. 3 of 1975

Kenya's wildlife policy is embodied in the Sessional Paper No. 3 of 1975 entitled: "A Statement on Future Wildlife Management Policy in Kenya". The key elements of this policy among others include:-

- i. Identifies the primary goal of wildlife conservation as the optimization of returns from wildlife defined broadly to include aesthetic, cultural, scientific and economic gains, taking into account the income from other land uses
- ii. Identifies the need to identify and implement compatible land uses and fair distribution of benefits derived from wildlife including from both non-consumptive and consumptive uses of wildlife
- iii. Underscores the need for an integrated approach to wildlife conservation and management in order to minimize human-wildlife conflicts.



A revised national wildlife conservation and management policy was formulated in 2012 but remains a draft. Objective 5 of the draft policy seeks to conserve and manage wildlife resources as a national endowment for sustainable development, wealth creation and employment. Amongst the recommendations of the policy is the application of ex situ conservation for species where this option is deemed necessary.

#### **2.1.1.7. The Kenya National Biodiversity Strategy Action Plan**

This is a national framework of action for the implementation of the Convention on Biological Diversity (CBD) to ensure that the present rate of biodiversity loss is reversed, and that present levels of biological resources are maintained at sustainable levels. Two important goals spelled out in the action plan are:

- i. To achieve sustainable utilization of resource ecosystem for the benefit of the present generations while ensuring their potential to meet the demands of future generations
- ii. To preserve genetic resources and biological diversity in the nation's ecosystem and to preserve their cultural value

#### **2.1.1.8. Occupational Safety and Health Act of 2007**

The main objectives of this Act is to secure the safety, health and welfare of persons at work and to protect persons other than the ones at work against risks to safety and health arising out of or in connection with the activities of persons at work. It assigns duties and liabilities to employers, employees and the public in order to facilitate and promote healthy work environment subsequently enhancing outputs economically. This Act is relevant to the management of wildlife in considering designs and layout of all developments in relation to interactions with people.

#### **2.1.1.9. Land Act No 6 (2012)**

This Act gives effect to Article 68 of the constitution to revise, consolidate and rationalize land laws and to provide for the sustainable administration of land and land based resources. It assigns the responsibility to the National Land Commission (NLC) to take appropriate action to maintain public land that has endangered or endemic species of flora and fauna, critical habitats or protected areas as well as identifying ecologically sensitive areas

that are within public lands and demarcate or take any other justified action on those areas to prevent environmental degradation and climate change. In performing these functions, NLC shall consult institutions dealing with conservation.

#### **2.1.1.10. Veterinary Surgeons and Veterinary Para-Professionals Act 2011**

This is an Act of parliament to make provision for the training, registration and licensing of veterinary surgeons and veterinary para-professionals, to provide for matters relating to animal health services and welfare, and for connected purposes. The Act establishes the Kenya Veterinary Board (KVB) which, amongst other functions registers, licenses, controls and regulates veterinary practice and veterinary laboratories, clinics and animal hospitals.

#### **2.1.1.11. County Government Act, 2012**

It gives effect to chapter 11 of the constitution to provide for County Government's powers, functions and responsibility to deliver services. It mandates the County Government to make legislation for the management and exploitation of county resources.

#### **2.1.1.12. Community Land Act (2016)**

The Act gives effect to article 63 (5) of the Constitution to provide for the recognition, protection and registration of community land rights, management and administration of community land, to provide for the role of County Government in relation to unregistered community land and for connected purposes. The Act also provides for the sustainable management of community land resources for purposes of sustainable conservation of land-based natural resources across counties and commits all respective registered communities to abide by the relevant applicable laws, policies and standards on natural resources. It also provides measures to protect critical ecosystems and habitats; incentives for communities and individuals to invest in income generating natural resource conservation programs; measures to facilitate access, use and co-management of forests, water and other resources by communities who have customary rights to them; resources; community participation in the management and utilization of land-based natural resources.

#### **2.1.1.13. Maritime Zones Act No. 6 of 1989**

This Act of parliament provides for the exploration, exploitation, conservation and management

of the resources of the maritime zones. It also provides for the exploration, exploitation and conservation and management of natural resources in the Exclusive Economic Zone (EEZ) which include regulation, control and preservation of the marine environment. It also provides for the application of the fisheries Act in the management of resources within the territorial waters and the EEZ.

#### **2.1.1.14. Fisheries Management and Development Act, No. 35 of 2016**

This is an Act of parliament to provide for the conservation, management and development of fisheries and other aquatic resources to enhance the livelihood of communities dependent on fishing and to establish the Kenya Fisheries Services; and for connected purposes.

#### **2.1.1.15. Forest Conservation and Management Act, 2016**

This Act gives effect to article 69 of the constitution with regards to forest resources. It provides for the development and sustainable management, including utilization, of all forest resources and for the socio-economic development of the country and for connected purposes. The Act applies to all forest, public private and community.

#### **2.1.1.16. Sessional Paper No.3 of 2009 on National Land Policy**

The overall objective of the National Land Policy is to secure rights over land and provide for sustainable growth investments and reduction of poverty. The policy provides a raft of measures geared towards protection, conservation and sustainable management of land and land-based resources. These cover diverse resources and ecosystems such as lakes, drainage basins and wetlands, wildlife and wildlife corridors, forests, fragile ecosystems etc.

#### **2.1.1.17. Vision 2030**

The objective of Vision 2030 is to transform Kenya into a newly industrialized middle income country through three economic pillars: Social, economic and political by the year 2030. One of its aims is to promote environmental conservation in support of the economic pillars. Key flagship projects include conservation, rehabilitation of water towers, securing wildlife corridors and improving waste management system.

#### **2.1.1.18. Animal Diseases Act cap 364**

This is an Act of Parliament to provide for matters relating to the management of animal diseases.

#### **2.1.1.19. Veterinary Policy 2015**

The Veterinary Policy is provided for in the Fourth Schedule of the Constitution of Kenya. It aligns developments in the animal resource industry to the Constitution as well as the Kenya Vision 2030 and the international animal health laws, treaties, agreements and conventions ratified by Kenya. Amongst other objectives, the policy provides an enabling environment for safeguarding animal life, health and welfare and ensure that Kenyans benefit from quality health by guaranteeing animal health, welfare and production services. The policy recognises wild animals' as reservoirs of diseases that can be transmitted to domestic animals and humans. Further, there are game farms which supply game meat. Wild animals therefore need to be considered in the Government's disease control programmes.

### **2.1.2. International treaties, Conventions and Agreements**

Section 109 of the WCMA provides for the implementation of international instruments, conventions and agreements ratified by Kenya in accordance to the provisions of the Treaty Making and ratification Act 2012. These include the following:

#### **2.1.2.1. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**

To enhance the conservation of endangered species in accordance to the provisions of the WCMA 2013 Section 48 on restricted activities involving listed species, Kenya is a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), an international agreement whose aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. States and regional economic integration organizations adhere voluntarily to CITES. Although the Convention is legally binding on the Parties – in other words they have to implement it – it does not take the place of national laws. Rather it provides a framework to be respected by each Party, which has to adopt its own domestic legislation to ensure that CITES, is implemented at the national level. Because the trade in wild animals and plants is cross border, the effort to regulate it requires international cooperation to safeguard certain

species from over-exploitation.

### **2.1.2.2. Ramsar Convention**

To enhance the conservation and management of wetlands as provided for in Section 33 of the WCMA 2013, Kenya is a Contracting Party to the Convention on Wetlands, called the Ramsar Convention, which is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources, as a contribution towards achieving sustainable development throughout the world.

Wetlands are among the most diverse and productive ecosystems. They provide essential services and supply all our fresh water. However, they continue to be degraded and converted to other uses. The Convention entered into force in Kenya on 5th October, 1990. Kenya currently has 6 sites designated as Wetlands of International Importance (Ramsar Sites), with a surface area of 265,449 hectares. These are: Lake Nakuru National Park, Lake Naivasha, Lake Baringo, Lake Bogoria, Lake Elementaita and Tana River Delta.

### **2.1.2.3. IUCN Red List**

The list provides taxonomic, conservation status and distribution information on taxa that are facing a high risk of global extinction. The list is necessary to address recovery plans of threatened and endangered in Kenyan in accordance to Section 49 of WCMA 2013.

### **2.1.2.4. Convention on Biological Diversity**

This multilateral environmental agreement is dedicated to conservation of biodiversity and to ensure sustainable use and equitable sharing of genetic resources in response to the principles of agenda 21. The convention calls for the conservation of genetic resources by preserving sensitive ecosystems, rehabilitating degraded habitats and enacting legislation that protects endangered plants and animal species and requests financial assistance for developing countries so that they can afford programmes designed to conserve their biological resources. The convention led to conception and implementation of the national biodiversity Strategy and action plan in Kenya.

### **2.1.2.5. Animal Welfare Policy Guidelines**

Whilst animal welfare issues lay emphasis on the handling and caring of domestic animals, they have been extended to wild animals especially those held in captivity or under the care of humans for whatever reason. The World Organisation for Animal Health (OIE) explains animal welfare as the way an animal is coping with the conditions in which it lives. An animal is in good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behavior and it is not suffering from unpleasant states such as pain, fear and distress. Good animal welfare requires disease prevention and veterinary care, appropriate shelter, management, nutrition, humane handling and humane killing. Animal welfare is said to be compromised if the animal fails to benefit from the five fundamental rights. These are:-

- i. Freedom from thirst and hunger by providing ready access to fresh water and diet so as to maintain full health and vigor
- ii. Freedom from discomfort by providing an appropriate environment including shelter and a comfortable resting area
- iii. Freedom from pain, injury and disease by preventing or rapid diagnosis and treatment of diseases
- iv. Freedom to express normal behavior by providing sufficient space, proper facilities and company of the animals own kind
- v. Freedom of fear from fear and distress by ensuring conditions and treatment which avoid mental suffering

In Kenya, these fundamental rights are safeguarded in the Prevention of Cruelty to Animals Act (CAP 360) and in the Veterinary Surgeons and Veterinary Para-Professionals Act 2011. Details of the provisions of these Acts are necessary at the EIA stages of any project development.

### **2.1.2.6. Convention of the Prevention of Marine Pollution by Dumping of Wastes and other Matters.**

The Convention was established to prevent indiscriminate disposal at sea of wastes that could create hazard to human health, marine life, damaging amenities or interfering with other legitimate uses of the sea

#### **2.1.2.7. African Convention on the Conservation of Nature and Natural Resources**

The agreement was established to facilitate sustainable use of the natural resources.

#### **2.1.2.8. Convention on the Conservation of Migratory Species of Wild Animals (CMS)**

This was established to facilitate close cooperation on the conservation of migratory species within the range states and commit states to act individually or in cooperation with others in taking action that would ensure such species are conserved.

#### **2.1.2.9. Africa-Eurasian Water Bird Agreement(AEWA)**

The agreement was developed in 1993 from deliberation of Bonn convention for the management and conservation of Tana Delta and associated wetland biodiversity resources. This agreement was triggered by the fact that there are several migratory water birds that use the Tana Delta as wintering site. This has led to the development process for the Integrated Coastal Zone Management (ICZM) protocol together with an action plan. ICZM provides for the sustainable management for the marine and coastal resources within the Western Indian Ocean (WIO) region.

## **2.2. Stakeholders In Wildlife Conservation And Management**

The WCMA, 2013 in various Sections empowers the Service to involve stakeholders in the performance of its mandate. For example Section 44 (5) provides for initiation of public consultations for purposes of formulating management plan guidelines, Section 49 (3) provides for the Service in developing and implementing recovery plans to enlist the services of appropriate public, private or non-governmental organizations and institutions and other qualified persons, and Section 49 (5) provides for the Service to implement a system, in cooperation with the county wildlife conservation committees, community wildlife associations and wildlife managers, to monitor effectively for not less than five years the status of all species which have recovered to the point at which the measures provided pursuant to this section are no longer necessary and which, in accordance with the provisions of this section, have been removed from the lists published in the Sixth Schedule.

Pursuant to these provisions, the Service partners with multiple stakeholders, both national and international, in fulfilling its mandate. These include:

#### **i) Other government agencies:**

Kenya Forest Service (KFS), National Environment Management Authority (NEMA), Directorate of Veterinary Services (DVS), Security agencies (Kenya Police Service, National Intelligence Service, Kenya Defense Forces), Kenya Maritime Authority, National Museums of Kenya, National Council for Science Technology

and Innovation (NACOSTI), Department of Remote Sensing and Resource Surveys (DRSRS), National Land Commission, the National Assembly, Brand Kenya, Kenya Airports Authority, KENGEN, Ethics and Anti-Corruption Commission, The Judiciary, Kenya Plant Health Inspectorate Service, Kenya Ports Authority, Kenya Roads Board, Kenya Tourism Board, Kenya Tourism Federation, Kenya Water Towers Agency, Office of The Auditor General Kenya among others.

#### **ii) Research Institutions and Universities (Local and International):**

State/private universities and other institutions of higher learning, International Livestock Research Institute (ILRI), International Centre for Insect Physiology and Ecology (ICIPE), Kenya Agriculture and Livestock Research Institute (KALRO), Kenya Medical Research Institute (KEMRI), Kenya Forestry Research Institute (KEFRI), Kenya Marine and Fisheries Research Institute (KEMFRI); some of the international institutions include, Tanzania Wildlife Research Institute, Washington State University, Royal Veterinary College, University of Pretoria among others

#### **iii) Non-Governmental organizations:**

David Sheldrick Wildlife Trust, World Wildlife Fund (WWF), Animal Welfare Fund (AWF), Born Free Foundation (BFF), International Fund for Animal Welfare (IFAW), Tsavo Trust, Africa Network for Animal Welfare, African Conservation Centre, African Fund for Endangered Wildlife, African Wildlife Foundation, African World Heritage Fund, Amboseli Trust for Elephants, ARN security,



Bill Jordan Wildlife Defense Fund, Birdlife International, Care for the Wild International, East African Wildlife Society, Eden Wildlife Trust, Elephant Neighbors Center, Elephant Research Trust Fund, Elephant Voices, Kenya Land Conservation Trust, Giraffe Centre, Frei Geboren, Friends of Conservation, George Adamson Wildlife Preservation Trust, Wildlife Clubs of Kenya Wildlife Conservation Society, Wildlife Direct, World Wide Fund for Nature, Vad Den Berg, Green Belt Movement, Kenya Association for Tour Operators, Nature Conservancy, Tsavo Elephant Research, Save the Elephants, Save the Mau Trust, Stand Out Shout Out, Stop Ivory, Kenya Organization for Environmental Education, Kenya Wildlife Conservancies Association, Kenya Wildlife Trust, Marwell Preservation Trust, Nairobi Green Line, Northern Rangelands Trust, Orpower, Park Action Committee Nakuru, Rhino Ark, Savannah Club Japan, Save Elephant Foundation.

#### **iv) International Institutions and Intergovernmental agencies:**

US Fish and Wildlife, USAID, Zoological Society of London, Lusaka Agreement Task Force, African Union Inter-African Bureau of Animal Resources, British Army Training Unit Kenya, Centers for Disease Control and Prevention, CITES Mike Programme, Council of Agriculture TAIWAN, Delegation of the European Union to Kenya, Earthwatch Institute, Embassy of Brazil, Embassy of France, Embassy of Israel, Embassy of Italy, Embassy of the People's Republic of China, Kenya Brazil Cooperation, International Union for the Conservation of Nature, INTERPOL, Japan International Cooperation Agency, Global Environment Facility, High Commission of Canada, German Embassy, French Development Agency, Friedrich-Loeffler-Institute of Animal Health, Embassy of the United States, European Union, Food and Agriculture

Organization, Forestry Bureau, World Bank, World Organization of Animal Health, Zoo d'Amnéville, San Diego Zoo, Uganda Wildlife Authority, United Nations Development Programme, United Nations Educational, Scientific and Cultural Organisation, United Nations Environment Programme (UNEP), United Nations Office on Drugs and Crime, United States Agency for International Development, The World Conservation Union (IUCN), Tanzania National Parks, Netherlands Environmental Assessment Agency, Ngorongoro Conservation Area Authority, Regional Centre for Mapping Resource for Development (RCMRD) Parks Canada, among others

#### **v) Community and Private Conservancies:**

Refer to table 3.5 and 3.6 on conservancies' chapter 3

#### **vi) County Governments:**

All the 47 Counties and communities are stakeholders in the management of wildlife resource.

#### **vii) Companies and Foundations:**

CMC Motors, Development Alternatives Inc, EABL Foundation, Ecobank, Elizabeth Glaser Paediatric AIDS Foundation, Kenya Commercial Bank, Kenya Association of Manufacturers, Kenya Association of Hotel keepers & Caterers, Bata Shoe Company, Equity Bank Group, Finlays Horticulture, Flamingo Hill Camp, Florensis Kenya Ltd, Toyota Kenya, The Mater Hospital, ICEA Lion Group, KLM Royal Dutch Airlines, Lake Nakuru Lodge, Meridian

Medical Centre, Nakumatt Supermarkets, NIC Bank, Novartis Animal Health, Oserian Development Company Ltd and Sarova Lion Hill Game Lodge.

## **2.3. Management Plans**

The WCMA 2013 in Section 44 provides that every National Park, Marine Protected Area, Wildlife Conservancy and Sanctuary shall be managed in accordance with a management plan that complies with the requirements prescribed by the Fifth Schedule. In preparing and adopting a management plan, the Service shall consult with the County Wildlife Conservation and Compensation Committee. In the case of protected areas, the formulation and implementation of management plans

shall involve the participation of neighboring communities.

The Act further in Section 44 (3) provides that the Cabinet Secretary shall, by notice in the Gazette, publish the approved management plans in respect of National Parks, Marine Protected Areas, Wildlife Conservancies and Sanctuaries and in Section 44 (4) that no development will be approved in the absence of management plans approved in subsection (3).



The Act also requires that the Cabinet Secretary shall initiate public consultation for purposes of formulating management plan guidelines (Section 44 (3)). The guidelines for the development of management plans have been developed using a consultative process and presently awaits gazettment. The

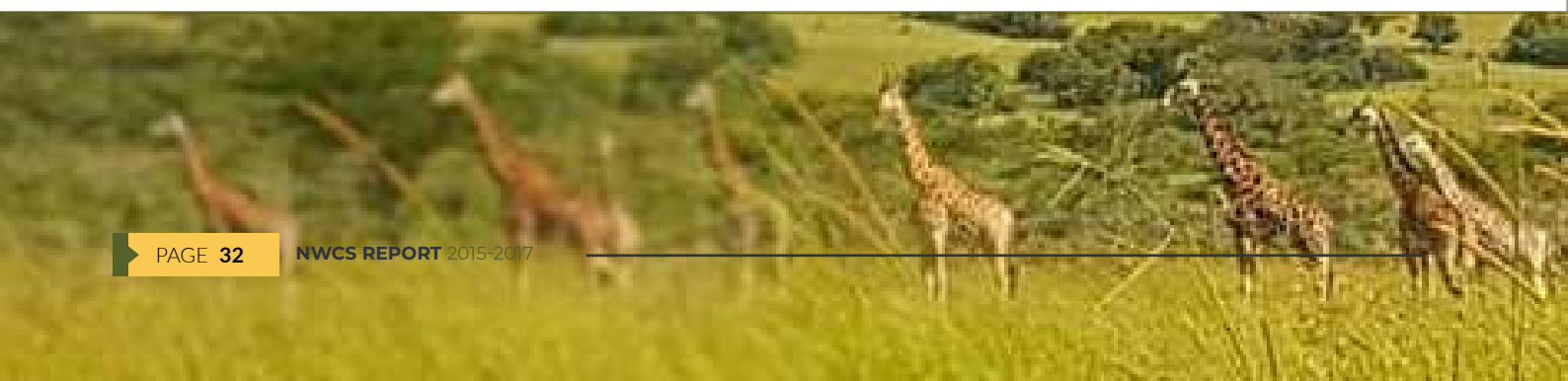
management of all protected areas in the country have and continue to be guided by management plans. Table 2.1 gives the status of the management plans with respect to the requirements of the WCMA 2013 as per the reporting period.

**Table 2.1 Status of Development and Implementation of Management plans**

No	Protected Area	Management Agency	Plan Title and Duration	Status of Management Plan
1.	Tsavo East	KWS	Tsavo Conservation Area Management Plan (2007-2017)	<ul style="list-style-type: none"> <li>The Plan was approved by KWS Board of Trustees but not gazetted</li> <li>No annual compliance report</li> <li>2012 and 2017 five year third party report not available</li> </ul>
2.	Tsavo West			
3.	Chyulu Hills National Parks Tsavo Road/railway			
4.	Ngai Ndethya National Reserve	Makueni County	No Plan	No management plan-The The PA has been encroached
5.	South Kitui National Reserve	Kitui County	South Kitui National Reserve Management Plan (2015-2025)	<ul style="list-style-type: none"> <li>Plan is as yet to be gazetted</li> <li>Compliance report 2016 &amp; 2017 not available</li> </ul>
6.	Amboseli National Park	KWS	Amboseli Ecosystem management Plan (2008-2018)	<ul style="list-style-type: none"> <li>The Plan reviewed in 2014 and yet to be gazetted</li> <li>Compliance report 2009-2017 not available</li> <li>Five year third party plan due in 2013 not available</li> </ul>
7.	Nairobi National Park	KWS	Nairobi national Park Ecosystem Management Plan (2005-2010)	<ul style="list-style-type: none"> <li>No management plan presently</li> <li>New management plan being developed</li> </ul>
8.	Oi Donyo Sabuk National Park	KWS	No Plan	The draft Plan in progress
9.	Nairobi Safari Walk/Animal Orphanage	KWS	Nairobi Safari Walk/Animal Orphanage (2013-2023)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No Compliance report from 2014 – 2017</li> <li>First 5 year third party expected in 2018</li> </ul>
10.	Hell's Gate and Mt. Longonot National Parks	KWS	Hell's Gate-Mt. Longonot Ecosystem Management Plan (2010-2015)	<ul style="list-style-type: none"> <li>Plan has expired</li> <li>No compliance report for 2014 &amp; 2015</li> </ul>
11.	Lake Nakuru National Park	KWS	Lake Nakuru Ecosystem Integrated Management Plan (2002-2012)	<ul style="list-style-type: none"> <li>Plan has expired</li> <li>Development of plan in process</li> </ul>
12.	Kamnarok National Reserve	Baringo County	Kamnarok National Reserve management Plan(1985)	Plan has expired
13.	Lake Bogoria National Reserve	Baringo County	Lake Bogoria National Reserve management Plan2007-2012	Plan has expired
14.	Masai Mara National Reserve	Narok County	Masai Mara national Reserve Management Plan (2009-2019)	<ul style="list-style-type: none"> <li>Plan notgazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>

15.	Rimoi (Kerio Valley) National Reserve	KWS	Rimoi National Reserve management Plan (2006-2016)	<ul style="list-style-type: none"> <li>Plan has expired</li> <li>No compliance reports for 2014/15/16</li> </ul>
16.	Lake Elementaita National Sanctuary	KWS	Lake Elementaita Wildlife Sanctuary Management Plan (2009-2019)	<ul style="list-style-type: none"> <li>Plan notgazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>
17.	Naivasha National Sanctuary	KWS	No Plan	No management plan
18.	Central Island National Park	KWS	Lake Turkana National Parks Conservation area Management Plan (2014-2024)	<ul style="list-style-type: none"> <li>Plan notgazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>
19.	Mount Elgon National Park	KWS	Mt. Elgon Ecosystem Interim management Plan (2012-2022)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>
20.	Ndere Island National Park	KWS	Ndere Island National Park Management Plan (2014-2018)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2015/16/17</li> </ul>
21.	Ruma National Park	KWS	Ruma National Park Management Plan (2012-2017)	Plan has expired
22.	Saiwa Swamp National Park	KWS	Saiwa Swamp Ecosystem Management Plan (2002-2012)	Plan has expired
23.	Chepkital National Reserve	Bungoma County	Mt. Elgon Ecosystem Interim Integrated Management Plan (2012-2022)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2015/16/17</li> </ul>
24.	Kakamega National Reserve	KWS/KFS	Kakamega Forest Ecosystem Management Plan(2012-2022)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2015/16/17</li> </ul>
25.	Lake Kanyaboli National Reserve	Siaya County	No Plan	No management presence
26.	Nasolot National Reserve	KWS	Nasolot national Reserve Management Plan (1996-2001)	Plan has expired
27.	South Turkana National Reserve	KWS/Turkana County	South Turkana national Reserve management Plan (1991-1996)	Plan has expired
28.	Kisumu Impala National Sanctuary	KWS	Kisumu Impala Sanctuary management Plan (2010-2015)	Plan has expired

29.	Lake Simbi National Sanctuary	KWS	No Plan	No management plan
30.	Ondago Swamp National Sanctuary		No Plan	No management plan
31.	Aberdare National Park	KWS	Aberdare Ecosystem management Plan (2010-2020)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>
32.	Mount Kenya National Park Mount Kenya National Reserve	KWS KFS	Mt. Kenya Ecosystem Management Plan (2010-2020)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>
33.	Samburu Shaba Buffalo Springs National Reserves	Samburu County Isiolo County	Samburu-Isiolo Conservation Area management Plan (2009-2019)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>
34.	Laikipia National Reserve	Laikipia County	Laikipia National Reserve Management Plan (1996-2001)	Plan has expired
35.	Laikipia National Park	KWS	No Plan	No management plan
36.	Mwea National Reserve	KWS/Embu County	Mwea National Reserve Management Plan (1998-2004)	Plan has expired
37.	Maralal National Sanctuary	KWS	No Plan	No management presence
38.	Meru & Kora National Parks	KWS	Meru Conservation Area Management Plan	<ul style="list-style-type: none"> <li>Plan has expired</li> <li>No compliance reports for 2014/15/16</li> </ul>
39.	Mwingi National Reserve	Kitui County	(2007-2017)	
40.	Bisanadi National Reserve	Isiolo County		
41.	Arawale National Reserve	Garissa County	No Plan	No management plan
42.	Nyambene National Reserve	Meru County	No Plan	No management plan
43.	Rahole National Reserve	Garissa County	No Plan	No management plan
44.	Malka Mari National Park	KWS	No Plan	No management plan
45.	Sibilo	KWS	Lake Turkana National Parks Conservation area Management Plan	Plan is being developed
46.	South Island			



47.	Central island National Park		(2018-2028)	
48.	Losai National Reserve	Marsabit County	No Plan	No management plan
49.	Marsabit National Reserve	KWS/KFS	Marsabit Forest Ecosystem Management plan (2015-2025)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>
50.	Arabuko Sokoke Forest Reserve	KWS/KFS	No plan	No management plan
51.	Kiunga Boni Doodori National Reserves	KWS	Kiunga-Boni-Doodori Conservation Area Management Plan (2013-2023)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>
52.	Shimba Hills National Reserve	KWS/KFS	Shimba Hills Ecosystem Integrated Management Plan(2010-2020)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>
53.	Tana River Primate National Reserve	KWS	Tana River Primate National Reserve Management Plan (2001-2006)	Plan has expired
54.	Kisite Marine National Park and Mpunguti Marine National Reserve	KWS	Kisite-Mpunguti Marine Coservation Area management Plan (2015-2025)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>
55.	Malindi Marine Marine National Park & Reserve and Watamu marine National Reserve	KWS	Malindi Marine Protected Area Management Plan(2016-2026)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>
56.	Mombasa Marine National Park and Reserve	KWS	Marine Protected Area Management Plan (2016-2026)	<ul style="list-style-type: none"> <li>Plan not gazetted</li> <li>No compliance reports for 2014/15/16/17</li> </ul>
57.	Diani Chale Marine National Reserve	KWS	Mombasa Marine National Park & Reserve Management Plan (2001-2006)	<ul style="list-style-type: none"> <li>Plan has expired</li> </ul>

***The WCMA, 2013 requirement on management plans does not exclude Wildlife Conservancies.***



## 2.4. Status Of Wildlife Health And Management

KWS has a Veterinary Services Department and 7 satellite clinics strategically located in key conservation areas to ensure quick response and effective monitoring of wildlife health in accordance to Section 52 of the WCMA 2013. The satellite clinics are located in Tsavo, Amboseli, Masai Mara, Naivasha, Nanyuki, Meru National Park and Lewa Wildlife Conservancy. The department was established in 1990 and has since grown from the rudimentary unit to a fully-fledged department that is regularly consulted on matters of wildlife health in the eastern Africa region and beyond. The department has been modernizing its operations to meet the ever-evolving challenges in conservation and management of biodiversity including diseases which is one of the significant factors known to decrease species populations' growths globally.

### 2.4.1. Strategies Applied In Managing Diseases In Wildlife

The department applies five main approaches to ensure healthy wildlife populations in Kenya. These are diagnosis and treatment of sick and injured animals, disease surveillance, investigation of diseases outbreaks and instituting appropriate prevention and control measures as well as undertaking research on diseases in wildlife.

#### 2.4.1.1. Diagnosis And Treatment Of Sick And Injured Animals

Rapid and accurate diagnosis of sick animals is undertaken in order to facilitate timely treatment, thus reducing mortalities and preventing the spread of disease. The department's main concern is the direct threat of disease epidemics to the survival and health of all wildlife populations, with emphasis on endangered wildlife populations.

In the reporting period, various diseases and over 850 cases of animal injuries were attended to nationally as summarized in the Table 2.2;

**Table 2.2: Status of Veterinary clinical interventions in 2015 to 2017**

No.	Disease/Injury	No of Cases	Region/Area	Intervention
1.	Infection by <i>Clostridium</i> spp. bacteria	Eastern Mountain Bongo	Mt. Kenya Wildlife Conservancy	Affected animals treated, in-contact animals vaccinated
2.	Arrows/spears	170	Masai Mara and Naivasha	Foreign bodies removed, wounds topically treated and animals covered with long acting broad spectrum antibiotics
		20	Meru	
		48	Tsavo East & West, Taita ranches	
		70	Mt. Kenya, Laikipia ranches	
		60	Amboseli, Kajiado	
3.	Wire snares	170	Masai Mara and Naivasha	Foreign bodies removed, wounds topically treated and animals covered with long acting broad spectrum antibiotics
		50	Tsavo East & West, Taita ranches	
		30	Meru	
		80	Mt. Kenya, Laikipia ranches	
		60	Amboseli, Kajiado	
4.	Other traumatic injuries attributed to humans but exact causes not established	33	Masai Mara & Naivasha	Treatment of infected wounds and euthanasia in some cases
		12	Meru	
		8	Mt. Kenya, Laikipia ranches	
		10	Amboseli, Kajiado	
		21	Tsavo East & West, Taita ranches	



### 2.4.1.2. Disease Surveillance

Passive and active surveillance of diseases are critical initiatives that mainly focus on diseases that cause mortalities in wildlife, those that have a negative impact on livestock economies and livelihoods and diseases of public health importance, each of which has important consequences for wildlife management. This approach makes it possible to have an

early warning of disease outbreaks, including those that could spread to livestock and humans. Besides reducing the cost of disease epidemics, such an approach ensures healthy wildlife populations. Diseases of national and international importance monitored by the veterinary department between 2015 and 2017 are enumerated in Table 2.3:

**Table 2.3: Wildlife Diseases Monitored in 2015 to 2017**

No.	Disease, Aetiological Agent	Status in Wildlife
1.	Peste des Petits Ruminants (PPR), Morbillivirus	Disease emerging after the eradication of rinderpest possibly due to loss of cross-protection because the two diseases are caused by a virus of the same genus. Serological evidence in wild small ruminants demonstrated. More epidemiological research ongoing in areas with wildlife-livestock interactions such as the Masai Mara.
2.	Rabies, Lyssavirus	Outbreaks partially responsible for near-extinction of the endangered wild dogs in the Masai-Mara- Serengeti ecosystem in 1980s. Transmitted from wildlife to domestic animals and vice versa. Is fatal in all mammalian species. Many wildlife species are susceptible. Endemic in many wildlife areas
3.	Anthrax, <i>Bacillus anthracis</i>	Sporadic cases and outbreaks in multiple wildlife species reported in many areas over the years. Recent outbreaks include in 2015 in Lake Nakuru national park resulting in mass deaths of buffaloes and some endangered species like the rhino and Rothschild giraffes. Earlier in 2011, there was an outbreak in Mwea national reserve resulting to significant mortalities of the endangered Rothschild giraffes and in 2005-2006 in northern Kenya resulting to massive deaths of the endangered Grevy's zebra. Endangered species are vaccinated during outbreaks
4.	Canine Distemper, Morbillivirus	This is a disease of wild carnivores and domestic dogs. Important for rare and endangered carnivores such as the wild dog. Important co-infection with protozoa is causing enhanced pathology in other species such as lions. Increased incidence in felines suggests emergence of this virus in the cat family. The recent outbreak was in wild dogs in Laikipia/Samburu ecosystem in 2017.
5.	Bovine tuberculosis, <i>Mycobacterium bovis</i>	Low prevalence rates in baboons and buffaloes reported. A recent study concluded in 2015 in Masai Mara did not get any confirmed cases from samples collected in both live animals and carcasses. The disease has however been reported to be the cause of decline in lion numbers in South Africa and a major problem to the buffalo populations. More studies required particularly in areas of high wildlife and livestock interactions to establish disease prevalence in wildlife.
6.	Trypanosomiasis, diverse <i>Trypanosoma</i> species	Diverse wildlife species including elephant, rhino, buffalo, warthog, hippo and various artiodactyls are maintenance hosts and are trypano-tolerant but can show high infection rates with various trypanosome species. Confirmed to have caused mortalities in immunologically naïve rhinos trans-located to tsetse infested areas such as Masai Mara national reserve and Meru national park.
7.	Malignant Catarrhal fever, Alcelaphine herpesvirus-1	Wildebeests are reservoirs. Disease limited to areas where cattle and wildebeests interact. It is an emerging issue in Masai land where there is high interaction of wildebeests and cattle, and a potential cause of human-wildlife conflicts in these areas. It is fatal in cattle.
8.	Foot and Mouth Disease (FMD), Aphthovirus	Buffaloes persistent carriers of South African Type (SAT)-1 and SAT-2 serotypes. Endemic in many wildlife populations. It is a notifiable disease whose importance in wildlife is because of transmission to livestock where it causes significant negative socio-economic impacts

9.	African Swine Fever (ASF), ASF virus	Free-ranging porcine species especially warthogs are asymptomatic carriers of the virus. Widespread and endemic in many wildlife populations. It is a notifiable disease whose importance in wildlife is because of transmission to livestock where it causes significant negative socio-economic impacts
10.	Rift Valley Fever, Phlebovirus	A zoonotic disease of great socio-economic importance. Sporadic outbreaks experienced after long inter-epidemic periods. Reported to have affected gerenuks and gazelles in the 2001 outbreak. Studies in wildlife ongoing to understand its epidemiological role
11.	New castle disease (NCD)	Wild bird populations in various parts of the country have been affected by New Castle disease outbreaks in the recent past. Massive die-offs between 2015 and 2017.
12.	Avian influenza	Migratory wild birds are reservoirs of Low Pathogenic Avian Influenza (LPAI) viruses but their role in transmission of Highly Pathogenic Avian Influenza (HPAI) viruses is still not clear and requires further investigation and research. Kenya lies on a major wild birds' migratory route linking southern Africa, Europe, and the Middle East, and has several important wetlands for migratory species, hence the risk of HPAI occurrence. Surveillance and research on all the avian influenza viruses (including H5N1) in wild birds is implemented by KWS and other partners following the outbreak in Asia in 2006. To date, no positive cases have been detected. KWS, however, remains alert and continues with passive and active surveillance of the disease.
13.	Sarcoptic mange in cheetahs in Masai Mara	The cheetah population in Masai Mara National Reserve is of significant value, being one of the cohesive populations and a major attraction. The population is persistently sick and infested by parasitic mites such as <i>Sarcoptes scabiei</i> that causes a skin disease called mange. The population is frequently treated by Ivermectin, which is effective, but the animals are usually re-infested. In a recent study to determine the transmission cycle of the mites, it was noted that the Thomson's gazelle was similarly infested by mites, a significant observation because the gazelles are the preferred prey of the cheetahs. It therefore suggests that the mite transmission pathway is sustained by the predator-prey interactions, and points to the source of persistent re-infections. If untreated, mange causes death in cheetahs and is therefore a real threat to the survival of cheetahs in the Masai Mara.
14.	Tick borne diseases	Usually opportunistic in nature particularly during periods of prolonged droughts in malnourished and immune-compromised animals or trans-located naive populations. Mortalities of multiple wildlife species usually experienced in different parts of the country. The diseases include theilerioses, anaplasmosis and brucellosis. Surveillance was done in Eastern Mountain Bongo surrogate species (cattle, bushbuck) in Eburu forest and Mt. Kenya in preparation of re-introduction of captive Eastern Mountain Bongo repatriated from US in 2002 back to the wild.



Plate: 1 Disease Surveillance in Masai Mara Ecosystem

### 2.4.1.3. Investigation Of Disease Outbreaks

This entails conclusive investigation of all outbreaks of diseases and instituting

appropriate control and monitoring systems, including vaccination of endangered species. In the reporting period, there were several disease outbreaks as summarized in the Table 2.4.

**Table 2.4: Status of disease outbreaks in 2015-2017**

No.	Disease Outbreak	Diagnosis	Location	Control and prevention	Total Mortalities
1.	Anthrax (Bacillus anthracis)	Mass die-offs of Buffaloes (669). Some mortalities of endangered species (5 Black Rhinos, 3 White Rhinos, and 1 Rothschild Giraffe)	Lake Nakuru NP	Prompt disposal of carcasses by deep burying and disinfection of sites	678
		Buffaloes deaths (3)	Nairobi National Park	Prompt carcass disposal through burying and environmental decontamination.	3
2.	Opportunistic tick-borne haemoparasite infection exacerbated by Starvation due to low plane of nutrition and inadequate water supply.	Mortalities of 46 Zebras	Solio ranch	Water provided using water bowser and fence opened for the animals to move into Solio ranch	46
3.	Putative filariasis caused by parasitic infection by <i>Stephanofilaria dinniki</i>	Large wounds in white and black Rhinoceros. Some wounds were deep below the epidermis. One rhino that had expansive wounds died, which showed that the infection is a threat to the Rhinos population	Meru National Park	Infected individuals treated with an anti-parasitic drug (Ivermectin) combined with topical treatment of the wounds and systemic antibiotics	1
4.	Tick-borne diseases (Theileriosis & Anaplasmosis)	Mass die-offs of impalas, Oryx and Buffaloes (200 Buffaloes, 150 Impalas, 3 Hartebeests and 3 Oryx)	Mugie ranch	Prompt carcass disposal through burying and disinfection. Pastoralists' livestock which were the source of the pathogens removed from the ranch	356
5.	Malnutrition & opportunistic parasites infection	Death of common Zebras	Oltepesi & Magadi areas in Kajiado	Carcass disposal by burning	
6.	Canine Distemper	Mortalities of about 70 Wild Dogs and Jackals	Southern Laikipia	In partnership with the Directorate of Veterinary Services vaccinated domestic dogs in the area	70

### 2.4.1.4. Research On Wildlife Diseases

The WCMA, 2013 in Section 7 defines one of the functions of the Service as conducting and coordinating research in the field of Wildlife Conservation and management and ensure application of the research findings in conservation planning, implementation and

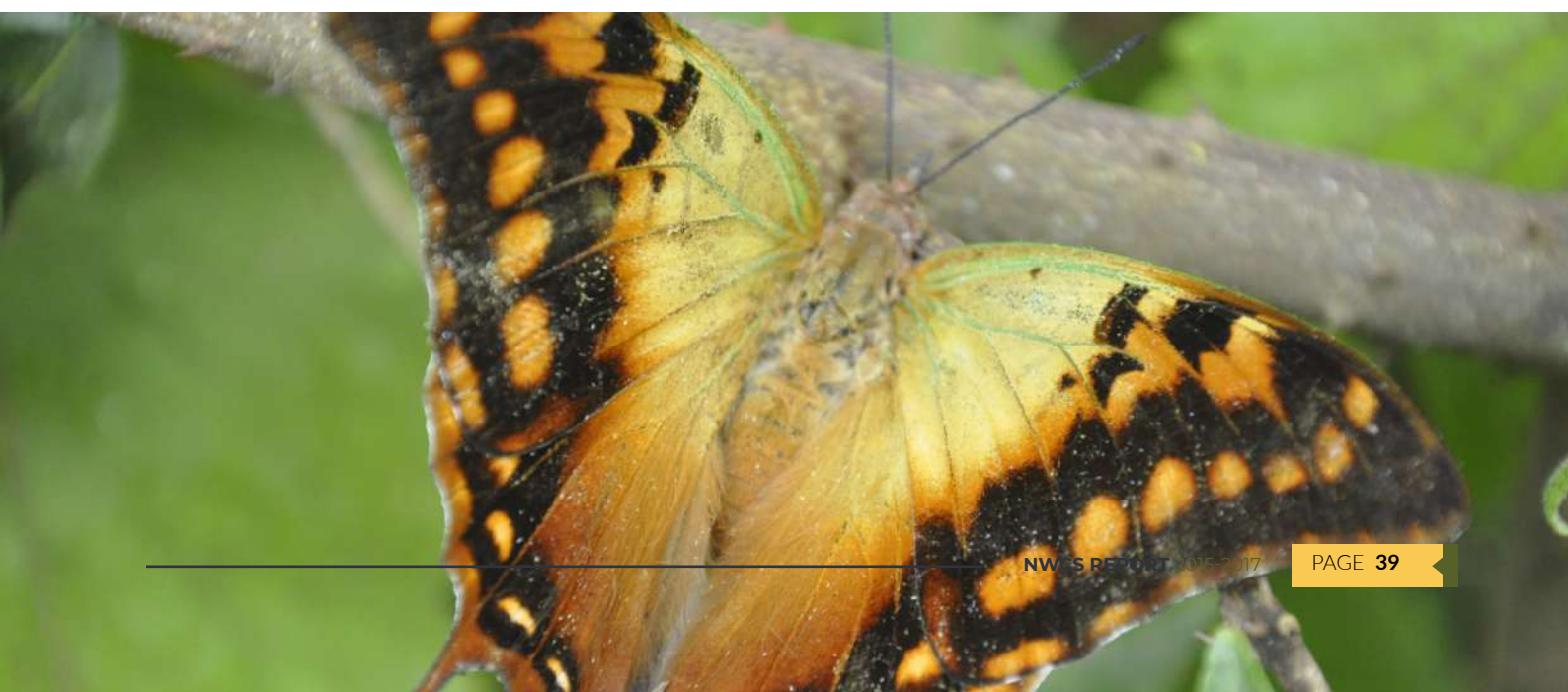
decision making. The veterinary Department undertakes research to better understand disease dynamics in wildlife populations so as to inform the best management methods. Table 2.5 gives the status of Research activities of diseases in wildlife between 2015 and 2017.

**Table 2.5: Research activities on diseases in wildlife in 2015 to 2017**

No.	Research	Objectives	Findings	Remarks
1.	Bat-borne viruses	<ul style="list-style-type: none"> <li>Application of non-invasive approaches using fresh faeces to detect viruses of public health importance circulating within the diverse species of Kenyan bats across five regions (former provinces)</li> <li>Viruses studied included Astroviruses, adenoviruses, caliciviruses, coronaviruses, flaviviruses, filoviruses, paramyxoviruses, polyomaviruses and rotaviruses</li> </ul>	<ul style="list-style-type: none"> <li>Except for filoviruses (these cause diseases such as Ebola), eight virus families were detected with varying distributions and positive rates</li> <li>Detected viruses were related to human strains which raises public health concerns particularly considering increased human-bat interaction.</li> </ul>	<ul style="list-style-type: none"> <li>This is the first country-wide surveillance of bat-borne viruses in Kenya spanning from 2012–2015 covering sites perceived to have medium to high level bat-human interaction.</li> <li>Many bats' species are dwelling in houses.</li> <li>Fruit bats are migrating to human populated areas including markets and cities.</li> <li>Thus need for active surveillance</li> </ul>
2.	New Castle Disease	<ul style="list-style-type: none"> <li>Determine the strains circulating in wild birds in Kenya especially pigeons and doves that underwent events of mass die-offs previously.</li> </ul>	<ul style="list-style-type: none"> <li>Pigeon Paramyxovirus type 1 is the cause of the mass deaths of Laughing doves in Kenya</li> </ul>	<ul style="list-style-type: none"> <li>The virus strain seems to be species specific to laughing doves, hence the population of the species is vulnerable</li> <li>Current survey is country wide to detect its circulation in diverse species of wild birds and in diverse ecozones</li> </ul>
3.	Highly Pathogenic Avian Influenza (HPAI)	<ul style="list-style-type: none"> <li>To detect the zoonotic HPAI virus from parlearctic migratory birds (from Europe, America, Asia)</li> </ul>	<ul style="list-style-type: none"> <li>The birds were not harbouring the virus.</li> </ul>	<ul style="list-style-type: none"> <li>There was no HPAI virus in the wild birds</li> <li>Active surveillance need to be maintained since outbreak occurred recently in Uganda</li> </ul>
4.	Foot and Mouth Disease (FMD)	<ul style="list-style-type: none"> <li>Buffalos are reservoirs of FMD virus making farmers intolerant to having buffalos in their land</li> <li>Research intended to determine the serotypes found in cattle and buffalo occupying a fenced habitat</li> </ul>	<ul style="list-style-type: none"> <li>Buffalo and Cattle were highly exposed to FMD virus based on Serology</li> <li>Molecular typing showed that buffalo had SAT1 and SAT 2 FMD virus while cattle had Serotype A and O</li> <li>Results showed limited chance of FMD virus strain sharing between co-occurring cattle and buffalo</li> </ul>	<ul style="list-style-type: none"> <li>The research obtained one of the largest genetic information on FMD virus strains from buffalo</li> <li>The information is important for strategies on control and prevention</li> </ul>
5.	Anthrax	<ul style="list-style-type: none"> <li>Conducted a retrospective survey to determine predictors of anthrax outbreak in wildlife</li> </ul>	<ul style="list-style-type: none"> <li>The results show that early warning system could be used to predict and prepare for anthrax outbreaks</li> </ul>	<ul style="list-style-type: none"> <li>Detailed data need to be collected to build in a reliable early warning indicators</li> </ul>



6.	Chimpanzee health status	<ul style="list-style-type: none"> <li>Captive chimpanzees at Ol Pejeta Conservancy require health monitoring to ensure preventive health care as majority grow older</li> </ul>	<ul style="list-style-type: none"> <li>The health monitoring determined that body mass index, age and sex are critical indicators of inflammatory disease in captive populations</li> </ul>	<ul style="list-style-type: none"> <li>Scheduled health checks continue for humane care of this populations whose life history was traumatic</li> </ul>
7.	Wildlife Injury	<ul style="list-style-type: none"> <li>Human inflicted Injuries are common in wildlife. Research determined whether such injuries have influence on parasite infection and immune system</li> </ul>	<ul style="list-style-type: none"> <li>The results in a zebra population showed that Injury has an effect on both immunity and parasites that are normally harmless</li> </ul>	<ul style="list-style-type: none"> <li>Wound care in animals is thus critical</li> </ul>
8.	Wild and farmed Quails and guinea fowls	<ul style="list-style-type: none"> <li>Interest in consumptive wildlife motivated the study to determine phenotypic differences in wild and farmed Quails</li> </ul>	<ul style="list-style-type: none"> <li>Research highlighted key traits that stakeholders could use to differentiate the farmed and wild types of these poultry</li> </ul>	<ul style="list-style-type: none"> <li>These traits are useful for conservation and farming</li> </ul>
9.	Rift Valley Fever	<ul style="list-style-type: none"> <li>Conducted a sero-surveillance survey in different wild species (elephants, buffalo, Rhinoceros)</li> </ul>	<ul style="list-style-type: none"> <li>Results show that RVF virus circulates in wildlife species during inter-epidemic periods</li> </ul>	<ul style="list-style-type: none"> <li>Wildlife plays a role in the epidemiology of this zoonotic disease</li> </ul>
10.	Brucella	<ul style="list-style-type: none"> <li>Sero-surveillance survey in buffaloes and impalas</li> </ul>	<ul style="list-style-type: none"> <li>The results show populations of buffalo and impala in Laikipia are exposed to <i>Brucella</i> spp</li> </ul>	<ul style="list-style-type: none"> <li>Occupational health risk practice for veterinarians</li> </ul>
11.	Q-fever	<ul style="list-style-type: none"> <li>Sero-surveillance survey</li> </ul>	<ul style="list-style-type: none"> <li>African buffalo are exposed to Q-fever</li> </ul>	<ul style="list-style-type: none"> <li>Disease is of public health importance because of zoonotic potential</li> </ul>
12.	Poaching and tusk size	<ul style="list-style-type: none"> <li>Effect of poaching on elephant tusk size</li> </ul>	<ul style="list-style-type: none"> <li>Findings showed that poaching of elephants has contributed to smaller tusked elephants</li> </ul>	
13.	Tick-borne parasites	<ul style="list-style-type: none"> <li>Diversity of <i>Theileria</i> and <i>Babesia</i> in elephants and wildebeests</li> </ul>	<ul style="list-style-type: none"> <li>Elephants and Wildebeests are naturally infected with diverse genotypes, some infectious to livestock</li> </ul>	<ul style="list-style-type: none"> <li>Status for other animals need to be determined</li> </ul>





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## 2.4.2. Resources Available For Wildlife Health Management

### 2.4.2.1. Collaborations

In undertaking wildlife health management, the Service has a strong network of local, regional, and international partners working in the areas of animal and human health. The network provides exciting opportunities to develop innovative, collaborative, and integrated approaches to wildlife management. The partners include the University of Nairobi, Directorate of Veterinary Services, International Livestock Research Institute, International Centre for Insect Physiology and Ecology, Kenya Agriculture and Livestock Research Organisation, Kenya Medical Research Institute, Washington State University and Royal Veterinary College amongst others.

### 2.4.3. Emerging issues and challenges in managing diseases in wildlife

There are several challenges that are evolving in management of diseases in wildlife populations. These include:

- **Emergence of new diseases:** Although very little is understood about the dynamics of diseases in most wildlife populations, evidence demonstrates that wildlife plays a key role in emergence of many diseases. There are many possible reasons for this phenomenon including the consumption of wildlife as well as ecological factors that affect patterns of contact between livestock and humans with wildlife for example, deforestation, population movements, and intrusion of people and domestic animals into wildlife habitats. Another reason is shifting weather patterns due to climate change that affects host-vector-pathogen dynamics. Additionally, in these days of rapid human and animal movements and threats of bioterrorism, diseases may spread from one continent to another very fast.
- **Increasing interactions between domestic animals, humans and wildlife:** These interactions are a key issue in livestock economies in Kenya, where many communities live in close contact with wildlife. Interactions are increasing due to a number of reasons, including rising human population and frequent droughts, which is bringing wild animals, livestock, and humans into closer proximity at watering

points and pastures. Because wildlife is generally susceptible to the same disease agents as domestic animals, it is suffering a spill-over of diseases from domestic animals.

- **Inadequate knowledge on diseases in wildlife:** Appropriate management of diseases in wildlife poses major challenges to wildlife veterinarians because there is still inadequate knowledge of disease dynamics in wild animal populations, which limits the development of effective strategies.
- **Limited options for disease control:** Options for disease control also limited and often have implications for wildlife welfare. Many strategies such as culling and creation of barriers (for example disease-free zones), invariably results in harm to wild animals. Conventional approaches to animal disease control such as vaccination or treatment to reduce transmission also have limitations in wildlife populations. Specific vaccines and treatments are often unavailable or untested for use in wildlife and delivery in field settings is beset by logistic, financial, and ethical considerations.
- **Inadequate funding:** Disease management in wildlife populations is expensive in terms of required resources such as immobilization drugs and darting equipment, transport as often wildlife is found in remote areas and difficult terrains and interventions therefore require immense resources in terms of transport and robust vehicles and sometimes a helicopter for darting.
- **Limited laboratory capacity for disease diagnoses:** The laboratory currently available only has basic diagnostic equipment. Confirmatory diagnoses that require advanced procedures are outsourced from other major reference laboratories within and outside Kenya. There is need to equip the laboratory and train personnel to enhance wildlife health management.
- To address the above challenges, the Service is undertaking the following initiatives:
- Expanding the range of diseases under its surveillance programs. Surveillance is intended to act as an early warning system for any disease outbreaks. Focus is mainly on diseases that cause wildlife mortalities, those that impact on livestock economies and livelihoods and those of public health importance.

- Enhancing collaborations with different stakeholders in the fields of animal, human and environmental health.

#### 2.4.4. Immediate Needs In Wildlife Health

- i. Regular training of veterinary and laboratory teams so as to constantly be honed with current epidemiological and diagnostic skills.
- ii. Increased funding of disease surveillance programs to enhance

early detection of disease outbreaks and ultimately lower the cost of managing disease epidemics

- iii. Establishment of an emergency fund to ensure efficient and effective response to disease outbreaks
- iv. Modernization of veterinary and capture equipment to enhance response to disease outbreaks including effective and efficient translocation of vulnerable endangered species where need be.

## 2.5. Wildlife Forensic and Genetics Laboratory

In 2015, KWS launched the forensic and genetics laboratory, making Kenya the second country in Africa after South Africa to apply Wildlife DNA forensic analysis in wildlife law enforcement. This is in line with the implementation of the WCMA 2013 Section 7 that defines the functions of the Service.

The benefits of the facility include:

- Employing modern DNA technology that will assist in the provision of accurate identification of wildlife and wildlife products in order to strengthen prosecution of wildlife crimes. This is important because the rate of poaching for bush meat and trophies especially for rhino horns and ivory is leading to alarming decline of wildlife biodiversity.
- Assist in developing the Rhinoceros DNA Indexing System that will enable Kenya have a credible gene and data bank of rhinos

for effective monitoring and application of other interventions that would increase and sustain Kenya's rhino populations.

- Since Kenya is a hub for international flights, smuggled wildlife and/or wildlife products are frequently confiscated at JKIA. The laboratory will aid the identification and possible source of products such as rhino horns especially once the rhino DNA indexing database is completed.
- Assist in the certification or licensing for export of products whose identification is suspect e.g. ornaments made from animal products, for business or research. This will curb illegal exploitation of Kenya's biodiversity and genetic resources.

### 2.5.1. Bush Meat Cases

The Table below summarises the number of bush meat cases analyzed by the Laboratory for prosecution purposes:



Plate: 2 Confiscated Bush meat

**Table 2.6: Bush meat cases analyzed in the forensic lab for prosecution purposes**

<b>No.</b>	<b>County</b>	<b>No. Of Cases</b>	<b>Species Identified</b>
1.	Kajiado	51	Zebra, common eland, impala, cattle, Grant's gazelle, wildebeest, Plain's zebra, dikdik, Thompson's gazelle, giraffe
2.	Nakuru	17	Plain's zebra, warthog, buffalo, Donkey, Blue wildebeest
3.	Lamu	11	Lesser Kudu, Buffalo, Waterbuck, Hippopotamus, Buffalo
4.	Narok	10	Plain's zebra, hippopotamus, Common Eland, buffalo, Red fronted gazelle
5.	Mombasa	8	Green sea turtle, loggerhead sea turtle, leopard, rhino
6.	Machakos	8	Hartebeest, wildebeest, Plain's zebra
7.	Tana River	7	Buffalo, waterbuck, elephant
8.	Taita-Taveta	6	Impala, elephant, common warthog
9.	Garissa	5	Giraffe, lesser kudu
10.	Kilifi	4	Donkey, Green Sea turtle, Hippopotamus, dikdik
11.	Nairobi	4	Donkey, Common Eland, elephant
12.	Laikipia	4	Buffalo, rhino
13.	Malindi	4	Bush pig, Elephant, Grey francolin, dikdik
14.	Makueni	3	Elephant, Cheetah, Leopard
15.	Wajir	2	Giraffe
16.	Kitui	2	Elephant
17.	Garissa	1	Giraffe
18.	Kisii	1	Cheetah
19.	Nyeri	1	Aadvark
20.	Isiolo	1	Degraded exhibit
21.	Nyandarua	1	Bushbuck
22.	Nanyuki	1	Bushbuck



## 2.5.2. Status of Ongoing Projects

**Table 2.7: Ongoing projects to develop genetic databases**

No.	Project Name	Status
1.	Elephant genetics database for east African region	<ul style="list-style-type: none"> <li>Objective is to build a collaborative forensic network between Kenya, Tanzania and Uganda that will result in development of a genetic database for elephant populations in East Africa. Over 200 samples of elephant tissue from different populations have been collected and are at various stages of analysis.</li> <li>The database will be used to enhance the detection and validation of poaching hot spots within the region and link seized products to their original crime scene to enhance prosecution of ivory traffickers</li> </ul>
2.	Rhinoceros DNA indexing System (RhODIST™) Project	<ul style="list-style-type: none"> <li>The project is developing a DNA forensic database for all rhinoceros in Africa range states.</li> <li>The database will be utilized to trace confiscated horns or other rhinoceros material to a specific source. This will provide complete traceability of rhinoceros products and build a basis for strong legal evidence in courts. It will also act as a major deterrent to poaching activities as it will greatly enhance the ability of enforcement agencies to secure prosecutions.</li> <li>Project commenced in 2012 in collaboration with University of Pretoria and WWF-Kenya. The database will be fully secured and owned by Kenya with restricted access.</li> </ul>
3.	Barcode of Wildlife Project	<ul style="list-style-type: none"> <li>Google's Global Impact Awards program has provided funding for the project involving six countries including Kenya (represented by KWS and NMK)</li> <li>Project aims to build DNA barcode reference library for CITES and threatened animal and plant species</li> <li>The DNA barcode will enable accurate identification of plant and animal materials. This will assist in developing processes for border inspection, courtroom prosecutions and other enforcement measures</li> <li>The project started in 2014. It is coordinated by the Consortium for the Barcode of Life (CBOL) headquartered in Washington, DC</li> <li>So far, Kenya has over 1000 Barcodes in the GenBank. The forensic laboratory has contributed over 200 of these from priority animal species</li> <li>The Service is currently using the DNA Barcoding reference library for timely and easy exhibit identification, which is presented as evidence in court cases. Convictions have been achieved in concluded cases using DNA barcode as evidence.</li> </ul>





### 2.5.3. Challenges and Needs of The Forensic Laboratory

- i. Inadequate computer hardware and software: There is need to acquire required computer hardware and software for the inventory of forensic and other wildlife samples in the lab
- ii. Inadequate laboratory personnel: There is need for recruitment of additional

staff as a matter of priority to work in the lab and help achieve the envisaged objectives of the wildlife forensic laboratory.

- iii. Training of laboratory personnel: There is need to upscale training of lab personnel to maintain the database and first responders and sample collection teams on proper samples collection, how to fill in sample collection forms, preservation and maintenance of chain of custody.

## 2.6. Translocations And Species Management Activities

### 2.6.1. Translocations

Translocation of wildlife is usually considered a last resort by the Service in fulfilling its mandate. However, as Kenya's biodiversity faces the incessant threats of habitat loss, invasive species and climate change, this type of conservation intervention is becoming more frequent. It is undertaken to address various management purposes such as:

- i. Establishment of sanctuaries
- ii. Introduction of wildlife species into new habitats

- iii. Re-introduction of wildlife species into former habitats
- iv. Mitigate habitat destruction through destocking
- v. Mitigate human-wildlife conflicts
- vi. Stocking species so as to increase genetic pool and improve breeding.

The table 2.8 gives the translocation activities undertaken in the reporting period.

**Table 2.8: Translocations in 2015 and 2017**

No.	Species and numbers	Donor site	Recipient site	Objective for translocation
1.	13 Black rhinos	Lake Nakuru National Park and Lewa Conservancy	Sera Conservancy	Implementation of species recovery plans for the black rhino by establishing a new in Sera Rhino Sanctuary
2.	11 Oryx	Haller Park in Bamburi	Tindress sanctuary in Nakuru	Establish a private sanctuary
3.	3 elands, 6 waterbucks	Haller Park in Bamburi	Tindress sanctuary in Nakuru	Establish a private sanctuary
4.	29 warthogs	Sumbatini farm in Kajiado	Nairobi National Park	Mitigate human-wildlife conflict and rescue from starvation following prolonged drought
5.	20 Common, Zebras, 8 Rothschild giraffe, 29 Waterbucks, 22 Impalas	Naivasha	Rimoi National Reserve	Restocking of Rimoi National Reserve 7 giraffe trans-located successful with 1 fatality
6.	6 Lions	Ol Pejeta conservancy	Tsavo West N.P	Mitigate human-wildlife conflicts, Reduce predators in rhino Sanctuary
7.	5 Giraffes, 6 zebras, 9 Impalas	Wilili conservancy in Naivasha	Bora Bora conservancy in Diani, South Coast	Establish a new private sanctuary



Plate: 3 Translocation of zebras in Naivasha to Rimoi National Reserve

## 2.6.2. Species Management Activities

The table 5.12 gives the management actions undertaken to support various species recovery plans as provided for in the WCMA 2013 Section 49 that empowers KWS to develop and implement recovery plans for the conservation and management of all species

listed under the Seventh Schedule. In Section 49 (2) (b) (i), the WCMA, 2013 empowers the Service to incorporate in each recovery plan a description of such site-specific management actions as may be necessary to achieve the plan's goal for the conservation and survival of the species.

**Table 2.9: Species management activities in 2015 and 2017**

No.	Species	Intervention	Location	Status
1.	Black Rhinos	Ear notching and fitting microchips	Meru, Lake Nakuru, Masai Mara,	Enhance monitoring and individual identification
2.	White Rhinos	Ear notching and fitting microchips	Nairobi, Lake Nakuru	Enhance monitoring and individual identification
3.	Black rhinos	Fit horn transmitters	Tsavo West IPZ	Enhance monitoring
4.	Elephant	Collaring	Tsavo, Amboseli, Masai Mara	Establish migratory corridors and mitigate Human-elephant conflict
5.	Lions	Collaring	Nairobi, Ol Pejeta, Soysambu,	Mitigate Human-wildlife conflict
6.	Buffalo	Collaring	Masai Mara	Establish wildlife-livestock interphase for disease surveillance
7.	Wildebeest	Collaring	Kajiado	Establish migratory corridors
8.	Wild dog	Collaring	Laikipia	Enhance monitoring



*Plate: 4 Ear notched black rhino in Lake Nakuru National Park*

## 2.7. Status Of Captive Wildlife Management And Animal Welfare

In undertaking its mandate, KWS endeavors to conserve wild animals free ranging in their natural habitats. However, situations do emerge that necessitate some animals to be conserved ex situ in captivity to assure them of a life. Captive facilities are therefore established to take care of such animals. A captive wildlife facility therefore refers to a sanctuary or an orphanage that provides shelter and care to animals that have been abused, injured or sick, abandoned or orphaned, illegally held or are otherwise in need. It also includes animals kept for education and tourism purposes in museums and education centers.

There are 3 public (KWS) managed facilities in the country. The WCMA 2013 Section 80 Section (1) on wildlife user rights provides that

the Cabinet Secretary may grant a permit for non-consumptive wildlife user rights, including -

- i. Wildlife-based tourism
- ii. Commercial photography and filming
- iii. Educational purposes
- iv. Research purposes
- v. Cultural purposes
- vi. Religious purposes.

Following these provision by the WCMA, 2013, permits have been granted 20 private facilities have been licensed and are operational. Another 5 are provisionally approved and in different stages of development.



**Table 2.10: Status of captive wildlife facilities**

No	Name	Location	Wildlife Kept
Established and KWS Managed			
1	Nairobi Safari Walk	Nairobi	Lions, leopard, rhino, cheetahs, hyaenas, pygmy hippo, assorted ungulates, ostriches, primates, crocodiles, etc.
2	Nairobi Animal Orphanage	Nairobi	Lions, leopard, mongoose, hyaenas, cheetahs, assorted ungulates, primates, crocodiles, etc.
3	Kisumu Impala Sanctuary	Kisumu	Lions, cheetahs, buffaloes, leopard, tortoises, parrots, guinea fowls, assorted ungulates..
Established Private or Community Owned			
4	Haller Park (Larfage ecosystems)	Mombasa	Giraffe, eland, Oryx, tortoises, and snakes
5	Reteti Elephant Orphanage	Namunyak Conservancy	Elephants
6	Eldoret nature and conservation centre (Poa Place)	Eldoret	Lions, crocodile, snakes, cheetahs, porcupines, ostrich, primates
7	Mt. Kenya Game Ranch	Nanyuki	Eastern Mountain Bongo, primates, cheetah, hyrax. Have made a request for lions and developed suitable infrastructure- animals not yet provided
8	David Sheldrick Wildlife Trust	Nairobi and Tsavo East	Elephants and rhinos
9	Sweet waters Chimpanzee sanctuary	Ol Pejeta Conservancy	Chimpanzees
10	Ol Jogi	Nanyuki	Leopard, pygmy hippo, eland, assorted birds, hyena, cheetah, elephant, bear.
11	National Museums of Kenya	Nairobi, Kitale, Kisumu	Snakes and tortoises
12	Institute of Primate Research	Karen, Nairobi	Primates
13	Raptor Rehabilitation Centre	Karen	Birds of prey
14	Giraffe Centre	Karen	Giraffes
15	Colobus Trust Centre	Diani	Colobus monkeys
16	Blue Post	Thika	Crocodiles
17	Watamu turtle watch	Watamu	Turtles
18	Mawingu	Nanyuki	Lion
19	Baringo	Baringo	Snakes
20	Mamba Village	Mombasa	Crocodiles
21	Mamba Village	Nairobi	Crocodiles and ostriches
22	Dari Estates	Karen	Impalas and Thompson gazelle



### 2.7.1.Objectives of Captive Facilities

The primary objective of a captive facility is to nurture and provide care to animals found in distress and where possible rehabilitate them back to the wild. The presence of animals in captive facilities leads to the following uses:

- i. **Conservation Education and Awareness:** All captive animal facilities are required to have an active conservation education and awareness program to educating the Kenyan public about wildlife and their habitats. They encourage learning and engender positive attitudes and values towards animal welfare, nature and its conservation.
- ii. **Promotion of tourism:** Members of the public who visit captive facilities are encouraged to visit parks and see free ranging wildlife in their natural habitats.
- iii. **Raising funds** to conserve wild living populations.
- iv. **Research:** Research in captive facilities is encouraged and priority is given to research that will be of benefit to conservation in the wild or to inform improvement of animal welfare. The research methodologies employed are non-invasive as much as possible.

### 2.7.2.Sources of Animals

Captive facilities do not take wildlife out of the wild to stock as this would defeat the conservation ethic. KWS at all times endeavors to conserve wildlife in situ except for extremely deserving cases that need rescue for care in a captive facility. Animals in the following situations are considered for rescue:

- i. Young animals found orphaned or abandoned and which cannot survive on their own in the wild
- ii. Animals with severe injuries which would compromise their survival in the wild
- iii. Animals confiscated from keepers or smugglers without valid licenses and documents which on assessment are found to be habituated such that their survival in the wild is not guaranteed
- iv. Exotic species confiscated from smugglers at points of entry or exit without valid documents
- v. Any animal in respect of which a breach of any of the provisions of the

Wildlife Conservation and Management WCMA, 2013 Laws of Kenya have been committed

- vi. Other sources of captive animals may include donations of exotic and indigenous species.

Where an animal is to be rescued from the wild to be kept in captivity, the following 3 criteria, in order of priority, are employed:

- i. **The conservation status of the animal species:** Threatened, endangered, vulnerable and endemic species are given first priority
- ii. **Age of the animal:** Only very young animals found without any of their kind are rescued from the wild. Before such rescue, the animals are monitored for an appropriate period of time to ascertain that they deserve rescue.
- iii. **Extent of the injury/disease:** Only very deserving cases that would require close veterinary observation are rescued for treatment and observation. Otherwise, veterinary interventions are undertaken in the field. Upon recovery, the animals are assessed to determine suitability for release back to the wild. If the injury/disease even after recovery compromises its survival in the wild, the animal is retained in captivity.

### 2.7.3.Rehabilitation Back To The Wild

Recognizing the important role each animal species plays in the ecosystem, captive facilities have release back to the wild strategies depending on whether the species can be rehabilitated into the wild. However, in some cases during the course of treatment and care, some animal species such as the large carnivores get habituated making it extremely difficult if not impossible to rehabilitate them back to the wild because of:

- i. Inability to fend for themselves because hunting is learned from an early age from mothers
- ii. Familiarity with humans which would make them move towards human settlements
- iii. Homing instincts which would make them attempt to go back to their original home
- iv. Territorial nature of the species which may lead to introduced animals being killed

or driven away by resident individuals.

In addition, non-indigenous species confiscated while on transit through Kenya without proper documentation are also not released back to the wild because of risks of hybridization with local species.

Consequently, captive animal facilities become the homes for un-releasable individuals for purposes of nurturing them and assuring them of a life.

#### **2.7.4. Emerging Issues And Challenges In Captive Wildlife Management**

Keeping wildlife in captivity poses many challenges and difficulties among which are ethical questions concerning animal welfare. As knowledge and societal values change, so does the focus of wild animals in captivity and the regulations governing them. Despite these concerns and difficulties however, the practice of rescuing animals found in distress will continue. It is the desire of KWS as the competent authority in wildlife conservation and management to do its best to ensure that captive wild animals are maintained in a professional, humane and healthy manner to ensure the welfare of each individual animal.

Whilst there are many examples of good practice, some captive wild animals suffer because of poor welfare standards. Shortcomings include:

- i. Poor designs such as undersized and 'barren' cages and enclosures, unsuitable floor surfaces that can be injurious to the animals and also difficult to clean to maintain good hygiene
- ii. Poor quality feed and nutrition
- iii. Inadequate veterinary/health care
- iv. Poor management and maintenance due to insufficient expertise in appropriate animal care

Section 80 (2) of the WCMA 2013 provides that the permit issued for non-consumptive wildlife user rights shall be in a prescribed manner and may set conditions in regard to duration, infrastructure development and any other aspects as may be appropriate. In this regard, the Service has developed Standard Operating Procedures (SOPs) to ensure animals kept in captive facilities are rescued in accordance to existing laws and regulations and are provided adequate care after rescue. In addition, KWS has also developed policy guidelines that prescribe the purposes for which wildlife shall be kept in captivity, sources of such animals and the procedures and measures for acquiring them, minimum acceptable welfare standards as well as inspections and audits by KWS and stakeholders amongst other considerations. A permit for wildlife user rights for keeping wildlife in captive situations may be withdrawn pursuant to Section 82 (1) if the licensee is in breach of the terms and conditions thereof or if the action is found necessary for purposes of protecting and conserving wildlife or if the licensee so requests.

## **2.8. Human Wildlife Conflict And Management**

Human wildlife conflict (HWC) is the interaction between humans and wildlife that results in negative impacts on:

- i. Human's social, economic or cultural life
- ii. Conservation of wildlife
- iii. The environment.

Human wildlife conflict has emerged as a great challenge to wildlife management and a major threat to wildlife conservation. This is because wildlife habitats are not only confined to protected areas but also extend into community and private lands. Factors which have contributed to escalation of human wildlife conflict include:

- i. Human demographic changes in terms of population increase on limited space
- ii. Human encroachment into wildlife areas
- iii. Increase land use pressure; incompatible uses in wildlife areas such as agriculture, settlement and urbanization
- iv. Persecution of wildlife
- v. Competition for pasture, space and water due to reduced habitat, conflicting land uses and climatic changes.

Human wildlife conflict is widespread in Kenya but there are some specific areas where it is more pronounced (hotspots). Figure 2.1 shows the Human wildlife conflict hotspots in Kenya

**Figure 2.1: Human Wildlife Conflict Hotspot Map**

The table 2.11 gives the types and number of conflicts reported between 2015 to 2017 and the wildlife species involved.

**Table 2.11: Crop Destruction, Livestock & Property Damage conflict reported cases by third schedule listed Species**

Animal	Incident Type	2015	2016	Jan-Feb 2017	Grand Total
Cheetah	Livestock Injury/Death	14	30	3	47
Elephant	Crop Destruction	949	1835	189	2973
	Livestock Injury/Death	18	6	2	26
	Property Damage	4	9	2	15
Hippo	Crop Destruction	63	99	31	193
	Livestock Injury/Death	6	5	2	13
	Property Damage	0	1	0	1
Hyaena	Livestock Injury/Death	330	240	40	610
	Property Damage	2	1	0	3
Leopard	Livestock Injury/Death	278	143	48	469
Lion	Livestock Injury/Death	192	115	25	332
Snake	Livestock Injury/Death	10	9	2	21
Wild Dog	Livestock Injury/Death	58	28	3	89
Zebra	Crop Destruction	66	16	1	83
	Total Incidences	4,005	4,553	348	4,875

**Table 2.12: Human death and injury cases by third schedule listed species**

SPECIES	2015		2016		Jan to Feb 2017	
	DEATH	INJURY	DEATH	INJURY	DEATH	INJURY
<b>Cheetah</b>	0	1				
<b>Elephant</b>	24	28	32	24	21	9
<b>Hippo</b>	14	17	10	21	4	5
<b>Hyaena</b>	1	34	4	19	0	5
<b>Leopard</b>	2	24	3	22	0	5
<b>Lion</b>	3	18	6	15	2	6
<b>Rhino</b>	0	1	0	0	0	0
<b>Shark</b>	0	8	0	2	0	0
<b>Snake</b>	119	1612	82	913	20	145
<b>Sting Ray</b>	0	6	0	1	0	0
<b>Stone Fish</b>	0	1	0	3	0	0
<b>Wild Dog</b>	1	16	0	8	0	0
<b>Wild Pig</b>	0	0	0	3	0	0
<b>Total</b>	<b>164</b>	<b>1,766</b>	<b>137</b>	<b>1,031</b>	<b>47</b>	<b>175</b>



### 2.8.1. Status Of Wildlife Compensation

The WCMA, 2013 gives affected Individuals the right to claim for compensation for human death, human injuries, Livestock Injury/Death loss, damage to Crop and properties occasioned by wildlife. This right is stipulated in section 19(i) and section 25 (1) and (4) of the WCMA, 2013. To facilitate this process, The WCMA 2013 provides for the establishment of County Wildlife Conservation and Compensation Committees (CWCCC's) which are comprised of a Chairperson appointed by the Cabinet Secretary through a competitive process, four persons not being public servants nominated by community wildlife associations, arepresentative of the County Government and

other relevant technical officers at the County Government level. KWS County Wardens are the secretaries to the CWCCC. The CWCCC's inter alia are responsible for receiving and assessing all compensation claims from the Counties and make recommendations to the Ministerial Wildlife Compensation Committee (MWCC). The MWCC reviews and validates/ rejects the claims and recommends payment of compensation claims as appropriate.

Forty seven (47) CWCCCs were gazetted on 6th March 2015, inducted and commenced discharging their functions as per provisions of the WCMA, 2013. The table 2.13 gives a summary of human injury and human death wildlife claims (per county) paid during the 2015 to 2017 period.





**Table 2.13: Status of paid claims per County for human injuries and deaths**

NO.	COUNTY	2015	2016	2017
1	Baringo	18	2	0
2	Bomet	1	0	0
3	Bungoma	1	0	0
4	Busia	1	0	0
5	Embu	28	0	2
6	Garissa	20	2	1
7	Homabay	7	3	3
8	Isiolo	1	0	1
9	Kajiado	16	2	1
10	Kericho	6	0	0
11	Kiambu	1	1	0
12	Kilifi	14	0	3
13	Kirinyaga	13	0	0
14	Kisumu	18	1	1
15	Kitui	120	1	0
16	Kwale	24	0	2
17	Laikipia	8	1	2
18	Lamu	0	1	5
19	Machakos	13	1	0
20	Mandera	8	0	0
21	Makueni	16	1	2
22	Marsabit	110	2	1
23	Marakwet	9	0	2
24	Meru	8	2	2
25	Nandi	9	0	0
26	Nakuru	2	5	1
27	Narok	26	6	5
28	Nyandarua	0	2	0
29	Nyeri	0	0	1
30	Samburu	0	5	6
31	Siaya	4	1	2
32	Taita Taveta	19	2	10
33	Tana River	0	8	7
34	Tharaka Nithi	7	0	0
35	Transnzoia	1	0	0
36	Turkana	13	0	0
37	Wajir	198	1	0
38	West Pokot	26	0	1
	<b>TOTAL</b>	<b>2,781</b>	<b>2,066</b>	<b>2,078</b>



## 2.8.2. Human Wildlife Conflict Mitigation Measures

Communities living around the wildlife conservation areas and those that host wildlife in their land bear the blunt of HWC. To address the Human Wildlife Conflict challenge, KWS in collaboration with stakeholders has adopted an integrated approach: through use of wildlife barriers such as electric and

non electric fences, predator proof bomas; translocation of problematic species, use of audio-visual deterrents, use of diversion tactics, use of technology i.e. collars, education and awareness programs, strategic placement of the Problem Animal Management Unit, community support and provision of compensation for loss of Livestock Injury/Death, life and injury. KWS also endeavors to support the livelihoods of these communities through CSR projects.

### 2.8.2.1. CSR And Fence Projects Between 2016 And 2017

**Table 2.14: CSR and fence projects between 2015 and 2017**

S/N	Name of the Project	County	Status	Remarks
1.	Ndebai classrooms	Nakuru	100 %	Project Completed and handed over on 11 <sup>th</sup> Feb, 2017
2.	Ndurumo classrooms	Nyeri	95 %	Finishing works ongoing
3.	Mulok classrooms	Baringo	70%	Ongoing
4.	Pre- fabricated beds for Mwakitau dormitory	Taita Taveta	100%	Project Completed and handed over done on 19 <sup>th</sup> June 2017
5.	Kabukuro Bore Hole	Meru	20 %	Ongoing
6.	Kiwanja Ndege primary school fence project	Wajir	100%	Project Completed and commissioned on the 6 <sup>th</sup> April 3, 2017,
7.	Mwakitau secondary school Girls Dormitory	Taita Taveta	100 %	Projected completed and commissioned on 19 <sup>th</sup> June 2017
8.	Olorukoti secondary school laboratory	Trans- Mara	100 %	Project completed and handed over on 23 <sup>rd</sup> may 2017
9.	Sibanga Community Bore hole	Bungoma	95 %	Power supplied, piping complete.
10.	Mathunzuni primary school -Makueni	Makueni	80 %	Ongoing
11.	Mwakitau Ndii fence - 70km fence	Taita Taveta	20 %	Construction works launched on 19 <sup>th</sup> June 2017
12.	Kamutonga –Bura 30km	Taita Taveta	20 %	Construction works launched on 19 <sup>th</sup> June 2017





## 2.9. Wildlife Security And Law Enforcement

### 2.9.1. Introduction And Background

WCMA, 2013 Section 7 (k) gives the service power to undertake and conduct enforcement activities such as anti-poaching operations, wildlife protection, intelligence gathering, investigation and other enforcement activities. The WCMA, 2013, in Section 7 (h) also provides for the provision of security for wildlife and visitors in National Parks, wildlife conservation areas and sanctuaries. These govern how security of wildlife will be undertaken to ensure its sustainability and posterity.

As a developing country, Kenya is characterized by a high level of dependency on natural resources for survival. This invaluable wildlife resource is the target of illegal activities such as poaching and illegal exploitation and other wildlife crimes which have been on the increase all over the world in the recent past. These environmental and wildlife crimes have both direct and indirect negative impact on local communities, including depletion of the resource base on which they depend for their livelihoods besides altering of the local environmental conditions.

With a significant population of wildlife living outside the protected areas on a seasonal or permanent basis, the country's wildlife

resource has suffered from the effects of human economic activities, poaching, human-wildlife conflict and demand for wildlife products in the illegal market amongst other factors. The crimes also pose a great threat to national, regional and international conservation efforts. It also works against the spirit of the country's Vision 2030 by jeopardizing our wildlife based tourism industry and natural resource base. Wildlife crime is often cited as a means to finance the more violent and destructive activities of criminal and terrorist organizations because of the major financial benefits derived from relatively minimal time, investment and low risks of detection. The huge profits made from illicit wildlife trade acts as an incentive to organized crime networks and also lure more involvement in crime by vulnerable segments of the public such as the youth and the unemployed.

### 2.9.2. Status of Poaching Trends

Kenya Wildlife Service (KWS) is mandated to enforce existing laws and treaties protecting wildlife and continued to carry out its mandate of protecting Kenya's biodiversity by eliminating poaching within protected areas and reducing it to a bare minimum outside protected areas, ensuring the safety of tourists in the protected areas and safeguarding all KWS revenue, assets and facilities.

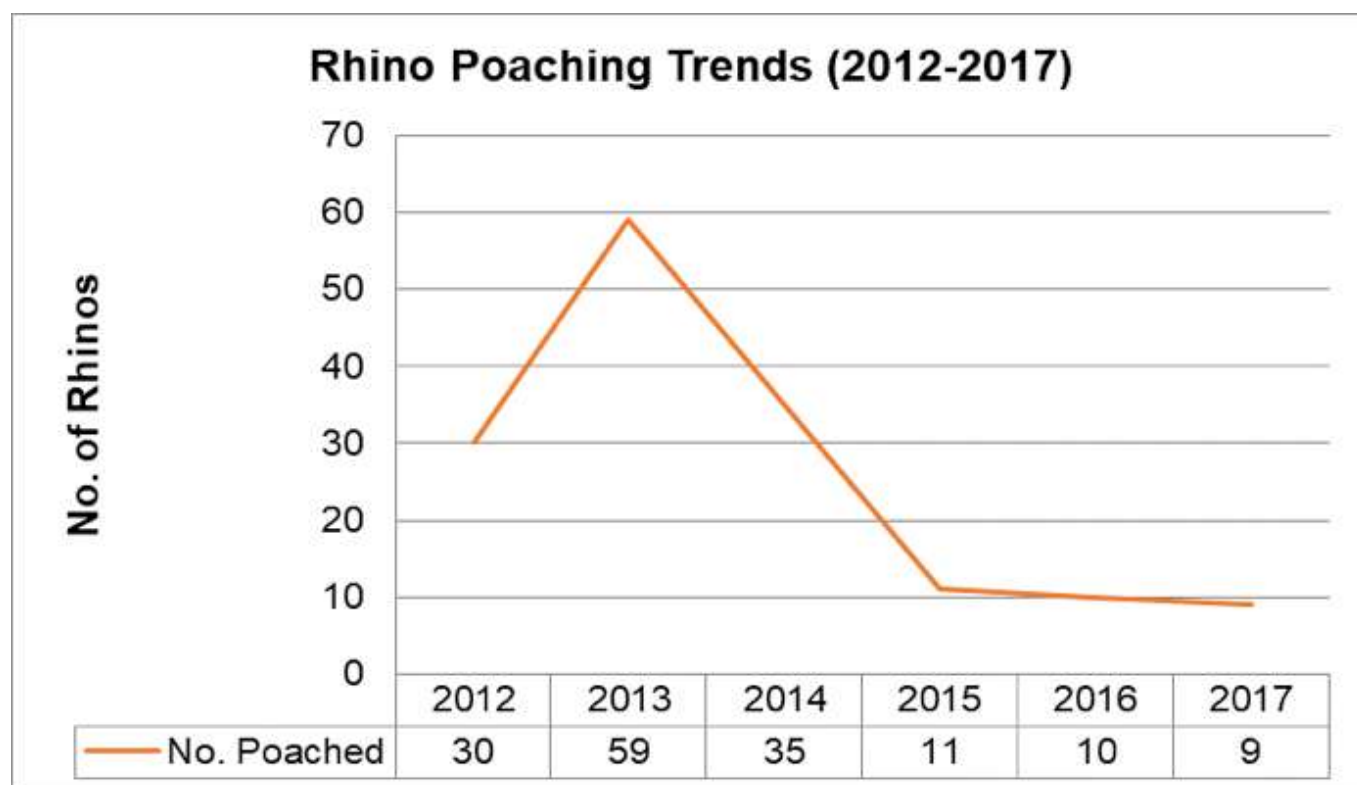
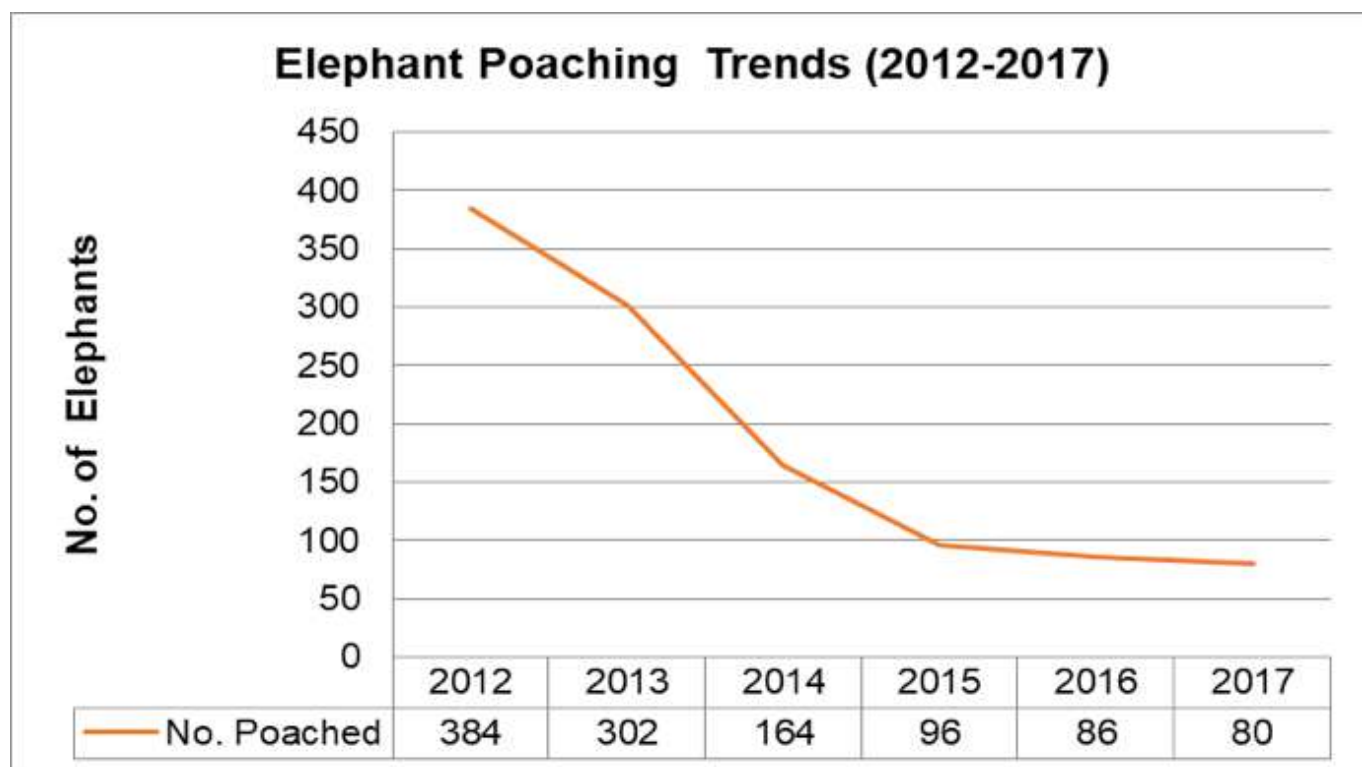


Figure 2.2: Rhino poaching trends between 2012 and 2017



The rhino poaching reduced by 10% in 2017 as compared to 2016. This was also an 85% reduction in rhino poaching compared to

when poaching was at its peak in 2013 (and lowest in 9 years).



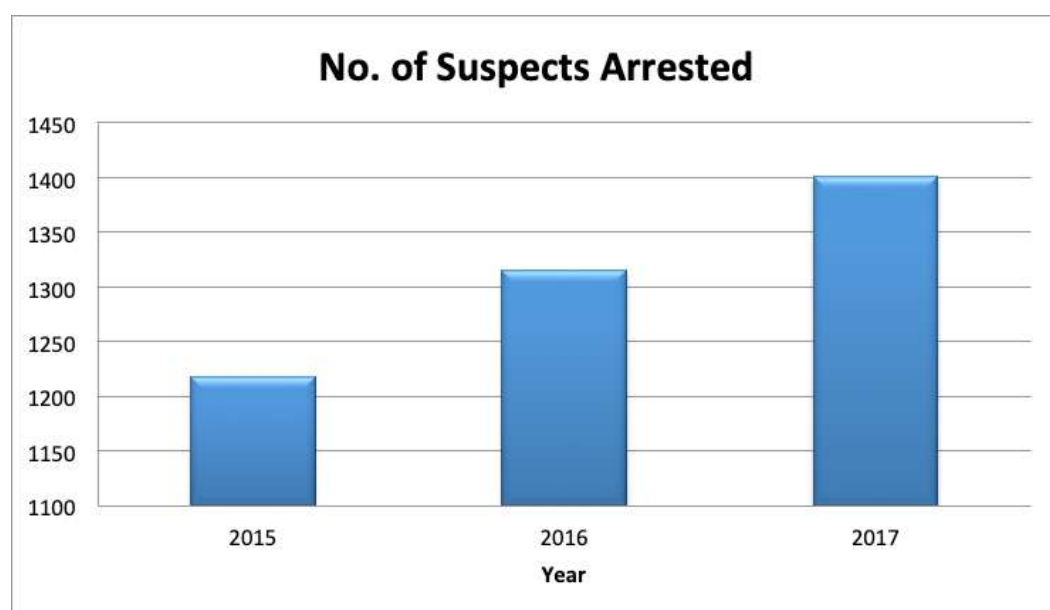
**Figure 2.3: Elephant poaching trends between 2012 and 2017**

The elephant poaching reduced by 7% in 2017 as compared to 2016. This was also a 79% reduction in elephant poaching compared to when poaching was at its peak in 2012 (and lowest in 10 years).

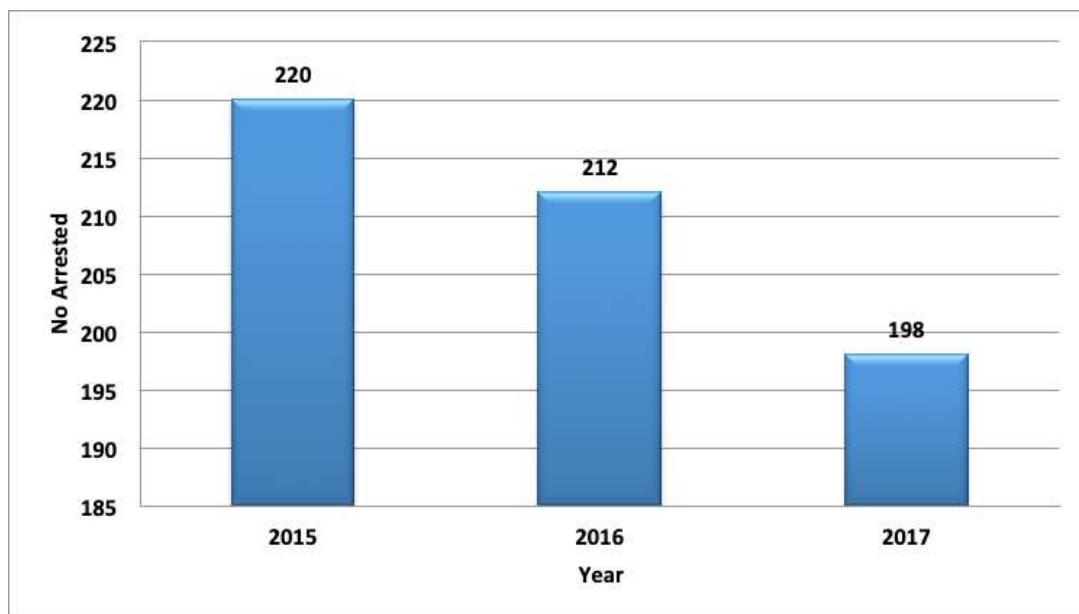
enforcement effort by Security personnel in collaboration with stakeholders. Illegal possession of Game trophies, Livestock incursion into protected areas, habitat destruction and poaching constituted the largest offences in terms of the number of suspects arrested.

### 2.9.3. Arrests

During the year a total of 1401 suspects were arrested and prosecuted for various wildlife law offences as a result of enhanced law



**Figure 2.4:  
No. of arrests  
between 2015  
and 2017**



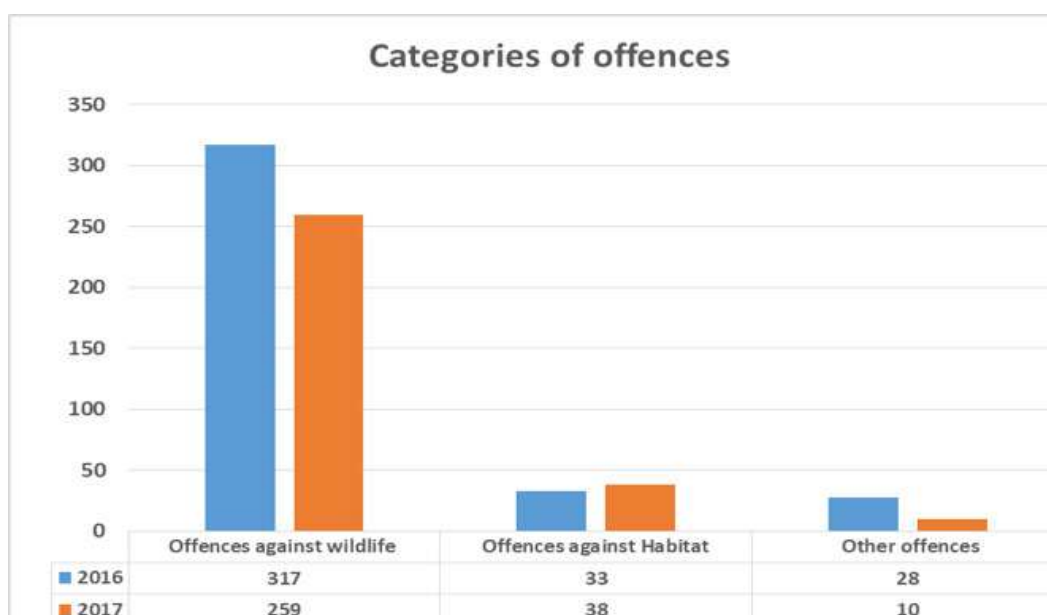
**Figure 2.5:**  
No. Of arrests in connection to bush meat poaching between 2015 and 2017

#### 2.9.4. Status of Wildlife Crime Prosecution

Wildlife law enforcement influences how wildlife protection is sustained. In its endeavor to enhance prosecution of wildlife crime, KWS has established a crime scene management unit to strengthen its prosecution section. 21 new prosecutors (Thirteen (13) Prosecutors and eight (8) Prosecution Assistants) were recruited from within the Service, this enhanced our own capability to prosecute wildlife cases.

In 2016, the offences against wildlife numbered

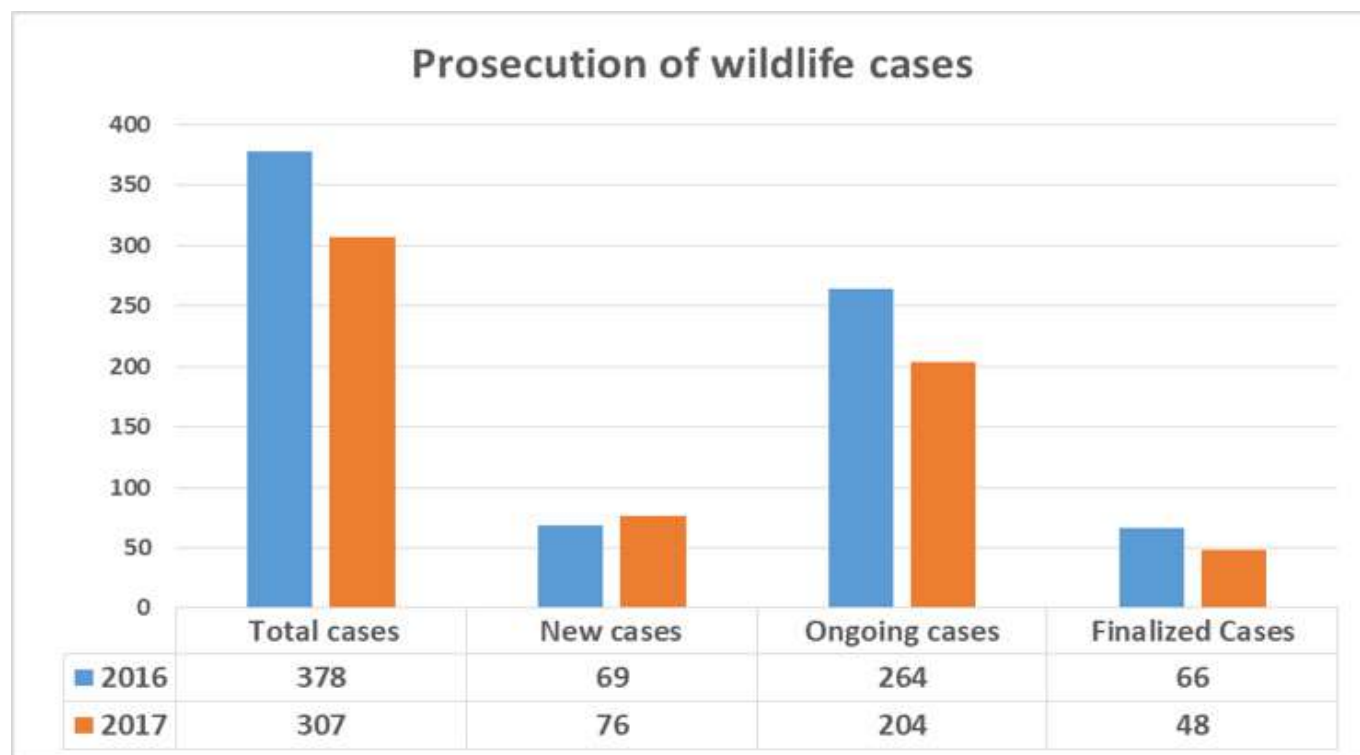
317 cases while the offences against habitat totaled 33 thus representing 84% and 9% respectively, whereas the other cases such as Firearms, illegal entry etc. represented 7% of the total cases prosecuted. However, in the year 2017, the offences against wildlife numbered 259 cases while the offences against habitat totaled 38 thus representing 84% and 12% respectively, whereas the other cases such as Firearms, illegal entry etc. represented 5% of the total cases prosecuted. Out of these, the highest number of ivory cases prosecuted over the two years was 209 cases in 2016 and 169 cases in 2017.



**Figure 2.6:**  
Category of offences in 2016 and 2017

## 2.9.5. Status Of Cases Before Court

The total 685 cases were prosecuted during the period (378 in the year 2016 and 307 in the year 2017 respectively) across 31 courts around the country.



**Figure 2.7: Number of wildlife crime cases prosecuted in 2016 and 2017**

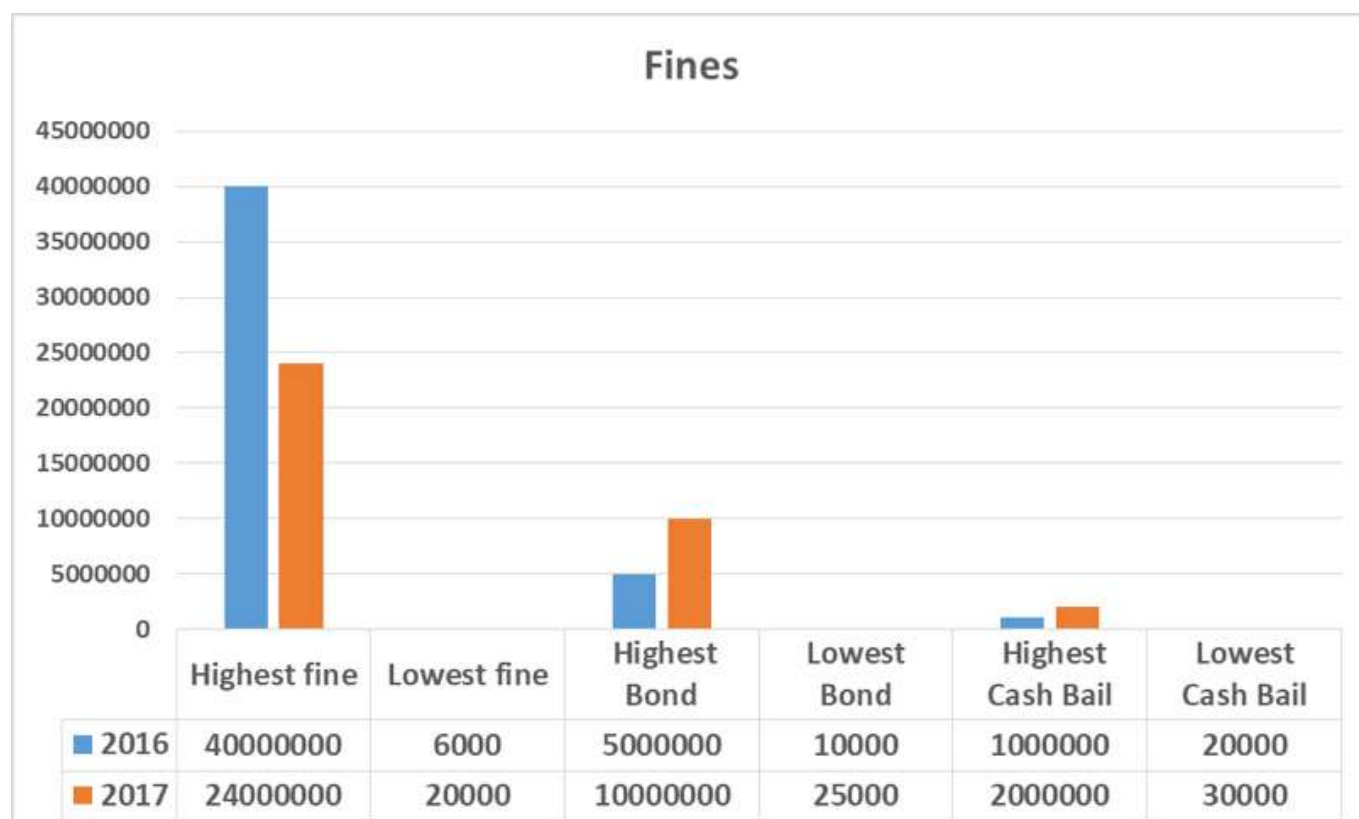
The service realized 69 and 76 new cases, 264 and 204 ongoing cases and 66 and 48 finalized cases in 2016 and 2017 respectively.

Four (4) life imprisonment sentences were handed down in various courts around the country in the year 2016 compared to one (1) life imprisonment sentence conviction recorded in 2017, this might be attributed to the fact that the use of section 92 of the WCMA, 2013 was rendered ambiguous by the High Court in Nairobi and as such many courts have been exercising caution in the use and application of this section in any wildlife case before it and for the adherence of High Court precedence, yet it is the only section of the Act that provides for the life imprisonment.

There are however, some deliberations to address the shortcomings that continues to be highlighted in the WCMA, 2013 during prosecution of Wildlife cases such as lack of the provisional section to address illegal fishing or harvesting of East African sandalwood species (*osyris lanceolata*) which requires a lot of protection and which previously enjoyed the presidential protection decree/directive due to its destructive harvesting and exploitations.

In total three (3) cases were reportedly withdrawn due to various reasons such as non-availing of police files and nonattendance of crucial witnesses who includes the Investigating Officers (I.O) and the experts from NMK or other quarters. Withdrawal of any ongoing case is under the discretionary powers of the presiding prosecutor upon exhaustive consultations with the relevant authority which in this case is the Service. This application as aforementioned may also include lack of enough evidence, absconding of court attendance by the accused persons or death of an accused person among many others. When the case is withdrawn under Section 87(a) of the Criminal Procedure Code, the accused person may be re-arrested and charged for the same offence once he is found.

Convictions ranged from Fines of KSh. 40 Million to KSh. 6,000/- on the minimum depending on the nature of offences committed over the period. It should however be noted that the service protects both wild flora and fauna which enjoys different protection regulations as well as punishment in terms of convictions for offences thereto.



**Figure 2.8: Nature of fines for successfully prosecuted cases in 2016 and 2017**

The highest fine was KShs. 40,000,000/- for a case of possession of ivory while the highest prison term other than life imprisonment is 20 years custodial sentence in both years (2016 & 2017).

The penalty that was most imposed was payment of fines with the least imposed

penalty being community service order (CSO) and probations, while the highest penalty were the Life imprisonment where four (4) cases got the sentencing of a life imprisonment in 2016, while only one (1) case got a life sentence in the year 2017.

**Table 2.15: Status of Duration of sentences**

	2016	2017
<b>Highest jail sentence</b>	20 Year	20 Years
<b>Lowest Jail sentence</b>	5 Months	2 Months
<b>Life Imprisonment</b>	4 cases	1 case

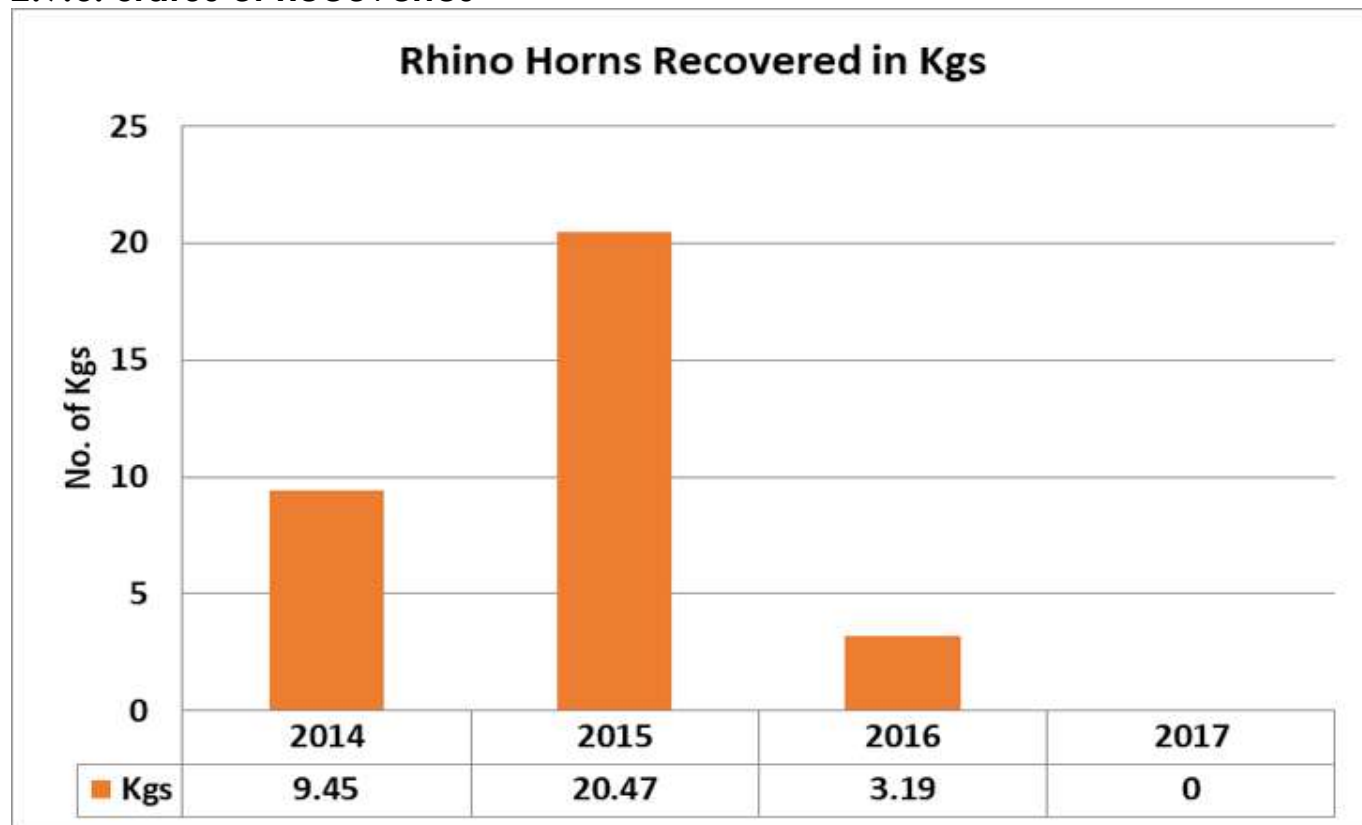


Equally, rhino cases were prosecuted across the various courts numbered 22 rhino cases in 2016 and 16 rhino horn cases in the year 2017.

and in total all other cases apart from ivory and rhino horn cases represented 39% and 40% in both the year 2016 and 2017 respectively.

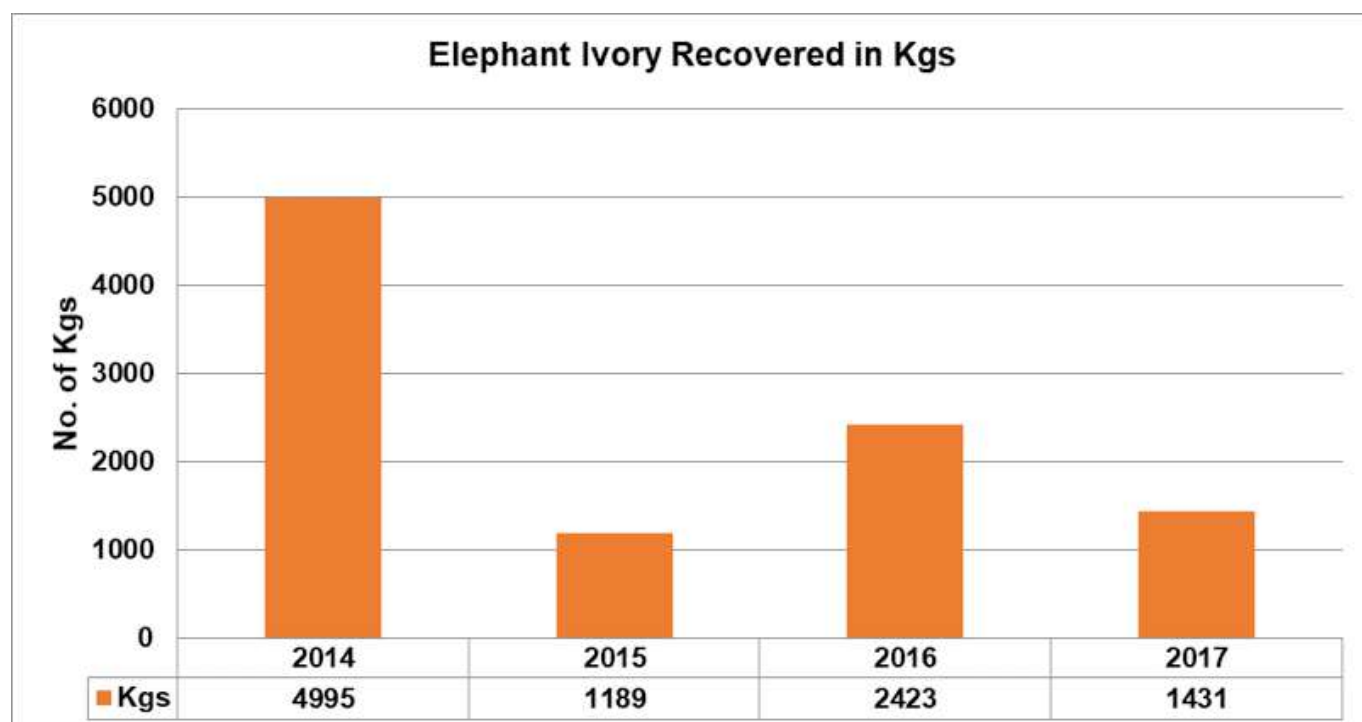
The total number of bush meat cases prosecuted over the two (2) years was also high

## 2.9.6. Status of Recoveries

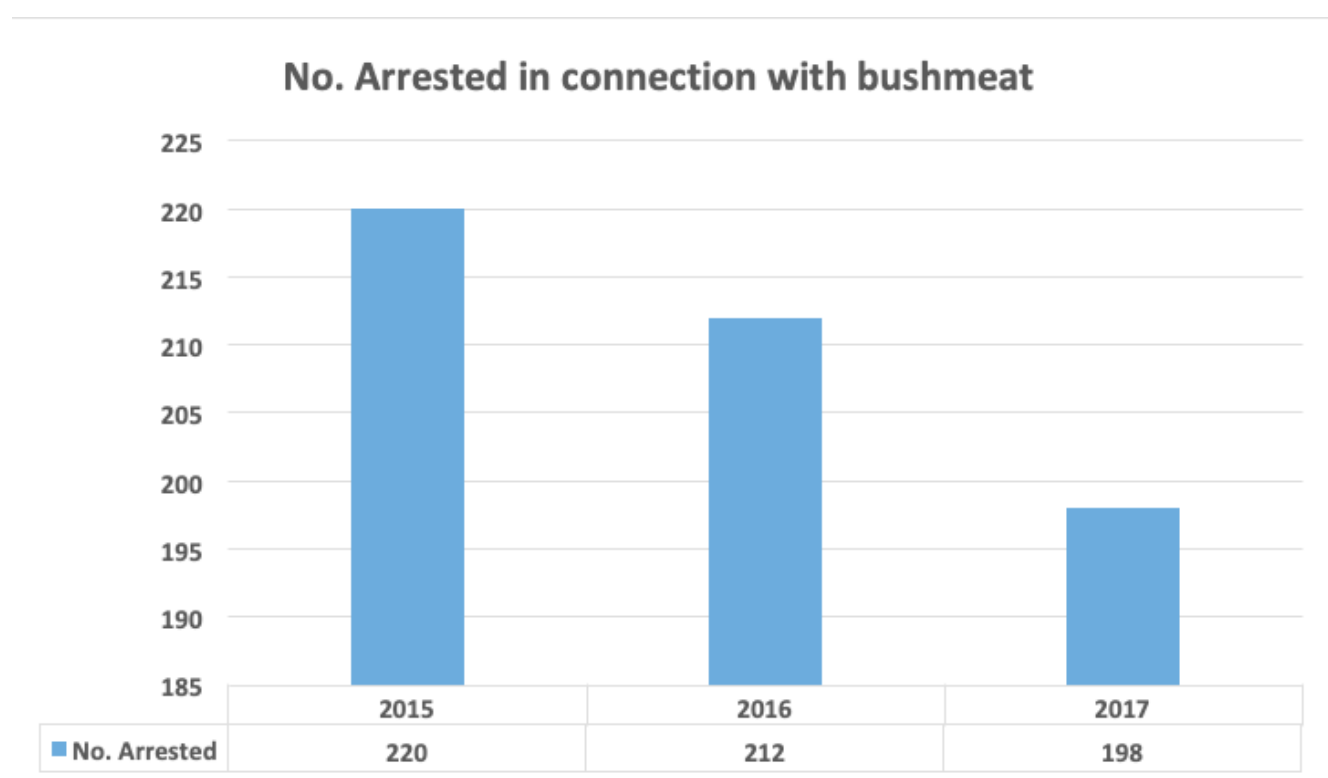


**Figure 2.9: Summary of rhino horn recoveries between 2014 and 2017**

There was no rhino horn recovered in 2017. This is due to it being portable and easy to conceal.



**Figure 2.10: Elephant ivory recoveries between 2014 and 2017**



**Figure 2.11: Bush meat recovery trends between 2015 and 2017**

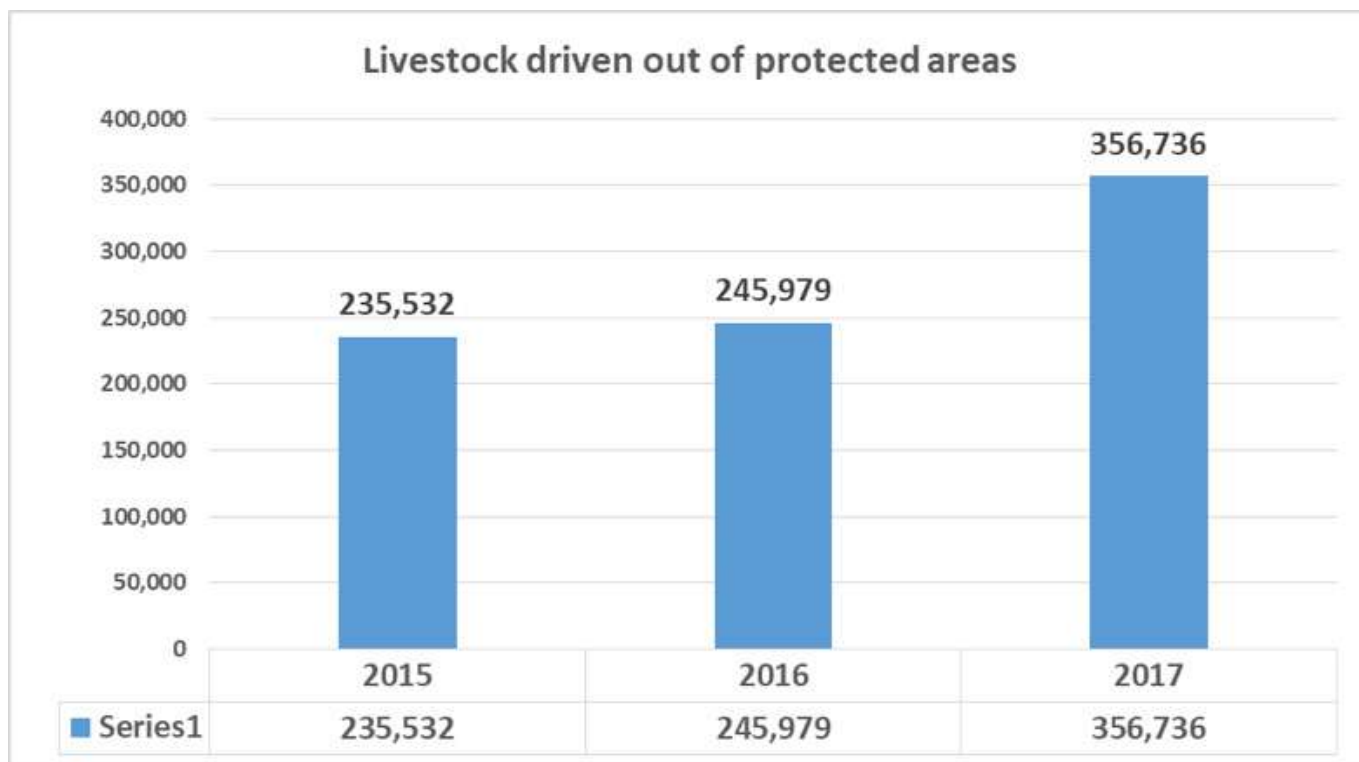
**Table 2.16: Contact engagement and Firearms and Ammunitions recoveries 2014 to 2017**

Year	No. of Contacts		
		Firearms	Ammunition
<b>2014</b>	24	48	608
<b>2015</b>	16	23	295
<b>2016</b>	12	26	387
<b>2017</b>	12	9	109

### 2.9.7. Livestock Incursion And Drive Operations

Livestock incursion in the protected areas still remained a challenge especially in Tsavos, Meru and Sibiloi. This was amplified by the prolonged dry spells. However, measures were

put in place to restore the ecosystem health including driving off the herds of Livestock out of protected areas, arrest of offenders and sensitization meetings. A total of 356,736 Livestock driven out of the protected areas (233,181 heads of cattle, 12,524 goats and 274 camels).



**Figure 2.12: Livestock driven out of protected areas between 2015 and 2017**



**Plate: 5 Livestock drive operation in southern part of Tsavo West**

The exercise of preventing Livestock incursion and ensuring integrity of protected areas is very demanding in terms of both human and

financial resources. A total of Kshs. 147,021,022 was spent in Livestock drive operations for a period of three years.

**Table 2.17: Annual Livestock drive operations expenditure estimates 2015 to 2017**

<b>Expenditure item</b>	<b>Amount</b>		
<b>Year</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Fuel</b>	15,985,683.00	18,269,352.00	19,300,000.00
<b>Vehicle maintenance</b>	6,394,273.20	7,214,644.00	12,500,000.00
<b>Aircraft expenses</b>	17,430,000.00	19,920,000.00	22,000,000.00
<b>Personnel allowances</b>	22,121,022.00	27,800,732.00	57,121,022.00
<b>Ration</b>	29,418,480.00	32,328,000.00	36,100,000.00
<b>Total</b>	<b>91,349,458.00</b>	<b>93,532,728.00</b>	<b>147,021,022.00</b>





### 2.9.8. Wildlife Protection Ranger Force Deployment

The emergence of new threats geared towards wildlife and the existing challenges has made KWS to rethink its deployment and assign personnel to combat the different challenges ranging from rhino monitoring and protection, elephant monitoring, Livestock drives operations which are becoming a routine with the change in weather patterns increasing Livestock influx into protected areas, habitat loss and destructions, logging, bush meat poaching, snaring of wildlife, protection water catchment areas, visitor protection, camp security geared towards preventing terrorism, KWS facilities and assets and key installations. Changing mode of operandi of the poachers, operating both during the day and night has made it a necessity for KWS personnel to operate effectively both during the day and night. Also with the devolve governance wildlife is facing threats due to change in land use diminishing the wildlife range. This calls for enhancement of security operations and coverage requiring more rangers to effectively curb the threats.

Wildlife protection and security provision in general is a labor intensive undertaking with rangers having to physically manage wildlife protected areas supported by aerial surveillance. The emergence of new challenges and existing one in wildlife protection has reduced the ranger force effectiveness in terms of numbers deployed to combat security challenges as currently we are operating at 1446 rangers from the optimum of 2,484 rangers which is a deficit of 1038 rangers (41.79%). This has resulted in gaps and not able to effectively respond to security challenges.

### 2.9.9. Strategies In Combat Wildlife Crimes

The WCMA, 2013, in Section 5: 2(a) gives KWS the mandate to put measures in place for the protection of wildlife species and their habitats and ecosystems. KWS has put measures in place to prevent and combat wildlife crimes. They include:-

- i. Monitoring of wildlife movement and migration to inform deployment of personnel.
- ii. Enhanced anti-poaching operations largely based on intelligence reports.
  - a. Ground, vehicles and aerial patrols were done to secure wildlife.

- b. Area specific strategies designed to deal with unique security challenges
- c. Adaptive seasonal strategies
- d. Adaptive wildlife security strategy to cope up with emerging threats e.g. forward patrol teams which prevents intrusion by poachers
- e. Owning the night by equipping with resources and training ranger force to enable them operate at night
- f. Enhanced deployments to poaching hotspots
- g. Community supported anti-poaching operations through Private Sanctuaries
- h. Identification, surveillance and profiling of trophy dealers
- i. Arresting and prosecuting offenders
- iii. Enhanced capacity through training, modern technology and resource acquisition (Force Modernization programme)
- iv. Implementation of security components in species recovery plans
- v. Enhanced Community engagement
- vi. Strengthening of specialized units such as the canine unit
- vii. Strengthening Wildlife Prosecution
  - a. Sensitization of judicial and law enforcement stakeholders on wildlife crime and how to combat it
  - b. Usage of the Wildlife DNA Forensic Lab for analyzing wildlife products, wildlife identification, monitoring and DNA assisting in combating wildlife crime
- viii. Inter - Agency Collaboration and Partnerships: KWS law enforcement units work very closely with other law enforcement agencies in all matters of wildlife security at local, regional and international arena. Structured engagement with law enforcement agencies, Government institutions, local communities and other conservation stakeholders have been intensified. Specific engagement with the County Administration, National Police Service, National Intelligence Service,

Directorate of Criminal Investigation, Kenya Forest Service, Kenya Revenue Authority, Kenya Ports Authority and Kenya Airports Authority amongst others were enhanced in terms of surveillance on poachers and prosecution of wildlife cases. This has also been extended in profiling of known poachers and dealers in the country. Regionally, cross-border collaborations between Tanzania and Uganda have also been put in place to address crimes of trans-boundary nature and have yielded results in tackling crime along the shared borders. In particular we are collaborating with Tanzania in the cross border wildlife security collaboration in the following key areas:-

- a. Prevention of illegal firearms movements across the common border
- b. Prevention of illegal dealing in wildlife trophies
- c. Enforcement of biodiversity and tourism security in protected areas of the environs
- d. Prevention of Livestock and human encroachment into protected areas
- e. Management of controlled and uncontrolled wild fires in protected areas
- f. Facilitate exchange of research findings which are relevant to security and biodiversity

The major stakeholder engagement and operations undertaken by KWS include:-

- i. Collaboration with other National and International agencies in joint investigations of ivory seizures,
- ii. Participation in international wildlife law enforcement operations e.g. participation in Lusaka Agreement task Force (LATF) coordinated operations and activities. INTERPOL and Lusaka Agreement Task Force have been instrumental in facilitating, coordinating and offering support where required, especially in fight against illicit trafficking of wildlife trophies and ensuring that local and international laws on wildlife crimes are enforced.
- iii. Enhanced intelligence covert and overt operations through sharing of information such as MIKE, Traffic, etc.

## 2.9.10. Wildlife Protection Challenges

Wildlife crime still poses threat to the survival of wildlife species. Although poaching has declined in the recent years, it remains as one of the main challenge to wildlife conservation as it has become more organized, sophisticated and international in nature and is occurring across all ranges including in those areas that were hitherto considered safe havens.

Challenges facing the protection of natural resources in the country are becoming more diverse and complex as the demand and use patterns change with time. This is as a result of the following factors:

- i. Poaching menace due to: high demand and prices of wildlife products especially rhino and elephant and pangolin scales, Increased poaching for bush meat as observed by large numbers of snares and other hunting apparatus confiscated, Continuous change in modus operandi of poachers and dealers, Proliferation of small arms, The motivating factors which are the key drivers in illicit wildlife trade including high profits returns and organized criminal syndicates with strong funding basis, Involvement of local and international well-to-do cartels in illicit wildlife trade
- ii. Illegal trade in wildlife species and their products
- iii. Banditry
- iv. Destruction of water catchment areas
- v. Bio- piracy which the Act defines as the exploration of biological resources without the knowledge and non-coercive prior consent of the owners of the resources and without fair compensation and benefit sharing
- vi. Encroachment into Wildlife habitats including Livestock incursion
- vii. Frequent and prolonged droughts due to changing climate resulting to scarce water and pastures resources in wildlife areas
- viii. Environmental Pollution
- ix. Limited livelihood opportunities
- x. Habitat loss and fragmentation which affects all species
- xi. Non compatible land use patterns

- xii. Inadequate resources and partial adoption of modern technologies
- xiii. Inadequate human resource and budgetary allocations

- xiv. Increasing interactions between wildlife/ Livestock humans leading to increasing Human-Wildlife Conflict which affect relationships with communities

## 2.10. Government Game Trophies

### 2.10.1. Introduction

The WCMA 2013 section 83 outlines government game trophies as any trophy found without an owner, any animal found dead or killed by accident or mistake, any animal killed in defense of life or in other circumstances authorized by or under WCMA, 2013, any animal or trophy in respect of which a breach of any of the provisions of Act or any animal killed by a member of the Service in the course of duty.

Prior to the ban in hunting and dealership in wildlife products in 1977 and 1978, respectively, all government trophies were quantified in monetary terms and were part of Government revenue to the exchequer. However, after the bans, the trophies no longer generate any revenue to the exchequer. At present the focus is on securing government trophies of critical

concern, especially, elephant ivory and rhino horns. KWS has put in place an elaborate and prudent management system for the ever-accumulating stockpile. Various other game trophies originating from problem animal management and law enforcement are secured in various KWS Stations and Parks. These other game trophies are, from time to time and on need-basis, issued to State formations and registered groups for educational, cultural, religious and heritage uses.

### 2.10.2. Status of Elephant Ivory and Rhinoceros Horn Stocks

Section 83 (3) of WCMA, 2013 mandates KWS to conduct an annual audit of government game trophies in her possession and publish in the government gazette. Table 2.18 presents a summary of quantities of elephant ivory and rhinoceros horns in the custody of KWS between 2015 and 2017.

**Table 2.18: Elephant Ivory and Rhinoceros Horns In KWS Custody**

Stock in stores	Elephant ivory (Kg)	Rhino horn (kgs)
<b>2015</b>	135,784.00	1,515.90
<b>2016</b>	40,176.15	364.9
<b>2017</b>	55,883.3	419.29





### 2.10.3. Disposal

The WCMA 2013 section 83 (4) provides for the Cabinet Secretary, on recommendation of the Service, to prescribe appropriate measures, rules and regulations and guidelines including those required for the disposal of Government trophies. Pursuant to this provision, there has been two disposals between 2015 and 2017 through burning aimed at sending a strong signal and statement to the world that poaching is a penance and is wiping out Kenya's heritage. Both occasions were presided over by H.E. President Uhuru Kenyatta. These were:

- i. **3rd March 2015-** 15,000 kgs on the occasion to mark the 3rd World Wildlife Day
- ii. **30th April 2016-** 105,037.13 kgs elephant ivory and 1,350 kg rhino horns.

### 2.10.4. Electronic records

The implementation of an electronic game trophy stockpile management system (ESMS) in 21 key Stations and Parks with the support of Stop Ivory is on course. The ESMS will strengthen the manual management system that has been operational for many years. Sixty-eight (68) staff have been trained on ESMS at Headquarters and 21 Parks and Stations. Suitable hardware for its implementation including tablets, wireless routers, a server and weighing scales as well as a suitable software have been procured and delivered to 21 selected Parks and Stations. The ESMS is presently being tested and piloted for effectiveness before it can be fully implemented.







A close-up photograph of a crocodile's head in muddy water. The crocodile has a large, open wound on its head, revealing internal organs and tissue. The water is murky and brown. The crocodile's skin is dark and scaly.

# CHAPTER 3:

## THREATS AND CHALLENGES TO WILDLIFE CONSERVATION AND MANAGEMENT

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## 3.1 Introduction

In Kenya, the human population has been growing at an annual rate of about 2.6% by 2016 and it is estimated that by 2017 the total population stood at 47 million people with about 30% of the population living in urban areas and the rest settled in rural areas. The present population gives a population density of 80.9 persons per square kilometer. The net impact of this increase in population has been decline in land availability especially in high and medium potential areas and settlement in arid and semi-arid areas which in most cases are wildlife inhabited areas. The emergence of irrigation agriculture and opening up of infrastructure in the ASAL areas has acted as a population pull effect. Such areas are now facing land sub division and evidence of man impact on wildlife include: enlargement

of agricultural land, invasive species (by 2017 the Mara ecosystem had a record of 212 alien species), human wildlife conflict (crop destruction, livestock loss and injury, human injury and death), and soil loss especially in fragile lands and change in land use. The rapid population increase also comes with other demands on natural resources which have negative impacts on wildlife conservation. These include: more demand on fuel resources (charcoal and firewood) and building materials (poles, posts, timber). This is manifested in areas such as habitat destruction and fragmentation, introduction and spread of alien plant and animal invasive species, Encroachment into wildlife areas, pollution, water abstraction, loss of wildlife corridors and dispersal areas, loss of native vegetation for exotic species, proliferation of illegal harvesting and trade in wildlife products. Table 3.1 and 3.2 below gives the present status of threats in protected areas.

## 3.2 Definitions of some of the threats used in the text are defined below.

**3.2.1 Area of occupancy (AOO)** is defined as the area within its extent of occurrence which is occupied by a taxon, excluding cases of vagrancy. The area of occupancy is the smallest area essential at any stage to the survival of existing population or taxon.

**3.2.2 By-Catch is non-**target fish and other marine species caught inadvertently by fishing nets for a different species. Unregulated fishing is the main cause of this problem. Trawlers are usually non selective

**3.2.3 Extent of occurrence (EOO)** is defined as the area contained within the shortest continuous imaginary boundary that can be drawn to encompass all the known, inferred or projected sites of the present occurrence of a taxon excluding cases of vagrancy. Is a parameter that measures the spatial spread of the areas currently occupied by the taxon. The intent behind this parameter is to measure the degree to which risks from threatening factors are spread spatially across the taxon's geographical distribution

**3.2.4 Habitat fragmentation** is the deliberate or otherwise the emergence of significant discontinuities in a species preferred environment resulting to population fragmentation and ecosystem decay. If the environment is altered too fast, the species are unable to adapt

leading to species decline or in severe cases extinction leads to decrease in biodiversity. The loss of migratory corridors, represent the most serious representation of this facet. It can also be defined as a process by which Habitat loss results in the division of large continuous habitats into a greater number of smaller patches of lower total area, isolated from each other by a matrix of dissimilar habitat.

**3.2.5 Illegal trade** in wildlife products- includes the trade of living or dead individuals, tissues such as bones, skin, teeth, meat or any other genetic material

**3.2.6 Invasive species-** is a non-native or alien plant, fungus, or animal species in the ecosystem which establishes itself at the expense of the native species and that has undesired effects of variable magnitudes to the environment. The introduced species in many instances colonizes the area and the local species are driven out directly or indirectly

**3.2.7 Poaching-** the illegal offtake of a listed wildlife species for food, trophy, recreation, trade, unwarranted control, cultural, religious, medicinal or any other reason.

**3.2.8 Pollution-** is the introduction of harmful/ poisonous solid, liquid or gaseous materials into the



environment (air, land or water). The pollutant can act directly on the affected species or indirectly through other means like the food chain (bio magnification). The impact- depending on the pollutant type and concentration- can impact immediately or over time. Fish and birds are highly susceptible to pollutants.

**3.2.9 Water Abstraction-** is the removal of water permanently or temporarily from rivers, lakes, water pans, dams or underground in a manner as to drastically alter the natural flow regime. It also involves also control of flow regimes

**3.2.10 Wildlife Disease-**pathological condition occurring in a susceptible population



Plate: 6 Habitat fragmentation Masai Mau complex



Plate: 7 Elephant Ivory Carvings for Export



Plate: 8 Opuntia



Plate: 9 Parthenium



Plate: 9 Parthenium



Plate: 11 Hydrogen Sulphide Water Pollution



**Table 3.1 Status of threats**

Threat defined	Cause	Policy and Legal framework	Location	Status	Remarks
Habitat loss/ Fragmentation	Human Encroachment into conservation areas	Section 102 WCMA, 2013 breach of Protected Areas regulation	Malka Mari NP	<ul style="list-style-type: none"> <li>2 permanent settlements and 5 villages, a primary school and assistant county commissioner's office comprising about 32Km<sup>2</sup> of the park area.</li> <li>Unchecked Grazing of livestock by the local communities. 876 km<sup>2</sup> of conservation land likely to be lost</li> </ul>	
			Tsavo East NP	<ul style="list-style-type: none"> <li>Over 300 illegal structures near Maungu and stretching 1km in the Park</li> </ul>	Eviction notice given
			Ngai Ndeithya NR	<ul style="list-style-type: none"> <li>Entire Reserve (212Km<sup>2</sup>) fully sub-divided and settlers have allotment letters.</li> <li>Some Wildlife (especially birds) still evident but decreasing.</li> </ul>	
		EMCA, 2015 Provides for Environmental management planning	Tsavo Road and Railway NR	<ul style="list-style-type: none"> <li>212Km<sup>2</sup> way leave to the Railway.</li> <li>A further 10Km<sup>2</sup> eased to Standard Gauge railway(SGR)</li> </ul>	
		Section 65 (2) of WCMA, 2013	Express-Mombasa-Nairobi highway	<ul style="list-style-type: none"> <li>Plans are underway to construct a dual carriageway</li> <li>Express highway from Mombasa to Nairobi will lead to further easement</li> </ul>	
		Section 34 of WCMA 2013 Provides for variation of boundaries or revocation of a National but is silent on variation of boundaries of National Reserves).	North Kitui NR (Also Known as Mwingi National Reserve)	<ul style="list-style-type: none"> <li>A stretch of 2Km along the western Boundary excised resulting into a total 110km<sup>2</sup> of land lost to local community.</li> <li>Reserve is yet to be re-gazetted. Area already settled.</li> </ul>	
		Section 32 (1) (b) WCMA 2013 Provides for declaration of a National Park	Laikipia National Park	<ul style="list-style-type: none"> <li>Community against area being gazetted as Park</li> <li>Community in court against Gazettement of Park</li> </ul>	
		section 19 of WCMA 2013 Provides for transitional clauses under park regulations	Kora National Park	<ul style="list-style-type: none"> <li>Entire town of Boka is in the park.</li> </ul>	
		Section 119 WCMA 2013 Provides for transitional clauses	Ruma National Park	The southern part of the park already settled	
			Nyambene NR	<ul style="list-style-type: none"> <li>Official Gazettement indicates 640.6 Km<sup>2</sup>.</li> <li>Meru County proposes a 200Km<sup>2</sup> re-Gazettement</li> <li>Isiolo County also claims ownership of the reserve</li> <li>Two ASTU camps at Erati wells</li> <li>Area around Ngare Mara River is fully under irrigation (farms have no titles), part of Isiolo Airport, 78 Tank Artillery are likely to be inside reserve</li> <li>Kula Mawe, Gambela and Ndomoru with all the associated developments are in the Reserve</li> <li>Unregulated Soda ash mining at Magado crater, marram around Gambela and Kula Mawe. Sand is harvested in virtually all the laghas and is a source of cess</li> </ul>	
		Section 46(1), (2). (WCMA 2013 Provides for protection of endangered and threatened ecosystems	Arabuko-Sokoke NP	<ul style="list-style-type: none"> <li>Entire area of 6Km<sup>2</sup> is settled and farmed. Charcoal burning</li> </ul>	

	Section 46(1), (2). (WCMA) Provides for protection of endangered and threatened ecosystems	Losai National Reserve	<ul style="list-style-type: none"> <li>13 villages established inside the reserve</li> <li>Unregulated free grazing</li> </ul>	
	Section 1 of EMCA 2015 part 5 Provides for Environmental management planning	Malindi	<ul style="list-style-type: none"> <li>Billionaire's club- on a turtle nesting sight.</li> <li>Wall being erected around the club will block turtles from nesting.</li> </ul>	
	Section 1 of EMCA 2015 part 5 Provides for Environmental management planning	Watamu	<ul style="list-style-type: none"> <li>Hemingway's-hotel has built a wall causing erosion on the beach.</li> </ul>	
	Section 102 (1) a	Chyulu NP	<ul style="list-style-type: none"> <li>Human settlement in the Park</li> </ul>	<ul style="list-style-type: none"> <li>2016 Main removal of settled persons in the Park undertaken</li> <li>2017 all the remaining families (50) evicted from the Park</li> </ul>
Illegal logging, Charcoal Burning, firewood (as an economic activity- Market in Nairobi, Mombasa and Voi)	Section 102 (1) c, h) (WCMA 2013 Provides for managing breach of Protected Area regulations	South Kitui, Tsavo, Kakamega forest	<ul style="list-style-type: none"> <li>South Kitui has highest number of charcoal kilns in any conservation area. Target species for charcoal e.g. acacia trees are on the decline.</li> </ul>	
	Section 102 (1) c, h) WCMA 2013 Provides for managing breach of Protected Area regulations	Masai Mara Environs	<ul style="list-style-type: none"> <li>Acacia trees in the decline due to charcoal burning, harvesting of fuel wood and building materials</li> </ul>	
	Plantations of exotic trees, emergence of livestock ranches and sisal plantations.	Section 102 (1) c, h) WCMA 2013 Provides for managing breach of Protected Area regulations	<ul style="list-style-type: none"> <li>A known cause of decline of Taita Apalis and Taita Thrush</li> <li>Loss of forage for other wildlife species e.g. elephants</li> </ul>	Decrease in land for wildlife conservation and especially specific habitats for endangered endemic birds
Loss of migratory corridors	Land policy on migratory corridors Section	<p>Athi Kapiti Wildebeest Migratory corridor</p> <p>Rimoi/Kamnarok-South Turkana, Nasolot elephant corridor</p> <p>Mt. Kenya, Laikipia, Samburu, Marsabit elephant corridor</p>	<p>Land subdivided, fenced and settled</p> <p>Lots of settlement and farming around Tot, Aror</p>	<p>Hardly any migration</p> <p>Elephant still able to migrate but route getting settled on. Insecurity still rife</p>

Invasive species	<ul style="list-style-type: none"> <li>Unregulated movement of goods across international boundaries</li> <li>Intentional introduction of alien species either for commercial or economic purposes</li> <li>Accidental or non-intentional introduction</li> </ul>	Schedule 7 of WCMA 2013 Provides for identification of invasive species	All conservation areas where such species occur	<ul style="list-style-type: none"> <li><i>Solanum incanum</i> spreading rapidly in Lake Nakuru, Amboseli and Hell's Gate National Parks. The species is unpalatable</li> <li><i>Lantana camara</i>- Spreading rapidly in Meru, Nairobi and Oldonyo Sabuk. Black Rhino has been reported feeding on it</li> <li><i>Parthenium</i> spp spreading rapidly in Nairobi National Park. It is a colonizer and unpalatable to all species.</li> <li><i>Opuntia</i>-common in most of the conservancies in Laikipia. It reduces native plant species spread</li> </ul>	Presently all control measures are manual and seem to be not effective. There is likelihood that some of this species are spread by wildlife.
				<ul style="list-style-type: none"> <li>Indian Crow &amp; Indian Myna Are aggressive towards other birds and a nuisance to tourist</li> </ul>	Has spread to as far as Nairobi. Control by the avian poison starticide proved very successful (in Australia) but the chemical is now banned worldwide
				<ul style="list-style-type: none"> <li>Nile Perch introduced in lake Victoria in 1950's for commercial purposes</li> </ul>	Is responsible for the loss of over 150 fish species some which were endemic to the lake.
			Diani Chale, Watamu & Msambweni	<ul style="list-style-type: none"> <li>Sea Urchin loss and degradation of sea grass beds which is a critical habitat for Dugongs</li> </ul>	Decline in Dugong population along the Kenyan coast
Pollution	<ul style="list-style-type: none"> <li>Industrial effluent especially into water bodies &amp;</li> </ul>		Diani Chale, Watamu & Msambweni	<ul style="list-style-type: none"> <li>Sedimentation affecting growth of sea grass and thus affecting food and habitat for aquatic herbivores e.g. Dugong</li> </ul>	
	<ul style="list-style-type: none"> <li>emission (harmful gases)</li> <li>Agro-chemicals especially that results into bio magnification</li> <li>Commercial &amp; Domestic especially solid wastes e.g. Plastic.</li> </ul>		Major towns Lodges in Protected areas Industries & commercial entities adjacent to Conservation areas	<ul style="list-style-type: none"> <li>Dump sites (solid waste)</li> <li>Effluent discharge into wetlands</li> <li>Plastic pollution into marine environment</li> </ul>	Proliferation of the Indian house crow and Indian Myna Poisoning of aquatic wildlife especially turtles
	<ul style="list-style-type: none"> <li>Oils spills from oil tankers, boats, trawlers</li> </ul>	Kenya Maritime Act- Oil spill contingency plan	Indian Ocean	<ul style="list-style-type: none"> <li>2015 oil spill at Makupa</li> </ul>	<ul style="list-style-type: none"> <li>Kills Mangroves (Makupa creek), Corals, Sea grass &amp; marine Organism</li> <li>Bridge being constructed to restore mangrove ecosystem at Makupa</li> </ul>
	<ul style="list-style-type: none"> <li>Anti-fouling agents applied to boats &amp; ships</li> </ul>	EMCA pollution guidelines	<ul style="list-style-type: none"> <li>Indian Ocean</li> <li>Lakes</li> </ul>	<ul style="list-style-type: none"> <li>Increase in Ocean going ships and boats on lakes</li> </ul>	<ul style="list-style-type: none"> <li>Increase in the use of the chemical &amp; its impacts</li> </ul>
Poaching	Subsistence meat & illegal trade.	Section 95 WMCA 2013 Provides for offences related to dealing in trophies. Section 96 (1) WCMA 2013 deals with sport hunting Section 97 WCMA 2013 subsistence hunting Section 98 WMCA 2013 deals with offenses relating to bush meat.	All conservation Areas	<ul style="list-style-type: none"> <li>No of Rhinos killed</li> <li>No of elephants killed</li> <li>Kilos of bush meat harvested</li> <li>Trophies from other species e.g. Pangolins, sharks, leopard skins, lion teeth &amp; claws, Monitor lizard &amp; snake skins etc</li> <li>No of kilos of Sandal-wood recovered</li> </ul>	Refer to chapter 5 <ul style="list-style-type: none"> <li>Rhino- 22 arrests</li> </ul>

	Trawling, dynamite fishing	Section 42 (6) Fisheries Management and Development Act 2016	Exclusive Economic Zone (Indian Ocean)	<ul style="list-style-type: none"><li>Illegal, unreported and Unregulated fishing in the high seas- overfishing of marine species (fish, sea turtles, dugongs and other marine mammals),</li><li>By-catch of endangered species in gill nets by trawlers</li></ul>	Capacity to monitor and enforce Act is lacking
	Unregulated/illegal fishing equipment and lack of surveillance	Section 42 (2) (3) of Fisheries Management and Development Act 2016	All lakes and Marine Parks	<ul style="list-style-type: none"><li>Decline in fish species e.g. Tilapia in lakes Jipe, Challa, Magadi and Victoria</li><li>Decline in Marine species e.g. turtles, dugongs, sharks, sting rays etc. caught up in gill nets as bycatch</li></ul>	Capacity of monitoring and enforcing Act is lacking
	Snares	Section 102(1)f) WCMA 2013 Provides for management of breach of protected area regulations	All PAs and Conservancies	<ul style="list-style-type: none"><li>South Kitui, Meru, Tsavo, Ruma (major cause of decline in Roan antelope population).</li><li>Small mammals especially dikdiks</li><li>Kikopey area- target species- zebra, eland, greater kudu, buffalo, and impala.</li></ul>	Are non-discriminate and thus maim or kill any species that gets in contact with it  They are rudimentary
	High demand for wildlife products driven by buyers' culture and lifestyles.	section 46:1-2 WCMA 2013 CITES appendix I& II	Turtle nesting sites on Kenyan coastline	<ul style="list-style-type: none"><li>Turtle nests reduced from 150 to 96 due to illegal off take of eggs for commercial purpose</li></ul>	
		CMS appendix 1& 2 Section 84 & 85 dealing with trophies and permit respectively		<ul style="list-style-type: none"><li>Sharks fins, teeth, skins</li></ul>	
		CITES appendix 1 Section 84 & 85 WMCA 2013 dealing with trophies and permit respectively	South Turkana, Rimoi, Turkana, Tsavo	<ul style="list-style-type: none"><li>Pangolin market becoming a great threat to wildlife - 500kg seized at JKIA in 2016</li></ul>	Are the most trafficked mammals in the world All the 8 species in the world are experiencing declining population trend Unmistaken belief that its flesh and scales have medicinal values
Prevalent wildlife diseases	Ecological factors that enhance contact between livestock, humans and wildlife. Changing weather patterns which affect host-vector-pathogen dynamics. Rapid human and animal movements facilitating rapid disease spread.	section 52 1(c) WCMA 2013 Provides for research on wildlife diseases surveillance and control	All wildlife conservation areas.	Filarial Anthrax Canine Distemper on Carnivores- Trypanosomiasis- Rabbits	White Rhino-Meru Buffalo and Rhino in Nakuru Masai Mara Black Rhino Meru Widespread
Over abstraction of water	Irrigation agriculture on the newly settled dry areas	Water Act	Meru NP	<ul style="list-style-type: none"><li>2 permanent rivers have dried up</li></ul>	
Infrastructure development	Development	Section 65 (2) of WCMA 2013	<ul style="list-style-type: none"><li>SGR</li></ul>	<ul style="list-style-type: none"><li>Easement of 10km<sup>2</sup></li></ul>	Fencing of wildlife movement routes
			<ul style="list-style-type: none"><li>Southern By- Pass</li></ul>	<ul style="list-style-type: none"><li>Part of Nairobi National Park annexed</li></ul>	
			<ul style="list-style-type: none"><li>Geothermal power generation at Hells gate NP</li></ul>	<ul style="list-style-type: none"><li>More wells drilled in Hells Gate NP Eburu Forest and Menegai</li></ul>	
			<ul style="list-style-type: none"><li>Lamu Port</li></ul>	<ul style="list-style-type: none"><li>Construction ongoing,</li></ul>	
			<ul style="list-style-type: none"><li>Lamu Coal power plant</li></ul>	<ul style="list-style-type: none"><li>The 22billion 900MW coal plant in Lamu- EIA conducted and license given</li></ul>	Matter in court 387 (Ha) of land needed for the project



### 3.3 Challenges to Wildlife conservation and management in Kenya

Challenges are operational matters that can lead directly to threats if not addressed. Wildlife in Kenya faces a myriad of threats caused mostly by human activities either directly or indirectly.

**Table 3.2 Status of Challenges to Wildlife conservation and Management**

Challenges	Policy and legal framework	Conservation Area	Status	Remarks
<b>Fire</b>	Section 102 (1) b	Tsavo Meru Chyulu Ruma	<ul style="list-style-type: none"> <li>2015- Ruma 70% of park burned. 2016- 2 fires. 2017- 2-minor fires</li> <li>Resource deviation</li> </ul> Impact on burrowing, insects,	
<b>Drought</b>	Section 102 (4)	Tsavo & Chyulu Meru Conservation Area Mara Conservancies Taita Conservancies Kajiado Conservancies Mt.Kenya Region Boni-Dodori NR and Forest Samburu NR, Buffalo Springs and Shaba	<ul style="list-style-type: none"> <li>Drying of water pans, rivers and dams (Aruba Dam)</li> <li>Movement of wildlife outside park in search of water</li> <li>Increase in human/resource conflict</li> <li>Rise in compensation for loss of human, injury and crop destruction</li> <li>Habitat destruction</li> <li>Livestock incursion</li> <li>Poaching for game meat</li> </ul>	<ul style="list-style-type: none"> <li>Guidelines yet to be gazetted</li> <li>Water and hay provision at a cost</li> <li>Rise in PAC cost- including more personnel/ vehicles deployment</li> </ul>
<b>Periodical floods</b>		Meru Ruma NP Mt. Elgon NP	<ul style="list-style-type: none"> <li>Inaccessibility of some areas</li> <li>Destruction of infrastructure like bridges, roads,</li> </ul>	Leads to insecurity due to difficulty in patrols Increases cost of maintenance
<b>Power generation (Geo-thermal, Hydro, Wind and diesel)</b>	Section 102 (h)	Hell's Gate NP Mwea NR	<ul style="list-style-type: none"> <li>Hydrology- More wells</li> <li>Impact (death, and entanglement) on birds especially vultures e.g. Rueppel vultures</li> </ul>	Management of wells and turbines as per the EMP
	Section 89	Kipeto (Kajiado wind power project)	<ul style="list-style-type: none"> <li>Production of toxic chemicals such as hydrogen sulphide</li> <li>Proposed construction of 60 turbines 100MW wind power farm on 70km<sup>2</sup> land</li> </ul>	Have negative impacts on vegetation. Hydrogen sulphide produces acidic rain  <ul style="list-style-type: none"> <li>Proposed Wind farm located 14km from Kwenia cliff a breeding site for Rueppel vultures</li> <li>Proposed wind farm</li> </ul>

				located on migratory birds fly way
<b>Human and monetary Capital</b>	Section 7 (a), (b)	All conservation areas	<ul style="list-style-type: none"> <li>• All logistics</li> <li>• Ecological monitoring</li> <li>• Patrols</li> <li>• Investigation</li> <li>• Intelligence gathering</li> <li>• Disease monitoring and control</li> <li>• Translocation</li> <li>• Capacity building</li> </ul>	<ul style="list-style-type: none"> <li>• Efficiency and effectiveness of delivery</li> <li>• Ranger capacity</li> <li>• Research capacity</li> <li>• Vet</li> <li>• Vehicles</li> <li>• Aircrafts</li> <li>• Scientific Equipment</li> <li>• Uniformed staff field equipment</li> </ul>
<b>Livestock incursion (Cattle, Camel, Donkeys, Sheep and Goats)</b>	Section 102 (2)	Tsavo West  Tsavo East  Meru Conservation Area  Sibiloi  Nairobi  Malka Mari  Marsabit   Losai  Nyambene  Rahole  L.Nakuru N.P,	<ul style="list-style-type: none"> <li>• Kitani, Murka, Ziواني, Rombo</li> <li>• Sanga Kalamu, Sukela la Ben, Huri Dabaduke, Kone, Emusaya</li> <li>• Boka, Bisanadi, Rapsu</li> <li>• Kokai</li> <li>• Athi River</li> <li>• Entire Park especially along the Dava River</li> <li>•</li> <li>•</li> <li>• Especially in the Reserve</li> <li>• The entire Reserve</li> </ul> Management of lions as a biological control of buffaloes in question	<ul style="list-style-type: none"> <li>• Ksh 20M spent on cattle drive in Tsavo</li> </ul>
<b>Fenced conservation Areas</b>				
<b>Unsecured Wildlife corridors</b>		Tsavo East-Tana delta (5 routes) Rimoi to South Turkana	Agricultural development and settlements- 16200Ha for Rice production (through Qatar government) and 350Km <sup>2</sup> for Biofuel and sugar Development of horticulture, irrigation (6000acres) and Aror power (80MW) through KVDA. Project will involve 20000families	

In the seventh schedule of the WCMA, 2013 contains a list of invasive species that occur in the country; the list is not exhaustive but

provides guidelines to wildlife managers on criteria of management of these species.

**Table 3.3 Status of listed invasive species in Kenya**

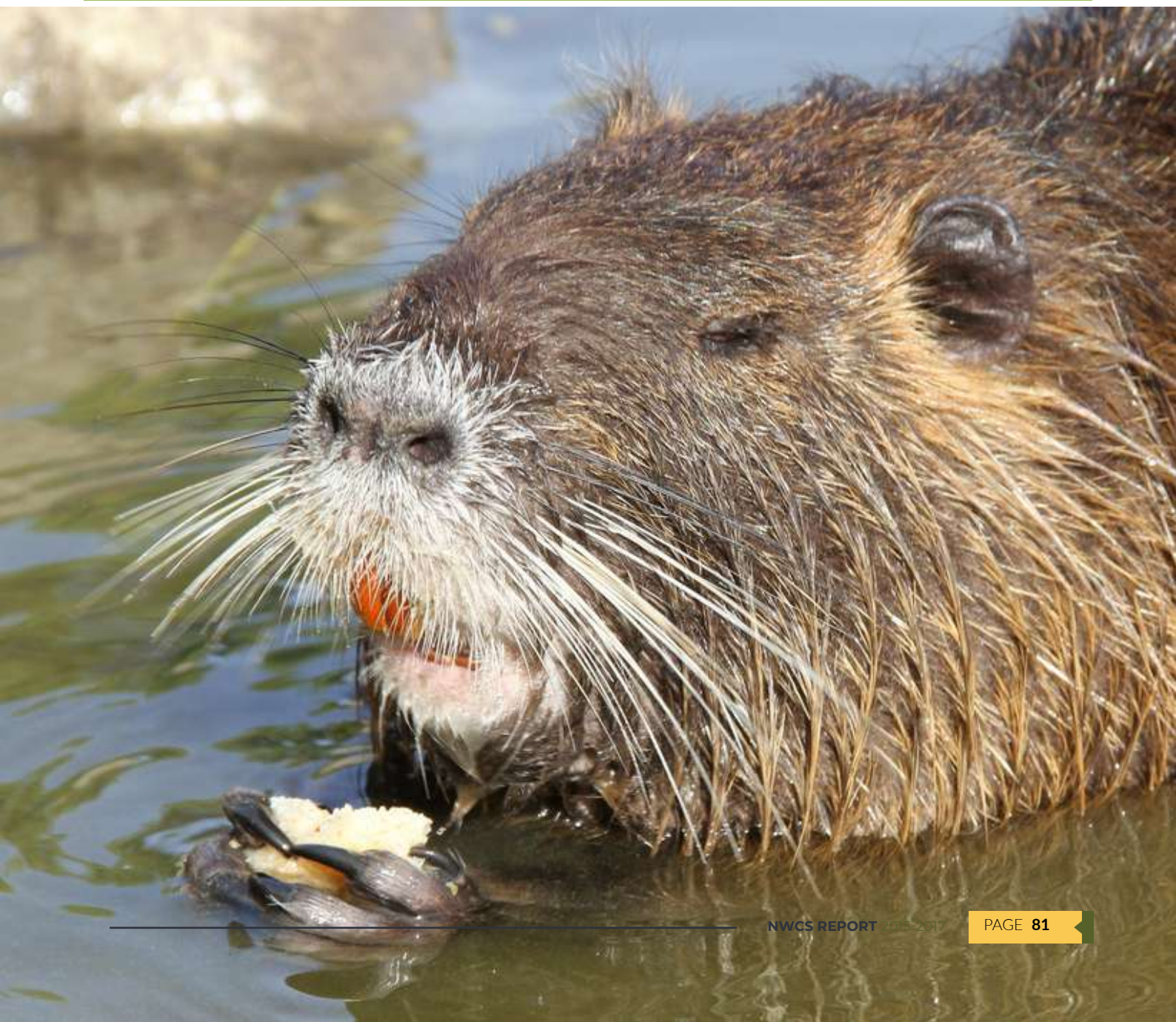
No	Species Common Name	Scientific Name	Origin	Location	Status	Remarks
1	Coypu Rat	<i>Myocastor coypus</i>	Argentina	Lake Naivasha		<ul style="list-style-type: none"> <li>No control measures in place</li> <li>Has commercial value</li> </ul>
<b>Birds</b>						
1.	Speckled Mouse bird	<i>Colius striatus</i>	Southern Africa or Cameroon	Widespread especially in urban areas and in cereal and coffee growing areas		Pest
2.	Ring-necked pheasant	<i>Phasianus colchicus</i>	China and East Asia	Game farms		Sold as ornamental birds
3.	Mute swan	<i>Cygnus olor</i>	Eurasia and Northern Africa			
4.	Chaffinch	<i>Fringilla coelebs</i>				
5.	House Finch	<i>Haemorhous mexicanus</i>	USA, Canada and Mexico (original home)			Usually replace house sparrow
6.	Common Indian Myna	<i>Acridotheres tristis</i>				
7.	Rose Ringed (Ring-Necked) Parakeet	<i>Psittacula krameri</i>				
8.	Common (European) Stirling	<i>Sturnus vulgaris</i>	Temperate Europe	Widespread	Increasing	<ul style="list-style-type: none"> <li>Has 12 sub-species</li> <li>Due to large flocks they are a hazard to air traffic</li> <li>They outcompete native birds for food and nesting sites</li> <li>Global population is 310 million with an EOO of 8,870,000km<sup>2</sup></li> </ul>
9.	Rock Dove (Feral pigeon)	<i>Columba livia</i>	Europe, North Africa & South West Asia	Wide spread	Stable	World oldest domesticated bird
10.	Beautiful Fruit Dove (Rose fronted Pigeon or Crimson capped fruit dove)	<i>Ptilinopus pulchellus</i>	New Guinea, West Papua & Indonesia			
11.	Black-chinned fruit dove (Black throated fruit/Leclalcher's dove)	<i>Ptilinopus leclancheri</i>	Taiwan and Philippines			Forest dweller

12.	Coronated Fruit Dove (Lilack capped)	<i>Ptilinopus pulchellus</i>	New Guinea		IUCN-LC	Rain Forest dweller Global population 10,000
13.	Mariana Fruit Dove (Rose capped fruit dove)	<i>Ptilinopus roseicapilla</i>	Endemic Mariana Island		<ul style="list-style-type: none"> <li>Global Population decreasing</li> <li>IUCN-EN</li> </ul>	The dove weighs 57g
14.	Pink-spotted fruit Dove	<i>Ptilinopus perlatus</i>	New Guinea	Kakamega Forest		
15.	Wompoo Fruit Dove	<i>Ptilinopus magnificus</i>	New Guinea and North Eastern Australia		Population is declining	Kenyan population is captive none in the wild
16.	House crow (Indian / greynecked / Ceylon/Colombo Crow)	<i>Corvus splendens</i>	India, Pakistan and Maldives	Introduced in Mombasa in 1940's and then colonized the coastal strip	Has spread as far as Nairobi	<ul style="list-style-type: none"> <li>It's an omnivorous scavenger</li> <li>Several unsuccessful control campaigns have been carried out at the coast</li> </ul>
17.	Red billed quelea (red billed weaver/dioch)	<i>Quelea quelea</i>	Sub-Saharan Africa	Kenya has 2 sub-populations (South & North)	Population increasing	<ul style="list-style-type: none"> <li>cereal pest</li> <li>Drinks on daily basis thus found within 30km of water bodies</li> <li>Global population estimated at 1.5 billion</li> </ul>
<b>Reptiles and Amphibians</b>						
18.	Red headed Agama lizard	<i>Agama agama</i>	Sub-Saharan Africa	Wide spread		
19.	Brother's Island tuatara	<i>Sphenodon guntheri</i>	New Zealand		IUCN - VU	
20.	Orange throated Whiptail Lizard	<i>Aspidoscelis hyperythra beldingi</i>	Mexico & USA (California)			
21.	Rainbow Kopje Skink (Garden skink)	<i>Lampropholis delicata</i>	Australia			Out Compete other invertebrates for food & feed on other invertebrates
22.	Brown Tree Snake	<i>Boiga irregularis</i>	New Guinea & Northern and Eastern coast of Australia			Aggressively Decimates population of small vertebrates
23.	Red Diamond Rattle Snake	<i>Crotalus exsul</i>	USA (south Western California), Mexico		IUCN_LC	
24.	Burmese Star Tortoise	<i>Geochelone platynota</i>				
<b>Plants</b>						
25.	Mathenge	<i>Prosopis</i>	Mexico,	Baringo, Garissa,	Rapidly	Used to control soil



		<i>juliflora</i>	Central & Northern South America	Mwingi	spreading	erosion
26.	Tickberry	<i>Lantana camara</i>	Mexico , central America, the Caribbean& tropical South America	Wide spread across the country	Grown for hedge and stems used for handicrafts	Fallen leaves produce allelopathic substances that prevent other plants from germinating
27.	Nile Cabbage (water lettuce, water cabbage or shell flower)	<i>Pistia stratiotes</i>	Unknown	Lake Naivasha		<ul style="list-style-type: none"> <li>• Introduced in lake Naivasha in the early 60's</li> <li>• Indicator of high nutrients</li> <li>• 2 known specific eaters(biological control) south American weevil &amp;larvae of the moth spodoptera practinicornis from Thailand</li> </ul>
28.	Yellow Oleander	<i>Thevetia peruviana</i>	Mexico and central America	Wide spread across the country	Grown as a garden ornamental plant	Listed in the Global Invasive Species Database (GISD 2010)
29.	Mauritius Thorn	<i>Caesalpinia decapeltata</i>	India	Wide spread across the country		<ul style="list-style-type: none"> <li>• Injurious to animals</li> <li>• Causes trees to collapse</li> <li>• Uses excessive amounts of water</li> <li>• Increases fire risk</li> </ul>
30.	Jimsons weed (Devils snare)	<i>Datura stramonium</i>	Mexico	Along roads sides and highways	Seeds can remain dormant even for years until soil is disturbed	Seeds are spread by birds
31.	Yellow Bells	<i>Tecoma stans</i>	Tropical America(Mexico)	Naturalized as a garden ornamental	Common along river banks & savannah areas especially where there are pastures	Entire plant is poisonous to people animals & environment
32.	Mexican Poppy	<i>Argemone mexicana</i>	Texas, Mexico and Central America	Wide spread across the country		Since it is extremely drought resistant it is an easily established weed It is poisonous especially to livestock and poultry

33.	Long spine cactus	<i>Opuntia exaltata</i>	Peru (South America)	Naivasha	Spreading	Used as a hedge since it outcompetes local species
34.	Sweet prickly pear	<i>Opuntia ficus-indica</i>	Mexico	Nairobi national Park, Naivasha	Spreading	<ul style="list-style-type: none"> <li>• Used as a hedge</li> <li>• Out do local species</li> <li>• Fruits are edible</li> </ul>
35.	Drooping prickly pear	<i>Opuntia vulgaris</i>	Mexico		Spreading	<ul style="list-style-type: none"> <li>• Used as a hedge</li> <li>• Out do local species</li> <li>• Fruits are edible</li> </ul>
36.	Water hyacinth	<i>Eichhornia crassipes</i>	South America but entered lake from Rwanda through the Kagera River	Lake Victoria Lake Naivasha (limited)	Spreading	1st recorded in the 80s Biological Control via the weevil neochetina (introduced in 1997) has not had much success
<b>Invertebrates</b>						
37.	Crown of thorn star fish	<i>Acanthaster planci</i>	Australia & indo-pacific regions	Kenya coast		Feed on coral polyps (coralivores) and thus destroy the coral ecosystem



## 3.4 Analysis of threats to protected areas

Threats to wildlife conservation and management are human activities and natural processes that affect wildlife species and habitats in negative and detrimental ways. Threats may be direct, affecting a species or habitat through intermediary actors or process. It is important that once the threats have been properly identified and defined all Protected Areas Susceptibility Index (PASI) needs to be calculated to give a proper status of the areas. In 2007, Kiringe and Okello analyzed, based on ten identified threats factors, protected areas susceptibility to threats. They found out that thirty two (64% of protected areas in Kenya) protected areas were susceptible to over half of the identified threat factors. Twenty seven (54% of the protected areas) were susceptible to over 60% of the threat factors types. Sixteen

(32% of the protected areas) were susceptible to over 70% of the threat factor types and three (6% of the protected areas) were susceptible to over 80% of the threat factor types. The protected areas most susceptible to the majority of the threat factors were- Masai Mara NR, Ndere Island NP, Lake Nakuru NP, Aberdares NP, Mt. Elgon NP, Kiunga Marine NR, Mt. Kenya NP, Mombasa Marine NP, Watamu Marine NP, Ruma NP, Kisite NP, Malindi Marine NP, Mwea NR, Kamnarok NR, Rimoi NR and Nairobi NP. All marine protected areas were very susceptible and threatened by the identified threat factors. This was followed by the montane protected areas. An analysis carried out today would reveal perhaps a similar trend but with newer protected areas taking a lead because of new challenges.

**Table 3.4 Analysis of Impacts of Threats on Protected Areas**

No	Protected Area	Encroachment	Poaching	Livestock Incursion	Fires	Pollution	Invasive species	Habitat degradation
<b>A National Parks</b>								
1.	Aberdares	5	4	5	3	5	3	4
2.	Amboseli	3	3	2	5	4	4	4
3.	Chyulu	2	4	4	2	4	3	3
4.	Hells Gate	3	4	3	4	1	3	1
5.	Kora	2	3	1	4	5	4	4
6.	Laikipia	3	3	1	4	5	3	3
7.	Lake Nakuru	5	3	5	3	2	2	2
8.	Malindi Marine	3	3	3	N/A	3	3	3
9.	Malka Mari	3	2	1	3	5	4	3
10.	Marsabit	3	3	2	4	4	3	3
11.	Meru	4	3	2	3	3	3	3
12.	Mombasa Marine	3	3	3	N/A	2	3	3
13.	Mt. Elgon	5	4	5	5	4	3	4
14.	Mt. Kenya	3	4	4	3	3	5	4
15.	Nairobi	3	3	2	3	3	2	3
16.	Ndere	5	2	5	2	5	2	3
17.	Oi Donyo Sabuk	2	4	3	3	5	4	4
18.	Ruma	2	2	4	2	4	2	3
19.	Sibiloi	2	3	2	5	5	4	4
20.	Longonot	2	2	2	2	4	3	4
21.	Saiwa	5	4	5	5	3	3	4
22.	Arabuko Sokoke	1	1	1	5	1	1	1
23.	Kisite	5	4	N/A	N/A	4	4	4
24.	South Island	5	5	5	5	5	4	5
25.	Tsavo East	3	3	2	3	3	3	3
26.	Tsavo West	3	3	1	3	3	3	3
27.	Central Island	5	5	5	5	5	5	5
28.	Watamu	5	4	N/A	N/A	4	4	4

1: Acute (very serious) 2. Serious 3; Moderate (Bad) 4; onset (Traces) 5. Insignificant

## B

## NATIONAL RESERVES

No	Protected Area	Encroachment	Poaching	Livestock Incursion	Fires	Pollution	Invasive species	Habitat degradation
1.	Arawale	1	1	1	1	1	1	1
2.	Bisanadi	2	3	2	3	4	3	3
3.	Bogoria	5	4	4	4	4	3	4
4.	Boni Dodori	4	4	4	4	5	4	4
5.	Buffalo Springs	5	3	3	4	4	2	4
6.	Chepkitale	3	4	3	5	5	4	5
7.	Diani Chale	5	4	N/A	N/A	4	4	4
8.	Ngai Ndethia	1	1	1	1	1	1	1
9.	Kakamega	4	4	4	4	4	3	4
10.	Kamnarok	4	4	1	3	4	3	4
11.	Losai	1	1	1	3	4	4	3
12.	Malindi	5	4	N/A	N/A	4	4	4
13.	Marsabit	3	3	2	2	4	3	3
14.	Masai Mara	2	3	1	3	3	3	3
15.	Mwea	5	3	3	3	4	3	4
16.	Mombasa	5	4	N/A	N/A	3	4	4
17.	Mpunguti	5	4	N/A	N/A	4	4	4
18.	Mwingi	2	3	2	3	4	3	4
19.	Nasolot	5	3	1	3	4	3	4
20.	Nyambene	2	1	1	1	5	3	2
21.	Samburu	4	4	3	4	4	4	4
22.	Shaba	4	4	3	4	4	4	4
23.	Shimba Hills	4	3	4	4	4	2	4
24.	South Kitui	2	2	1	1	5	3	1
25.	South Turkana	5	2	3	3	4	4	4
26.	Rahole	2	1	1	2	4	2	3
27.	Rimoi	4	3	3	3	4	3	4
28.	Tana river primate	2	3	2	4	4	3	4
29.	Watamu	5	4	N/A	N/A	4	4	4
30.	Tsavo east Railway	2	2	1	4	4	3	3
31.	Yala swamp	3	3	3	5	4	3	3

## C

## NATIONAL SANCTUARIES

No	Protected Area	Encroachment	Poaching	Livestock Incursion	Fires	Pollution	Invasive species	Habitat degradation
1	Kisumu Impala	4	5	5	5	3	4	4
2	Naivasha Wildlife sanctuary	5	3	4	4	4	4	5
3	Ondago							
4	Maralal	1	5	1	5	1	1	1
5	L.Simbi	3	5	3	5	2	5	5
6	L.Elementaita	3	3	3	4	4	4	4

1: Acute (very serious) 2. Serious 3; Moderate (Bad) 4; onset (Traces) 5. Insignificant







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# CHAPTER 4:

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## STATUS OF KENYA'S WILDLIFE CONSERVATION AREAS

The WCMA, 2013 defines a wildlife conservation area as a “tract of land, lake or sea that is protected by law for purposes of wildlife and biological diversity conservation and may include a national park, national reserve, game reserve or sanctuary”. The WCMA, 2013 also defines a Wildlife Conservancy as “land set aside by an individual landowner, body corporate, group of owners or a community for purposes of wildlife conservation in accordance with the provisions of this Act”. Kenya offers a variety of habitat types that include coral reefs, mangroves, savannah grasslands and woodlands, tropical rainforests, fresh and salt-water lakes, deserts and semi-deserts, and montane habitats. Kenya is a country that is highly dependent on its biological resources that are essential in provision of ecosystem goods and services for its social, cultural and economic development. In this regard, the government through the Constitution and Vision 2030 recognizes the importance of sustainable use of natural resources, reducing loss of biodiversity and maintaining ecosystem processes for economic growth. Wildlife conservation and sustainable tourism is therefore identified as one of its social-economic pillars in the Vision 2030.

The valuation of the ecosystem goods and services is yet to be done and neither are the returns directly accruing from the goods and services commensurate with the value. To safeguard its rich biodiversity resources, Kenya has designated a significant proportion of its total land area as wildlife conservation. By 2015 forests, woodlands, National Parks, National Reserves and Conservancies covered slightly over 20% of the total land area.

Over the years, some of the protected sites have experienced habitat changes, through human settlements, livestock incursion, pollution, infrastructure development and other anthropogenic induced changes leading to some protected areas becoming ‘Paper Parks’. The main management focus by KWS is enshrined in the WCMA, 2013 which empowers it to manage all issues related to wildlife conservation. Identification mapping and gazetement of wildlife corridors and dispersal areas connecting conservation areas

is one of the requirements of the land policy to win more space for wildlife.

Several infrastructure projects that affected the protected areas were initiated during this reporting period notably the Standard Gauge Railway (SGR) that traversed the Tsavo's; the Nairobi southern bypass (Nairobi National Park), the KETRACO 400KV transmission line (Tsavo National Park, Taita ranches, Machakos, Kajiado Conservancies, Athi Kapiti) and the new Kenya Pipeline through Tsavo West and Nairobi National Park was completed. The construction of the Lamu port was initiated- the impact of this mega infrastructure both on land and the coastline is yet to be manifested. An EIA license was also awarded to put up the first coal powered electricity (with a capacity to generate 900MW) plant in Lamu. Several wind powered electricity plants were also given licenses to commence construction. The 310MW Turkana Wind power Project at Loyangalani in Marsabit county covers 400Km<sup>2</sup>- the 428Km long 400KV transmission line to Suswa passes through wildlife conservation areas (Conservancies in Marsabit, Samburu, Laikipia and Narok). EIA License to construct a 400MW Meru Wind power station was also granted and it apparently lies partly in the Nyambene National Reserve. In Hells Gate National Park and its environs more geothermal wells were sunk. The 60MW power plant on the Aror dam on the Kerio River lies on the elephant migratory corridor between Rimoi, South Turkana and Nasolot Kipeto 100MW wind power project in Kajiado. The Mombasa - Nairobi express highway was also licensed and runs through the Tsavo's. These constructions came with a cost as wildlife lost critical habitats and space.

Wildlife Conservation Areas in Kenya include a) National Parks, b) National Reserves, c) National Sanctuaries and d) Wildlife Conservancies, Forest Reserves which are under the Forest Act also have a variety of wildlife species. Kenya is a signatory to several International Multi-lateral agreements on conservation, some of which have been domesticated and implemented, notable among them being Ramsar and World Heritage Sites.

## 4.1. Terrestrial Parks and Reserves

### 4.1.1. Status of National Parks

In an effort to achieve ‘in-situ’ conservation of biodiversity, Kenya has a well-established

National Park system where the diverse ecosystems, habitats and wildlife are represented and managed directly by Kenya



Wildlife Service. Presently, Kenya has 24 terrestrial National Parks which are distributed in 17 Counties. These parks occupy an area of 29,504Km<sup>2</sup> that is approximately 5.08% of the total area of Kenya. Tsavo East and Tsavo West National Parks -including the Tsavo National Road and Railway Reserve- cover 71.2% of the area occupied by all National Parks. This is followed by Kora (6%), Sibiloi (5.3%) and Malkamari (3%).

During this reporting period, the parks received 2,055,667 visitors. Lake Nakuru National Park recorded 422,883 visitors (20.57%) followed by Nairobi National Park 306,615 visitors (14.92%), Hells Gate National Park with 304,212 visitors (14.80 %) and Amboseli National Park with 218,987 visitors (10.65 %). Tsavo East and Tsavo West combined had 273,592 visitors (13.31 %).

Amboseli and Mt. Kenya are designated by UNESCO as Man and Biosphere Reserves (MAB); Tsavo East and West and Central Island are equally designated by UNESCO as World Heritage Sites; While Aberdares, Mt. Kenya, Chyulu and Mt. Elgon are National Water towers. Sibiloi hosts Koobi Fora which is regarded as the cradle of Mankind. Kenya has Ramsar Sites of which Lake Nakuru is a Park, Lake Bogoria is a Reserve while the other 4 (Tana River Delta, Lake Elementaita, Lake Baringo and Lake Naivasha) do not enjoy other protection status.

All the parks are required by law to have management plan that are gazetted. Presently

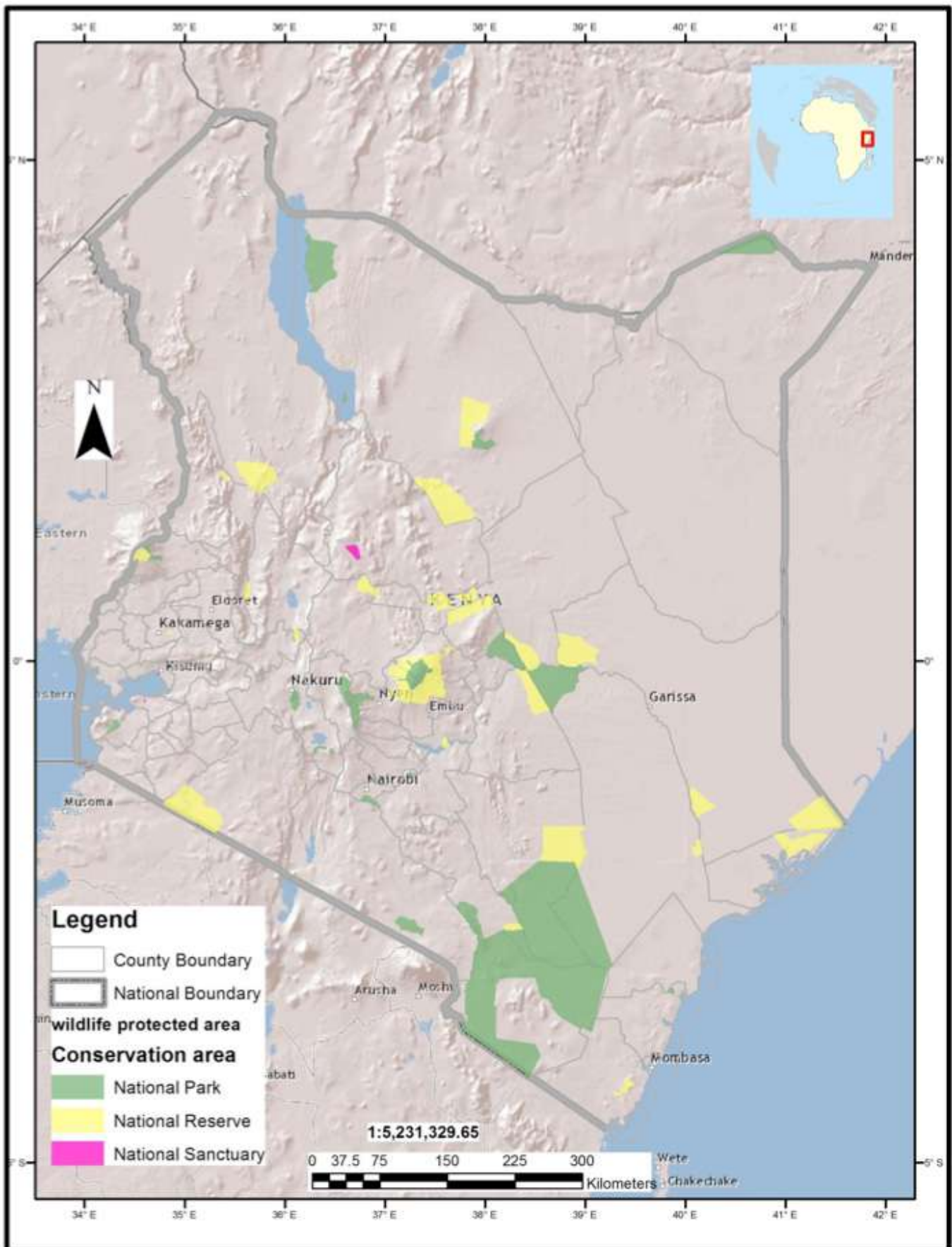
only Amboseli, Mpunguti (Kisite-Mpunguti) and Marsabit have gazetted management plans. The rest are at various stages of development. In addition, all of them have legal notices of their gazettelement while a number of them have title deeds. The management plans will form the basis of evaluating the state of conservation areas. The WCMA, 2013 requires that the managers will every year give a compliance report of the management plans.

The economic benefits of wildlife conservation were mainly channeled to neighboring communities through CSR projects. Direct benefits accruing from wildlife conservation will be dependent on the formulation of regulations on access and benefit sharing. During this period the said regulations were formulated and are awaiting gazettment.

The strategy to use fences as a measure to reduce human wildlife conflict during this period was undertaken in several parks. However in certain areas, notably Tsavo East and Meru; Electric fences were constructed inside the Park to create Rhino sanctuaries. The Meru one was an extension of the existing sanctuary. Other similar projects were initiated but not completed due to the requirement of environmental impact assessment. The cost of construction and maintenance of these fences continues to be astronomical.







**Figure 4.1 National Parks, National Reserves & National Sanctuaries**  
Source KWS2017

**Table 4.1: Status of National Parks in 2015/2017**

No	Protected Area	Area (Km <sup>2</sup> )	Legal notice/ Gazettement	Remarks (Values, & Threats)	Other Protection Status	Visitor statistics (2015-2016)	Visitor statistics (2016-2017)	Accommodation	Electric Fences (Km)	Roads (Km)	Air strips (No)
1.	Aberdares	765.7	Legal notice no... 1950 and legal notice No. 172 of 1968	<ul style="list-style-type: none"> <li>Among the listed species include the Eastern Mountain Bongo, Black Rhino, white and black colobus monkey, leopard, lion, African Golden Cat</li> <li>The park is a black Rhino sanctuary</li> <li>Has over 250 bird species</li> <li>Water tower</li> <li>Rare &amp; Endemic bird species</li> <li>Increasing invasive species</li> <li>Annual forest fires</li> </ul>	IBA	35,063	42,312	2 lodges & 2 guest house	400 (Phase 2 Under rehabilitation )		1
2.	Amboseli	392	1974	<ul style="list-style-type: none"> <li>Loitokitok- Emali road tarmacked</li> <li>Electricity from Kimana town to park HQ</li> <li>Community have concession for livestock watering</li> <li>Kimana- Namanga Road goes through park</li> <li>The Kuku Elephant corridor facing subdivision</li> </ul>	UNESCO Man and biosphere reserve, IBA	91,485	127,502	2 Lodges, 5 bandas,	31 ( constructed since 1996)	1. 150km unclassified, 144km classified	2
3.	Arabuko Sokoke	15	Legal notice no. 426 of 1990	<ul style="list-style-type: none"> <li>Fully Encroached</li> <li>Ader's duiker and the golden-rumped elephant shrew found in the forest</li> <li>Fischer's turaco, sokoke pipit and amani sunbird still present but AOO is leading to Critically endangered</li> </ul>	IBA	113	-		114 ( Constructed 2002-2012) Fence requires rehabilitation	0	0
4.	Central Island	5	Legal notice no. 18 of 1983	<ul style="list-style-type: none"> <li>More than 350 bird species</li> <li>Crocodile breeding site (April-M34 species of European migrant birds</li> <li>23 species of birds breed here</li> <li>Large concentration of crocodiles ay)</li> </ul>	IBA	43	157	1 camp site	0	0	0
5.	Chyulu hills	734	1983,	<ul style="list-style-type: none"> <li>Declared as a National Water tower</li> <li>Listed species include Rhinos, elephants, leopards</li> <li>Fire is a major threat</li> <li>Charcoal burning is a major threat to habitat</li> </ul>	Water tower	380	378			160	1

6.	Hells gate	68.25	Legal notice No. 13 of 1984	<ul style="list-style-type: none"> <li>• More geothermal wells sunk- present capacity is 155MW and target from Olkaria is 1200MW by 2025- meaning more wells</li> <li>• Only breeding ground for the globally endangered Ruppells Vulture in Kenya now destroyed</li> <li>• Prospects for five industrial parks inside the park are at an advanced stage</li> <li>• Part of the South Lake road runs through the Park and remains a threat to wildlife-many kills have been reported</li> <li>• Has over 103 species of birds-lammergeyer not spotted any more</li> </ul>	IBA	133,463	170,749	2 campsites	N/A	58	0
7.	Kora	1,788	Legal notice No. 339 of 1989	<ul style="list-style-type: none"> <li>• EIA for fencing of park rejected by Boka community but accepted by Asako community</li> <li>• Livestock incursion is a serious threat to habitat</li> <li>• No revenue Gates</li> </ul>	None	None	None	2 Campsites	0	221	3
8.	Laikipia	69	Not gazetted	<ul style="list-style-type: none"> <li>• Proposed National Park</li> <li>• Donated to KWS by AWF in 2011</li> <li>• Ownership contested in court by community</li> </ul>	None	No Gates		0			
9.	Lake Nakuru	188	Legal notice no. 137 of 1968	<ul style="list-style-type: none"> <li>• Lake levels rising and water quality changing,</li> <li>• declining Lesser Flamingo population (park is Ramsar site due to Lesser Flamingo)</li> <li>• Park has more than 450 bird species</li> <li>• Black and White Rhino sanctuary</li> <li>• Invasive species increasing (colonizing)- especially the toxic non palatable solanum incanum</li> <li>• Population of Buffalos well above maximum carrying capacity</li> </ul>	IBA Ramsar UNESCO MAB	190,529	232,354	5 lodges	78 (10Km rehabilitated during reporting period)	262	1

10.	Malka Mari	876	Legal notice no. 338 of 1989	<ul style="list-style-type: none"> <li>• Encroachment &amp; settlements by the nomadic Gurreh herders</li> <li>• Listed species include the Somali Giraffe, Spotted hyaena, Crocodiles on the Daua River</li> <li>• Livestock incursion here is totally unregulated</li> <li>• The juba Weaver and the white winged Dove have been recorded here</li> </ul>	None	No Gates	0	0			
11.	Marsabit	68	Legal notice no. 366 of 1967	<ul style="list-style-type: none"> <li>• Encroached by 1 village inside park</li> <li>• Management plan gazette</li> </ul>	Water tower	2,120	4,092	1 lodge	21 (6.7Km rehabilitated during reporting period)		1
12.	Meru	870	Legal notice no. 4756 of 1966	<ul style="list-style-type: none"> <li>• Rhino sanctuary extended by 25km<sup>2</sup></li> <li>• Serious livestock incursion</li> <li>• Water diversion and abstraction outside the park is a serious threat to the wetlands inside park that provide dry season forage</li> <li>• Tsetse menace a major hindrance to rhino conservation</li> <li>• Has over 350 bird species</li> </ul>	IBA	18,629	18,336	2 lodges, 2 guest houses, 1 hostel, 4 bandas, 1 tented campsite	116 KMs (inclusive of 30 KMs of community fence around Rapsu and Kinna towns)	Classified 50 Kms (Murera-Ura road)  Unclassified 700 KMs	16
13.	Mt. Kenya	715	Legal notice No. 69 of 6th June 1949 and extension of 1968	<ul style="list-style-type: none"> <li>• Water tower</li> <li>• Eastern Mountain Bongo sanctuary</li> <li>• Increasing invasive species</li> <li>• Annual fires</li> </ul>	IBA WHS	17,465	19,404	3 guest houses 3 lodges and several cottages	180 (construction in progress with a target of 400Km)		
14.	Mt. Elgon	169	Legal notice no. 112 of 1968	<ul style="list-style-type: none"> <li>• Over 300 birds' species including 40 restricted range. 56 of the 87 afro tropical highland biome species live here</li> <li>• IUCN has listed 37 faunal species as globally threatened (22 mammals, 2 insects and 13 bird species of which 9 are endemic)</li> </ul>	IBA	7,131	9,925	1 banda	18 (fence require rehabilitation )		0
15.	Mt. Longonot	52	Legal notice no. 13 of 1983	<ul style="list-style-type: none"> <li>• Besides Mount climbing/hiking the park is rich in Giraffes, Zebras and Grant gazelles</li> <li>• Drilling for geothermal power increasing</li> </ul>		55,556	66,349	2 Campsites	N/A	9	N/A
16.	Nairobi	117	Legal notice No. 48 of 1946	<ul style="list-style-type: none"> <li>• Park lost 178.2 h of land to infrastructure development (southern bypass, pipeline, Ketraco)</li> <li>• Sporadic livestock incursion is still experienced</li> <li>• Rhino sanctuary</li> </ul>	IBA	139,933	166,682	1 tented camp	73 (constructed between 1984-1997. Requires rehabilitation )	254km	none



17.	Ndere Island	4.2	Legal notice no. 368 of 1986	<ul style="list-style-type: none"> <li>tsetse infestation still a great hindrance to any investment</li> <li>Over 100 bird species</li> <li>Illegal fishing by local communities remains a major problem</li> </ul>	None	1,580	1,035	none	0	0	0
18.	Ol Donyo Sabuk	18	Legal notice no. 274 of 1967		None	11,345	16,007	Oldonyo Sabuk Guest House		9.6 km	
19.	Ruma	120	Legal notice 100 of 1983	<ul style="list-style-type: none"> <li>Is a black Rhino sanctuary</li> <li>Roan population has gone down to 17 which is not viable</li> <li>Subsistence poaching remains a problem</li> <li>Fires caused by communities remain a major problem</li> <li>Rothschild giraffe have done considerably well here (a success story of translocation)</li> </ul>	IBA	4,428	9,769	1 guest house 1 campsite	74km (Constructed between 1993-2011)		1
20.	Saiwa Swamp	3	Legal notice no. 11 of 1974	<ul style="list-style-type: none"> <li>Is a sitatunga sanctuary</li> <li>De Brazza monkey</li> <li>Over 370 bird species recorded here including the Ross's turaco and the blue-headed coucal</li> <li>Upstream agriculture is a threat to the swamp in terms of water abstraction and agrochemicals</li> </ul>	None	2,891	2,383	1 Tree house	0	0	0
21.	Sibilo	1570	Legal notice no. 160 of 1973	<ul style="list-style-type: none"> <li>Archaeological sites-Koobi for a</li> <li>Volcanic formations, petrified forests,</li> </ul>	WHS			2 guest houses			2
22.	Southern Island	39	Legal notice no. 13 of 1983	<ul style="list-style-type: none"> <li>Lesser flamingoes feeding ground</li> <li>34 species of European migrant birds</li> <li>23 species of birds breed here</li> <li>Large concentration of crocodiles</li> </ul>	IBA				0	0	0
23.	Tsavo East	13,747	Number 17 of 6/4/48 and 23 of 29/9/53	<ul style="list-style-type: none"> <li>Sobo rhino sanctuary 99.5 km<sup>2</sup> established</li> <li>SGR- Easement for the new railway line</li> <li>Ketraco has easement for the 440KV lines</li> <li>Settlement in the park</li> <li>Livestock incursion remains a threat</li> </ul>	IBA	80,618	101,538	14 (Lodges and permanent tented camp)	Ithumba 60Km Total 96Km (constructed between 1996-2002)	2389KM	17
24.	Tsavo West	7,000	Number 17 of 6/4/48 and 23 of 29/9/53	<ul style="list-style-type: none"> <li>SGR-Easement for the new railway line</li> <li>Ketraco-Easement for the 440KV national grid line</li> <li>Livestock incursion remains a major threat to wildlife and habitat</li> <li>Charcoal burning remains a major problem to habitat health</li> <li>Unregulated Mining of rubies</li> </ul>	IBA	35,928	55,508	3 lodges, 2 Tented camps, 2 bandas, 1 guest house	67Km (constructed between 1990 to date) Taveta station 127KM Total 204Km	1,640	11

### 4.1.2. Status of National Reserves

There are 31 terrestrial National Reserves in Kenya occupying 17,358.8km<sup>2</sup> which is 3% of the country's total area. These Reserves are distributed in 21 out of the 47 Counties. Most of the National reserves are managed by county governments with technical advice from KWS. However Marsabit, Mt.Kenya, Mwaa, Kakamega and Shimba Hills are managed by KWS. There are seven Reserves each covering an area larger than 1000km<sup>2</sup>. UNESCO has designated Mt.Kenya National Reserve as a MAB under World Heritage Sites while Lakes Bogoria and Baringo National Reserve are

designated as Ramsar sites. Apart from Marsabit National Reserve none of the other Reserves presently has a gazetted Management Plan.

The lack of gazetted management plans, which is a prerequisite to any development in a wildlife conservation area, is a major impediment to development of infrastructure in these reserves. This includes zonation of use and no use areas resulting to human encroachment and thus posing serious threats to wildlife health and survival. The various County governments have invested little in terms of human capital and currency in most of these Reserves. Table 4.2 summarizes the status of National Reserves in Kenya

**Table 4.2: Status of National Reserves in 2015/2017**

No	Protected Area	Area (Km <sup>2</sup> )	Legal notice/ Gazettement	Remarks (Values & threats)	Other Protection Status	Management authority	Annual Visitor statistics (2015-2017 average)	Accommodation facilities	Km of electric Fences	Km of Roads	No of airstrips
1.	Arawale	533	Legal notice no. 272 of 1966	<ul style="list-style-type: none"> <li>• Hirola &amp; grevys Zebra presently the only area with hunters heartbeest.</li> <li>• Poaching of small game is rampant</li> <li>• No lodges or tented camps</li> <li>• Roads are virtually non existent</li> </ul>		Garissa county	No Revenue gates	None			
2.	Bisanadi	606	Legal notice 261 of 1979	<ul style="list-style-type: none"> <li>• Has elephant, lion, cheetah</li> <li>• Has 400 species of birds including the Hinde babbler</li> <li>• Included in the Meru Conservation Area management plan</li> <li>• Livestock incursion is a major threat</li> </ul>	None	Isiolo county	No Revenue gates	1 lodge	0		0
3.	Boni	1339	Legal notice no. 7 of 1976	<ul style="list-style-type: none"> <li>• Critically endangered Aders duiker, elephants</li> <li>• Sokoke pipit sighted</li> </ul>	UNESCO man & biosphere reserve, globally, prized conservation site	Garissa county	No Revenue gates	None	0	0	0
4.	Buffalo springs	131	Legal notice no. 189 of 1985	<ul style="list-style-type: none"> <li>• Samburu-Isiolo conservation area management plan(2009-2019) approved</li> </ul>	IBA	Isiolo county		2 lodges			
5.	Chepkitale	172	Legal notice no. 88 of 2000	<ul style="list-style-type: none"> <li>• Settlements inside Reserve by Ndarobo</li> <li>• Resident elephant population above bamboo line</li> <li>• Population (elephant) estimated to be above 100</li> </ul>	None	KWS &, Bugoma county	No revenue gate				
6.	Dodori	877	Legal notice no.75 of 1976	<ul style="list-style-type: none"> <li>• Critically endangered Aders duiker</li> </ul>	UNESCO man & biosphere reserve, globally, prized conservation site	Lamu	No Revenue gates		0		0

7.	Kakamega	44.7	Legal notice no. 95 of 1985	<ul style="list-style-type: none"> <li>Electricity supply</li> <li>Endemic birds species, Snakes, butterflies</li> </ul>	IBA	KWS	3,894 (2015/2016) 5,020 (2016/2017)	2 Bandas	0		0
8.	Kamnarok	87.7	Legal notice no. 101 of 1983	<ul style="list-style-type: none"> <li>Elephant corridor between Rimoi and Nasolot</li> </ul>		Baringo county	No Revenue gates	0	0		0
9.	Lake Bogoria	107	Legal notice no. 270 of 1970	<ul style="list-style-type: none"> <li>Population of greater Kudu estimated at 35</li> <li>Flamingos</li> <li>Over 370 birds species</li> </ul>	<ul style="list-style-type: none"> <li>Ramsar site</li> <li>IBA</li> <li>World heritage site</li> </ul>	Baringo county	71,000(2015)			26	1
10.	Lake Kanyaboli	41.4	Legal notice no. 158 of 2010	<ul style="list-style-type: none"> <li>Community in court contesting gazetment</li> <li>Sitatunga is present but population status as yet to be established</li> <li>Land Use plan (Yala Swamp SEA Land Use Plan) gazetted by National Environment Management Authority(NEMA) on 25.01.2017</li> </ul>	None	Siaya county	No Revenue gates	0	0	0	0
11.	Losai	1,806	Legal notice no. 8 of 1976	<ul style="list-style-type: none"> <li>No management presence</li> <li>Encroached 13 villages</li> </ul>	None	Marsabit county	No Revenue gates				2
12.	Marsabit	1,552	Legal notice no. 936 of 1948	<ul style="list-style-type: none"> <li>Encroached 1 village inside park</li> <li>Management Plan gazetted</li> </ul>	None	KWS & Marsabit county	No Revenue gates				1
13.	Masai Mara	1510	Legal notice no. 271 of 1974	<ul style="list-style-type: none"> <li>Free ranging black Rhino sanctuary</li> </ul>	IBA	Narok county	146,900	2 lodges and 50 camps 101 camps and lodges in the surrounding conservancies	0	170	5
14.	Mwea	48	Legal notice no. 6 of 1976	<ul style="list-style-type: none"> <li>Elephant census conducted in 2017</li> </ul>	IBA	KWS & Embu county	826 (2015/2016)	0			
15.	Mwingi (North Kitui)	745	Legal notice No. 187 of 1979	<ul style="list-style-type: none"> <li>MOU between County Government and KWS on management prepared but yet to be signed</li> </ul>	None	Kitui county	No Revenue gates	none	0		0
16.	Nasolot	194	Legal notice no. 85 of 2000	<ul style="list-style-type: none"> <li>Kengen guest house available</li> <li>KWS admin offices outside reserve</li> </ul>	None	KWS	No Revenue gates	None			1
17.	Ngai Ndeithya	212	Legal notice no. 9 of 1976	<ul style="list-style-type: none"> <li>Entire reserve Fully encroached, settled and farmed</li> <li>Settlers have allotment letters</li> <li>Paper Park</li> </ul>		Makueni county	No Revenue gates None	None	0	0	0

18.	Nyambene	640.6	Legal notice no. 86 of 2000	<ul style="list-style-type: none"> <li>1 ASTU camp in the Reserve</li> <li>Part of Isiolo Airport in the Reserve</li> <li>Part of Military Barracks in the park</li> <li>Two primary schools and a village in the reserve</li> <li>Management of Reserve controversially between Isiolo and Meru Counties</li> <li>Part of the Reserve settled and farmed</li> <li>Livestock incursion by Somali, Turkana, Borana &amp; Meru</li> </ul>	None	Meru/Isiolo counties	No Revenue gates	None	0	0	0
19.	Rahole	1,270	Legal notice no. 54 of 1976	<ul style="list-style-type: none"> <li>Beisa oryx &amp; grevys zebra</li> </ul>		Garissa county	No Revenue gates	None			
20.	Rimoi/ Kerio valley	66	Legal notice no. 13 of 1983	<ul style="list-style-type: none"> <li>KWS has a PAC Outpost</li> <li>10 Km fence line rehabilitated during this reporting period</li> <li>10 scouts and one county chief warden accommodated inside the Reserve.</li> </ul>		KWS & Elgeyo Marakwet County	One revenue gate	1 Campsite	30km perimeter electric fence done. 2km remaining	70Km (constructed between 2015-2017))	
21.	Samburu,	165	Legal notice no. 188 of 1985	<ul style="list-style-type: none"> <li>Samburu-Isiolo conservation area management plan (2009-2019) approved.</li> <li>Listed species include the reticulated giraffe, lion, leopard, cheetah, elephant</li> <li>Has over 350 species of birds</li> </ul>	IBA	Isiolo county	8,500(2015)	Has 4 tented camp sites			
22.	Shaba	239	Legal notice no. 268 of 1974	<ul style="list-style-type: none"> <li>Samburu-Isiolo conservation area management plan (2009-2019) approved.</li> </ul>	IBA	Isiolo county					
23.	Shimba hills	192	Legal notice no. 298 of 1968	<ul style="list-style-type: none"> <li>Simba hills ecosystem management plan (2010-2020) needs review and approval. Area surveyed and following up on deed plan</li> <li>Sable antelope</li> <li>6.7 Km of fence rehabilitated during this reporting period</li> </ul>	IBA	KWS	17,465 (2015/2016) 20,479 (2016/2017)	4 bandas		136Km (constructed between 1990-2012)	
24.	South Kitui	1,833	Legal notice 186 of 1979	<ul style="list-style-type: none"> <li>Charcoal burning rampant using the wasteful traditional kilns.</li> <li>Indiscriminate and unplanned felling of trees especially acacia (tortillas and tamarind being the most preferred) -</li> <li>Listed species include Lions, leopard and a variety of birds</li> </ul>	None	Kitui county government					0
25.	South Turkana	1,091	Legal notice no. 29 of 1979	<ul style="list-style-type: none"> <li>KWS has a Security camp at Lobokat</li> </ul>		KWS & Turkana county	No Revenue gates	None	0		0



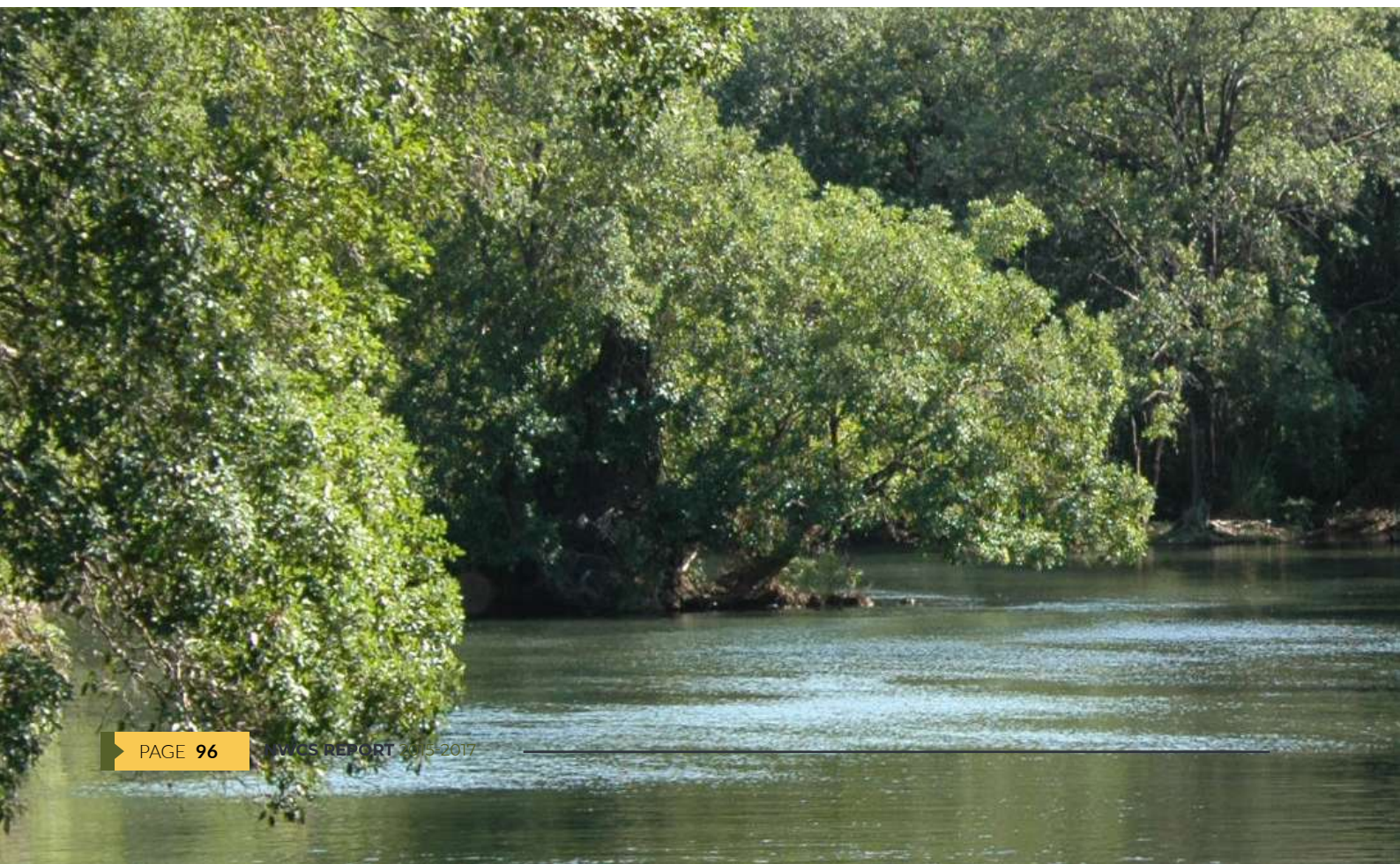
26.	Tana River Primate	169	Legal notice no. 4 of 1976	<ul style="list-style-type: none"> <li>• Tana river mangabay &amp; Red Colobus</li> <li>• Community (250 were to be resettled) settlements still inside reserve</li> <li>• The 13Km<sup>2</sup> riverine forest is rapidly being depleted</li> <li>• Primates inhabit the 16 patches of forests along the river</li> <li>• 2007 high court ruling against the reserve establishment still stands</li> <li>• The very rare white winged apalis is still seen</li> </ul>	IBA	KWS	No Revenue gates				0
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### 4.1.3. Status of Natural Forest Reserves

Kenya are presently has 257 sites categorized as natural forests. They harbor a variety of wildlife species and are also water towers or water catchment areas. Some wildlife species are endemic to these forests.

These natural forests fall under 4 key management regimes namely; community forests (52 sites covering 180, 245 ha), forest reserves (201 sites covering 2,045, 406 ha),

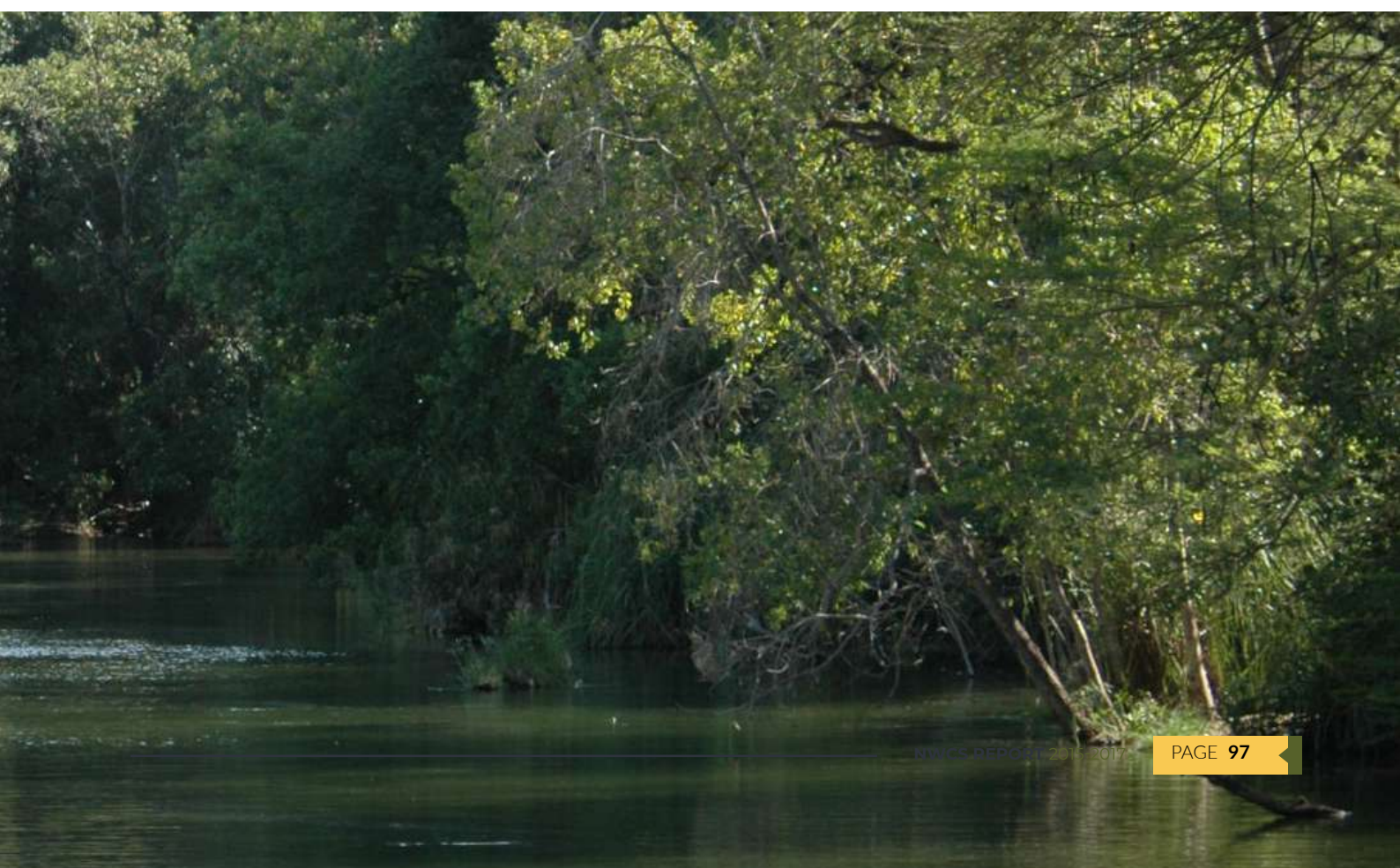
national monuments (3 sites covering 401 ha) and trust land (1 site covering 188,2017ha) with a total area of 24,142.59km<sup>2</sup> which is 4.2% of Kenya's total area. These forests are important wildlife habitats. However, it's only in Mau, Aberdares, Mt. Kenya, and Shimba hills where comprehensive biological resource inventories have been initiated. Marsabit forest ecosystem management plan 2015-2025 is under legal notice No. 1894 of March 2016. Table 4.3 gives the status of some of the major forest reserves in Kenya.

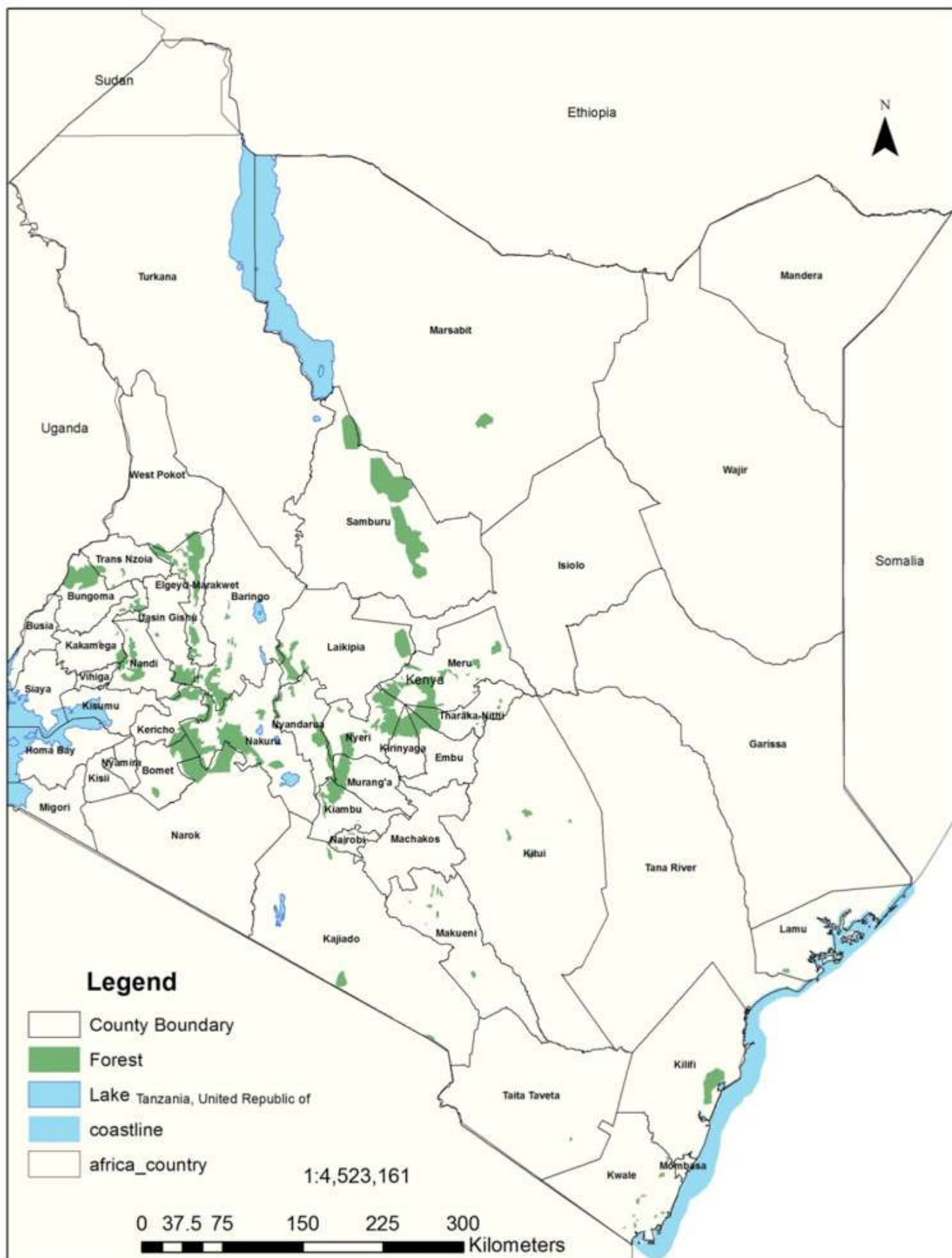




**Table 4.3: Status of Forest Reserves in 2015/2017**

No	Protected Area	Area (Km <sup>2</sup> )	Legal notice/ Gazettement	Remarks (Values, & Threats)
1	Mt. Elgon	737.05	Legal notice no. 44 of 1932	<ul style="list-style-type: none"> <li>• Prunus Africana</li> <li>• Elephant</li> <li>• Presence of KWS &amp; Kenya Water Towers, KFS</li> </ul>
2	Kakamega	197.92	Legal notice no. 14 of 1933	<ul style="list-style-type: none"> <li>• Prunus Africana</li> <li>• IBA</li> <li>• Variety of listed snakes</li> <li>• Presence of KWS &amp; KFS</li> </ul>
3	Malava	7.19	Legal notice no. 14 of 1933	<ul style="list-style-type: none"> <li>• Prunus africana</li> <li>• IBA</li> <li>• Variety of listed snakes</li> <li>• Presence of KWS &amp; KFS</li> <li>• African grey Parrot</li> </ul>
4	Bunyala	8.27	Legal notice no. 421 of 1956	<ul style="list-style-type: none"> <li>• IBA</li> <li>• KFS</li> </ul>
5	Marsabit	157	Legal Notice no. 44 of 1932	<ul style="list-style-type: none"> <li>• Presence of KWS, KFS</li> <li>• Gazetted integrated wildlife &amp; forestry Management plan</li> <li>• Elephant</li> </ul>
6	Arabuko Sokoke	416	Legal notice no. 44 of 1932 and legal notice no. 180 of 1979	<ul style="list-style-type: none"> <li>• Dual Gazettment (KFS/KWS/NMK/KEFRI)</li> <li>• 114Km Fence (requires rehabilitation)</li> </ul>
7	Cherangani	956		<ul style="list-style-type: none"> <li>• Tea plantation farming encroachment</li> <li>• Illegal logging of indigenous tree species</li> </ul>
8	Mau	2,733		<ul style="list-style-type: none"> <li>• Elephants</li> <li>• Encroachment &amp; degradation</li> </ul>
9	Eburu			<ul style="list-style-type: none"> <li>• 43.7Km fence maintained by KFS</li> </ul>





**Figure 4.2: Kenya Forest Reserves**

#### 4.1.4. Status of National Sanctuaries

There are 5 National Sanctuaries in Kenya located in Nakuru, Samburu, Kisumu and Homa bay counties. They cover 12.47km<sup>2</sup> of the country. These sites were designated as Sanctuaries for various reasons amongst them: spectacular views and abundant birdlife;

conservation education and rescue centers; or due to historical reasons. Lake Simbi, Ondago swamp and Maralal National sanctuaries fall under the County Government land. Maralal town has encroached fully into the Maralal Sanctuary. Table 4.4 gives the status of the Sanctuaries

**Table 4.4: Status of National wildlife Sanctuaries in 2015/2017**

No	Protected Area	Area (Km <sup>2</sup> )	Legal notice/ Gazettement	Other Protection Status	Visitor statistics (2015-2017 average)	Status of Site Infrastructure	Values (Remarks & threats)
1.	Naivasha	6.47		None	N/A	Classes, hostels & offices	Wildlife Training Institute
2.	Kisumu Impala	0.34	Legal notice no. 418 of 1992	None	202,560 (2015/2016) 292,075 (2016/2017)	<ul style="list-style-type: none"> <li>Wildlife cages</li> <li>3Km Fence</li> </ul>	Impala Sanctuary Educational center with caged wildlife species Impala B –yet to be developed
3.	Lake Simbi	0.42	Legal notice no. 85 of 2000	IBA	N/A	None	<ul style="list-style-type: none"> <li>Lesser Flamingo</li> <li>No revenue gates</li> </ul>
4.	Ondago swamp	0.24	Legal notice no. 85 of 2000	IBA	N/A	None	<ul style="list-style-type: none"> <li>Lesser Flamingo</li> <li>No revenue gates</li> </ul>
5.	Maralal	5		None	N/A	Lodge ( closed)	<ul style="list-style-type: none"> <li>Fully encroached by Maralal town</li> </ul>

#### 4.1.5. Status of Wildlife Conservancies

The WCMA, 2013 recognizes conservancies as a form of wildlife land use and according to the WCMA, 2013, any person or community who own land on which wildlife inhabits may individually or collectively establish a wildlife conservancy or sanctuary in accordance with the provisions of the WCMA, 2013. Since the Regulations for the registration of conservancies is as yet to be gazetted, all conservancies have been operating on an adhoc basis.

There are over 160 conservancies covering over 63,600Km<sup>2</sup> representing 11% of the country's area as indicated in Figure 4.3. Of these, 4 are Marine, 76 are community, 58 are private, and 26 are group while 60 are listed under World Database Protected Area (WPDA). All these areas are crucial to the land owners and the local community around them as they derive their livelihoods from them as they continue to conserve the biological resources therein. Some harbor critically endangered and/or endemic species with unique habitats. Depending on their resources or sponsorship, the Conservancies are at

different levels of development in both human and infrastructure capital. They mostly operate as Community Based Organizations (CBOs), Trusts or private companies. The Northern Rangeland Trust (NRT) supports a large number of conservancies especially community based ones. Other noticeable support comes from private companies, government institutions (e.g. Agriculture Development Corporation (ADC), NEMA, NGOs (e.g. World Wildlife Fund (WWF), AWF, USAID, Nature Kenya) and County Governments.

According to the Kenya Wildlife Conservancies Association (KWCA)-an umbrella association for all conservancies – website, the first conservancies were established in the 1970s, and have continued to grow in number and complexity. Currently they have 160 conservancies registered with them in 28 counties. Of these 110 are operational, 42 emerging and 8 proposed. Of these 76 are on community land, 26 are formed by grouping together private lands and 58 are on private individual land ownership. The largest community conservancy in the country is the Melako 5467Km<sup>2</sup> followed by Malkahalaku

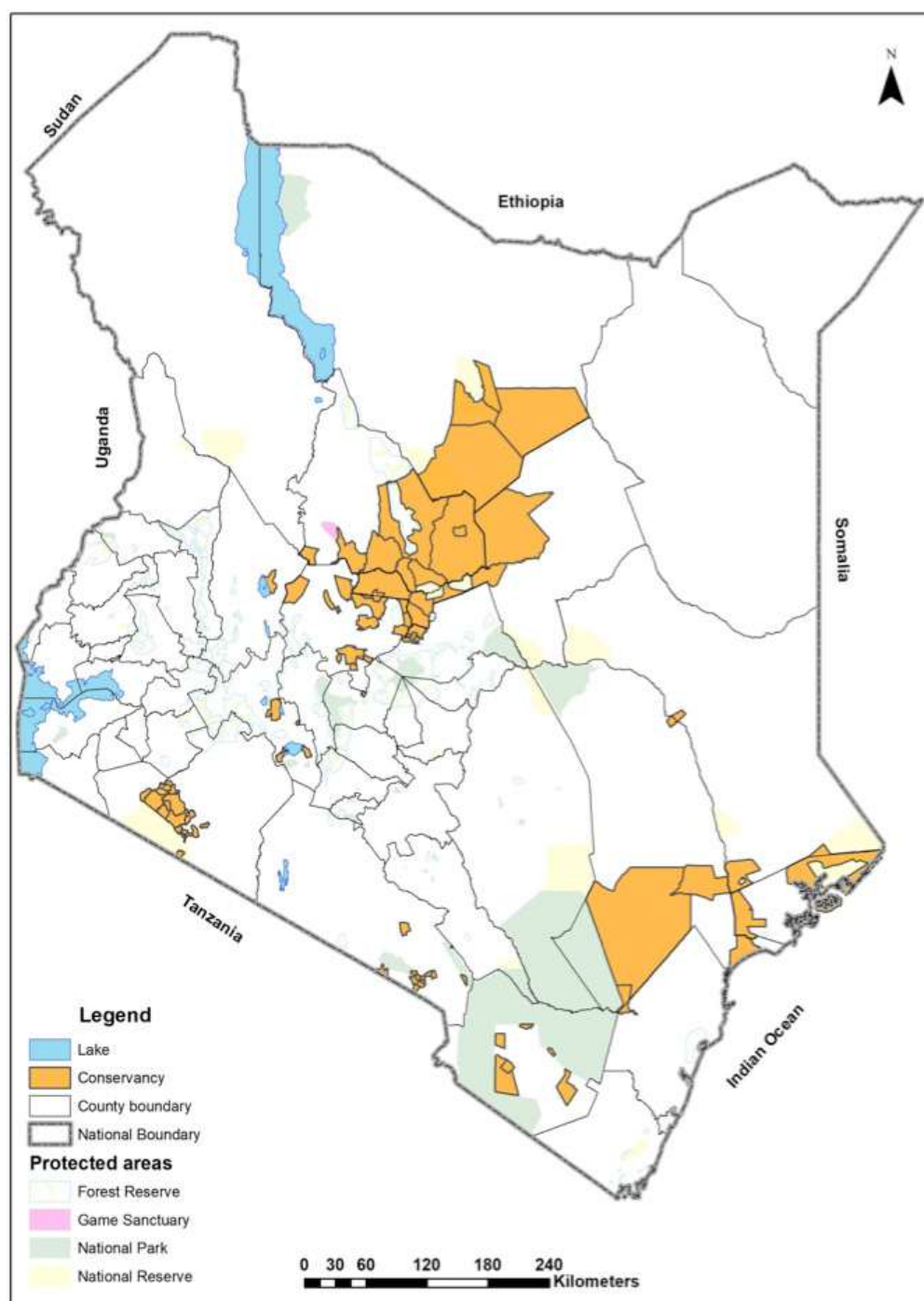


conservancy which covers 4800Km<sup>2</sup> and then Lokichar 4540Km<sup>2</sup>.

These conservancies are host to 90% of the global population of Grevy's Zebra and Hirola. They also support community livelihoods with over 707,460 households -1,809 non uniformed staff, 2,991 rangers and 206 staff employed by regional association. Ksh257m was invested in community developments by NRT in their operational areas in 2015. Ksh71m was invested in community development within the Mara region in 2015-2016.

The conservancies have administrative and management structures which are defined

by their various umbrella associations. NRT, the KWCA and the Masai Mara Wildlife Conservancies Association are the three largest umbrella Conservancy associations in Kenya. The conservancies are grouped based on areas of region thus; Amboseli ecosystem, Athi Kapiti, Laikipia, Lamu, Masai Mara, Rift Lakes, Southern rangeland, Northern rangelands, Taita Taveta, Tsavo, Western and North Eastern. The associations deal with the governance, laws, policies and regulations affecting the member conservancies. Table 4.5 and 4.6 gives the status of Conservancies in Kenya.



**Figure 4.3: Wildlife Conservancies in Kenya**

**Table 4.5 Status of Community Conservancies 2015/2017**

#	Conservancy	Year Established.	Area (Ha)	Scouts (No)	No. Trained	Regional Association/Management	County	Values (Remarks & Threats)
1.	Cheborbwa Conservancy		688	0	0	Western Wildlife Conservancies Association		
2.	Ngenyin Community Conservation Area	2001	49	1	1	Rift Lakes Conservancies Association	Baringo	•
3.	Ruko	2007	17,897	16	10	Rift Lakes Conservancies Association	Baringo	• Sanctuary for Rothschild giraffe introduced in 2011
4.	Kiborgoch Community Wildlife & Wetland Conservancy	2015	51	0	0	Rift Lakes Conservancies Association	Baringo	•
5.	Kabarion Conservancy	2011	25,000	15	0	Rift Lakes Conservancies Association	Baringo	•
6.	Irong Community Conservancy	2010	400	0	0	Rift Lakes Conservancies Association	Baringo	•
7.	Kosetei Wildlife Conservancy	2016	21,000	18	8	Western Wildlife Conservancies Association	Baringo	
8.	Kibargoi wildlife Conservancy	2016	4,000	4	0	Western Wildlife Conservancies Association	Elgeiyo Marakwet	
9.	Kapkurumoi Cultural & Conservation					Western Wildlife Conservancies Association	Elgeiyo Marakwet	
10.	Gwasi Hills	2009	4,835	0	0	Western Wildlife Conservancies Association	Homa Bay	• Birds & Snakes
11.	Oldonyiro	2016	55338	60		Northern Rangeland Trust	Isiolo	<ul style="list-style-type: none"> <li>• Land ownership unresolved since the conservancy is where the livestock holding grounds under GoK</li> <li>• Mpus Kutuk conservancy is now part of oldonyiro</li> <li>• It is an elephant corridor</li> <li>• Habitat for Grevy Zebra</li> <li>• Traversed by the 400MW Ethiopia – Kenya power line.</li> </ul>
12.	Leparua Community Conservancy	2014	32,835	16		Northern Rangeland Trust	Isiolo	<ul style="list-style-type: none"> <li>• Elephant corridor linking ilngwesi, Lekurruki, Nasuulu and Mpus Kutuk (Oldonyiro)</li> <li>• Elephant and Grevy Zebra</li> <li>• It is home to the last remaining population of Elands in Northern Kenya</li> </ul>
13.	Nakuprat-Gotu Community Conservancy Ltd	2013	71,254	28		Northern Rangeland Trust	Isiolo	<ul style="list-style-type: none"> <li>• Borders Shaba National Reserves</li> <li>• Has one of the largest Beisa Oryx population</li> <li>• Mainly it's a wildlife corridor between reserves and conservancies</li> <li>• 1 tented campsite</li> </ul>
14.	Nasuulu Community Conservancy	2010	34,601	26		Northern Rangeland Trust	Isiolo	<ul style="list-style-type: none"> <li>• Buffer to Shaba National Reserves</li> <li>• Faced with constant inter-tribal conflict and cattle rustling among the four pastor-nomadic tribes</li> <li>• Has Grevy Zebra</li> </ul>
15.	Biliqo-Bulesa	2007	378,520	36		Northern Rangeland Trust	Isiolo	<ul style="list-style-type: none"> <li>• Giraffe, Leopard, lion</li> <li>• Important Elephant corridor between Sera conservancy and Samburu National Reserves, buffalo Springs and Shaba</li> <li>• Is developing a " sustainable land use plan"</li> </ul>

16.	Masai Wilderness Conservation Trust(Kanzi)	2002	4800	103	44	Amboseli/Tsavo Ecosystem Trust	Kajiado	<ul style="list-style-type: none"> <li>Has an Eco-lodge (kambi ya kanzi)</li> <li>It's an Elephant migration corridor between Amboseli and Tsavo National Parks</li> <li>Operates the Wildlife Pay policy which financially compensates herders who lose their livestock to predators</li> <li>Donor funded operations</li> </ul>
17.	Kitirua	1986 (established )	30000 acres	10	4	Amboseli Ecosystem Trust	Kajiado	<ul style="list-style-type: none"> <li>It's an Elephant migration corridor between Amboseli and Tanzania</li> <li>Tortillas Camp is the 1<sup>st</sup> lodge to operate 100% on solar and lodgers pay a conservation fee and scout training levy</li> <li>The area still experiments on "elephant Enclosures" to rejuvenate woodland</li> </ul>
18.	Sidai Oleng Wildlife Sanctuary (kimana)	2014	2428.2	34	34	Amboseli Ecosystem Trust	Kajiado	<ul style="list-style-type: none"> <li>It is situated at the base of Mt. Kilimanjaro</li> <li>It's an Elephant migration corridor between Amboseli and Tanzania</li> </ul>
19.	Kilitome (Tawi)	2009	2400	6	6	Amboseli Ecosystem Trust	Kajiado	<ul style="list-style-type: none"> <li></li> </ul>
20.	Olerai Wildlife Community Conservancy	2006	3561	10	10	Athi-Kapiti Wildlife Conservancies Association	Kajiado	<ul style="list-style-type: none"> <li></li> </ul>
21.	Enkusero Sampu	2013	2,428	2		Southern Rangeland Association of Land Owners	Kajiado	<ul style="list-style-type: none"> <li></li> </ul>
22.	Golini Mwaluganje	2014	2,630	6	0	Taita Taveta Wildlife Conservancies Association	Kwale	<ul style="list-style-type: none"> <li>Established by community as an Elephant sanctuary</li> <li>1 lodge</li> </ul>
23.	Ol-Lentile Trust	2005	10000	33	21	Laikipia Wildlife Forum	Laikipia	<ul style="list-style-type: none"> <li>Located in community owned Kijabe group ranch</li> <li>Lion, Wild dog, Grevys zebra, Leopard, Stripped &amp; Spotted Hyaena, Greater Kudu, Elephant</li> <li>1 lodge fully powered by Solar</li> <li>Have a conservancy management plan</li> </ul>
24.	Sossian Samburumburu	1999	9452	50	0	Laikipia Wildlife Forum	Laikipia	<ul style="list-style-type: none"> <li>1 lodge</li> <li>Lion, leopard, Cheetah, Wild dog, Elephant, Hippo, Grevy zebra, Giraffe</li> <li>Over 300 species of birds</li> <li>30 Reptile species</li> <li>Over 70 Mammal species</li> <li>Ewaso-Narok river passes through</li> </ul>
25.	Laikipia Nature Conservancy(Ol Ari Nyiro)	2002	36500	45	20	Laikipia Wildlife Forum	Laikipia	<ul style="list-style-type: none"> <li>Managed from its worldwide office in Arlington, Virginia USA</li> <li>Illegal grazing a major threat</li> <li>Has 62 man- made lakes, the permanent Mukutan River</li> <li>Besides elephants has giraffes, lions, leopards and cheetah</li> <li>Has over 400 bird species (85that are either Vulnerable or endangered)</li> </ul>
26.	Il Ngwesi group ranch	1996	9,433	17		Northern Rangeland Trust	Laikipia	<ul style="list-style-type: none"> <li>Has a Award winning Eco-lodge</li> <li>Provides the largest number of cattle to the NRT livestock Programme</li> </ul>
27.	Lekurruki Conservation Ltd	1999	15,872	38		Northern Rangeland Trust	Laikipia	<ul style="list-style-type: none"> <li>Has elephants and reticulated giraffes</li> <li>Part of Mukogodo forest is found and has 210 different species of birds</li> <li>Has 1 lodge</li> </ul>
28.	Naibunga Conservancy Trust	2004	47,105	26		Northern Rangeland Trust	Laikipia	<ul style="list-style-type: none"> <li>Has 3 lodges and 1 cottage</li> <li>Has elephants, Cheetah, lions and grevy Zebra</li> </ul>
29.	Ngare Ndare	2000	5,511	24 (14 trained at FTS-manyani)		Northern Rangeland Trust	Laikipia, Meru	<ul style="list-style-type: none"> <li>Land gazetted under KFS (it is a forest reserve)</li> <li>Elephant corridor linking Lewa and Mt. Kenya</li> <li>Has red Cedar trees</li> </ul>

30.	Awer Community Conservancy	2013	157,540	15	6	Northern Rangeland Trust Coast	Lamu	<ul style="list-style-type: none"> <li>Located in the Lamu archipelago between the Dodori and Boni Forest</li> </ul>
31.	Hanshak Nyongoro Conservancy	2013	32,000	11	6	Northern Rangeland Trust Coast	Lamu	<ul style="list-style-type: none"> <li>The Ox-bow and Bird rich Lake Moa is found in this conservancy</li> <li>Is within the Ramsar site of the Tana Delta</li> </ul>
32.	Kiunga Marine Community Conservancy	2013	23,936	18	15	Northern Rangeland Trust Coast	Lamu	<ul style="list-style-type: none"> <li>This is a community group that partners with Kiunga Marine Park especially in the conservation of turtles, birds and mangroves</li> </ul>
33.	Pate Island Conservation Group	2013	27,831	10	6	Northern Rangeland Trust Coast	Lamu	<ul style="list-style-type: none"> <li>This is a community group and not a conservancy</li> </ul>
34.	Chachabole Community Environment & Wildlife Conservation Group	2013					Mandera	
35.	Songa Community Conservancy	2011	103,868	14	0	Northern Rangeland Trust	Marsabit	<ul style="list-style-type: none"> <li>A relatively new conservancy and presently is in the process of setting up infrastructure- a HQ, Roads and tourism facilities</li> <li>It borders Marsabit National Park</li> <li>Has greater Kudu, Elephant, gray Zebra, Giraffe, lion</li> </ul>
36.	Jaldesa Community Conservancy	2012	52,079	14	12	Northern Rangeland Trust	Marsabit	<ul style="list-style-type: none"> <li>Main listed species include elephant, gray zebra, giraffe, leopard</li> <li>Intensified farming and increase in livestock numbers along the riverine is a threat to the existence of wildlife</li> <li>Since the conservancy is still relatively new it is more inclined presently in infrastructure development</li> </ul>
37.	Shurr	2013	417,098	14		Northern Rangeland Trust	Marsabit	<ul style="list-style-type: none"> <li>Listed species include elephants, giraffe, gray zebra,</li> <li>Wildlife poaching remains the biggest threat</li> <li>Since the conservancy is still relatively new it is more inclined presently in infrastructure development</li> </ul>
38.	Melako	2004	549,125	38		Northern Rangeland Trust	Marsabit	<ul style="list-style-type: none"> <li>Has over 200 Grevy Zebra</li> <li>High levels of poaching</li> <li>The conservancy is next to Ethiopia and Somalia</li> </ul>
39.	Kigio Wildlife Conservancy	2007	1,400	12	2	Rift Lakes Conservancies Association	Nakuru	<ul style="list-style-type: none"> <li>34 Rothschild giraffe</li> </ul>
40.	Hippo-point Naivasha Conservancy	2003	200	9	2	Rift Lakes Conservancies Association	Nakuru	<ul style="list-style-type: none"> <li>Masai giraffe</li> </ul>
41.	Lentolia Farm	2004	44	2	0	Rift Lakes Conservancies Association	Nakuru	<ul style="list-style-type: none"> <li>Python, Masai giraffe</li> </ul>
42.	Mundui Estate		405	12	8	Rift Lakes Conservancies Association	Nakuru	<ul style="list-style-type: none"> <li>Located on the shores of Lake Oliden</li> <li>Has hippos, giraffe and most of the 400 bird species of Lake Naivasha can be viewed here</li> </ul>
43.	Kongoni Conservancy	2000	356	10	7	Rift Lakes Conservancies Association	Nakuru	<ul style="list-style-type: none"> <li>Hyaena, leopard, spring hare among others are represented here</li> <li>Has 1 lodge and 2 cottages</li> </ul>
44.	Sanctuary Farm	1979	160	2	0	Rift Lakes Conservancies Association	Nakuru	<ul style="list-style-type: none"> <li></li> </ul>
45.	Soysambu Conservancy	2008	19,200	64	5	Rift Lakes Conservancies Association	Nakuru	<ul style="list-style-type: none"> <li></li> </ul>
46.	Loldia Conservancy	2002	2,000	0	0	Rift Lakes Conservancies Association	Nakuru	<ul style="list-style-type: none"> <li></li> </ul>



47.	Crater Lake Game Sanctuary	1995	4,047	9	9	Rift Lakes Conservancies Association	Nakuru	•
48.	Oserengoni		7,000	24	24	Rift Lakes Conservancies Association	Nakuru	•
49.	Kibirong	2015	267	17	5	Western Wildlife Conservancies Association	Nandi	
50.	Mara North Conservancy	2008	27,788	41		Masai Mara Wildlife Conservancies Association	Narok	• 1 lodge and 9 tented campsites
51.	Lemek Conservancy	2009	7,397	18	2	Masai Mara Wildlife Conservancies Association	Narok	• 2 lodges and 3 tented campsites
52.	Olare Orok conservancy	2005	8,000	22		Masai Mara Wildlife Conservancies Association	Narok	•
53.	Olchorro Oirowa Conservancy	1992	6,472	12		Masai Mara Wildlife Conservancies Association	Narok	• 4 tented campsites
54.	Olarro Conservancy	2009	7,497	8		Masai Mara Wildlife Conservancies Association	Narok	• 1 tented campsite
55.	Ol kinyei conservancy	2005	7,544	20		Masai Mara Wildlife Conservancies Association	Narok	•
56.	Enonkishu Conservancy	2011	2,399	13		Masai Mara Wildlife Conservancies Association	Narok	• 2 tented campsites
57.	Oloisutuk Conservancy	2011	20,225	13		Masai Mara Wildlife Conservancies Association	Narok	•
58.	Motorogi Conservancy	2006	4,160	11		Masai Mara Wildlife Conservancies Association	Narok	• 5 tented campsites
59.	Siana Conservancy		11,595	8		Masai Mara Wildlife Conservancies Association	Narok	• 4 tented campsites
60.	Olderkesi Wildlife Conservancy Trust	2011	3,079	15		Masai Mara Wildlife Conservancies Association	Narok	• 1 tented campsite
61.	Pardamat Conservation Area		25,989	16		Masai Mara Wildlife Conservancies Association	Narok	•
62.	Nashulai Conservancy					Maasai Landowners	Narok	• Is a critical migratory corridor and Elephant nursery •

63.	Nkoteiya	2011	17000	25		Northern Rangeland Trust	Samburu	•
64.	Kalama Community Wildlife Conservancy	2002	49,674	30		Northern Rangeland Trust	Samburu	<ul style="list-style-type: none"> <li>• Located in Gir Gir group ranch</li> <li>• Listed species include the lesser kudu, elephant, grevy Zebra, reticulated giraffe, wild dog and cheetah</li> <li>• 1 lodge and campsites</li> </ul>
65.	Ltungai Community Conservancy	2007	19,308	23		Northern Rangeland Trust	Samburu	<ul style="list-style-type: none"> <li>• Found in the Longewan and Iolmolog group ranch</li> <li>• Has Grevy Zebra, elephant, lion and cheetah among the listed species</li> <li>• One of the areas where greater Kudu is common</li> </ul>
66.	Meibae Community Conservancy	2013	101,648	27		Northern Rangeland Trust	Samburu	<ul style="list-style-type: none"> <li>• Traversed by the 400MW Ethiopia – Kenya power line.</li> </ul>
67.	Westgate Community Conservancy	2005	36,253	40		Northern Rangeland Trust	Samburu	<ul style="list-style-type: none"> <li>• In Ngutuk Ongiron group Ranch</li> <li>• Has listed species- Grevy Zebra, Elephant, Lesser Kudu,</li> <li>• Ewaso Lions Community group has its footing here and is involved in Lion conservation</li> <li>• Has an 18 bed tented camp and one camp site</li> </ul>
68.	Namunyak	1995	288,228	85		Northern Rangeland Trust	Samburu	<ul style="list-style-type: none"> <li>• Conservancy surrounded by the Mathews Ranges</li> <li>• Has Elephants, Leopards, Reticulated giraffes, Wild dog, greater Kudu and the rare De Brazza colobus Monkey</li> <li>• It's part of the elephant corridor to Mt. Kenya</li> <li>• Has the IUCN listed papyrus an endemic sub species of cycadencephalartos tegulaneus (Mathew cycad)</li> <li>• Due to its large size it is divided into three management units each independent and with an HQ but under an Umbrella Board and manager</li> <li>• Has two tented camp sites</li> <li>• Traversed by the 400MW Ethiopia – Kenya power line.</li> </ul>
69.	Sera Community Conservancy	2012	339,336	93	33 rangers and another 12 trained by British Army	Northern Rangeland Trust	Samburu, Marsabit, Isiolo,	<ul style="list-style-type: none"> <li>• Black Rhino Sanctuary- 20 translocated in 2015</li> <li>• Listed species include African Wild Dog, Elephant, giraffe and Grevy Zebra</li> <li>• 1 luxury banda and a camp site</li> </ul>
70.	Lumo Wildlife Conservation Trust	2001	45,788	14	12	Taita Taveta Wildlife Conservancies Association	Taita Taveta	•
71.	Taita Ranch	1964	38,040	0	0	Taita Taveta Wildlife Conservancies	Taita Taveta	<ul style="list-style-type: none"> <li>• Listed Species Elephant, Hyaena, Cheetah</li> </ul>
72.	Oza group ranch		11,200	0	0	Taita Taveta Wildlife Conservancies Association	Taita Taveta	•
73.	Wangala Ranch		2,000	5	0	Taita Taveta Wildlife Conservancies Association	Taita Taveta	•
74.	Rukinga	1997	34,398	85		Taita Taveta Wildlife Conservancies Association	Taita Taveta	•
75.	Kasigau Ranching Company Ltd	1980	20,800	5	0	Taita Taveta Wildlife Conservancies Association	Taita Taveta	•

76.	Mkuki Ranch	1975	2,427	0	0	Taita Taveta Wildlife Conservancies Association	Taita Taveta	•
77.	Amaka Ranch	2007	5,988	5	0	Taita Taveta Wildlife Conservancies Association	Taita Taveta	•
78.	Maungu Ranching Company Ltd.		21,619	0	0	Taita Taveta Wildlife Conservancies Association	Taita Taveta	•
79.	Wushumbu Ranch		19,468	0	0	Taita Taveta Wildlife Conservancies Association	Taita Taveta	•
80.	Dawida Ranching company Ltd		4,000	0	0	Taita Taveta Wildlife Conservancies Association	Taita Taveta	•
81.	Kambanga Ranching Company Ltd	2001	13,600	5	0	Taita Taveta Wildlife Conservancies Association	Taita Taveta	• Listed species Elephant, Leopard, cheetah, Hyaena
82.	Mgeno Ranching Company Ltd		21,200	5	0	Taita Taveta Wildlife Conservancies Association	Taita Taveta	• Listed species Elephant, giraffe, Lesser Kudu, Lion, Stripped Hyaena, Cheetah
83.	Bura Ranch	1977	15,355	0	0	Taita Taveta Wildlife Conservancies Association	Taita Taveta	• Listed species Lion, Cheetah, Elephant • Snakes & variety of bird species
84.	Mramba Ranch	1995	11,874	10	4	Taita Taveta Wildlife Conservancies Association	Taita Taveta	
85.	Kamungi Conservancy	2015	2,800	12	0	Tsavo Conservation Group	Taita Taveta	
86.	Ndera Community Conservancy	2010	116,261	10	10	Northern Rangeland Trust Coast	Tana river	• Falls within the designated Ramsar site and borders Ishaq Bin • The critically endangered Tana mangabey and the Red Colobus are found here • Over 200 bird species have been recorded • It's a critical ecosystem without a management plan
87.	Ishaqbini	2007	68,174	37		Northern Rangeland Trust Coast	Tana River	• The only established Hirola sanctuary in the country • Has a predator free fence
88.	Galana Wildlife Conservancy	2009	24,000	4	0	Tsavo Conservation Group	Tana River	
89.	Malkahalaku		480,000	12	0	Tsavo Conservation Group	Tana River	
90.	Lower Tana Delta Conservation trust	2004	50,000	12	6	Northern Rangeland Trust Coast	Tarasaa and Kipini sub county	• Falls within the designated Ramsar site • The critically endangered Tana mangabey and the Red Colobus are found here • Has a mangrove forest • It's a critical ecosystem without a management plan • Lodge charges guests conservation fee which is forwarded to the Management (Trust) • 1 community lodge and bandas
91.	Kitale Nature Conservancy	2010	120			Western Wildlife Conservancies Association	Trans Nzoia	• Sitatunga
92.	Kainuk	2015		19		Northern Rangeland Trust North Rift	Turkana	•

93.	Lokichar	2014		30		Northern Rangeland Trust North Rift	Turkana	•
94.	Katilu	2015		20		Northern Rangeland Trust North Rift	Turkana	•
95.	Lochakula	2015		18		Northern Rangeland Trust North Rift	Turkana	•
96.	Kaimosi Mission Wildlife Conservancy	2011	80	5	1	Western Wildlife Conservancies Association	Vihiga	
97.	Masol	2015	300,000	16		Northern Rangeland Trust North Rift	West Pokot	• bandas
98.	Pellow	2015	500,000	17		Northern Rangeland Trust North Rift	West Pokot	•

These are conservancies set up on land on leasehold or freehold by a private individual or corporate body for the purpose of wildlife conservation.

**Table 4.6 Status of private conservancies 2015/2017**

No	Name	Location	Area (Km <sup>2</sup> )	Year Established	Management and Management Plan	Infrastructure	Remarks
1.	Lewa Wildlife conservancy (Lewa downs)	Meru	250	1995	<ul style="list-style-type: none"> <li>Lewa Wildlife Conservancy</li> <li>It is the HQ of NRT</li> </ul>	<ul style="list-style-type: none"> <li>1 Airstrip</li> <li>1 lodge</li> <li>4 tented camps</li> </ul>	<ul style="list-style-type: none"> <li>Has the big five and is a Black Rhino sanctuary</li> <li>12% of Kenya's Grevy Zebra population</li> <li>More than 400 bird species</li> </ul>
2.	Ol Jogi	Laikipia	270	1965			<ul style="list-style-type: none"> <li>Has the big five and the African (is a black Rhino sanctuary) Wild Dog is a common site</li> <li>Has over 400 Grevy Zebra and reticulated Giraffe and three species of primates</li> <li>In 2016 opened a wildlife corridor to neighboring conservancies</li> <li>Has a wildlife rescue centre</li> <li>Use of modern technology in wildlife surveillance</li> </ul>
3.	Ol Pejeta	Laikipia	360	2005			<ul style="list-style-type: none"> <li>By 2016 300 bird species had been recorded</li> <li>Is a Chimpanzee sanctuary (at sweet waters)</li> <li>Has the largest black and white Rhino sanctuary in the country and the home to remaining Northern White Rhino (moved here from the Dvur Kralove Zoo in the Czech republic)</li> <li>Has Grevy Zebra and also the African Wild Dog</li> </ul>
4.	Sangare Conservancy	Laikipia	2428	2010	Family management	1 tented camp	<ul style="list-style-type: none"> <li>Situated between Mt. Kenya and the Aberdares</li> <li>Trout fishing is a major attraction</li> <li>It is thus a major Elephant corridor and has over 60 animal species</li> <li>The Saline Sangare Dam is a Bird Paradise</li> <li>The Fresh water springs and marshes are important wildlife watering points</li> <li>Has over 300 bird species</li> <li>It also keeps livestock</li> </ul>
5.	Solio	Nyeri	190	1970	Private	Fully fenced 1 lodge	<ul style="list-style-type: none"> <li>Black Rhino Sanctuary</li> <li>Land ownership dispute still in court</li> </ul>



6.	Borana	Laikipia	48.5	1992	Private	1 lodge	<ul style="list-style-type: none"> <li>Is a black rhino sanctuary since 2103</li> <li>Fence between it and Lewa was brought down to create a wildlife corridor</li> <li>Has more than 50 indigenous tree families</li> <li>300 bird species</li> <li>Houses koiyaki Guiding school</li> <li>Mara naboisho lion project is housed here</li> </ul>
7.	Mara Naboisho	Narok	200		Base camp have a 15yr management lease	6 tented campsites	<ul style="list-style-type: none"> <li></li> </ul>
8.	Kipwa	Machakos	121 (Ha)			• 1 eco-lodge	<ul style="list-style-type: none"> <li></li> </ul>
9.	Olerai sanctuary	Nakuru					<ul style="list-style-type: none"> <li></li> </ul>
10.	Kwa kyelu Sanctuary	Machakos	1500				<ul style="list-style-type: none"> <li></li> </ul>
11.	Wileli House	Nakuru (naivasha)				Cottages	<ul style="list-style-type: none"> <li>On Moi south lake road and adjacent to L. Naivasha</li> <li>Giraffes &amp; Hippo</li> <li>Variety of water birds</li> </ul>
12.	Cheploch nature Trails	Baringo/ Elgeyo					<ul style="list-style-type: none"> <li></li> </ul>
13.	Silole	Kajiado/ Nairobi	400 acres		Under Nairobi National Park management plan	1 Lodge	<ul style="list-style-type: none"> <li>Divided from Nairobi N.P by Mbagathi river</li> <li>Lease programme for Nairobi National Park until 2015</li> </ul>
14.	Crater lake tented Camp and Game sanctuary	Nakuru (Naivasha)	15Ha				<ul style="list-style-type: none"> <li></li> </ul>
15.	Kongoni Wildlife	Nakuru	405 Ha	2000	Community		<ul style="list-style-type: none"> <li></li> </ul>
16.	Hippo Point Wildlife Conservancy	Nakuru		2011		1 lodge at hippo point	<ul style="list-style-type: none"> <li>Stretches both on lakes Naivasha and Oloiden</li> <li>Hippo, Giraffe &amp; birds</li> </ul>
17.	Lentolia Farm	Nakuru		2004			<ul style="list-style-type: none"> <li></li> </ul>
18.	Sanctuary Farm	Nakuru (L. Naivasha)					<ul style="list-style-type: none"> <li></li> </ul>
19.	Oserengoni Wildlife Sanctuary						<ul style="list-style-type: none"> <li></li> </ul>
20.	Mundui Estate	Nakuru		2011		1 Lodge	<ul style="list-style-type: none"> <li>Located on Lake Oloiden</li> <li>Listed species Giraffe, Hippo, Leopard</li> <li>Birds</li> <li>Over 450 bird species (28% of world's Lesser flamingo)</li> <li>Over 50 mammal species (10% of world's Rothschild Giraffe)</li> <li>Migratory corridor between L. Elementaita &amp; L. Naivasha</li> <li>Has a breeding population of rothschild giraffe</li> <li>Has over 250 bird species and has one of the largest population of the grey crested helmetshrikes</li> </ul>
21.	Soysambu	Nakuru	480	2008			<ul style="list-style-type: none"> <li></li> </ul>
22.	Kigio Wildlife	Nakuru	14Km <sup>2</sup>			Has a lodge and a tented camp	<ul style="list-style-type: none"> <li></li> </ul>
24.	Green Park						<ul style="list-style-type: none"> <li></li> </ul>
25.	Kedong Ranch	Nakuru	303Km <sup>2</sup>	1974		1 lodge	<ul style="list-style-type: none"> <li>Heavy encroached by livestock</li> </ul>
26.	Ziwani Island						<ul style="list-style-type: none"> <li></li> </ul>
27.	Yala Swamp				Dominion		<ul style="list-style-type: none"> <li></li> </ul>
28.	Mugie	Laikipia	200			1 Camp & Guest house	<ul style="list-style-type: none"> <li></li> </ul>
29.	Lisa Ranch	Kajiado	2428				<ul style="list-style-type: none"> <li>Cheetah, Giraffe, Lesser Kudu, Lion</li> </ul>

### 4.1.6. Conservation Education Facilities

The country has several wildlife conservation education facilities which are either private or public. Among the key private ones are Lafarge (Haller) Park at Bamburi in Mombasa, Mt. Kenya Education Center (William Holden) in Nanyuki, Giraffe Center in Nairobi, Blue Post Orphanage in Thika and Poa Place in Eldoret.

The Nairobi Orphanage and Nairobi Safari Walk are two educational facilities run by KWS in Nairobi. A similar facility, the Kisumu Impala Sanctuary is based in Kisumu. A total of 717,223 visitors, mainly students visited these three facilities. Of these 48% visited Nairobi Animal Orphanage, 21% Nairobi Safari Walk and 31% visited Kisumu Impala Sanctuary. Table 4.7 gives the Conservation Education Programmes undertaken 2015-2017

**Table 4.7 Status of Conservation Education Programmes 2015-2017**

Activity	2015/16	2016/17	Remarks
Out-reach programs	160	67	Targeted learning institutions and organized community groups. Different wildlife conservation issues tackled through lecture/talks and video shows
Stakeholders workshop			Not undertaken during this period
In house programs		355	Learning institutions and organized community groups visiting the education facilities. Different wildlife conservation issues tackled through lecture/talks and video shows
International biodiversity day celebrations	2	3	Took part in the planning and execution of world wildlife day and world environment day celebrations respectively.
Media programs	12	6	programs filmed and aired in collaboration with k24( Just Kids Program)
Wildlife conservation essay competition and awards	1		A total 25 learning institutions participated in this activity. Best students were awarded with different prizes
Conservation exhibitions			None undertaken
Road shows	2		Done at Narok and Nanyuki towns respectively
Conservation exhibitions	4	7	creating awareness to the general public
Essay competitions and awards			Awards to winners to be done in 2017/18
Agricultural Society of Kenya (ASK) shows	2	7	The department represented the organization.

## 4.2. Status of Marine Parks and Reserves and Ramsar sites

### 4.2.1. Marine National Parks

There are 4 Marine National Parks distributed in Kilifi, Kwale and Mombasa Counties. These are Kisite, Mombasa, Watamu and Malindi Marine National Parks. They cover a total gazetted area of 54km<sup>2</sup> with Mpunguti Marine Park being the largest while Malindi is the smallest.

Kisite-Mpunguti Marine Protected Area Management Plan 2015-2025 was finalized and gazetted through gazette notice no. 1896 of March 2016.

Malindi and Watamu were grouped together and both are internationally recognized by UNESCO as Man and Biosphere Reserves. Table 4.8 gives the status of Marine Parks in Kenya

**Table 4.8: Status of Marine Parks**

No	Park	Area (Km <sup>2</sup> )	Legal notice/ Gazettement	Other Protection Status	Visitor statistics (2015-2017 average)	Values (Remarks & Threats)
1	Malindi	6	Legal notice no. 98 of 1968	UNESCO Man & Biosphere reserve, 1978	26,540 (2015/16) 31,555 (2016/17)	<ul style="list-style-type: none"> <li>More than 600 fish species, 145 types of hard coral, 12 species of echinoids, 135 types of gastropods &amp; 200 species of benthic cover algae</li> <li>Billionaires club beach wall erected on turtle nesting site</li> <li>Listed breeding turtle species Hawks bill, green olive ridley &amp; loggerhead</li> </ul>
2	Mombasa	26.093		None	25,906 (2015/16) 29,565 (2016/17)	<ul style="list-style-type: none"> <li>Encroachment on KWS Office/ residential land</li> <li>No Management plan</li> <li>Listed species shark, Rays, leatherback turtle, hawksbill turtle &amp; green turtle</li> </ul>
3	Kisite	28	Legal notice No. 216 of 1978	IBA	30,088 (2015/16) 38,328 (2016/17)	<ul style="list-style-type: none"> <li>Management plan 2015-2025 gazetted</li> <li>No Compliance report for 2016 &amp; 2017</li> <li>45 species of corals and 350 types of fish species, turtles, humpback whale</li> </ul>
4	Watamu	10	Legal notice no. 98 of 1968	UNESCO Mann & Biosphere reserve, 1978	29,707 (2015/16) 40,266 (2016/17)	<ul style="list-style-type: none"> <li>Hemingway beach wall on turtle nesting sites</li> <li>Over 500 fish species</li> <li>Listed species Whale Shark, Rays, Green turtle, Hawksbill turtle, Leatherback turtle and Olive Ridley</li> </ul>

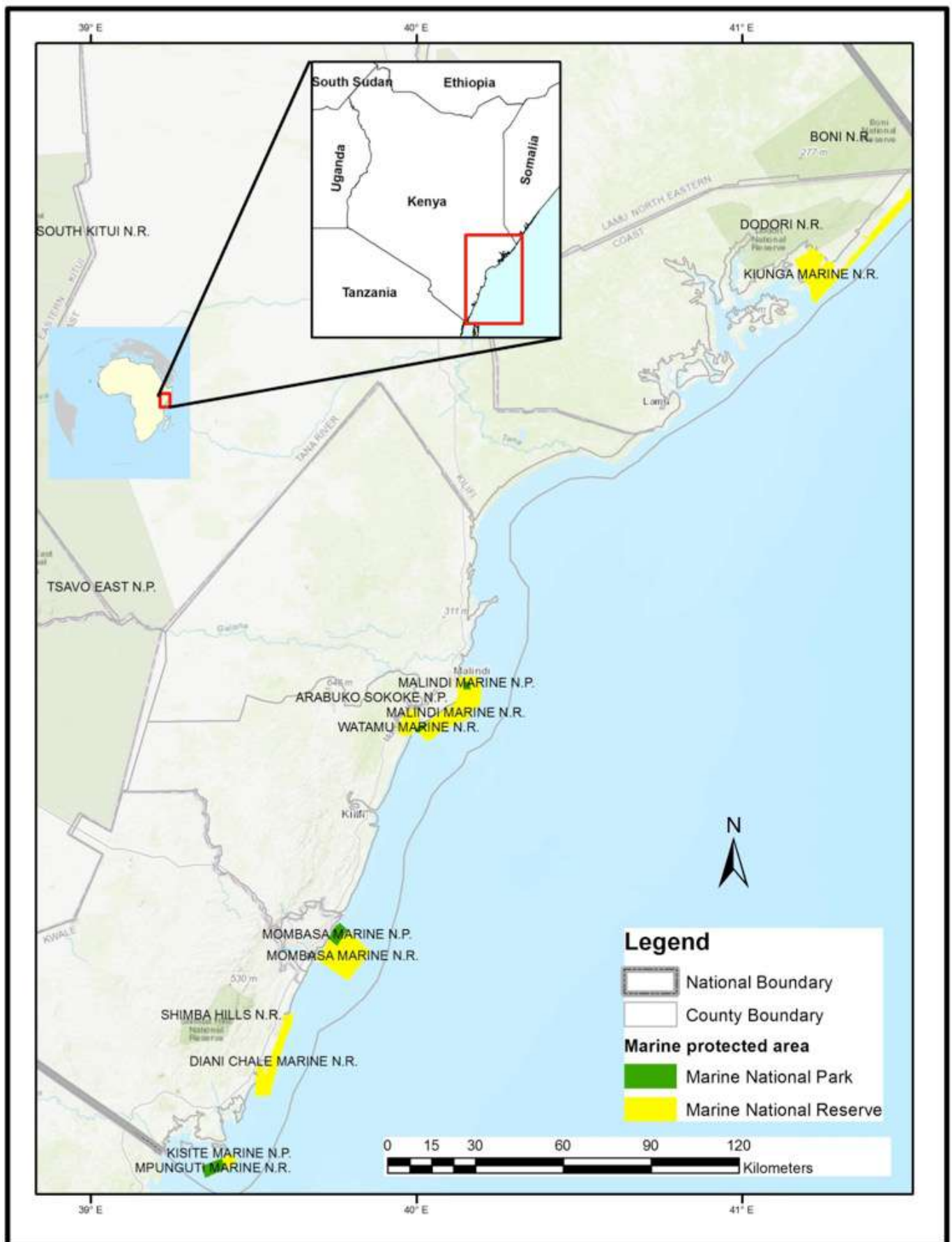


Fig 4.4 Marine Parks & Reserves



## 4.2.2. Marine National Reserves

There are 6 marine national reserves in the counties of Lamu, Kilifi, Mombasa and Kwale with a total acreage of 871km<sup>2</sup>. These Marine Reserves are appendages of the National Marine Parks except Diani Chale and Kiunga. Kiunga Marine National Reserve is the largest, followed by Mombasa Marine National Reserve while Mpunguti is the smallest. Malindi and Watamu are internationally recognized by UNESCO as Man & Biosphere Reserve (1978).

Only Diani Chale Marine National Reserve is as yet to develop a management plan, the rest

have their management plans development at various stages. Kisite-Mpunguti Management Plan was gazetted in 2016.

Presently the Reserves are facing various pressures including illegal fishing by trawlers, pollution especially by solid waste, dynamite fishing, climate change and invasive species which are undermining the health status of the Reserves. Some of these threats are highlighted specifically in chapter 3. Table 4.9 summarizes the status of the Marine Reserves during the reporting period

**Table 4.9: Status of Marine Reserves in 2015/2017**

No	Protected Area	Area (Km <sup>2</sup> )	Legal notice/ Gazettement	Recognition (local/ international)	Visitor statistics (2015-2017)	Remarks
1	Malindi	213	Legal notice no. 99 of 1968	UNESCO Mann & Biosphere Reserve, 1978	Same to Malindi MP	<ul style="list-style-type: none"> <li>Beach wall being constructed by the Billionaires club on a turtle nesting site</li> <li>Management plan in preparation process</li> </ul>
2	Watamu	32	Legal notice no. 98 of 1968	UNESCO Mann & Biosphere Reserve, 1978	Same to Watamu MP	<ul style="list-style-type: none"> <li>Turtle nesting sites being fenced off by emerging beach walls</li> <li>Management plan in preparation process</li> <li>Green turtle,</li> </ul>
3	Mombasa	200	1988		Same to Mombasa MP	<ul style="list-style-type: none"> <li>Solid waste disposal from the city is a growing threat</li> <li>No Management plan</li> </ul>
4	Mpunguti	11	Legal notice No. 216 of 1978		Same to Kisite MP	<ul style="list-style-type: none"> <li>Same as Kisite MP</li> </ul>
5	Kiunga	250	1979		47 (2015/16) 180 (2016/17)	<ul style="list-style-type: none"> <li>Dugong sighted in 2017 Kiwayu/Kiunga, Olive ridley &amp; leather back turtles</li> </ul>
6	Diani Chale	165	1995		Not managed	<ul style="list-style-type: none"> <li>Dugong sighted in 2017 at Funzi Island</li> </ul>

### 4.2.3. Kenya's Ramsar sites

The Convention on wetlands came into effect in Kenya on 5th of October 1990. Presently Kenya has six designated Ramsar sites that cover an area of 2654Km<sup>2</sup>. For an area to be designated as a Ramsar sites it must fulfill

at least one out of the nine set conditions. First, it must contain rare or unique wetland type. The other eight conditions cover sites of international importance for conserving and sustaining biological diversity. Table 4.10 gives the status of the six Ramsar sites in Kenya

**Table 4.10 Status of Ramsar Sites in Kenya**

NO	Ramsar Site	Year of Designation	Protection Status	Reason For designation	Remarks
1	Tana River Delta	07/09/2012	<ul style="list-style-type: none"> <li>IBA</li> <li>African Eurasian Water Bird Agreement (AEWA)</li> <li>Is not a gazetted conservation area</li> </ul>	<ul style="list-style-type: none"> <li>Due to its unique habitat caused by confluence of saline and fresh water it hosts a variety of species that include shrimps, prawns, bivalves and fish</li> <li>Five listed species of turtles are found here</li> <li>The critically listed Tana River Mangabey and the Tana River Red Colobus are also found here. The White-Collared monkey is also found here</li> <li>Over 600 plant species including the endangered <i>cynometra lukei</i> and <i>gonatopus marattioides</i> are found here</li> <li>It is a critical feeding and wintering ground for several migratory birds such as the Waders, gulls and terns.</li> </ul>	<ul style="list-style-type: none"> <li>Ramsar site 2082</li> <li>Water abstraction and land reclamation pose the greatest danger to this very fragile ecotone</li> <li>The migratory and resident water birds are dependent on the seasonally flooded grasslands borassus palm savannahs that cover some 70,000Ha of the Tana Delta</li> </ul>
2	Lake Nakuru	05/06/1990	<ul style="list-style-type: none"> <li>National Park</li> <li>Is also a UNESCO WHS</li> </ul>	<ul style="list-style-type: none"> <li>Has several listed endangered bird species including the South African Darter, great Egret, Grey crested shrike, lesser Kestrel and the Madagascar pond heron</li> <li>It is also a Black Rhino sanctuary</li> </ul>	<ul style="list-style-type: none"> <li>Ramsar site 476</li> <li>Site is 188Km<sup>2</sup></li> <li>fencing is a major hindrance to wildlife migration</li> <li>The lake is under massive pressure from invasive species</li> </ul>
3	Lake Naivasha	10/4/1995	<ul style="list-style-type: none"> <li>IBA</li> <li>Is not a gazetted conservation area</li> </ul>	<ul style="list-style-type: none"> <li>The lake holds 1% of the worlds red-knobbed coot (<i>fulica cristata</i>)</li> <li>Has over 350 bird species both residents and migratory</li> </ul>	<ul style="list-style-type: none"> <li>Ramsar site 724</li> <li>Pollution from agrochemical from horticulture farms</li> </ul>
4	Lake Bogoria	27/08/2001	<ul style="list-style-type: none"> <li>Is also a UNESCO WHS</li> <li>Is a National Reserve</li> </ul>	<ul style="list-style-type: none"> <li>The lake holds over 90% of Kenya's Black-necked grebe and cape Teal</li> <li>One of the remaining places where one can easily see the threatened greater Kudu</li> </ul>	<ul style="list-style-type: none"> <li>Ramsar Site No 1097</li> <li>The site is 107Km<sup>2</sup></li> </ul>

5	Lake Baringo		<ul style="list-style-type: none"> <li>• IBA</li> <li>• Is not a gazetted conservation area</li> </ul>	<ul style="list-style-type: none"> <li>• Has an Endemic fish species- <i>oreochromis niloticus baringoensis</i></li> <li>• Is a feeding and refuge for over 500 local and migratory bird species some of which are of regional or global conservation significance. Over 20000 birds are reported</li> </ul>	<ul style="list-style-type: none"> <li>• Ramsar site No 1159</li> <li>• The site is 314Km2</li> <li>• Deforestation and water diversion for irrigation is a major threat to the site</li> <li>• The invasive Pistia (Nile cabbage) is a new threat</li> </ul>
6	Lake Elmentaita	05/09/2005	<ul style="list-style-type: none"> <li>• Is also a UNESCO WHS</li> </ul>	<ul style="list-style-type: none"> <li>• On average over 600000 individual water birds comprising over 450 species (residents and migrants) are present of which about 80 are waterfowls</li> <li>• Naturally is a feeding site for over 1million (about 28% of the global population) Lesser flamingo which is designated as near Threatened</li> </ul>	<ul style="list-style-type: none"> <li>• Ramsar site No 1498</li> <li>• Site is 108Km2</li> </ul>

### 4.3. Paper (Non-Functional) Parks and Reserves

A 'Paper Park' is defined as a legally established protected area where experts state that current protection activities are insufficient to halt degradation." It is an internationally recognized term which implies that they have absence of management, or are "benign/neglected" and only exist on maps and in legislation but offer little real protection for wildlife species and their habitats. These areas represent failure of efforts to protect resources and ecosystems.

Apart from Ngai Ndethya National Reserve and the 6km2 Arabuko Sokoke National Park which in their true sense are now Paper Park, many of the Reserves seem to be heading towards similar direction. These include Losai, Rahole, Arawale and South Kitui South Kitui is presently the Reserve with the highest number of charcoal kilns while Losai has several villages established inside it. Malka Mari is slowly being settled while its wildlife is being threatened by livestock incursion.

### 4.4. Declaration of Protected Areas

Section 31 (1) of WCMA, 2013 deals with declaration of a protected area, subsection (e) gives the Cabinet Secretary the legal framework on how to publish, after consultation, a wildlife rich area as a protected area (Park, Reserve, Sanctuary or Conservancy). The areas that look promising in this regard include the following;

- a. **Gurar (Wajir County).** The area is known to have a variety of wildlife species. Though no biodiversity inventory has been carried out, the area is known to have a variety of herbivores, birds and carnivores. The species of wildlife include ostrich, hyaenas, lion, giraffe and a variety of birds
- b. **Ilemi triangle.** The area measures between

10,320-14,000Km2 this is an area equivalent to Tsavo East National Park, sparsely populated, rich in wildlife species and thus would provide a suitable wildlife land. Wildlife conservation would have to be integrated with the 5 local nomadic communities.

- c. **Lotikipi Plains (Turkana County).** This massive savannah grassland in the extreme North West of the country which is dissected by the seasonal Tarach River has a healthy population of Oryx antelopes and gazelles. No biodiversity assessment has been carried out.
- d. **Suguta Valley.** Lake Logipi (18Km<sup>2</sup>), a seasonal saline lake which lies north of the Suguta valley is a flamingo haven. The lakes

shore line has several saline hot springs. The changing color of the lake is due to the algae concentration.

- e. **Forole (North Horr).** Is found in Marsabit County between Turbi to the east and Maikona to the NorthWest. Wildlife found in this area include Oryx, Somali Ostrich, grants gazelle
- f. **Omo Delta.** This is a designated Important Bird Area. Lake Turkana has over 350 recorded bird species and perhaps the highest concentration of Nile crocodile

per square kilometer. Presently the area is coming under pressure of irrigation agriculture.

- g. **Lakes, Dams, Swamps, River Systems.** Kenya's major rivers (Tana, Athi,Nzoia,Ewaso Ngiro,Yala,Mara, Kuja), swamps(Yala and Lorian), lakes(Ol bollosat,Magadi,Victoria,Kenyatta, Challaand Naivasha)and dams(Masinga and Turkwel) harbor various water dependent animal species including local and migratory bird species.

## 4.5. Status of Wildlife Corridors and Dispersal Areas

Kenya has several wildlife corridors with the major ones being the Amboseli-Kilimanjaro and Mt. Kenya-Lewa downs-Samburu-Meru elephant corridors. The latter is a world heritage site .Other wildlife corridors include;

- The corridors connecting Nairobi National Park with Athi Kaputei (wildebeest migratory corridor & dry season wildlife dispersal area)
- MasaiMara Serengeti wildebeest migratory corridor.(It includes wildlife dispersal areas especially in the ranches & conservancies)
- The Tsavo National Park Elephant dispersal areas:
  - » Chyulu National Park, South Kitui National Reserve, Kibwezi forest reserve, adjacent group ranches which constitute Tsavo ecosystem.
  - » Of particular importance are the four key corridors that sustain the ecological integrity of the ecosystem
- Tsavo East to Mkomazi in Tanzania through Kasigau forest and the community ranches

- Tsavo East to Arabuko Sokoke Forest Reserve through Galana-Kulalu ranches
- Tsavo East to Mwaluganje & Shimba Hills through community ranches
- Tsavo West to Amboseli through Kuku ranch
- In the southern rift ecosystem, the area around Lake Magadi and Natron in Tanzania, Nguruman ranges with Ewaso Ngiro River being the only permanent source of water(Elephant corridor)
- The elephant corridor connecting Aberdares and Mt. Kenya through Sangare /Solio ranch and Kabirotini forest reserve
- The corridor connecting L. Nakuru National Park, with Hells Gate National Park through Elementaita wildlife sanctuary and Naivasha wildlife conservancies(zebra)
- Elephant corridor between Kamnarok National Reserves, South Turkana to Nasolot National Reservesalong the Kerio River.

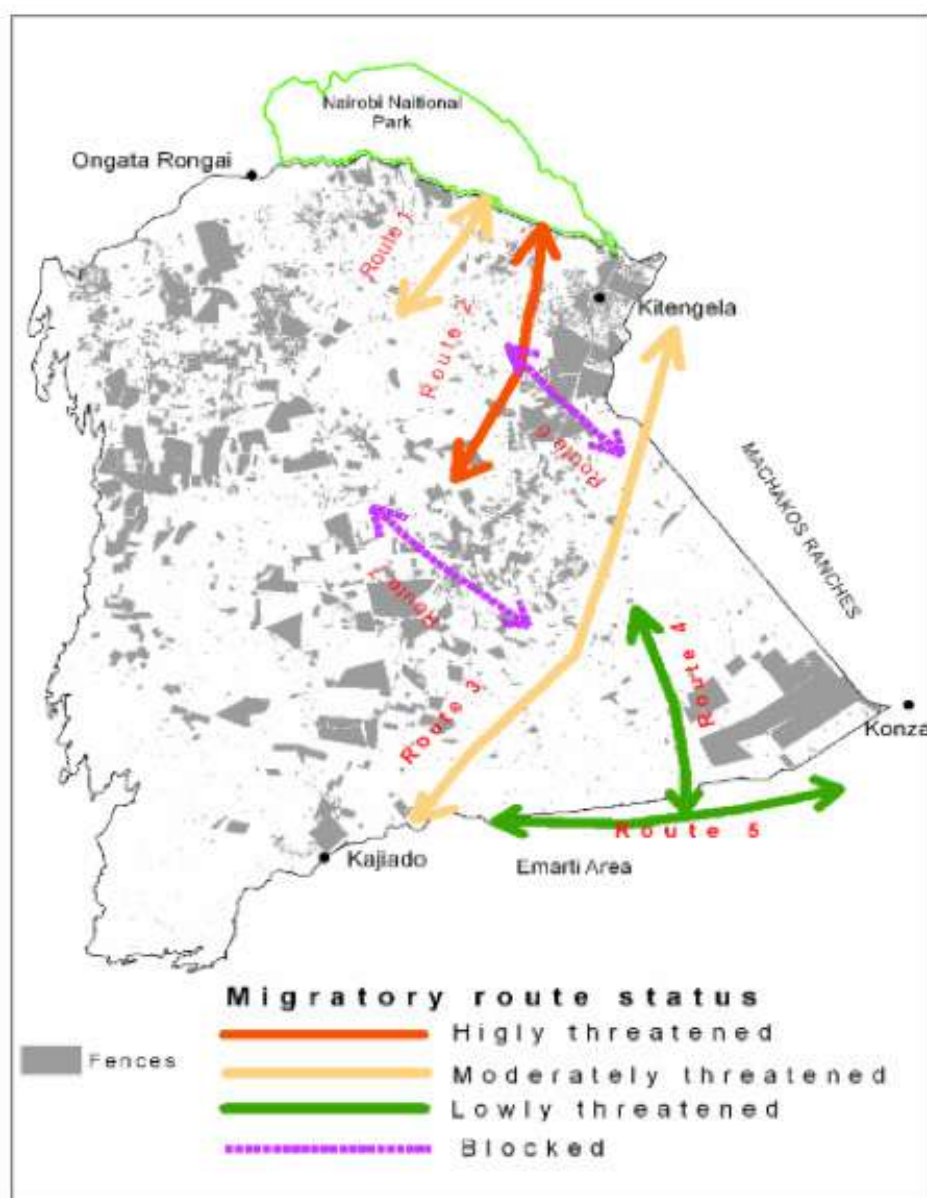
Table 4.11 gives the status of the wildlife corridors in Kenya





**Table 4.11: Status of Wildlife Corridors 2015-2017**

No	Corridor	Connectivity	Area Km <sup>2</sup>	Identified	mapped	Gazetment	Status
1	Mt. Kenya-Lewa-Samburu-Marsabit-Meru	Mainly for elephants migration		done	done	Not yet	<ul style="list-style-type: none"> <li>KDF in the process of fencing without (no EIA done) NEMA approval</li> </ul>
2	Athi – kaputei- (Nairobi-kitengela) Amboseli	Mainly zebra, wildebeest, giraffe,		done	done	Not yet	<ul style="list-style-type: none"> <li>Severe sub division of land and peri-urban development on the increase. Proposed Konza City</li> </ul>
3	Kerio- South Turkana-Nasolot	Elephant		done	done	Not yet	<ul style="list-style-type: none"> <li>Settlements, land subdivision, habitat loss and irrigation agriculture by KVDA increasing. Possibility of HEP and oil exploration</li> </ul>
4	Tsavo-Mkomazi-Amboseli	Elephant, Giraffe		done	done	Not yet	<ul style="list-style-type: none"> <li>Corridor through ranches being subdivided and fenced therefore need to be gazetted</li> </ul>
5	Lake Naivasha-Elementait a-Lake Nakuru-Eburru Forest	Buffaloes, giraffes		done	done		<ul style="list-style-type: none"> <li>Entire corridor is within Soysambu Conservancy and can easily be gazetted</li> </ul>
6	Lake Natron-Magadi Area	Zebra, giraffe, Buffalo		done	done		<ul style="list-style-type: none"> <li>Part of the corridor is found in conservancies e.g. Shompole</li> </ul>
7	Serengeti-Mara	Wildebeest, Zebra,		done	done	done	<ul style="list-style-type: none"> <li>95% of migratory corridor within protected area. Dispersal areas being subdivided, fenced and farmed</li> </ul>
8	Amboseli-west kilimanjaro	Elephants		done	done		<ul style="list-style-type: none"> <li>Illegal logging and uncontrolled nomadic use of pasture</li> <li>The corridor is within conservancies</li> </ul>
9	Tsavo East National Park- Tana Delta	Elephant, Buffalos, Antelopes, Giraffes	100	done	done	Not yet	<ul style="list-style-type: none"> <li>5 routes exist into the delta- 2 from the North East and 3 from the North West and West</li> <li>These migratory routes are the same used by pastoralist when herding cattle between the delta and wet season grazing areas.</li> </ul>

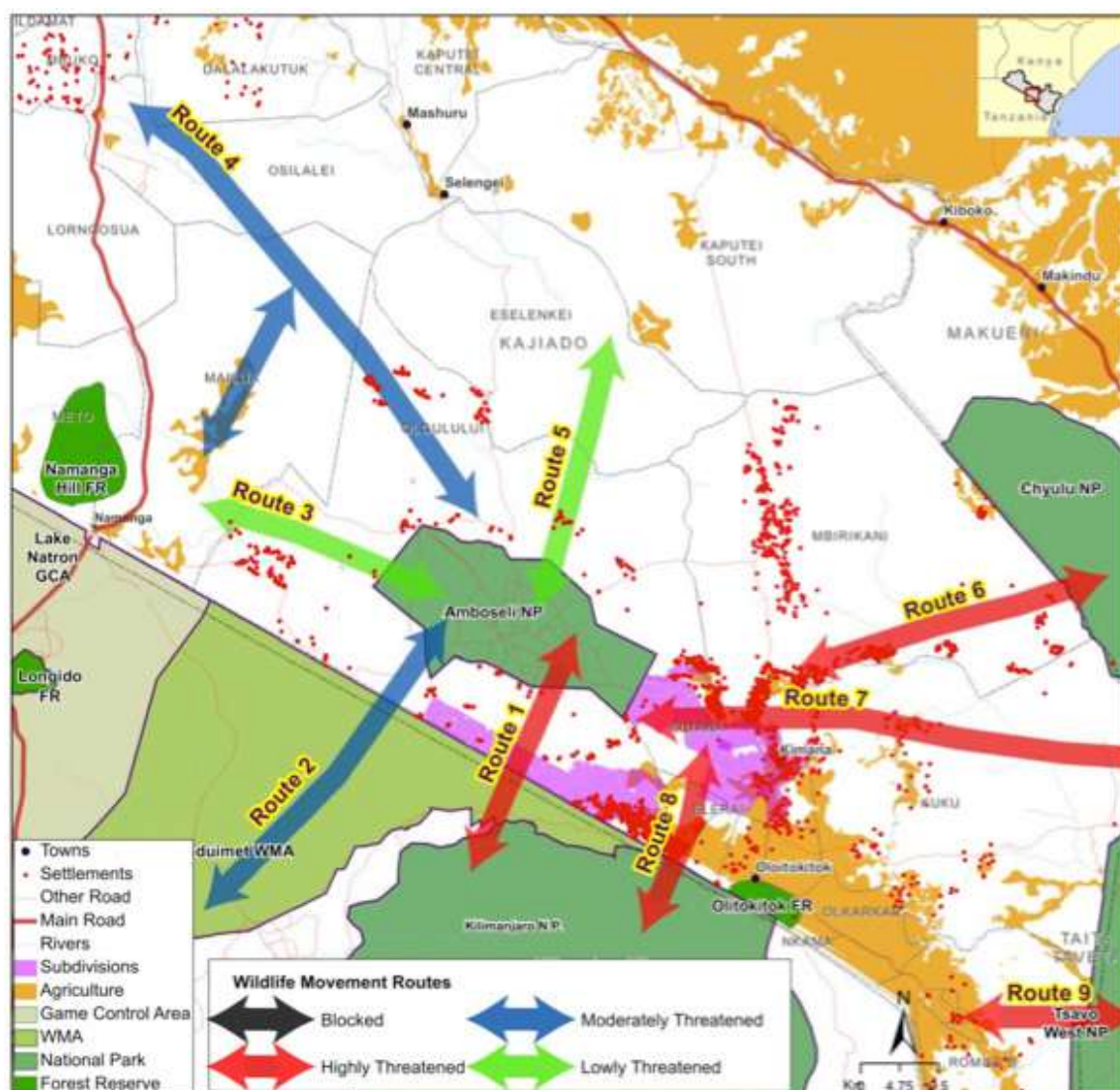


**Table 6.5.1:** Connections and linkages, and conservation threat level and action needs in the Athi-Kaputei Ecosystem.

Route Threat	Description	State	Action
1	Runs to and from Nairobi NP through upper eastern part of Sheep and Goat open land, and towards Oloolotikosh-Kipeto open lands.	Privately owned but critical passage to the park. Also imminent blockade by the proposed Mlolongo - Mbagathi bypass.	Immediate - Negotiate for land lease; plan to construct animal subway bypasses across the highway.
2	Exits the park at Sheep and Goat open land and crosses Kitengela and Oloolotikishi Rivers to Enkasiti and Kisaju	The sheep and goat open land is a critical link to Nairobi National Park	Immediate - GoK land - reclaim
3	Runs from the upper Machakos ranches to east of Kitengela town, and crosses Ilasit and Olturoto in the south, and then to wildebeest calving zone in Enkiringiri (Kaputei North).	Housing developments (shopping centres, residential estates) along the Kitengela-Namanga highway	Immediate - Need land use policy to support
4 & 5	4 - Runs to and from Ilasit in the east of Olturoto and crosses Olturoto River to Emarti in Kaputei Central. 5 - Cross Emarti and connect calving zone in Enkiringiri to Machakos ranches	Land subdivisions between Ilasit and Olturoto, and gypsum mining at Ilopolasat and Enkiringiri	Immediate - Implement land use master plan; put restriction to the minimum size of land parcel.
6 & 7	Connects the 1st and 2nd triangle to ensure wildebeest and zebra movements to Nairobi NP	Blocked	Immediate - Secure the corridors; Develop compatible land use.

None Low Moderate High Blocked

**Figure.4.5 Athi –kaputei (Nairobi-kitengela) - Wildebeest Corridor**



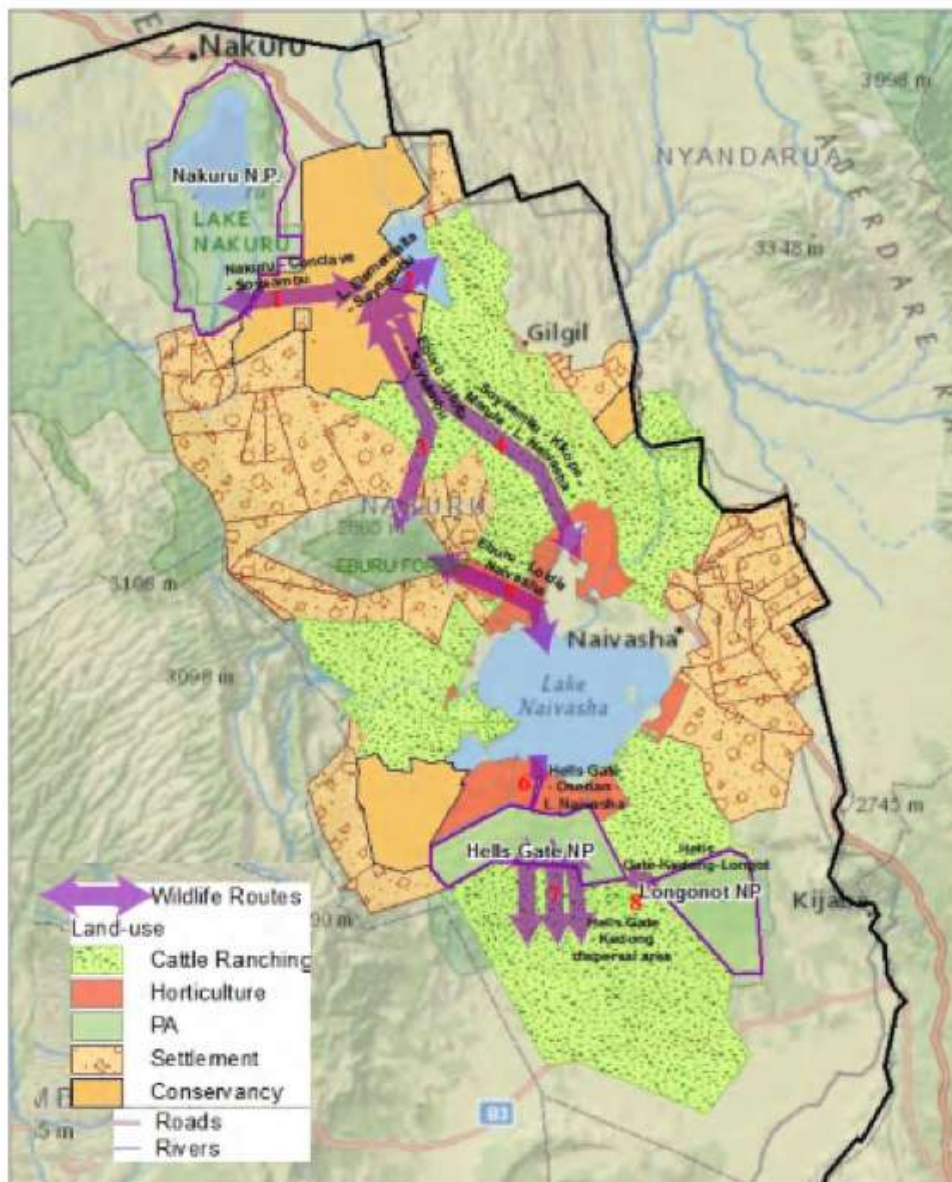
**Table 6.6.1:** Connections and linkages, conservation threats and action needs in the greater Amboseli ecosystem

Routes	Threats	State	Action
1	Highly Threatened	Kitenden-Kilimanjaro - impinged by subdivision and irrigated agriculture	Immediate - needs legal and economic instruments to maintain connection
2	Moderately Threatened	Kitirua-West Kilimanjaro - challenged by sedentarization and fragmentation	Needs policy coordination across international boundaries
3	Moderately Threatened	Amboseli-Mailua-Namanga - challenged by sedentarization and degradation	
4	Moderately Threatened	Amboseli-Magadi-Shompole - challenged by sedentarization, fragmentation and degradation	
5	Lowly Threatened	Amboseli-Eselenkei-Imbirikani - open, threatened by agriculture and the impacts of new Emali-Oloitokitok tarmac road	Protect the remaining key habitats "stepping-stones" - e.g. swamps and riverine areas
6	Highly Threatened	Amboseli-Chyulu-Tsavo - invaded by subdivision, agriculture and settlements	Immediate -
7	Highly Threatened	Amboseli-Kimana-Tsavo - encroached by subdivision, agriculture and settlements	Immediate -
8	Highly Threatened	Kimana-Elerai-Kilimanjaro - impinged by subdivision, agriculture and settlements	Immediate -

None Low Moderate High Blocked

**Figure 4.6: Amboseli- West Kilimanjaro Elephant Corridor**





*Existing and Proposed  
Wildlife Routes and Corridors*

**Route 1:** Lake Nakuru NP -  
Conclave - Soysambu

**Route 2:** Lake Elementaita -  
Soysambu

**Route 3:** Eburu - Ututu -  
Soysambu

**Route 4:** Soysambu - Kekopey  
- Marula - Lake Naivasha

**Route 5:** Eburu - Loldia -  
Lake Naivasha

**Route 6:** Hell's Gate NP -  
Oserian - Lake Naivasha

**Route 7:** Hell's Gate NP -  
Kedong Dispersal Area

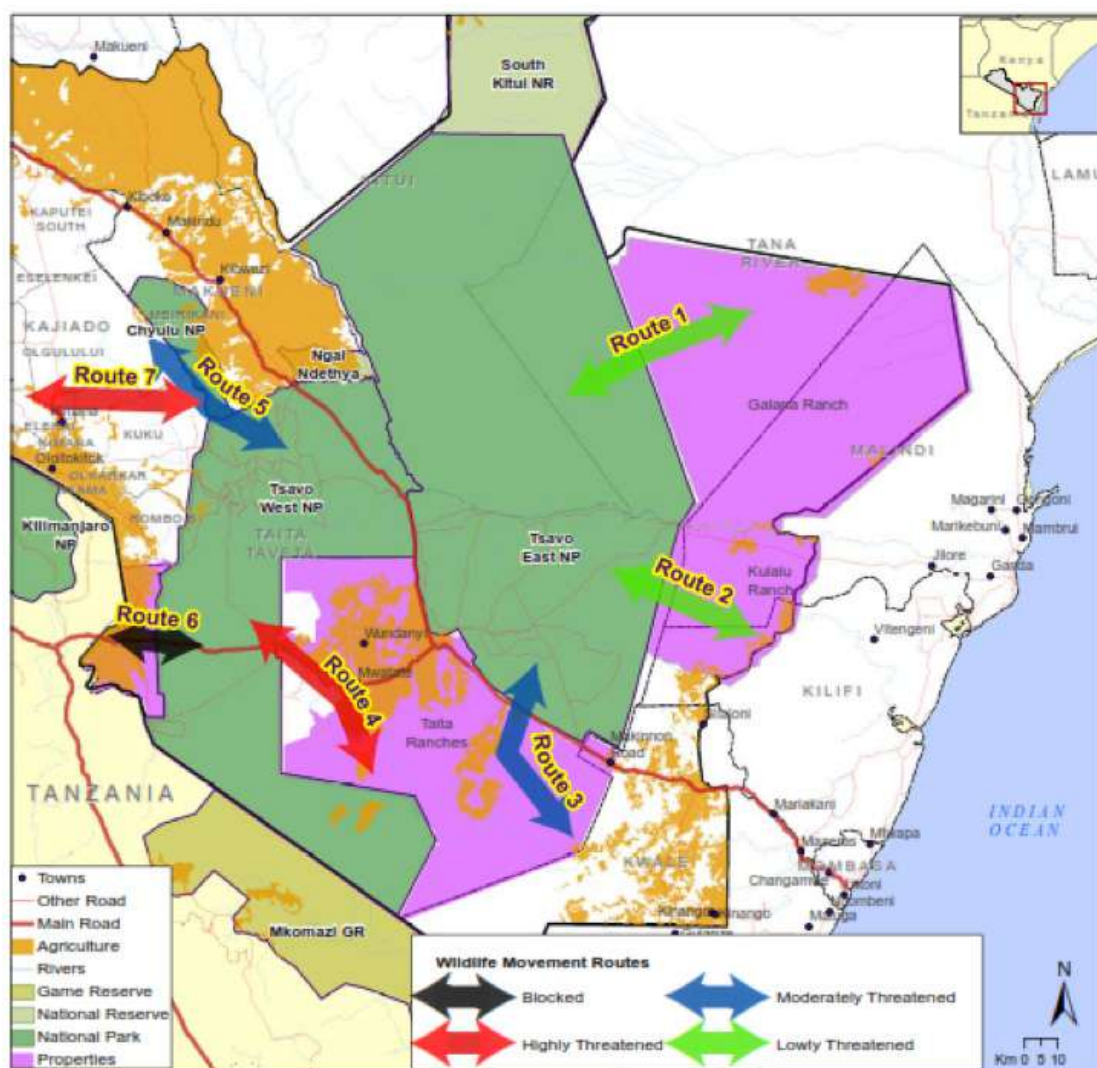
**Route 8:** Hell's Gate NP -  
Kedong - Longonot NP

**Map 6.3.1:** Land use and existing/proposed wildlife routes and corridors in wider Lake Naivasha, Elementaita, Nakuru and Eburu Forest Ecosystem.

**Figure 4.7:** Lake Naivasha-Elementaita-Lake Nakuru-Eburu Forest





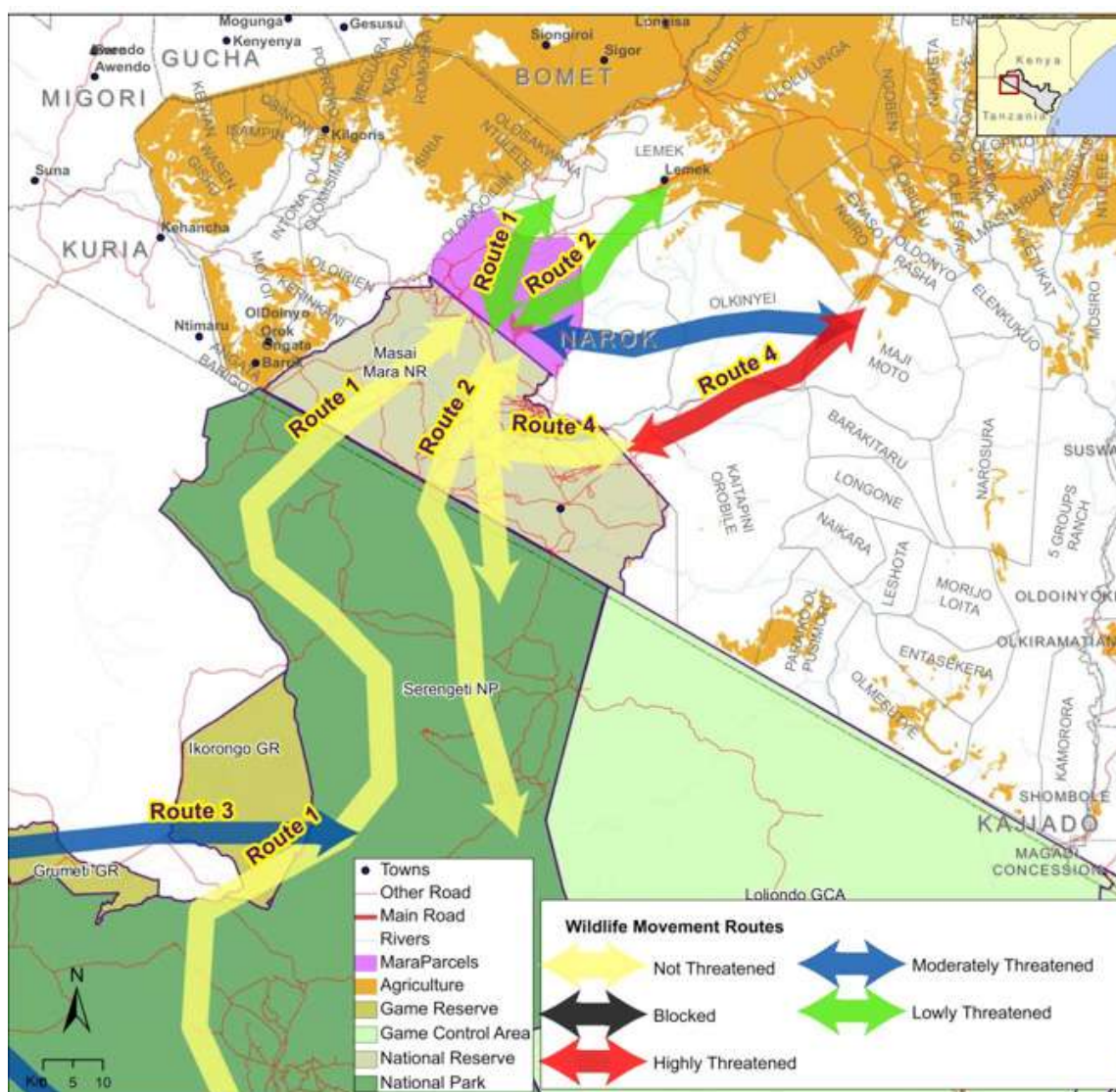


Source DRSRS

Routes	Threats	State	Action
A, B, C	None	Tiva River crossing, Gaps in Yatta and Ngulia to Yatta - critical elephant corridors inside the park	Monitor the vegetation dynamics, and effects of Standard Gauge Railway (SGR) on elephant movements and behaviour
2&1	Low	Tsavo East to Galana and Kulalu Ranches - degraded through overgrazing by livestock	Immediate - landowners to adapt proper range management
3	Moderate	Southern part of Tsavo East NP to Rukinga and Taita hills - fences and small-scale farming	Immediate - establish conservancies in the ranches
4	High	Maktau to Kasigau - settlements, small-scale farming and fences blocking wildlife movement	Immediate - establish conservancies and fences
5	High	Kamboyo to Chyulu - heavily encroached by small-scale farming and settlements	Immediate - construct and maintain fences to separate farms and settlements from wildlife areas
6	High	Tsavo West NP to Lake Jipe - blocked by settlements, small-scale farming and fences	
7	High	Chyulu to Amboseli - subdivision, irrigated agriculture, fences and tourism developments	Immediate - establish conservancies, restore wetlands

None
  Low
  Moderate
  High
  Blocked

Figure 4.8: Tsavo Mkomazi- Elephant migratory Corridor



Source DRSRS

Ecosystem	Routes	Threats	State	Action
Mara Ecosystem	1 & 2	Low	Low threats depending on the existence of conservancies	Immediate - need policy to support
	3 & 4	Moderate	Need compatible land use - low settlement and livestock numbers	Immediate - develop compatible land uses
	5,6,7,8	Low	No threats inside the park	Need s habitat monitoring and vegetation dynamics
Serengeti Ecosystem	6,7,8	Low	No threats inside the park	Low
		High	Intense poaching in Game Controlled Areas	High

Legend    Non    Low    Moderate    High    Blocked

Figure 4.9: Serengeti-Mara- Wildebeest Migratory Corridor









# CHAPTER 5:

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## STATUS OF LISTED ENDANGERED WILDLIFE SPECIES POPULATION AND TRENDS



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## 5.1. Kenya's Biodiversity Resources

Kenya has an array of bio-geographical zones spread along altitudinal gradients from the coast to the snow-capped peaks of Mt. Kenya, reaching over 5000m above sea level. The latitudinal gradient in Kenya is bisected into two by the equator and some species e.g., Grevy's zebra, Reticulated Giraffe, Beisa Oryx respond to this gradient. Globally Kenya is classified in the second group of mega-biodiverse nations.

The foundation for Kenya's vertebrate and invertebrate diversity is the richness and abundance of its plant life and bio-geographic spread. Africa is known to have 29,614 vascular plant species including; 706 ferns, 44 gymnosperms and 28,864 angiosperms. The East African region has a documented 12,317 species: this is the highest plant diversity per unit area across mainland tropical Africa. Of these at least 7,004 (57 per cent) are found in Kenya. With the advent of more advanced taxonomic and biodiversity survey tools such as molecular techniques, this number is likely to change as new species will be established and recorded. Currently 4,623 plant species within 1,387 genera are documented (source: NMK). In addition, 766 species of bryophytes, 511 ferns and 2,071 species of fungi and lichens have been recorded.

The Kenya-Tanzania borderland stands out on

the African continent for its wealth of mammal which are associated with certain specific wildlife species. These biomes contain high levels of animal species diversity and genetic variability, and have many endemic, rare, endangered and threatened species. There are 393 Mammals in Kenya consisting of 2 golden moles; 43 even toed ungulates; 4 odd toed ungulates; 36 carnivores; 26 Whales, 5 dolphins and porpoises; 105 bats; 39 hedgehogs; 4 hyraxes; and 4 Lagomorphs; 5 elephant shrews; 3 pangolins; 20 primates; 1 proboscis; 94 rodents; 1 Dugong and 1 aardvark. Kenya has over 260 reptiles (Snakes, lizards, geckos, skinks, chameleons, tortoise, turtles, terrapins, crocodile) and amphibians (toads, frogs, salamanders) species; 1,105 bird species; 769 Fish species (362 fresh water) of which 5 are likely to be extinct, 168 arthropods, arachnids.

The 2017 IUCN list of threatened species showed that Kenya had 463 plant and animal species which were threatened. Of these, 30 mammals, 43 birds, 73 fish and 234 plants. The broad classification by IUCN while listing threatened species includes. Critically endangered, endangered, vulnerable, near threatened, least concern, data deficient, and not evaluated.

## 5.2. Data Collection Methodologies

The Service has developed an Ecological monitoring protocol manual (first edition) to guide monitoring various species parameters as population status (numbers, densities, presence or absence and threats). Some of the methodologies used include:

### a. Aerial Counts

- Total Counts- for large mammals such as; elephants, giraffes, buffaloes, grevy zebra, eland and large marine mega fauna
- Sample Counts- hippos, impala, wildebeest, zebra, birds

### b. Dung Counts undertaken for large mammals in forested areas such as Elephants

### c. Ground counts -a monitoring tool for presence or absence of a species, it includes:

- Road counts based on defined transects in a defined area
- Call back- used for carnivores especially Lion and Hyena Counts
- d. Capture mark recapture: long term method used in some areas for monitoring certain wildlife populations. The method is based on individual identification unique pattern or marks.
- e. Marine underwater transects e.g. for sea grass and coral
- f. Informed guess from persons who interact with a specific area on a regular basis.

## 5.3. Status of Carnivores

Kenya has variety of large and small carnivores of which 6 are large and 30 small carnivores (table 5.1). Carnivores play a vital role ecologically and economically in Kenya's tourism sector. However, survival of the carnivores in Kenya is severely threatened by habitat loss, anthropogenic factors, landuse change, and reduction in wild prey base, human-carnivore conflicts, diseases, range reduction and road/rail kills.

The population status of carnivores in most areas is not well known as monitoring of carnivores is a challenging undertaking. Most large carnivores range widely and in some ecosystems are difficult to track.

A National carnivore survey is planned for 2018/2019; the objective of the survey will be to determine their distribution, density as well as threats.

**Table 5.1 List of Carnivores species in Kenya**

<b>Listed species in WMCA 2013</b>			
<b>Listed</b>			
1.	Lion	<i>Panthera Leo</i>	Felidae
2.	Cheetah	<i>Acinonyx jubatus</i>	Felidae
3.	Leopard	<i>Panthera pardus</i>	Felidae
4.	African Golden Cat	<i>Caracal aurata</i>	Felidae
5.	African Wild Dog	<i>Lycaon pictus</i>	Canidae
6.	Spotted Hyaena	<i>Crocuta corocuta</i>	Hyaenidae
7.	Stripped Hyaena	<i>Hyaena hyaena</i>	Hyaenidae
8.	Small spotted Genet	<i>Genetta genetta</i>	Nandiniidae
<b>Non Listed</b>			
9.	Serval Cat	<i>Leptailurus serval</i>	Felidae
10.	Black Serval	<i>Melanistic</i>	Felidae
11.	Caracal	<i>Caracal caracal</i>	Felidae
12.	African Wildcat	<i>Felis silvestris</i>	Felidae
13.	Silver/Black Backed Jackal	<i>Canis mesomelas</i>	Canidae
14.	Golden Jackal	<i>Canis aureus</i>	Canidae
15.	Side-Stripped Jackal	<i>Canis adustus</i>	Canidae
16.	African Golden Wolf	<i>Canis anthus</i>	Canidae
17.	Bat Eared Fox	<i>Octocyon megalotis</i>	Canidae
18.	Aardwolf	<i>Proteles cristata</i>	Hyaenidae
19.	African large spotted Genet	<i>Genetta maculata</i>	Nandiniidae
20.	Servaline Genet	<i>Genetta Servalina</i>	Nandiniidae
21.	African Civet	<i>Civettictis civetta</i>	Viverridae
22.	African Palm civet	<i>Nandinia binotata</i>	Viverrid
23.	Stripped polecat(Zorilla/African skunk)	<i>Ictonyx striatus</i>	Mustelidae
24.	African clawless Otter	<i>Aonyx capensis</i>	Mustelidae
25.	Spotted Necked Otter	<i>Lutra maculicollis</i>	Mustelidae
26.	African stripped Weasel	<i>Poecilogale albinucha</i>	Mustelidae
27.	Somali dwarf Mongoose	<i>Helogale hirtula</i>	Herpestidae
28.	Common dwarf mongoose	<i>Helogale parvula</i>	Herpestidae
29.	Somali slender Mongoose	<i>Herpestes ochraceus</i>	Herpestidae
30.	Slender Mongoose	<i>Herpestes sanguineus</i>	Herpestidae
31.	Marsh Mongoose	<i>Artifax paludinosus</i>	Herpestidae
32.	Banded Mongoose	<i>Mungos mungo</i>	Herpestidae
33.	White-tail Mongoose	<i>Ichneumia albicauda</i>	Herpestidae
34.	Sokoke bushy- tailed Mongoose	<i>Bdeogale omnivora</i>	Herpestidae
35.	Jackson's Mongoose	<i>Bdeogale jackson</i>	Herpestidae
36.	Bushy-tailed Mongoose	<i>Bdeogale crassicauda</i>	Herpestidae

### 5.3.1. Status of Cheetah (*Acinonyx jubatus*)

The Cheetah is listed in the sixth schedule of WCMA, 2013 as an endangered species, however in the IUCN red list, it is categorised as vulnerable with its worldwide population noted as decreasing. The current global cheetah population is estimated at 6,674 individuals by IUCN.

Historical data shows that, cheetahs were widely distributed within Kenya; however, recent surveys have shown that, cheetahs in Kenya have experienced a reduction in their geographic range and now occupy 23% of their historical range with the largest population occurring in Laikipia-Samburu, Tsavo and Mara ecosystems. Table 5.2 and 5.3 gives the population of cheetah in some specific surveys in Laikipia/Samburu, Serengeti/Mara/Tsavo

**Table 5.2 Cheetah Distribution and Population Status**

Name	Area (km <sup>2</sup> )		Population estimate
	total	protected	
Laikipia/Samburu	47,390	2,074	450*
Serengeti/Mara/Tsavo (trans-boundary population with Tanzania)	98,616 <sup>¶</sup>	36,177 <sup>¶</sup>	710 <sup>†¶</sup>
<b>Grand total:</b>	<b>146,006<sup>¶</sup></b>	<b>38,251<sup>¶</sup></b>	<b>1,160<sup>¶</sup></b>

(Source KWS, 2008)

\*Population sizes estimated from the size of the polygon using a conservative density of 1 adult per 100km<sup>2</sup>

<sup>¶</sup>Estimate includes some land outside Kenya and some animals resident on the land, in trans-boundary populations.

**Table 5.3 Recent Selected cheetah surveys**

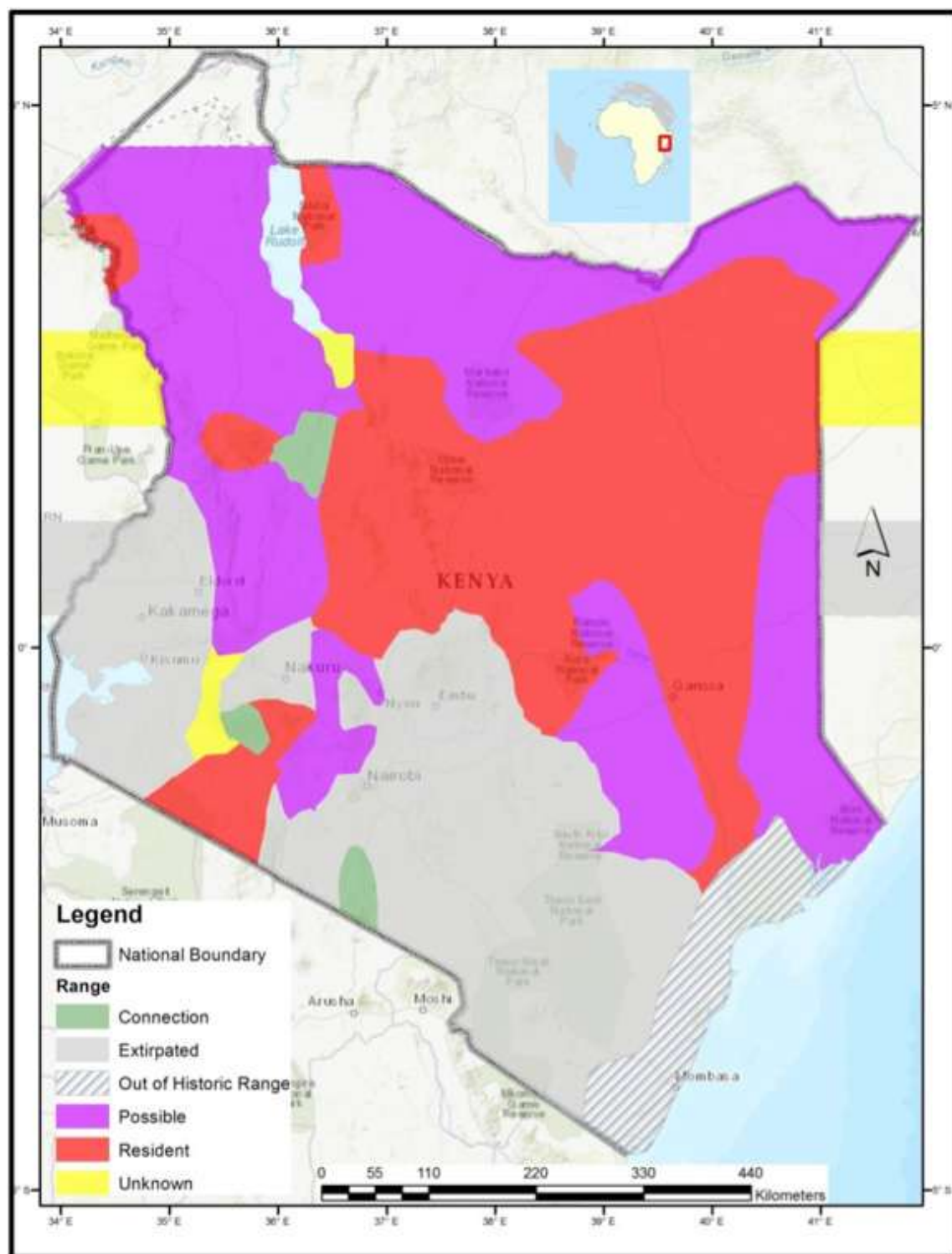
Area		Type of survey	Population Estimate	Year	Source
Maasai Ecosystem	Mara	Ground count (capture-recapture)	30	2016	Broekhuis and Gopalaswamy
Tsavo ecosystem		Spoor transects	130	2014	Henschel et. al.,

(Source KWS, 2008)

NB/These recent surveys do not represent the national Cheetah population status but it is expected that the 2018-2020 status report will have an updated status arising from the ongoing National carnivore survey.







**Figure 5.1 Cheetah Distribution range**

Legend interpretation for figure 5.1 above

1. Resident: cheetahs are known to be present
2. Possible: cheetahs likely to be present
3. Connection: cheetahs likely not to be resident, but may be transiting through occupied areas, or to re-colonise extirpated range. Such connections might take the form of 'corridors' of continuous habitat or 'stepping stones' of habitat fragments.
4. Unknown: status is currently unknown and cannot be inferred using knowledge of the local status of habitat and prey.
5. Extirpated: land where the species has been extirpated. This can be further divided into:
  6. Out of historic: areas where cheetahs have never occurred
  7. Recoverable: presently no cheetah but habitat favourable for cheetah habitation

### 5.3.2. African Wild Dog (*Lycaon pictus*)

The African Wild Dog is listed by IUCN as critically endangered and in the sixth schedule (WCMA, 2013) as endangered. The major threat is habitat fragmentation, increased interaction with human being leading to conflict and competition with other large carnivores.

The African Wild Dog was widely distributed across Kenya in the past but currently occupy only 13% of their historical range. Despite this

past decline, wild dog numbers have increased in recent years with the largest population being found in parts of Tsavo ecosystem, Samburu, Laikipia and Isiolo/Meru. Wild Dogs are also gradually increasing in number and re-colonizing the Mara-Serengeti ecosystem following a die-off in 1990.

The table 5.4 gives the population while figure 5.2 shows distribution range of Wild Dogs in the country

**Table 5.4: African Wild Dog population estimate**

Location	Population Estimate	
	Number*	Packs
Ijara-Lamu (probably trans-boundary population with Somalia)	130	11
Isiolo	30	2
Kajiado-Loliondo (trans-boundary population with Tanzania)	100	8
Kora-Kitui	20	2
Machakos	220	20
Tsavo	100	12
<b>Grand Total</b>	<b>845</b>	<b>57</b>

Source KWS, 2009

\*Number represents Adult individuals



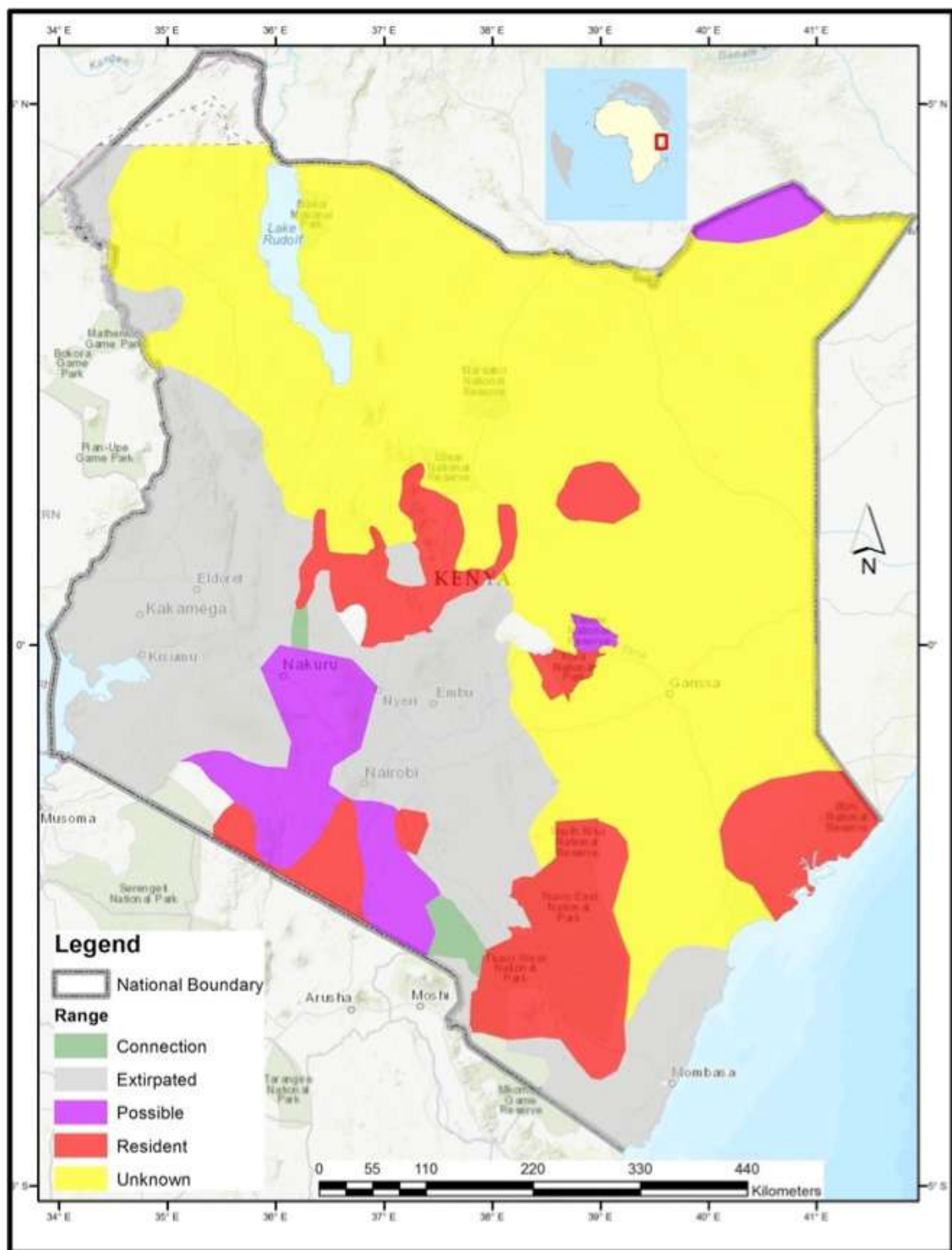


Figure 5.2: Current distribution of African Wild Dog range

(Source: KWS ,2015)



### 5.3.3. Status of Spotted Hyaena (*Crocuta crocuta*)

The sixth Schedule of WCMA, 2013 lists the Spotted Hyaena as vulnerable while IUCN lists it as least concern with the global population being 27,000 to 47,000 individuals. Mills and Hofer (1998) estimated the number of spotted hyaenas in Kenya to be about 2,000-4,000.

Threats include persecution by humans through conflict (poisoning, spearing and shooting), road kills, disease, habitat loss and fragmentation.

Table 5.5 shows recent surveys undertaken while figure 5.3 shows the Spotted Hyaena distribution in Kenya.

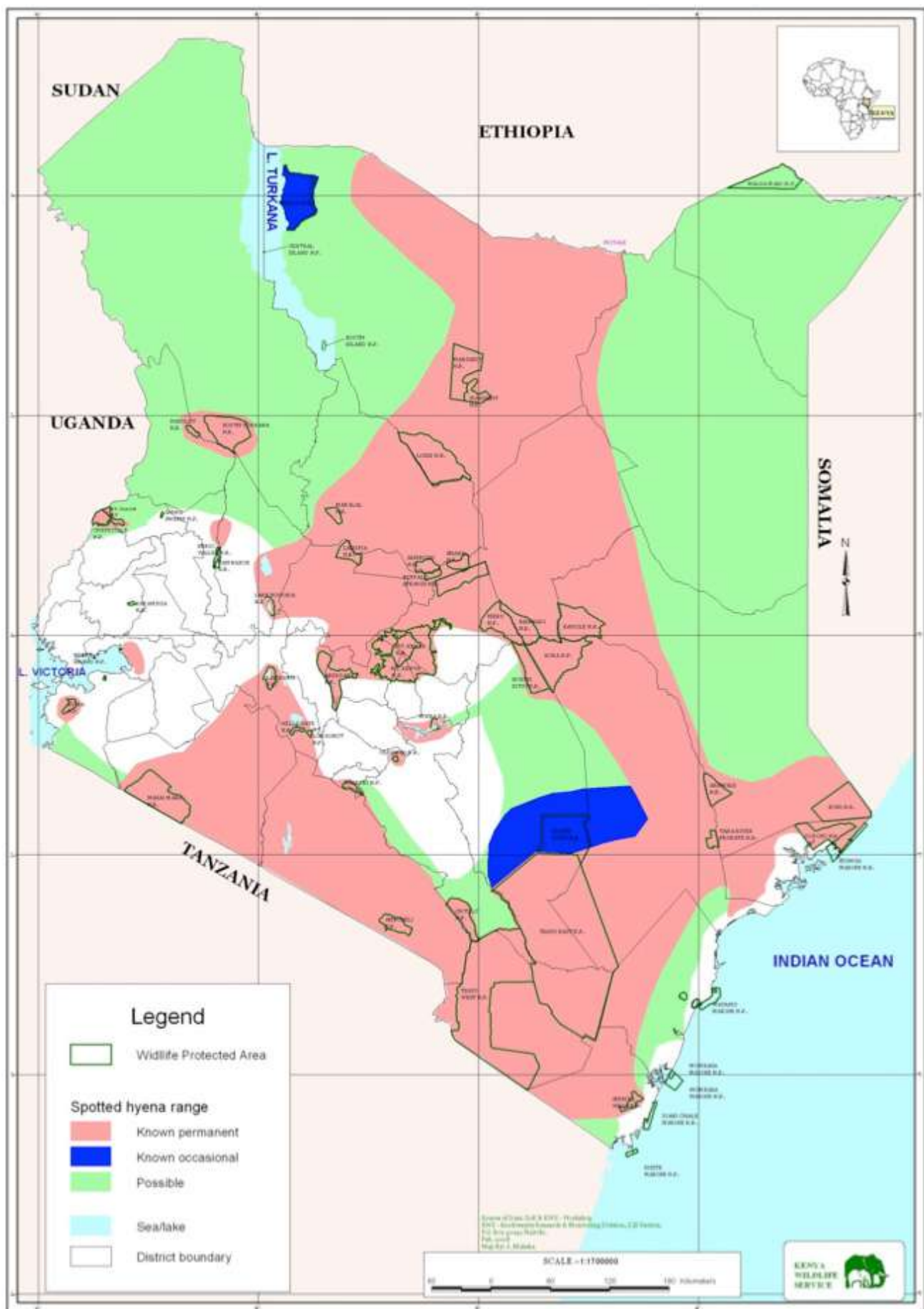
**Table 5.5 Recent Spotted Hyaenas surveys**

Area	Type of survey	Population estimate	Year	Source
<b>Meru National Park</b>	Call Back-Capture recapture	98	2016	KWS
<b>Aberdares National Park</b>	Call Back-Capture-recapture	247	2015	Manchester Metropolitan University
<b>Lake Nakuru National Park</b>	Informed Guess	30	2015	KWS
<b>Tsavo Ecosystem</b>	Spoor Transects	3,914	2014	Henschel et al
<b>Amboseli Ecosystem</b>	Call Back-Capture-recapture	346	2014	KWS
<b>Naivasha Ranches</b>	Ground Count	62	2012	NWC

(Source: KWS, 2015)



Plate: 12 Spotted Hyaena



**Figure 5.3. Spotted Hyena distribution**  
(Source KWS, 2015)

### 5.3.4. Status of Striped Hyaena (*Hyena hyena*)

The IUCN red list classifies the species as near threatened while in the WCMA, 2013 sixth schedule, it is classified as endangered. The national population is estimated to be 1,000 individuals. (KWS, 2008). In 2014 a survey carried out by Henschel et al in Tsavo ecosystem using spoor transect gave a population estimate of 660; In 2016 a survey by KWS in Meru National Park using call back gave an estimate of 9

individuals. The National carnivore surveys of 2018-2019 will endeavour to establish the number and distribution of the species.

Threats to this sub-species include persecution from humans, decreasing natural and domestic sources of carrion due to decline of population of other species, road kills along the Mombasa-Nairobi highway in Tsavo and along Isiolo- Marsabit highway; and retaliatory killings due to Human wildlife conflict.

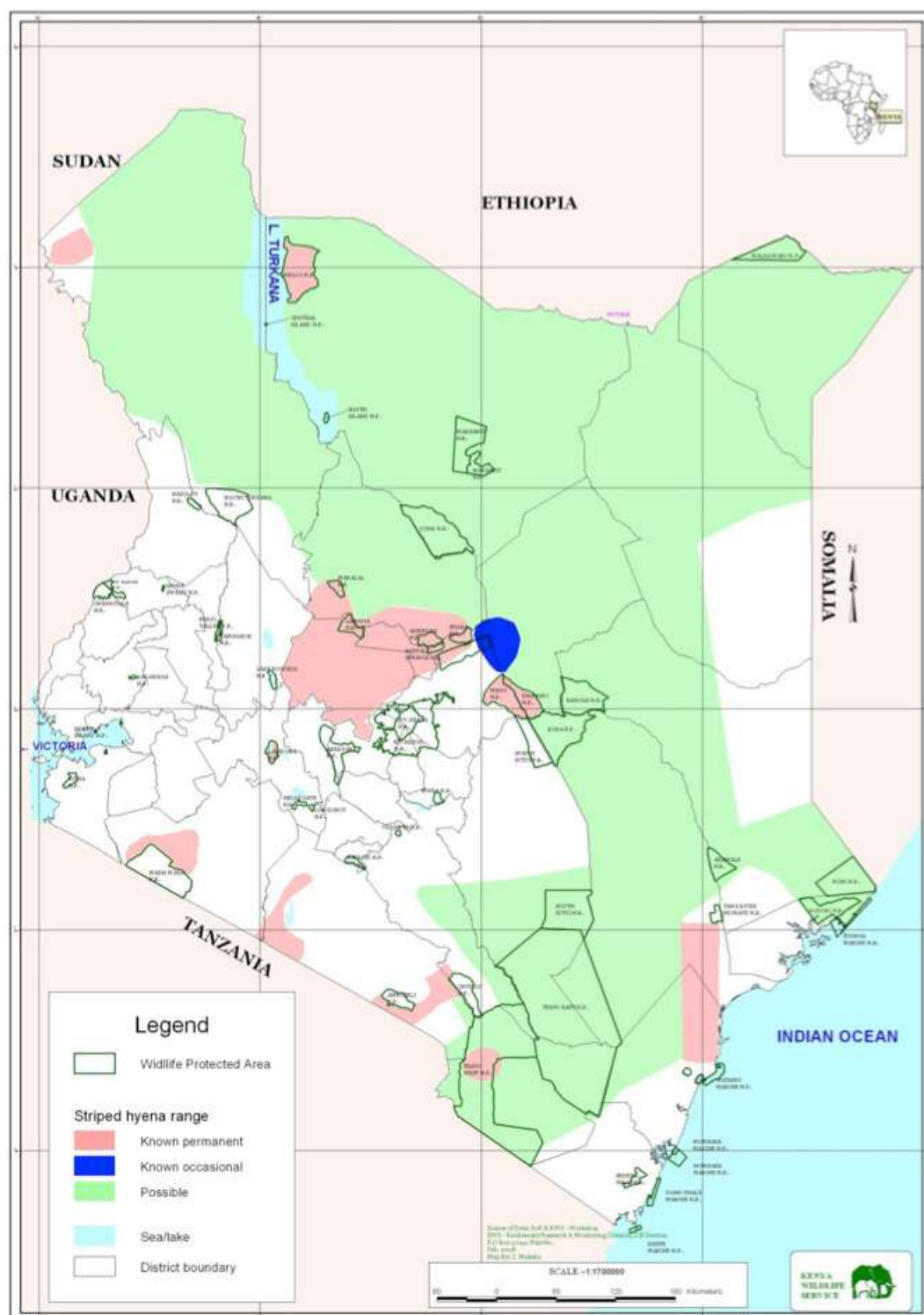


Figure 5.3. Spotted Hyaena distribution (Source KWS, 2015)





Plate: 13 Striped Hyena

### 5.3.5. Status of Lion (*Panthera leo*)

Lions occur in a number of Kenya's conservation areas. Large populations are found in the Masai Mara and the Tsavo ecosystems. In addition, there are sizeable populations in Laikipia/Samburu, and Kajiado. Many Conservancies especially in the northern and Machakos area frequently report presence of lions. In the coastal region, lions are found in Boni Dodori National Reserves while cases of infrequent visits are still reported in Arabuko Sokoke forest Reserve. Lion presence has been reported in community areas of Gurar in Wajir and areas adjacent to Sibiloi National Park. Lion population

surveys have been undertaken in some areas between 2012 and 2017 as shown in Table 5.6. Table 5.7 shows areas where lion population are known to exist but surveys to establish their status is as yet to be done. These areas will be covered under the National Carnivore surveys that end in 2019. It is important to note that several lion populations are held in captivity in several orphanages and educational facilities spread all over the country.

The national population of lions is estimated at 1,970 individuals (KWS, 2008). Lion's permanent range is estimated to be over 18 % (see figure 5.5) of the total area of the country.

**Table 5.6 Lion population surveys (2012 – 2017)**

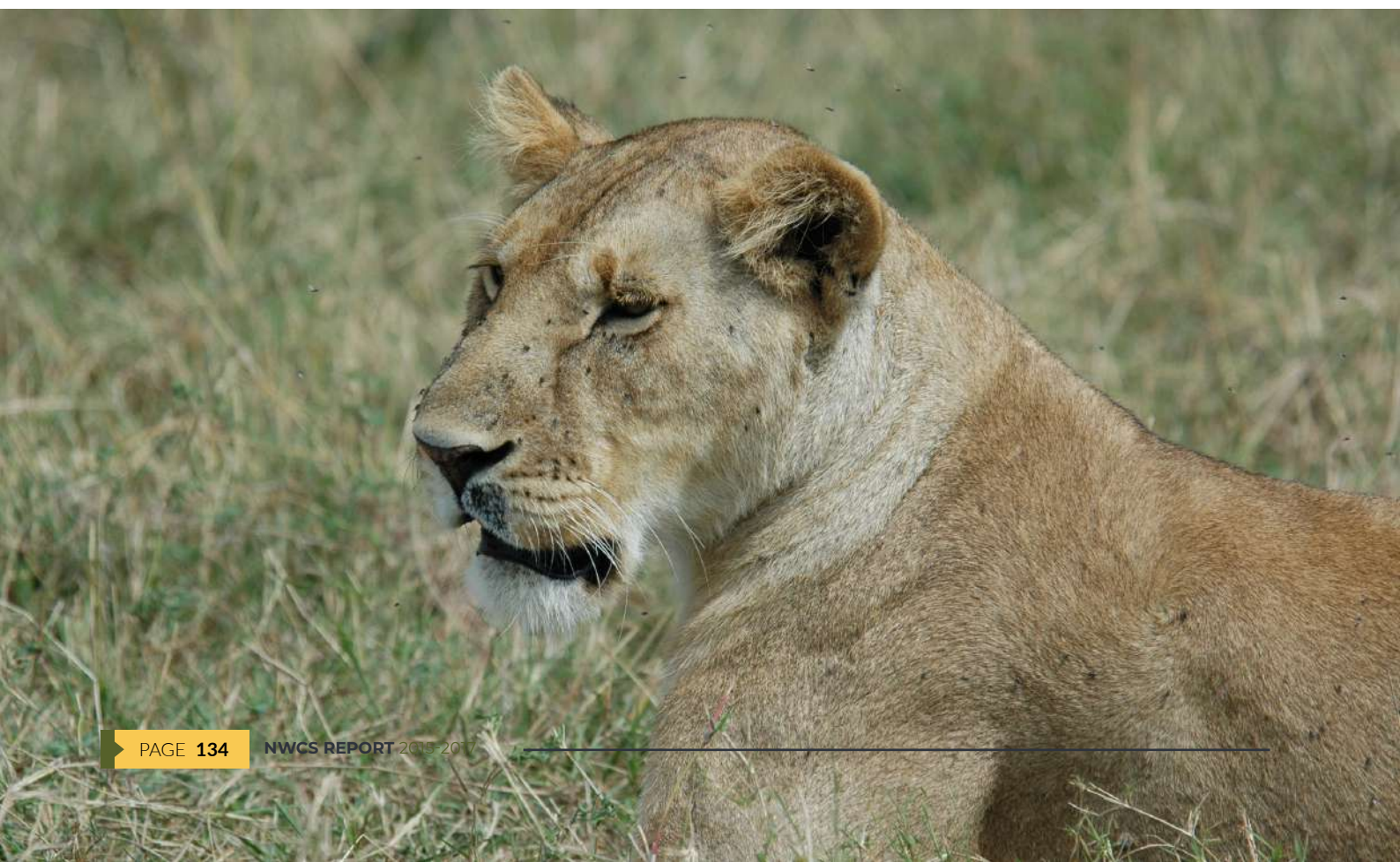
Conservation Area	County	Estimate	Year	Source
Tsavo East and West National Parks	Taita Taveta/Kitui	700	2014	Living with lions and Panthera
Masai Mara National Reserve and adjacent Conservancies	Narok	420	2017	
Amboseli National Park and adjacent conservancies	Kajiado	122	2017	Lion guardians
Olpejeta Conservancy	Nyeri	61	2017	Olpejeta
Meru National Park	Meru	58	2016	KWS
Nairobi National Park	Nairobi	45	2017	KWS
Lewa and Borana Wildlife Conservancy	Meru/Laikipia	42	2017	Lewa
Solio Conservancy	Laikipia	26	2012	KWS report
Samburu and Shaba National Reserve	Isiolo/Samburu	17	2013	Ewaso lions annual report
Lake Nakuru National Park	Nakuru	16	2017	KWS
Buffalo Springs National Reserve	Samburu	15	2013	
Soysambu Conservancy	Nakuru	14	2017	KWS
Shompole and Olkiramatian	Kajiado	70	2015	Soralo

**Table 5.7 Areas with unsurveyed lion population**

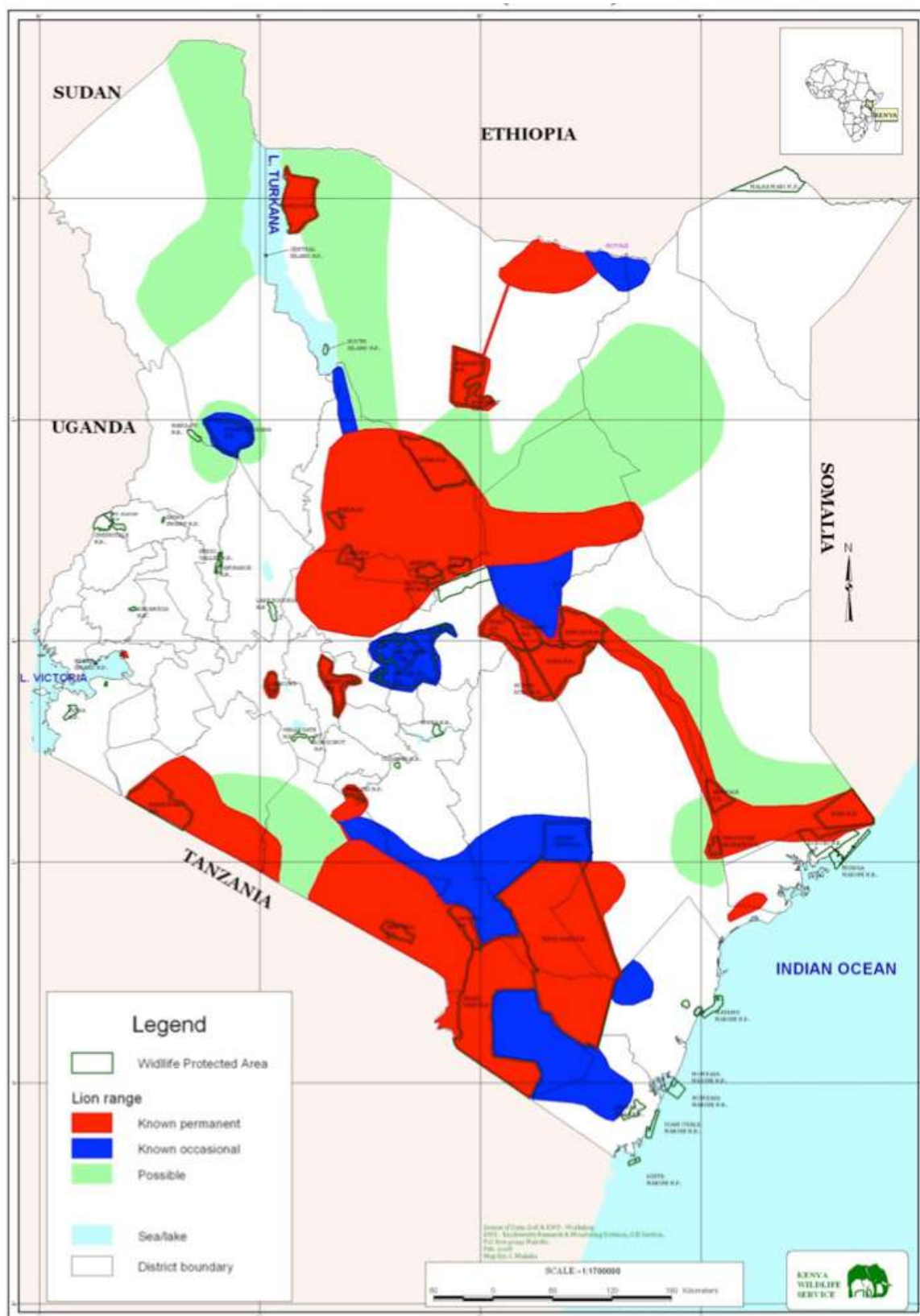
No	Area	Remarks
1.	<b>Machakos Area</b>	Machakos,Athi-Kapiti Plains
2.	<b>Lamu</b>	Lamu,Tana River, Ijara, Hola, Baomo, Boni Dodori National Reserves, Kipini
3.	<b>Marsabit</b>	Marsabit National Park and Reserve, Moyale, Sibiloi National Park, Malka mari National park
4.	<b>Garissa</b>	Garissa,Losai National Reserve, Losai,Rahole National Reserves, Bura, Arawale National Reserve
5.	<b>Turkana &amp; Nasolot</b>	South Turkana National Reserve/West Pokot, Lodwar and Kalokol areas ,Nasalot National Reserve
6.	<b>Kitui</b>	North Kitui National Reserve(Mwingi National Reserves), Bisanadi National Reserve ,South Kitui National Reserve
7.	<b>Taita ranches</b>	Taita ranches
8.	<b>Other Parks</b>	Aberdares National Park, Mt. Kenya National Park, Laikipia National Reserve
9.	<b>Laikipia Ranches</b>	Sengare Ranch conservancy, Oljogi Conservancy
10.	<b>Samburu</b>	Maralal area,Shaba National Reserve, Baffalo springs National Reserve
11.	<b>Narok</b>	Loita forest
12.	<b>Conservancies in Kajiado</b>	

Lions face a variety of threats that range from cultural practices, diseases, and retaliatory killing due to human wildlife conflict, prey base

depletion, loss and fragmentation of habitat. Figure 5.5 shows the lion range in Kenya







**Table 5.7 Areas with unsurveyed lion population**



### 5.3.6. Status of Leopard (*Panthera pardus*)

Leopards are widespread both inside and outside protected areas, the national status of leopards is unknown mainly due to their shy and nocturnal nature which makes them a difficult species to study. The species however like other carnivores faces a number of threats that are detrimental to its survival. Among these threats

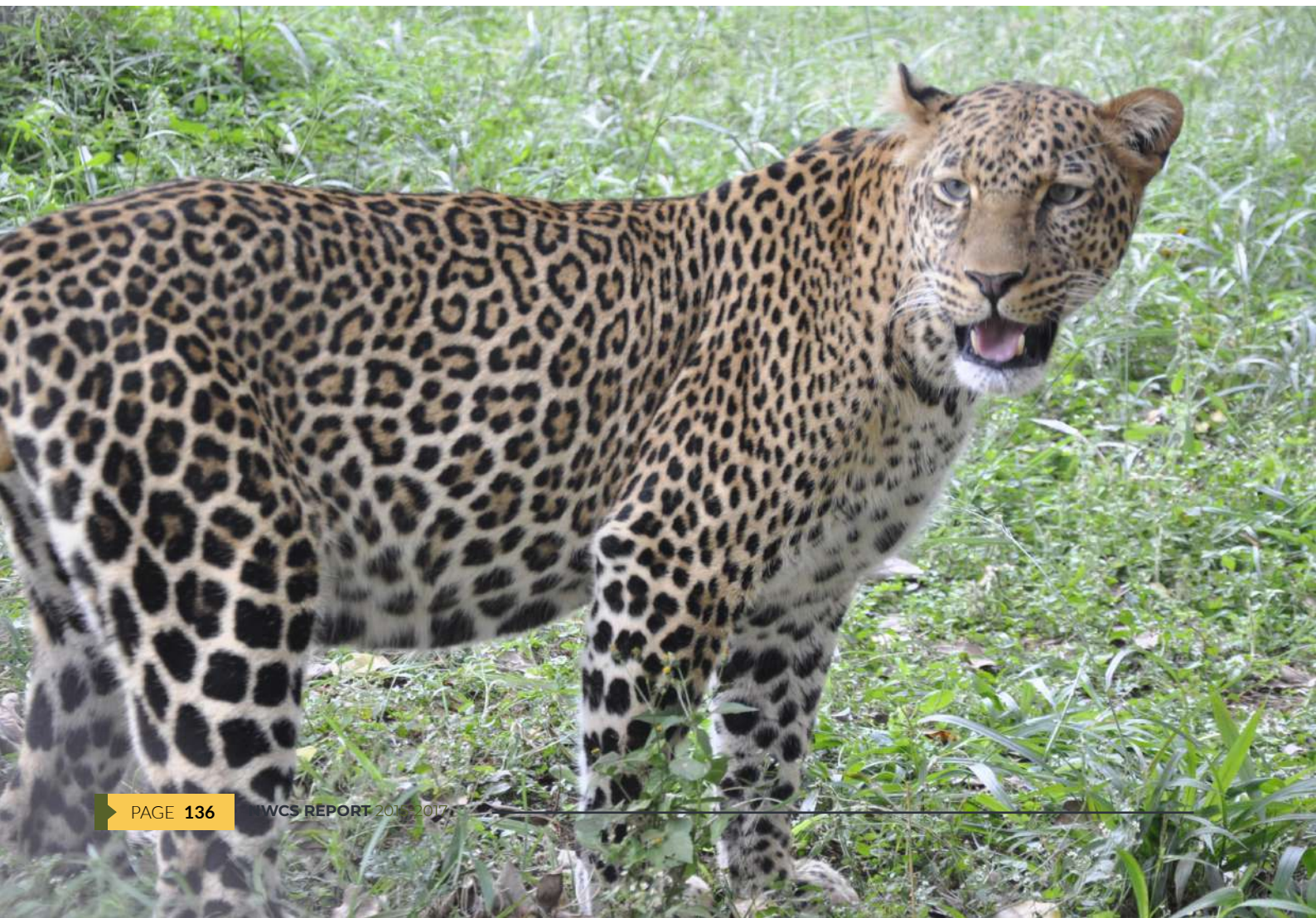
includes loss of habitat, livestock incursions into leopard range, land use change, poaching and illegal trade for their skins and bones in oriental markets thus listed in CITES Appendix I.

Table 5.8 gives leopard population estimates, in certain locations of Kenya where surveys have been undertaken

**Table 5.8 Leopard surveys**

Conservation Area	Survey Type	Population Estimate	Year	Source
Meru National Park	Call back-Capture-recapture	18	2016	KWS
Tsavo ecosystem	Spoor Transects	489	2014	Henschel et al
Nairobi National Park	Camera Traps	8	2013	Yumi Yamane
Borana Wildlife Conservancies	Ground Counts	6 - 12	2010	Report
Naivasha Ranches	Ground Counts	15	2007	NWC

(Source: KWS, 2015)





**Table 5.9 Status of listed small carnivores in Kenya**

Common Name	Scientific Name	Listing	Location	Population Status	Remarks
African golden cat	<i>Profelis aurata</i>	<ul style="list-style-type: none"> <li>IUCN-VU</li> <li>WCMA-</li> </ul>	-	-	The only member of the genus <i>profelis</i> Taxonomy under review by IUCN
Jackson's mongoose	<i>Bdeogale jacksoni</i>	<ul style="list-style-type: none"> <li>IUCN-</li> <li>WCMA-</li> </ul>	Aberdares, Mt. Kenya & Mt. Elgon N.P	DD but believed to be decreasing	Forest loss due to logging
Spotted Necked/Throated Otter	<i>Lutra (hydrictis) maculicollis</i>	<ul style="list-style-type: none"> <li>IUCN-</li> <li>WCMA-</li> </ul>	Lake Victoria & it's tributaries	Declining Reed-Smith et al 2010	Habitat degradation, polluted waterways, human animosity & poaching for meat, skins

(Source: KWS, 2015)

Other threats include infrastructure development, human activities including farming and urbanization, subsistence and commercial poaching, fragmentation of habitats, planting of exotic trees and invasive

species. Small carnivores that burrow are the most affected. Presently the study of small carnivores in the country has centred on the caracal, jackals, aardwolf and serval cat.



Plate: 14 African golden cat



Plate: 16 Jackson's mongoose



Plate: 15 Spotted Necked/Throated Otter

## 5.4. Herbivores

### 5.4.1. Rhinoceros

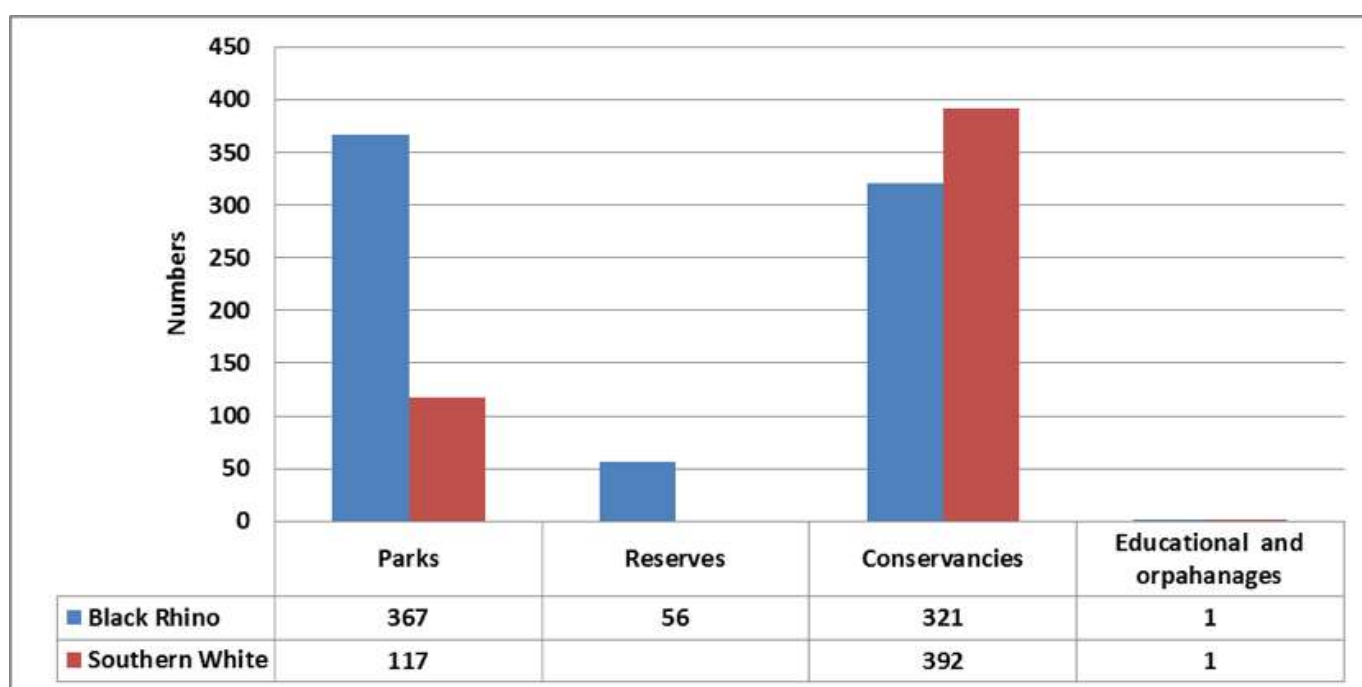
Three out of five sub-species of rhinos in the world are found in Kenya. The Black rhino – *Diceros bicornis michaeli* is native to the country while the Southern white rhino – *Ceratotherium simum simum* and the Northern white rhino – *Ceratotherium simum cottoni* are exotic. In the 1970's Kenya had a population of 20,000 black rhinos widely spread mainly in the protected areas. The upsurge of poaching in the 1970's to mid the 1980's decimated the population to a handful. In the late 1980's the government made a deliberate effort to

consolidate the remaining rhinos by creating sanctuaries. Presently there are 10 black rhino sanctuaries in National Parks with two of the parks, Tsavo East and West having free ranging rhinos in Intensive Protection Zones (IPZ). Only one National Reserve- Masai Mara- is a rhino Reserve and 8 Conservancies have rhino sanctuaries. The Sobo Rhino Sanctuary in Tsavo East is the latest sanctuary to be established but is yet to receive any rhinos. The population and distribution of Rhino population in the country is given in Table 5.10.

Conservation Area	County	Sanctuary Year of establishment	Black Rhino	Southern White	Northern White	Total current
			Current population	Current population	Current population	
<b>Parks</b>						
Aberdare National Park	Nyeri	Historical range	6	-	-	06
Chyulu National Park	Makueni	Historical range	7	-	-	7
Lake Nakuru National Park	Nakuru	1984???	69	14	-	83
Meru National Park	Meru	Historical, population decimated, re-established in 2004	32	72	-	104
Nairobi National Park	Nairobi	Historical range	101	16	-	117
Ruma National Park	Homa Bay	Historical, population decimated, re-established in 2011/2012	22	15	-	37
Tsavo East National Park- Free range	Taita Taveta	Historical range	15	-	-	15
Tsavo East National Park- (Sobo)	Taita Taveta	Sanctuary construction completed in 2017	0	-	-	0
Tsavo West National Park- IPZ	Taita Taveta	Historical, re-established in 2008 and 2010	20	-	-	20
Tsavo West National Park (Ngulia)	Taita Taveta	Historical, 1985	95	-	-	95
			367	117	-	484
<b>Reserves</b>						
Masai Mara National Reserves& Triangle	Narok	Historical range	56	-	-	56



Conservation Area	County	Sanctuary Year of establishment	Black Rhino Current population	Southern White Current population	Northern White Current population	Total current
<b>Community Conservancies</b>						
Il Ngwesi community conservancy	Laikipia		0	2	-	2
Lewa - Borana landscape	Meru/Isiolo	Historical	87	80	-	167
Oi Choro Oirouwa community conservancy	Narok	1990	0	2	-	2
Oi Jogi Ranch/Pyramid	Laikipia	Historical	59	28	-	87
Oi Pejeta Conservancy	Laikipia	Historical, supplemented in 2006	114	30	3	147
Sera Community Conservancy	Laikipia	Historical, re-established in 2016	12	0	0	12
Solio Sanctuary	Laikipia	Historical	49	250	0	299
<b>Sub-Total</b>			<b>321</b>	<b>392</b>	<b>3</b>	<b>716</b>
<b>Educational &amp; Orphanages</b>						
Nairobi Safari Walk	Nairobi	Part of National Park		1	-	1
Sheldrick Orphanage	Nairobi	Part of National Park	1	-	-	1
<b>Sub-Total</b>			<b>1</b>	<b>1</b>	<b>-</b>	<b>2</b>
<b>Sub-Total</b>			<b>745</b>	<b>510</b>	<b>3</b>	
<b>NATIONAL TOTAL</b>						<b>1,258</b>

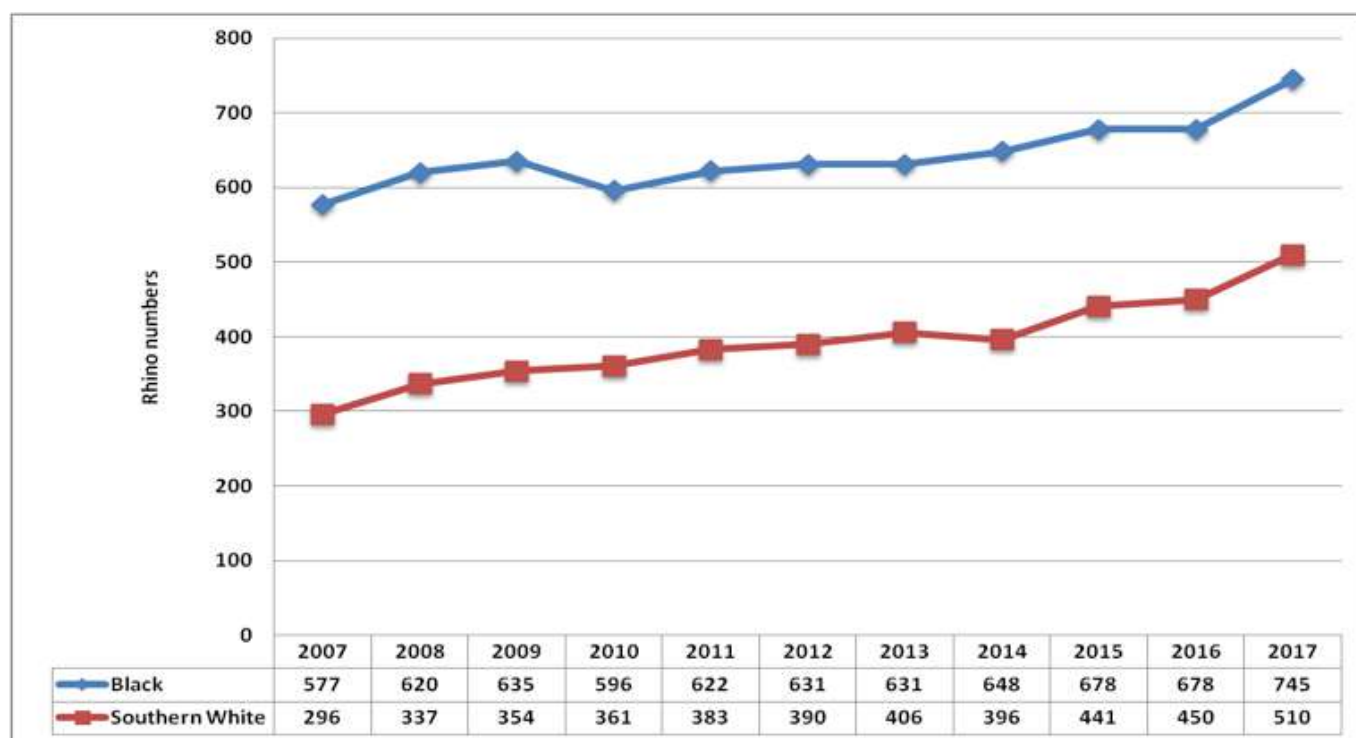


**Figure 5.6 Distribution of Rhinos by Areas of conservation**  
(Source KWS, 2017)

Both the White and Black Rhino have shown a positive trend in their population growth (see figure 5.7). This can be attributed to a number of factors among them: a) the creation of specific rhino sanctuaries, b) Heightened security against poaching, c) strict control of diseases, d) Tsetse management and control e) collaboration with other stakeholders especially conservancies in creating rhino sanctuaries, f) development and implementation of a National Rhino strategy g) Financial support

from government and other donor agencies in rhino conservation, h) creation of National awareness in matters of Rhino conservation.

Threats facing rhinos in Kenya include: poaching (Mugie had rhinos trans-located due to security), diseases, loss of habitat, diminishing gene pool, lack of enough areas to create more sanctuaries, large lucrative international markets for rhino horn.



**Figure 5.7 National Population trends of Black & Southern White Rhino 2007 -2017**  
(Source KWS, 2017)

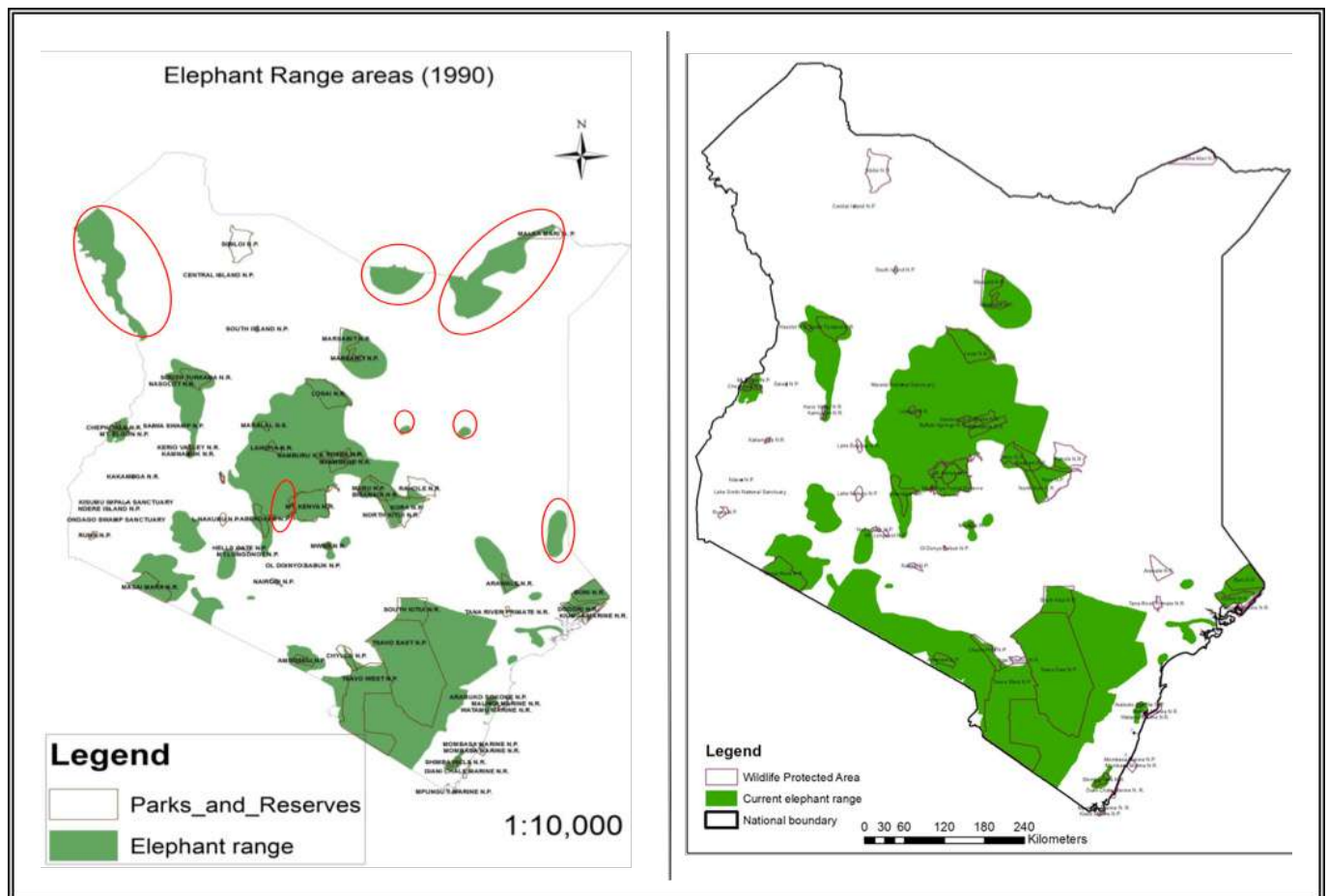
#### 5.4.2. Status of Northern White Rhino

The 3 (1 male and 2 females) Northern White Rhino hosted at Ol Pejeta Conservancy in Nyeri County. These are the only remaining living individuals globally. The Northern White Rhino Steering Committee in collaboration with international experts is assessing the best way forward (both in-situ & Ex-situ) to save this great sub species from extinction.

#### 5.4.3. Status of Elephant (*Loxodonta Africana*)

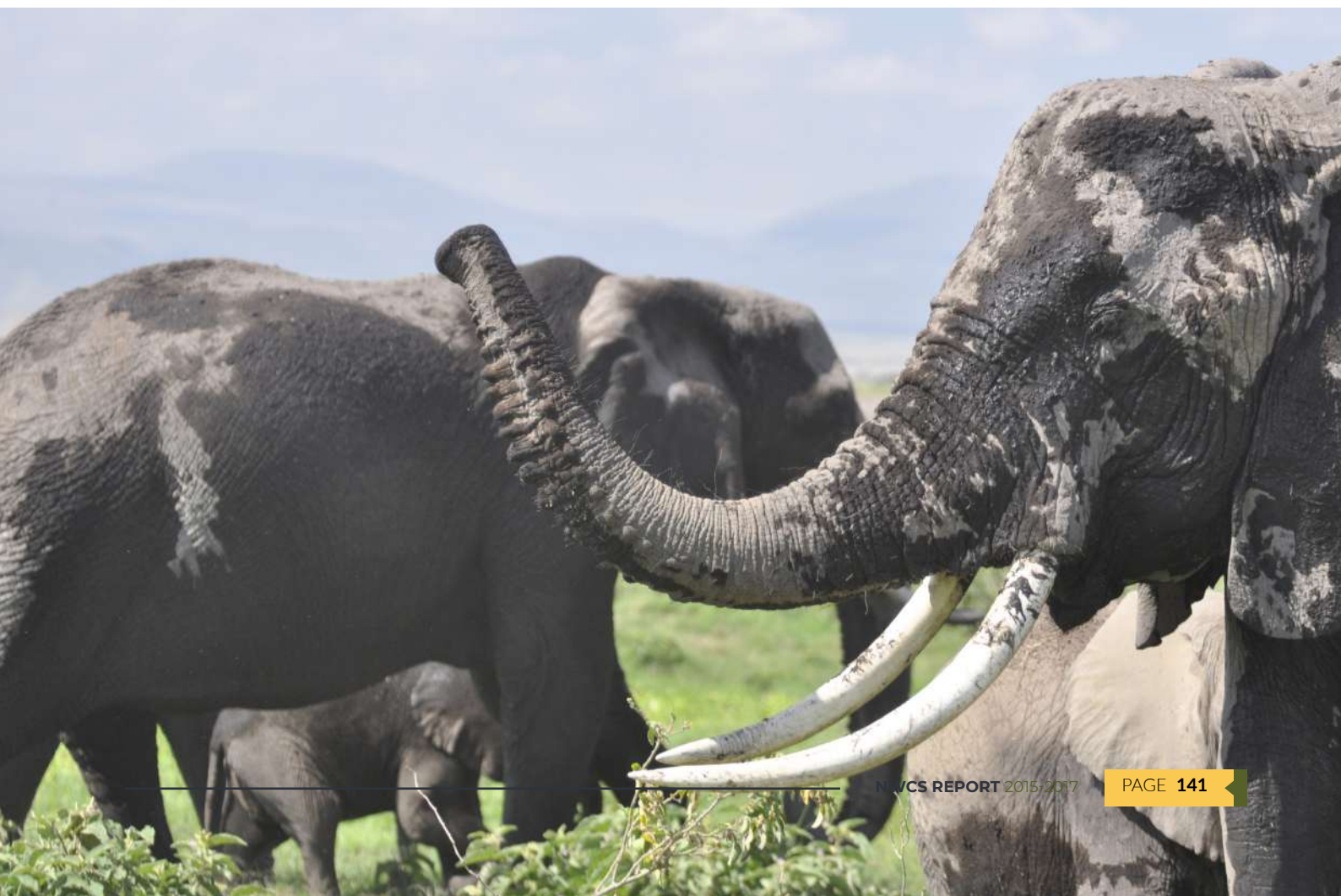
In the early 1970's Kenya's elephant population was estimated at 167,000 dropping to 16,000 by 1989. In the 1970's alone Kenya lost more than a half of its elephant population. Elephant hunting was made illegal in 1973. By 1980s there were 73,000 individuals. 90 % of the Kenyan elephant are found in the rangelands. IUCN data indicates that the elephant range in Kenya is 110,972km<sup>2</sup> which translates to 19% of the total land area in Kenya.

Figure 5.8 shows the elephant range in the 1990s & 2016. Figure 5.9 shows the distribution of elephants in Kenya.

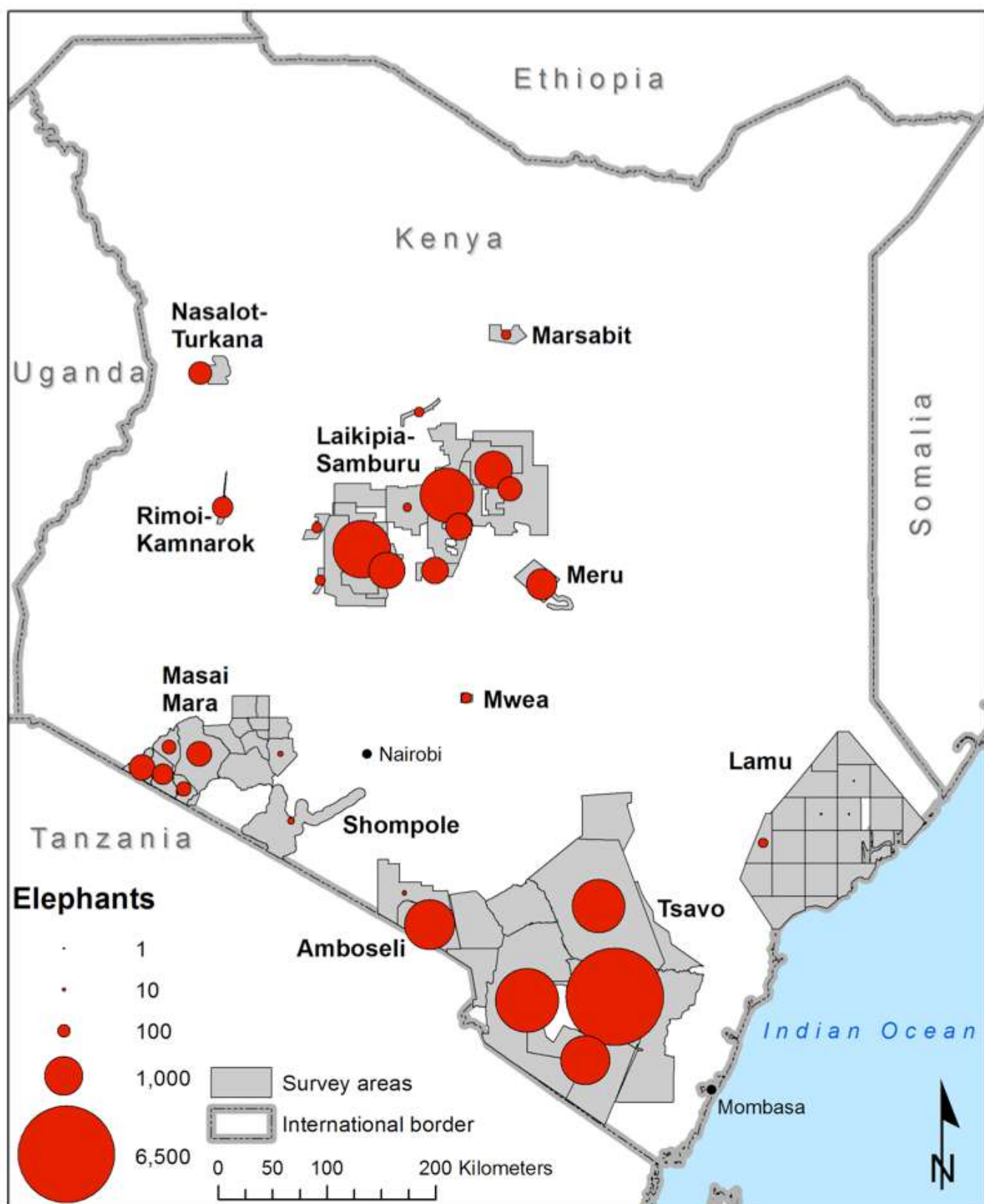


**Figure 5.8. Elephant range areas**

(The areas circled in red indicate ranges that are no longer being utilized by elephants.)







**Figure 5.9 Elephant Distribution in Kenya**

**Table 5.11. Summary of elephant population status by end of 2014, with updated information from recent census undertaken in certain areas**

Elephant areas	Survey type	Year	Estimate 2015/17	Estimate 2000-14
1. Aberdare Ecosystem	Dung count	2017	3,939	
2. Marsabit Ecosystem	Aerial total Count	2017	181	
3. Masai Mara Ecosystem	Aerial total Count	2017	2,493	
4. Meru Conservation Area	Aerial total Count	2017	674	
5. Mwea National Reserve	Aerial total Count	2017	125	
6. Samburu-Laikipia Ecosystem	Aerial total Count	2017	7,166	
7. Shimba Hills Ecosystem	Aerial total Count	2017	35	
8. Tsavo Conservation Area	Aerial total Count	2017	12,843	
9. Mau Forest Complex	Dung count	2016	652	
10. Mt Kenya National Park & Forest Reserve	Dung count	2016	2,579	
11. Lamu Ecosystem	Aerial total Count	2015	60	
12. Nasalot, S. Turkana, Rimoï-Kamnarok National Reserves	Aerial total Count	2015	662	
13. Amboseli-Magadi ecosystem	Aerial total Count	2014		1,766
14. Arabuko Sokoke Forest	Dung count	2002		184
15. Mt Elgon National Park & Forest	Informed guess	2002		139
16. Boni & Dadori National Reserves	Dung count	2000		50
Sub-Total			31,409	2,139
<b>Grand Total</b>			<b>33,548*</b>	





#### 5.4.4. Status of Giraffes

There are four distinct species of giraffe three of which are found distributed in 27 of the 47 counties of Kenya. The Masai giraffe (*Giraffa camelopardalis tippelskirchi*) is distributed from Nairobi National Park southwards through the Athi Kapiti plains and towards the Amboseli Maara ecosystem. Other areas with Masai giraffe include the Tsavo ecosystem. The Reticulated giraffe

(*G. c. reticulata*) is found in the ASAL parts of northern Kenya spreading from the northern part of Tsavo East National Park towards the Kenyan, Ethiopia Somali border. The Rothschild's giraffe

(*G. c. rothschildi*) is spread in small enclaves spread in the country including Ruma National Park (highest population) and Lake Nakuru

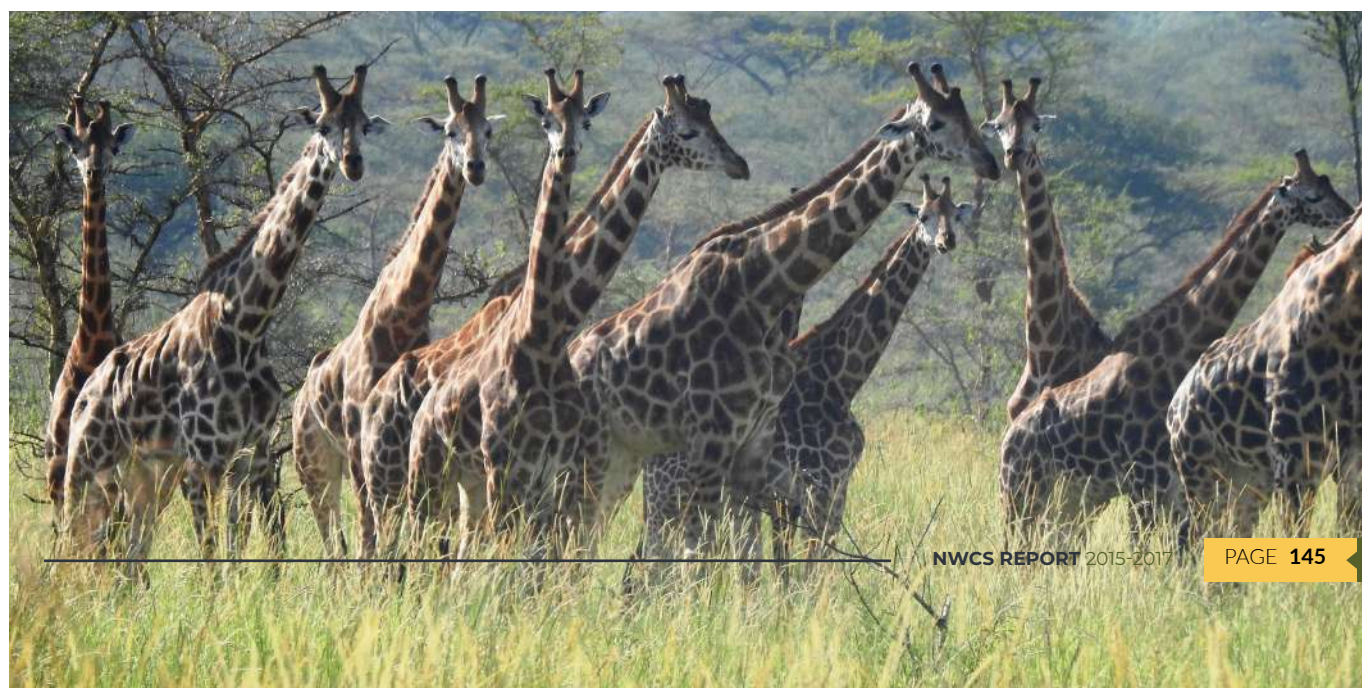
National Park. Nairobi Giraffe centre which was established in 1979 as a giraffe rescue centre has to date released over 500 giraffes into the wild including Soisambu, Kigio, Sergoit (Eldoret) and Mwea National Reserves. Table 5.12 gives the status while figure 5.10 show the habitat extends of the 3 subspecies of giraffes in Kenya. Threats facing giraffes include loss of suitable habitat due to agricultural expansion into their former habitats; logging of acacia trees for charcoal burning firewood and building (rampant in Kitui South National Reserve, Tsavo National Park & Masai Mara area); poaching; predation of calves by carnivores; and diseases (anthrax).





**Table 5.12 Status of Giraffes in Kenya**

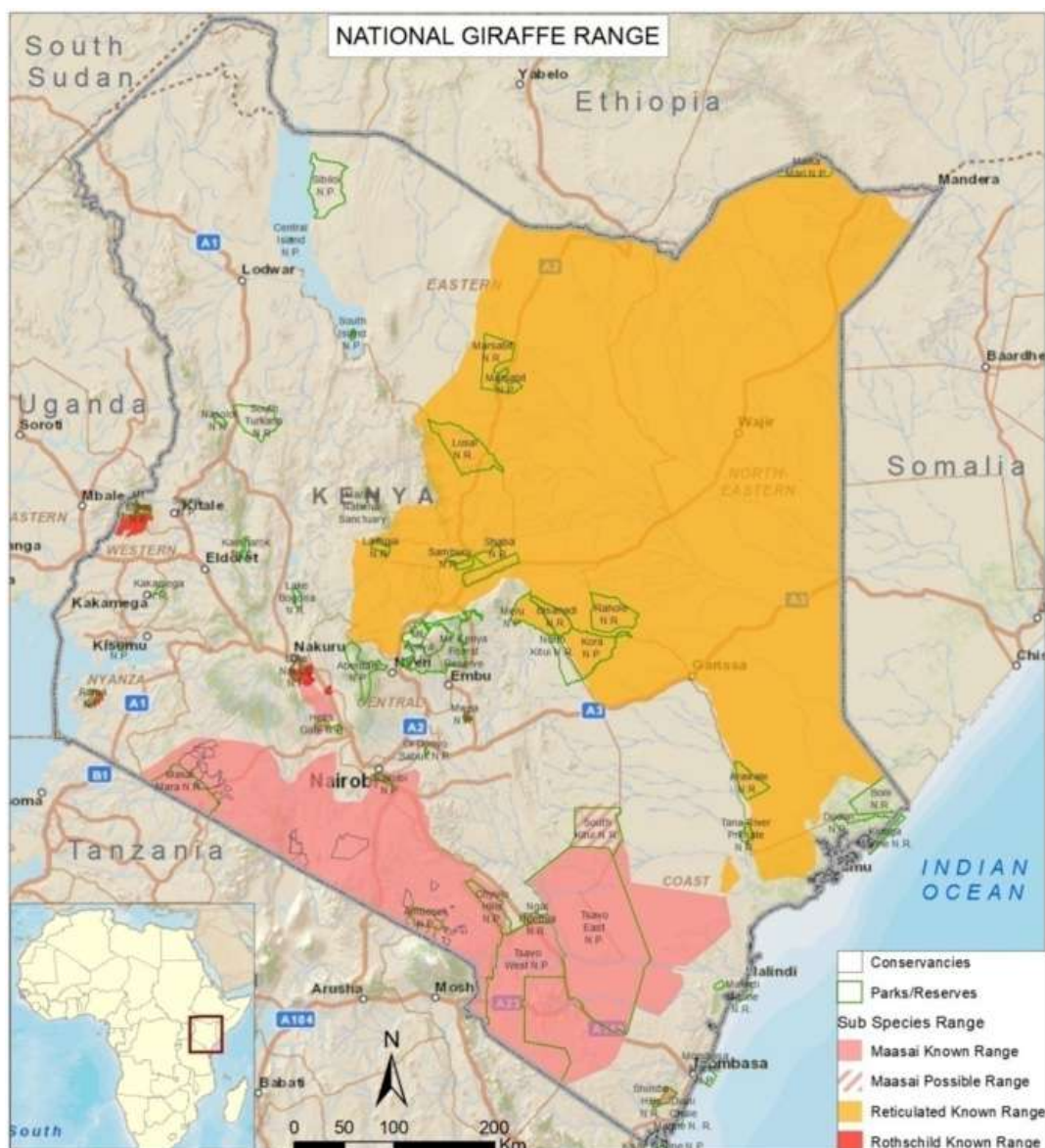
	NUMBER	SOURCE	YEAR	Remarks
<b>MASAI GIRAFFE</b>				
Tsavo	4,068	KWS	2017	Population is stable
Amboseli	3,470	KWS	2013	Population is stable
Namanga and Magadi	1,577	KWS	2013	
Masai Mara	2,607	KWS	2017	Population is stable & increasing
Nairobi National Park	112	KWS	2017	Population stable & increasing
Maanzoni-Malinda and Mwalimu Ranches	47	KWS	2016	Population decreasing due to shrinking habitat
Athi-Kapiti and Machakos Ranches	303	KWS	2005	Population decreasing due to shrinking habitat
Naivasha-Nakuru	529	NWC	2017	
Shimba Hills	4	KWS	2017	Population decreasing(Introduced population)
<b>TOTAL</b>	<b>12,717</b>			
<b>ROTHSCHILD'S GIRAFFE</b>				
Ruma National Park	176	KWS	2016	<ul style="list-style-type: none"> <li>In 1983 27 trans-located from Soi ranch in Eldoret</li> <li>Population stable &amp; increasing</li> </ul>
Ruko Community Conservancy	8	KWS/NRT	2017	In 2012 8 trans-located to Ruko
Soysambu Wildlife Conservancy	155	Soysambu	2017	Population stable
Kigio Wildlife Conservancy	34	Kigio	2017	
Lake Nakuru National Park	74	KWS	2017	Population stable
Mwea National Reserve	25	KWS	2017	
Mt. Elgon National Park	2	KWS	2017	In 2007 7 were trans-located from ADC farm
Rimoi National Reserve	5	KWS	2017	
Giraffe Centre	10		2017	
<b>TOTAL</b>	<b>489</b>			



**Table 5.13. Selected Counts of reticulated-giraffe sub-populations in Kenya**

Area	Year		Source
	2011	2015 - 2017	
	Number	Number	
Mandera County	130		Ogutu <i>et al</i> 2016
Marsabit Ecosystem		342	KWS aerial count
Wajir (Gurar)	3,797		Ogutu <i>et al</i> 2016
Laikipia - Samburu		4,019	KWS aerial count
Meru conservation area		876	KWS aerial count
Nyeri (Aberdare Country Club)	30		KWS
Garissa (South)		4,356	Ogutu <i>et al</i> 2016
Lamu(including Boni Dodori)		1,974	GEC aerial count
Total		15,524*	

In 2011 DRSRS recorded, a reticulated giraffe population of 6988 in their Garissa County transect



**Fig 5.10 Giraffe Range Map**



#### 5.4.5. Status of Hirola (*Beatragus hunteri*)

The four eyed Hirola is the most rare antelope and is listed as critically endangered. Its distribution range is found between the eastern boundary of Kenya and south west boundary of Somali. Presently its population is found within its native range and restricted communal lands of Bura, Galmagala, Ijara, Garissa, Masalani, Gedilun of Garissa County and parts of Tana River, and Tsavo East National Park. The current estimated population of Hirola is less than 500 individuals. In the 1980's rinderpest killed about 85 -90% of the existing 15,000 hirola together with other wildlife species. Despite the disease being eradicated unlike

other previously affected species, the Hirola population has never recovered. The threats facing the Hirola include diseases; poaching of elephants which open up wooded vegetation to grassland vegetation; bushfires; competition for pasture between livestock and wildlife; drought; predation by carnivores especially of mother and calves which isolate themselves from the herd immediately after calving. Table 5.14 gives the population distribution of Hirola in Kenya during this reporting period. Presently conservation efforts are being hampered by insecurity in the Hirola range. The only Hirola sanctuary is the Ishaqbini sanctuary in Ijaara sub-county.

**Table 5.14 Distribution of Hirola in Kenya**

Area	Population Estimate	Method	Population status	Source
<b>Tsavo East</b>	60-70	aerial and ground counts	Stagnant/declining	KWS
<b>Ishaqbini sanctuary</b>	90	aerial and ground counts	Increasing	NRT
<b>Sangailou (Garissa)</b>	60	scout based estimate	Declining	HCP
<b>Bura</b>	50	scout based estimate	Declining	HCP
<b>Gababba (Garissa/Tana delta)</b>	40	scout based estimate	Declining	HCP
<b>Ijara – east of Masalani</b>	30	scout based estimate	Declining	HCP
<b>Ishaqbini (outside the sanctuary)</b>	60 - 80	aerial reconnaissance	Stagnant/declining	NRT
<b>Bodhei (Garissa/Lamu)</b>	30	aerial reconnaissance	Declining	NRT
<b>Total population estimate</b>	<b>420-450</b>			





#### 5.4.6. Status of Roan Antelope (*Hippotragus equinus*)

The Roan antelope *Hippotragus equinus* is the third largest bovid in Africa after the Africa buffalo and Eland. It was once widely distributed through the savannah woodlands of east, central, southern and western Africa. But during the last 40 years the population has declined rapidly throughout much of its range. Listed by the IUCN as LC the WCMA, 2013, lists it as CE. Like in the Serengeti National Park in Tanzania the Roan is now extinct in the Mara. The Roan population in Ruma National Park has declined from over 200 in the mid 1970's to the present population (survey 2016) of 17

individuals (adult males 2 females 2, unsexed 12 juvenile 1). The viable population for the Roan is 50 individuals preferably in two herds. The 37 Roan trans-located from Ithanga sanctuary in 1970 to Shimba Hills National Reserve became extinct by 1985 for unclear reasons. The threats facing this species include encroachment, subsistence poaching, snaring, fire, loss of habitat, decreasing gene pool, highway on the northern part of Ruma National Park. The species is known to face carnivores and this has proved in many occasions to be detrimental to the species. Figure 5.11 shows the location of Roan Antelope in Ruma National Park.

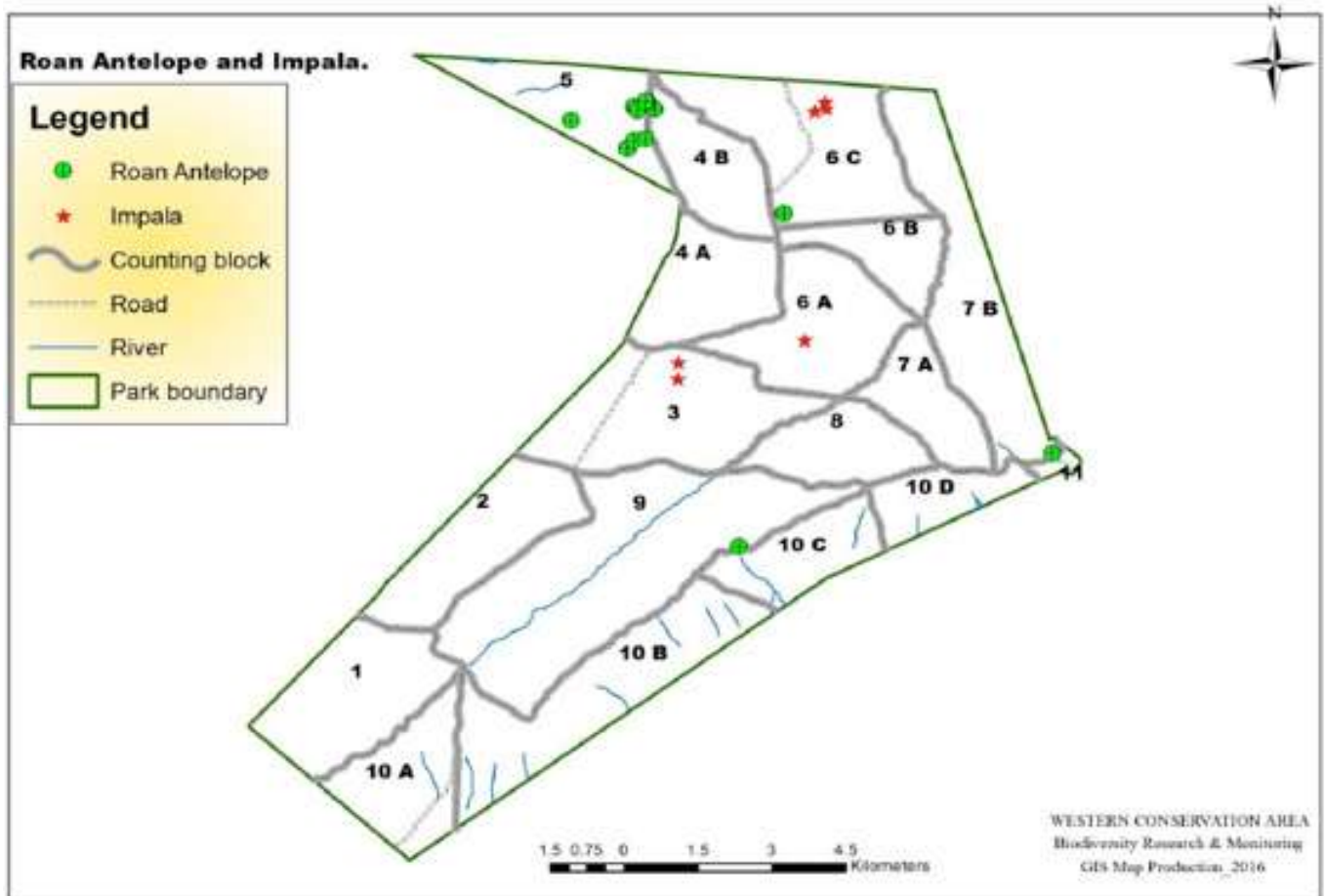


Figure 5.11 Roan antelope distribution in Ruma National Park



### 5.4.7. Staus Sitatunga Antelope

The Semi aquatic Sitatunga is mainly distributed along the shores of Lake Victoria and the associated wetlands of its main tributaries the Nzoia and Yala rivers. The recently gazetted Kanyaboli National Reserves besides being a bird sanctuary is also the second Sitatunga sanctuary after Saiwa. Other notable areas with Sitatunga include Ndere National Park, Kitale Nature Conservancy, and KingwalSwamp in Nandi, Lewa Wildlife Conservancy, Bunyala swamps and Yala swamp.

The national population in 2008 gave a population of 256 individuals as shown in table

5.15. The population estimate needs to be updated since the existing habitats are facing severe threats that include a) Loss of wetlands especially due to agricultural development (Dominion farms, Bunyala rice irrigation scheme), b) harvesting of wetland resources e.g. Brick basket making, mats and roofing materials, c) Water abstraction for agriculture, commercial, industrial and domestic use d) poaching especially for subsistence consumption, e) burning of papyrus reeds which constitutes sitatungas habitat.

**Table 5.15. Population status of Sitatunga (2008)**

Area	Population Estimate
Saiwa swamp	39
Lewa	8
Kingwal /Kimondo	125
Kibabet tea estate )	20
Kesses dam	50
Boits farm ( Marula swamp)	8
Kisumu impala	6
<b>Total</b>	<b>256*</b>



Plate: 18 Sitatunga



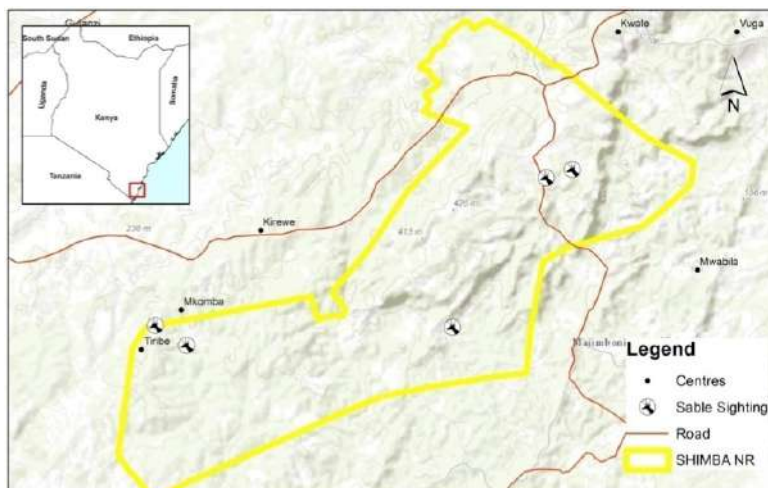
#### 5.4.8. Sable Antelope (*Hippotragus niger roosevelti*)

The Sable antelope (plate7) which is listed by IUCN as LC but CR under WCMA 2013 is endemic to Shimba Hills National Reserve in Kenya. The population has declined from approximately 265 individuals in 1960 to about 34 individuals in 2012 (KWS aerial census report, 2012) and 41 individuals in 2017 (KWS aerial census report, 2017). Presently they occur in two

herds in the Park. The viable population for the Sable is 50 individuals preferably in two herds. Threats faced by the species include predation by leopards and hyenas, fire, decreasing gene pool, poaching, snares, habitat degradation (a sizable area of the Reserve is under exotic forest plantation). The impact of tsetse fly in the Park, on wildlife is yet to be established. Sightings of Sable antelopes within Shimba Hills National Reserve are given in Figure 5.12.



Plate: 19 Sable Antelope



**Figure 5.12. Sable sighting in Shimba Hills National Reserve**



#### 5.4.9. Status of Eastern Mountain Bongo (*Tragelaphus eurycerus isaaci*)

The shy and reclusive Eastern Mountain Bongo is the largest of the forest antelopes and is listed by WCMA 2013 as E and as CE by IUCN. It is endemic to the Aberdares, Mount Kenya, the Mau and Cheranganis, with a few individuals left in the Eburu, West Mau and Londiani forests. The present population is estimated to be 96 individuals with the highest population being in Aberdares National Park (50). The viable breeding population for the Eastern Mountain Bongo is placed at 250 (Donald Bunge). A programme to reintroduce the species was

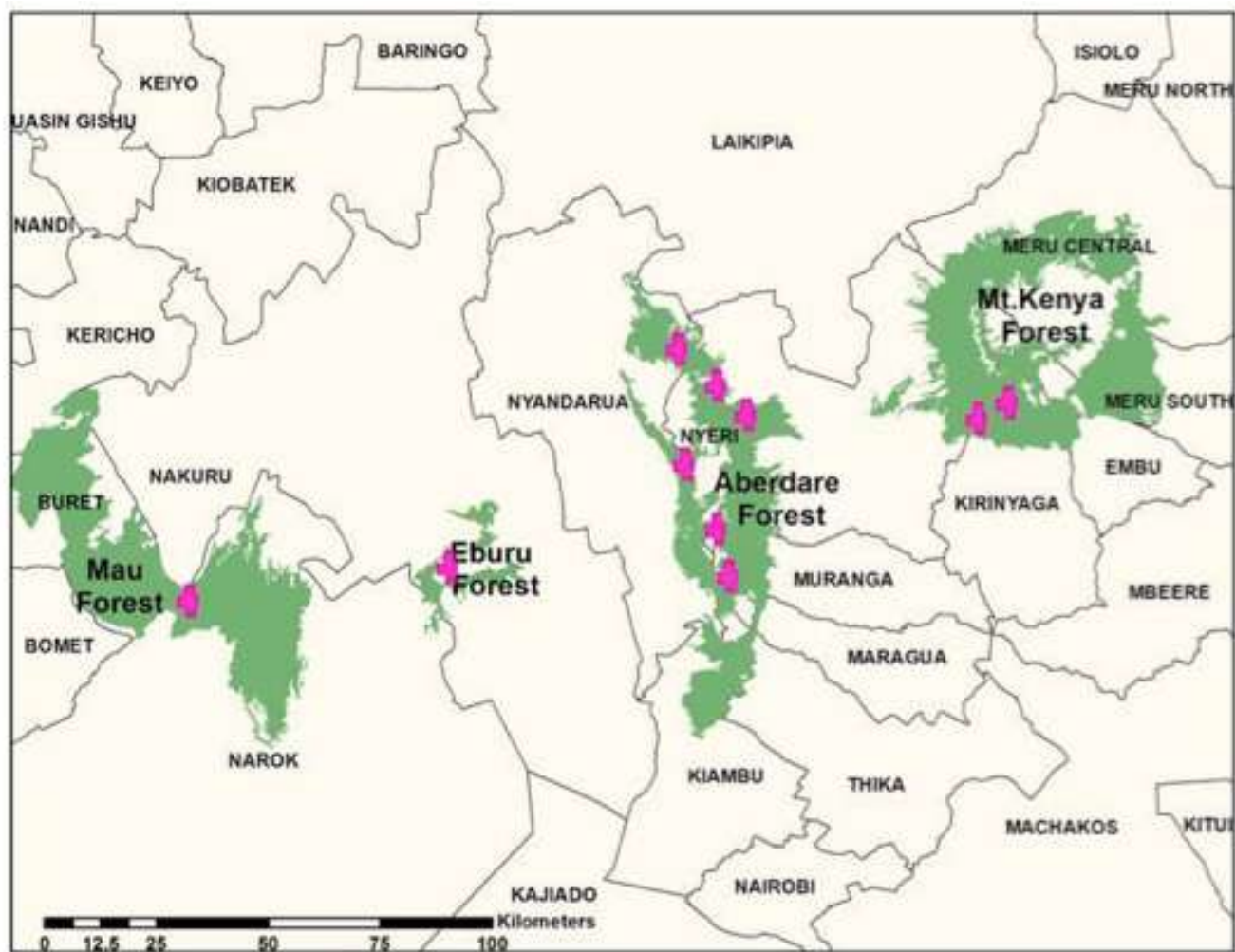
undertaken in Mt. Kenya conservancy where 18 individuals from Northern American zoos were introduced in 2004. Sixty one Eastern Mountain Bongos are held in captivity in USA in a breeding programme. In 2015, 18 calves were born at Mt. Kenya conservancy. The species in the last 50 years has been facing a myriad of threats including unrestricted hunting, poaching, loss of habitat, decreasing gene pool, fires, predators, illegal logging and diseases. The population of the species is highly susceptible to rinderpest as was seen in 1890's and 1990's. Table 5.16 gives Camera traps and Visual sighting in selected Eastern Mountain Bongo areas while Figure 5.13 shows the current Eastern Mountain Bongo range in Kenya.



Plate: 20 Eastern Mountain Bongo

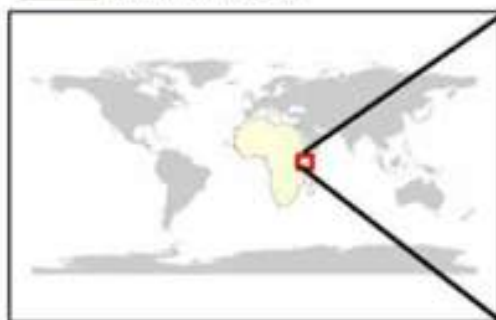
**Table 5.16 Results of Camera traps and Visual sighting in selected Eastern Mountain Bongo areas 2015-2017**

Area	Population estimate	Monitoring Results
The Aberdare National Park (BSP estimate is based on Honi population, no presence registered for 2+ years N. Aberdare - Kanjwiri and 5+ years S. Aberdare)	40- 50	<ul style="list-style-type: none"> <li>Up to 39 potential. 15+ calves observed.</li> <li>However, take into consideration concerns for Kanjwiri group (4) not seen in 2 years.</li> <li>S. Aberdare BSP accessibility issues. (Helicopter utilised in 2008 surveillance)</li> </ul>
Mt. Kenya National Park and Reserve (Ragati) – based on Camera Traps and visual forest information collected	6	<ul style="list-style-type: none"> <li>4 female individuals photographed</li> </ul>
Eburu – based on trap photographs and visual forest information collected	6	<ul style="list-style-type: none"> <li>individuals</li> </ul>
SW Mau Forest Reserve. Based on trap photographs and visual forest information collected.	6- 9	<ul style="list-style-type: none"> <li>6-9</li> </ul>
Masai Mau. Based on Trap photographs and visual forest information collected.	25	<ul style="list-style-type: none"> <li>Up to 18 on camera trap and 7 visual</li> </ul>
<b>Total population</b>	<b>96</b>	<b>77</b>



## Legend

- bongo distribution
- Forest
- district boundary



**Robinson Projection**

Central Meridian: -60.00

Redrawn from Hillman, 1982

**Figure 5.13. Current Eastern Mountain Bongo range in Kenya**



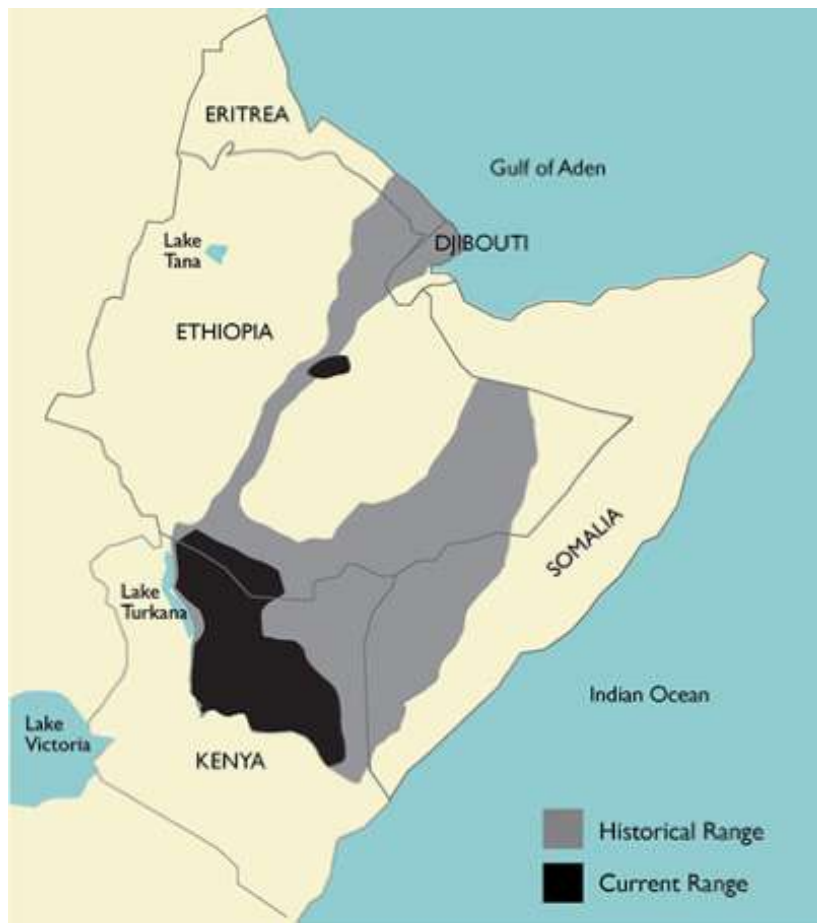
#### 5.4.10. Status of Grevy's zebra (*Equus grevyi*)

The species is listed as endangered by both the WCMA, 2013 and IUCN. Historically, the species was also found in Eritrea, Djibouti, and Somalia and with reported sighting in Sudan. Numbers of Grevy's zebra have declined from an estimated 15,000 individuals in the late 1970's

to 2,350 individuals presently. This translates to an 85% decline in the number of Grevy's Zebra over a period of about 30 years. Kenya has an enormous national and global responsibility to ensure that this species is conserved for posterity. It is estimated that 95% of the current population of Grevy's zebras is found in Kenya. Of these 90% are found in conservancies.



Plate: 21 Grevy's zebra



**Figure 5.14. Grevy's zebra historical and current range distribution**



**Table 5.17 Population status of Grevys Zebra in Kenya**

#	Area	Population Estimate (2016)	Remarks
1.	Isiolo	268	Mainly in the conservancies
2.	Samburu	429	Mainly in the conservancies
3.	Marsabit	75	Mainly in the conservancies
4.	Laikipia	1,206	Mainly in the conservancies
5.	Meru	8	Meru National Park. Population is declining from the initially introduced 20. Only 1 birth has ever been recorded.
6.	Oserian	6	Introduced population
7.	Others	34	Wamba ,Tsavo, Gurar,South Horr

#### 5.4.11. Status of Common hippopotamus (*Hippopotamus amphibius*)

The species is listed as Vulnerable by both IUCN and the sixth schedule (WCMA, 2013). Global estimate of Hippos numbers by IUCN in 2016 was between 116,000 to 130,000 individuals. In Kenya the species is found in most fresh water lacustrine and palustrine wetlands including L.Victoria, Lake Turkana, L.Naivasha, L. Baringo, L.Kenyatta, Tana and Athi- Sabaki Rivers, MaraRiver, Kuja River, Yala Swamp, Lorian Swamp, Mzima Spring amongst others. Hippos are also found in manmade wetlands such as the Masinga, Kiambere, Kamburu dams and Ruai sewerage ponds. IUCN estimates Kenya population to be 6,500 individuals. Major threats include habitat degradation, illegal and unregulated subsistence poaching and trophy, over abstraction of water and

diversion, and water pollution. Habitat loss and degradation has resulted to conflict with agricultural development and farming.

#### 5.4.12. Status of Lelwel Hartebeest(*Alclephus buselaphus*)

It is one of the eight (Cokes, Western, Red, Lichtenstein, Swayne, Northern, Tora) subspecies of the hartebeest and is classified as endangered by both the IUCN and the sixth schedule (WCMA). Globally the population has declined from 285,000 in the 1980s to less than 70,000 in 2017(IUCN). In Kenya it is found in Laikipia, Naivasha (Kongoni Island), Ruma N.P and Masai Mara. Threats facing the Lelwel Hartebeest include habitat loss in its rangeland caused by human encroachment especially due to agricultural development; subsistencepoaching. The population status of the Lelwel Hartbeest is yet to be established.

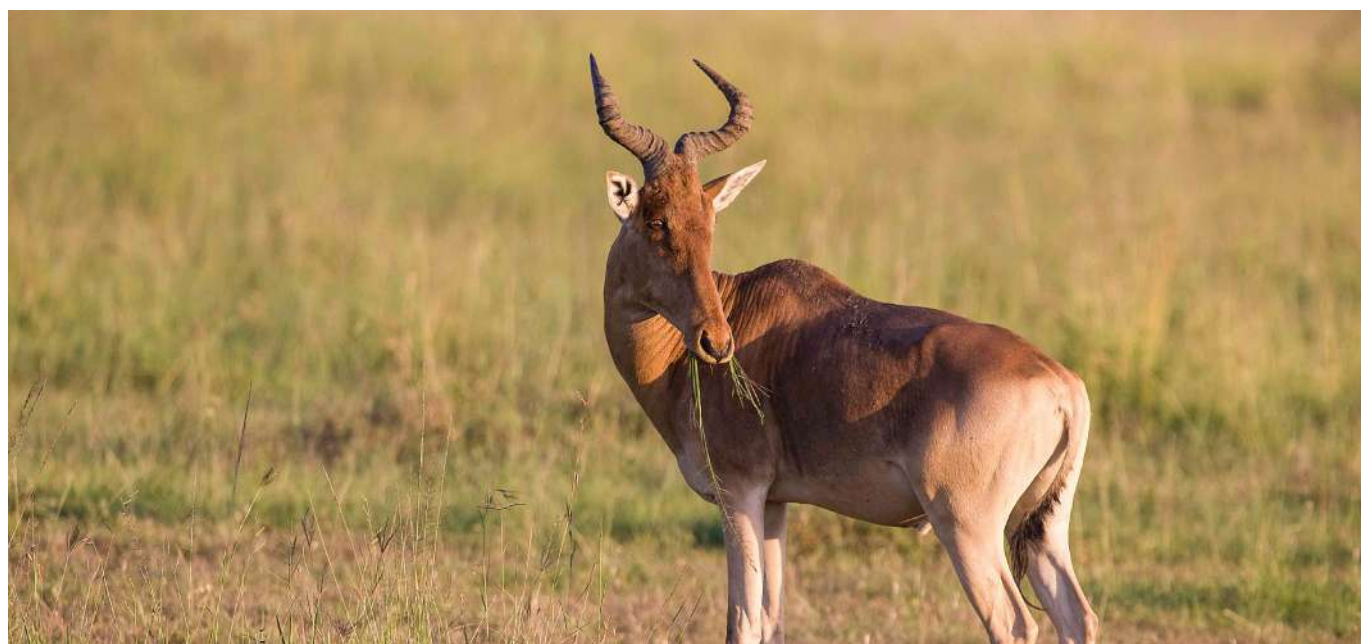


Plate: 22 Lelwel Hartbeest

#### 5.4.13. Status of Soemmerring's gazelle (*Gazella soemmerringii*)

IUCN and WCMA lists the Soemmerring's gazelle species as vulnerable. The species distribution is the Ogaden area and other lowlands of Eastern Ethiopia. It occasionally ventured as far south of Ogaden to extreme north east Kenya. No sightings have been reported in Kenya since

1999. The major factors of the drastic decline in population are attributed to the great drought in the Ogaden area and rampant over grazing. Other exacerbating factors were hunting and habitat destruction.



Plate: 23 Soemmerring's gazelle

#### 5.4.14. Status of Lesser Kudu (*Tragelaphus imberbis*)

The species is listed as vulnerable in WCMA, 2013 and as threatened by IUCN. The species has a wide range but is basically a wooded grassland species. It is found in many of the protected areas including conservancies in Laikipia, Mara, Kajiado and Taita. Notable populations are found in the Tsavos, Marsabit,

Meru conservation area (Meru and Kora National Park, Bisanadi and North Kitui National Reserves), Bogoria, Samburu, Lamu, Tana River and Garissa. Threats to the species include predation, encroachment, and habitat conversion, subsistence poaching and high susceptibility to rinderpest. Population status is yet to be established but presently believed to be stable especially in the protected areas.



Plate: 24 Lesser Kudu



#### 5.4.15. Status of Greater Kudu (*Tragelaphus strepsiceros*)

Schedule six lists the species as vulnerable and least concern by IUCN. The last global estimate done by East, 1999 estimated a total population of about 482,000 individuals. There are 4 sub-species of strepsiceros. Two of these are found in Kenya. In the north Samburu, Marsabit, Laikipia, Bogoria and Meru is the *Tragelaphus strepsiceroschora* while in the south Tsavo and Mara is the *Tragelaphus*

*strepsicerosstrepsiceros*. Presently there are some populations in Meru, Samburu, and Garissa and in a few conservancies in Laikipia. According to DRSRS census, in the 1970's the National population of the species was 272, in the 1980's 400, in the 1990's 704 while in the early 2000's there were 762 individuals. The population in Tsavo is likely to be extinct. Threats facing the species include loss of habitat; deforestation and subsistencepoaching. Its population status in the country is unknown but believed to be declining drastically.



Plate: 25 Greater Kudu



#### 5.4.16. Status of Giant forest hog (*Hylochoerus meinertzhageni*)

The Giant forest hog is native to montane wooded habitat but do not tolerate low humidity. Their range resembles exactly the one for the Eastern Mountain Bongo. They occur in

Aberdare National Park, Mt. Kenya National Park & Reserve, Kakamega Forest and possibly in the Mau Forest. The status of this species is presently unknown. Threats facing the species include poaching, loss of habitat due to illegal logging.



Plate: 26 Giant Forest Hog

#### 5.4.17. Status of Tana Crested Mangabey (*Cercocebus galeritus*)

This critically endangered (WCMA, 2013) endemic long tailed monkey is a primate species in the family Cercopithecidae. IUCN lists the species as endangered. The species is restricted to about 30 patches of forests along the lower Tana with an EOO of 60km from Nkanjonja to Hewani. The present population is estimated to be about 1000 individuals in 1 sub-population. The species is listed under appendix I of CITES and class A of the African Convention on the Conservation of Nature And Natural Resources. about 60% of the population lives

in the Tana river Primate Research while the rest is found in adjacent forests and on trust and government land.

The species is threatened by deforestation, burning of grassland which slows forest regeneration, livestock incursions into forests and damming of the Tana river upstream which affect the water table and thus the forest. They are preyed on by African Crowned Eagle, Martial Eagle and Nile Crocodile. The species is also persecuted due to raiding of Crop Destruction. The court order in 2007 to degazette the Reserve further aggravated the conservation status of the species.



Plate: 27 Tana Crested Mangabey

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#### 5.4.18. Status of Red Colubus Monkey(*Piliocolobus rufomitrat*)

Due to its small EOO (50km<sup>2</sup>) and the increasingly smaller isolated AOO has resulted in the species being listed as endangered by IUCN and critically endangered by WCMA, 2013. Presently the species occurs in some clear localized area which are facing rapid destruction. The area runs from Kipende on the lower Tana river to Mitipani where the Tana flood plains begins. This area has about 30 patches of fragmented forests which support the species. The population presently is estimated to be

about 1000 individuals divided into about 80 to 90 groups.

The species is threatened by deforestation, burning of grassland which slows forest regeneration, livestock incursions into forests and damming of the Tana river upstream which affect the water table and thus the forest. Poaching for meat and skin on a local basis is equally a threat to the species. The proposed Tana integrated sugar project that will occupy about 200km<sup>2</sup> is likely to be a serious threat to the existence of this species.



Plate: 28 Red Colubus Monkey

#### 5.4.19. Status of Eastern Tree Hyrax (*Dendrohyrax validus*)

This species belongs to the family Procaviidae and is listed as near threatened by IUCN. It is found in the Aberdare range, Mau forest and Mt. Kenya regions. The species are found in fig trees and riverine forest in Mt. Kenya while

in Abaderes they occupy the mid-montane and riverine forest. The main threat facing the species includes forest loss, degradation and fragmentation as well as hunting for meat and skins. Although it occurs in a number of Reserves much of its habitat remains unprotected. Their status is presently unknown.



Plate: 29 Eastern Tree Hyrax

## 5.5. Other Listed Species

### 5.5.1. Status of Shrews

There are more than 330 species of shrews found all over the world. These are mole-like mammals in the order of eulipotyphla. They are animalivorous i.e. they eat small live prey mostly invertebrates although some prey on small vertebrates. Shrews need to consume 200 – 300 % of their body weight in food every day in order to survive. There are 38 species 10 of which are listed as being endangered.

Table 5.18 gives the status of the 10 listed (schedule 6 of WCMA, 2013) shrew species in Kenya. Most of the shrews have a relatively low extent of occurrence (EOO) which basically is montane and lowland forest. Their areas of occurrence (AOO) are equally highly specialised and therefore limited within very specific range. Any slight interference in their ranges constitutes a threat to their existence. Some of these threats include habitat loss and change, encroachment, destruction of their ground nests, logging, pollution, farming and introduction of invasive species.

**Table 5.18 Status of listed Shrews in Kenya**

s/n o	Common Name	Scientific Name	Listing		Location	Population Status	Remarks
			IUCN	WCM A			
1.	Golden ramped elephant shrew	Rhynchocyon chrysopygus	E	E	Boni forest, Arabuko sokoke, Dakatcha	20,000	Last estimate done by Clare de Brito 1994 Arabuko forest  Dakatcha woodlands facing severe encroachment
2.	Black & rufous elephant shrew/the black and rufous sengi or zanj elephant shrew	Rhynchocyon petersi	LC	V	Arabuko sokoke, Gede forest	DD	It is ranked 46 <sup>th</sup> out of 5000 mammal species based on the ZSL scoring system for the world's mammals based on their evolutionary distinctiveness (ED weighted by global endangerment (EDGE)
3.	Aberdare shrew\Aberdare mole shrew	Surdisorex norae	LC	V	East side of the Aberdare mountain range (Kerbis Peterhans et al 2009)	DD	Lives in the high tropical high altitude bamboo and grassland.  Threatened by climate change
4.	Mt. Kenya shrew	Surdisorex polius	LC	V	Mt. Kenya	DD	Habitat Tropical high altitude bamboo & grassland
5.	Elgon shrew	Crocidura elgonius	LC	V	Mt. Elgon	DD	Habitat – sub tropical or tropical moist montane forest
6.	Fischer's shrew	Crocidura fischeri	DD	V	Kajiado nguruman	DD	Extent yet to be established due to taxonomic issues surrounding its relationship with Voi shrew yet to be resolved



6.	Fischer's shrew	<i>Crocidura fischeri</i>	DD	V	Kajiado nguruman	DD	Extent yet to be established due to taxonomic issues surrounding its relationship with Voi shrew yet to be resolve
7.	High land shrew	<i>Crocidura allex</i>	LC	V	Mt.Kenya, Aberdare ranges, Mau forest, Nanyuki	DD	Threatened by agricultural expansion in other parts of its range.AOO under severe pressure
8.	Rombo Shrew	<i>Crocidura monax</i>	LC	V	Mt. Elgon	DD	Additional studies are needed into the taxonomy, distribution, abundance, general ecology and threats to this little-known specie
9.	Smokey white toothed shrew	<i>Crocidura fumosa</i>	LC	V	Mt.Kenya & Aberdare range	DD	Threatened by habitat loss
10.	Vermiculate shrew	<i>Crocidura xantippe</i>	LC	V	Tsavo National Park.	DD	Population outside protected areas being threatened by decreasing AOO



Plate: 30 Black & rufous elephant shrew



Plate: 31 Golden ramped elephant shrew

### 5.5.2. Status of Listed Bats (Chiroptera)

About one quarter of all mammals found in the country are bats. Kenya has about 110 bat species divided into 10 families. Kenyan bats are distributed throughout the country and inhabit virtually all types of physical and natural geographical and environments states. The largest aggregations of bats in the country are found in coral caves along the coast. One such cave in Kilifi County supports millions of bats with about 6 different species. Bats are

nocturnal mammals and that combine sight (bats are not blind) with echolocation for movement in search of food and avoidance of hindrances and predators.

Threats to Bats basically by human activities thiyat include- disturbances of their roosts, environmental pollution, persecution (cultural beliefs), and fragmentation. The evolution of wind farms for power generation in the last decade is now prooving to be a major factor in bat mortality. The table 5.19 below gives the status of the listed bats in the country.

**Table 5.19 status of the listed bats in the country**

#	Common name	Scientific name	Location	Listing	Population Trend	Threats
1.	Percival's short eared Trident bat Thomas 1901	<i>Cleotis percivali</i>	Isolated population on coast of Kenya	IUCN-LC WCMA-VU	Unknown	Roost disturbance
2.	East African little Collared Fruit Bat, Bergmans 1980	<i>Myonycteris relicta</i>	Narrowly distributed in SE Kenya	IUCN-LC WCMA-VU	Decreasing	Habitat loss through logging, harvesting of firewood and conversion of land to agriculture
3.	Hildegard's tomb bat	<i>taphozous hildergadeae</i>	Distributed along the Coast of South east Kenya from lower Tana River Southwards.	IUCN-VU WCMA-VU	Last population done in 1988 yielded 1500 individuals in 3 caves	Loss of forest habitats and disturbance of caves on which the species depends
4.	Macinnes mouse-tailed bat Hayman, 1937	<i>Rhinopoma macinnesii</i>	Northern Kenya but endemic to East Africa (Ethiopia, Kenya, Uganda; Somali)	IUCN-DD WCMA-VU	Unknown	Habitat loss but this needs confirmation
5.	Hamilton's tomb bat	<i>Taphozous hamiltonii</i>	Western shores of Lake Turkana	IUCN-DD WCMA-VU	unknown	Threats facing this species are unknown. It could be declining due to habitat loss through agriculture, but the data to confirm this is lacking
6.	Kenyan big eared free-tailed bat	<i>Tadarida lobata</i>	Maungu Hills & North west of Kenya	IUCN-DD WCMA-VU	unknown	There appear to be no identifiable threats to this species (IUCN)
7.	Large-eared free-tailed bat (matschie 1897)	<i>Otomops martiensseni</i>	Lava tubes in Chyulu Hills, Tsavos and Suswa	IUCN-NT WCMA-VU	Decreasing	Disturbance of their cave habitat. Threats to these caves include blocking of entrances, recreational caving and unregulated tourism activities

### 5.5.3. Status of Rodents

Presently Kenya has 194 rodents which are divided into 11 families. Anomolures 1, 3 Mole rats, Hamsters Voles, Lemings and Allies

1; dormice 3, Porcupine 3; Rats & Mice 63, Nesomyids 6, Spring hare 1, Squirrels 10, Mole-Rats 1 and Cane Rats 2 Table 5.20 gives the status of the listed rodents in Kenya.

**Table 5.19 status of the listed bats in the country**

s/no	Common Name	Scientific Name	Listing		Location	Population Status	Remarks
			IUCN	WCMA			
1.	Hopkin's groove-toothed swamp rat	<i>Pelomys hopkinsi</i>	DD	VU	Lake Victoria	Unknown	<ul style="list-style-type: none"> <li>Endemic to L. Victoria basin</li> <li>Change in land use especially to agricultural use and therefore treating the species as a pest</li> <li>Loss of papyrus swamp (It's Habitat)</li> </ul>
2.	Audacious mole rat (Abedares mountain mole rat)	<i>Tachyoryctes audax</i>	LC	VU	Abedares, Mt. Kenya	Unknown	<ul style="list-style-type: none"> <li>Endemic to Kenya</li> <li>Since most of its habitat is in protected areas, its population seems to be stable</li> </ul>
3.	Lesser hamster-rat (long tailed pouched rat)	<i>Beamys hindei</i>	LC	VU	Arabuko sokoke, Gede	Unknown	<ul style="list-style-type: none"> <li>Threatened Habitat (tropical &amp; subtropical lowland forest) – mainly due to agricultural and associated practices</li> <li>captured as pets</li> <li>illegal trade</li> </ul>
4.	Dwarf multimammate mouse	<i>Mastomys pernanus</i>	DD	VU	Kajiado, Narok	Unknown	<ul style="list-style-type: none"> <li>Its habitat is tropical &amp; subtropical grassland savannas &amp; grasslands mainly lost to wheat farming &amp; rapid urbanization</li> <li>Its area EOO has greatly been affected by change in land use especially farming</li> <li>Its AOO is now restricted to small fragmented natural grassland areas with minimal livestock incursion.</li> </ul>
5.	Springhare	<i>Pedetes capensis</i>	LC	VU		Unknown	<ul style="list-style-type: none"> <li>Hunted for food and clothing</li> <li>No recent sightings have been reported</li> </ul>
6.	Red bush squirrel (The red bellied coast squirrel)	<i>Paraxerus palliatus</i>	LC	VU	Arabuko forest, Gede Taita hills	Unknown	<ul style="list-style-type: none"> <li>Deforestation and degradation of original coastal forest habitat is a major threat</li> </ul>



#### 5.5.4. Status of Montane/Kenyan Dancing Jewel (*Platycypha amboniensis*)

This is the only listed insect species and is listed as critically endangered by the IUCN and WCMA, 2013. The species belongs to the African Damselfly and in the family chlorocyphidae which has about 10 species. The species is endemic to the montane forest streams of the Aberdares and Mt. Kenya and only found

between 1600 and 2000M above sea level. The species is critically in danger of extinction due to severe habitat loss and degradation. The forest under which its EOO is defined has been cleared leaving only fragmented pockets (AOO) where it presently occurs. The continued illegal logging, charcoal burning and clear cutting has further aggravated the survival of the species.



Plate: 32 Montane Dancing Jewel

#### 5.5.5. Status of Fish

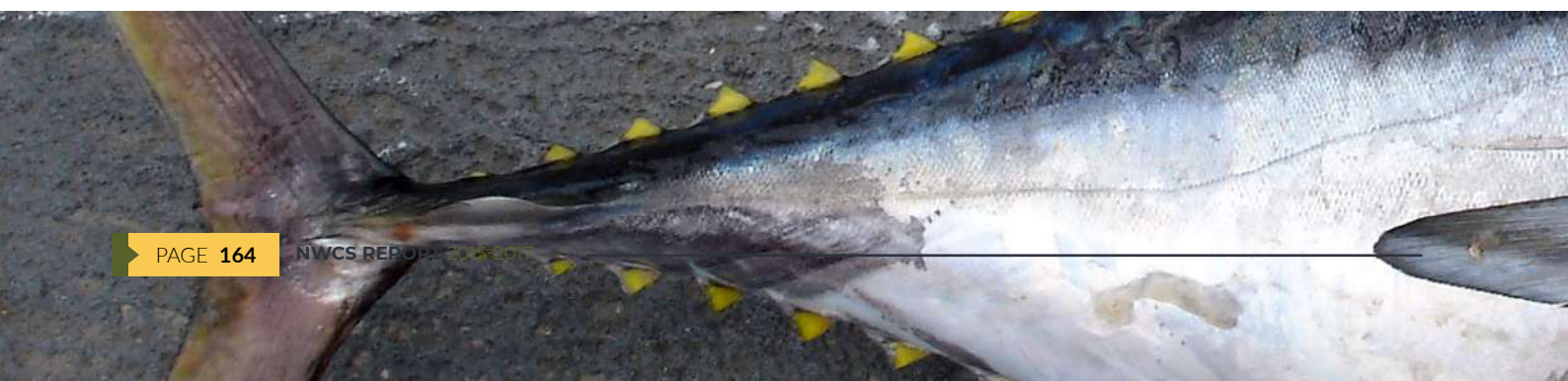
There are 355 fish species recorded in the country as fresh water fishes but currently only 332 species are confirmed present, 15 species are recorded as possibly present while 8 are extipated. Presently 25 fresh water fish species

are listed as endemic. Kenyan lakes and rivers are home to a variety of fishes some which show endemism and some which though wide spread and due to a variety of reasons are now listed as threatened. Table 5.21 gives the status of the 11 listed fish species in Kenya.



**Table 5.21 Listed Fish Species in Kenya**

	Common Name	Scientific Name	Protection classification	Location/ Remarks	Status 2015-2017	Threats
1	Singidia tilapia (local name – mwekundu)	<i>Oreochromis esculentus</i>	IUCN-CR WCMA-CR	Established into lake Jipe in 1976 and is now the dominant species	Population declining	<ul style="list-style-type: none"> <li>• Heavy fishing pressure</li> <li>• unregulated fishing</li> <li>• marked reduction of diatoms from phytoplankton's at the expense of "unpalatable" cyanobacteria</li> <li>• massive typha species infestation of the spawning and nursery grounds</li> <li>• increased siltation due to agricultural and cattle grazing practice in the area</li> <li>• clearance of water-laden woodlands for agriculture and for fuel wood</li> <li>• pollution from domestic and agricultural effluents</li> </ul>
2	Rainbow Sheller	<i>Ptyochromis sp nov</i>	IUCN- WCMA-CR	Endemic to lake Victoria	Population declining	Threats unknown
3	Lake Victoria deep water catfish	<i>Xenoclaris eupogon</i>	IUCN WCMA-CR	Endemic to Lake Victoria	Possibly extinct (no recorded landing)	<ul style="list-style-type: none"> <li>• predation by Nile Perch</li> <li>• increased eutrophication of the lake</li> <li>• overfishing</li> </ul>
4	Lake Chala Tilapia	<i>Oreochromis hunteri</i>	IUCN WCMA-CR	Endemic to Lake Chala- (extent of occurrence < 2Km <sup>2</sup> ) on the eastern slopes of Mt. Kilimanjaro	Population declining	<ul style="list-style-type: none"> <li>• Weed infestation- increased surface plankton whose decomposition depletes oxygen</li> <li>• Siltation and erosion</li> <li>• Lake is strongly stratified and thus little mixing and only the top 20m depth (epilimnion) supports life</li> </ul>
5	Lake Jipe tilapia	<i>Oreochromis jipe</i>	IUCN WCMA-CR	Endemic to lake Jipe  On Kenyan side of the lake the lake falls within Tsavo West National	Population declining	<ul style="list-style-type: none"> <li>• Competition for habitat with the more dominant <i>oreochromis esculentus</i></li> <li>• High level Siltation</li> <li>• Weed-<i>typha domingensis</i>, <i>cyperus papyrus</i> and <i>phragmites mauritianus</i>-infestation</li> <li>• Overfishing especially by nets</li> </ul>





				park and is thus protected		<ul style="list-style-type: none"> <li>Increasing salinity due to reduction in lake levels</li> </ul>
6	Victoria Tilapia	<i>Oreochromis variabilis</i>	IUCN- CE	<p>Lake Victoria &amp; it's tributaries</p> <p>Restricted to a few small satellite lakes</p>	<p>Population declining</p> <p>Estimated EOO &lt;100km<sup>2</sup></p>	<ul style="list-style-type: none"> <li>Over fishing using illegal methods &amp; gear</li> <li>Competition for habitat &amp; food with exotic species (introduced Nile Tilapia)</li> <li>Predation by introduced Nile Perch</li> </ul>
7	Magadi Tilapia	<i>Alcolapia alcalicus</i>		Lake Magadi (lakes Natron and Manyara in Tanzania)	Population declining	<ul style="list-style-type: none"> <li>Overexploitation due to use of small meshed nets, beach seines in particular and intensive fishing efforts</li> <li>Decrease in water levels</li> <li>Sedimentation is a major problem</li> </ul>
8	Victoria stonebasher	<i>Marcusenius victoriae</i>	IUCN-LC WCMA-EN	Yala swamp, Lake Kanyaboli, Lake Victoria and mouths of rivers entering lake Victoria, Mara river	Population declining but deemed to be stable	<ul style="list-style-type: none"> <li>Predation by Nile Perch</li> <li>Water turbidity and siltation as a consequence of erosion and farming expansion</li> <li>Regression of wetlands due to farming and human settlements</li> <li>Irrigation</li> <li>Eutrophication</li> <li>Loss of riverine migratory routes</li> <li>Illegal fishing methods</li> </ul>
10	Kyoga flameback	<i>Xystichromis nuchisquamulatus</i>	IUCN-CR WCMA-EN	Species endemic to lake Victoria	Population declining	<ul style="list-style-type: none"> <li>Presence in Kenya is not documented</li> <li>Likelihood of hybridization due to decrease in water transparency</li> <li>Predation by Nile perch</li> </ul>
11	Ewaso nyiro labeo	<i>Labeo percivali</i>	IUCN-VU WCMA-EN	Only in the northern part of Ewaso nyiro river	Population status is unknown	<ul style="list-style-type: none"> <li>Likely to be affected by change in water quality and quantity</li> </ul>





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#### **5.5.5.1. Status of Plain Northobranch (*Nothobranchius bojiensis*)**

This endemic species to Kenya belongs to the family Aplocheilidae and is found in the northern Ewaso ngiro drainage in the seasonal waters of Boji plains near Merti. It is listed both by the IUCN and WCMA 2013 as vulnerable. It's EOO and AOO is very restricted. There is very scanty information on its population status and threats to this species

#### **5.5.5.2. Status of Elongate nothobranch (*Nothobranchious elongatus*)**

This species of the Aplocheilidae family inhabits temporary pools of water along the Mombasa Kaloleni road. It is only found between 170-200M ASAL and thus has a very restricted EOO and AOO. Its habitat is intermittent freshwater marshes- ephemeral ponds. It is listed by both the IUCN and WCMA-2013 as Vulnerable. The species usually dies as the ponds dry but the eggs survive and hatch during the next wet season. Its lifespan is thus very short and rarely exceeds 6 months. It reaches maturity in about 20 days.



Plate: 33 Elongate Nothobranch

#### **5.5.6. Status Of Listed Toads And Frogs**

Researchers have expressed concern over the rapid decline of frog populations in Kenya and Africa in general, citing disease (chytrid fungus-which has been documented to be responsible for the demise of frogs in other countries) and destruction of natural habitats (fires & land conversion) which have been cited as major threats to their existence. The situation has been further compounded by the lack of information on the species. Data from IUCN shows 1,800 species of amphibians across the world face extinction. Presently Kenya has 20 amphibian

species listed as endemic. Human activities such as logging and agricultural expansion, climate change and alien species invasion have been blamed for the declining frog population in Kenya. Poor waste management leading to pollution of water bodies, which constitutes home to amphibians, has also contributed to this decline. Construction of hydro-electric power is a major threat to migratory frog and toad species. Most of these species have a narrow EOO and thus are easily affected by any anthropogenic interference.



**Table 5.21 Listed Fish Species in Kenya**

#	Common Name	Scientific Name	Protection classification	Location/ Remarks	Status 2015-2017	Threats
1.	Du toit's Torrent Frog (kenya rocky river frog)	<i>Peptropedetes dutoitii/arthroleptides dutoitii</i>	IUCN- WCMA- CR	Endemic to Kenyan side of mount Elgon in the upper rocky montane streams	DD	<ul style="list-style-type: none"> <li>Last recorded in 1962</li> <li>Suspected cause was chytridiomycosis</li> </ul>
2.	Nairobi Toad	<i>Bufo Nairobiensis</i>	IUCN- WCMA-VU	Highlands around Nairobi, Mt.Kenya,Kinagop plateau	<ul style="list-style-type: none"> <li>Taxonomic status as yet to be resolved to differentiate with <i>M.Tandy&amp; M.mocquardi</i></li> <li>Population status unknown</li> </ul>	<ul style="list-style-type: none"> <li>unknown</li> </ul>
3.	Silvery tree Toad (triad tree frog)	<i>Leptopelis argenteus</i>	IUCN-LC	Coast of Kenya- but in savanna woodland areas with many trees and bushes	DD	<ul style="list-style-type: none"> <li>Pet trade (though not very pronounced)</li> </ul>
4.	Taita Toad	<i>Bufo taitanus/ mertensophryne taitana</i>	IUCN- LC	Sandy areas of woodlands, grasslands or open savanna of south eastern Kenya	DD	<ul style="list-style-type: none"> <li>Loss of habitat due to land conversion</li> </ul>
5.	Mount Kenya frog	<i>Phrynobatrachus irangi</i>	IUCN-EN	Irangi forest in Meru  Kimande- on the slopes of Aberdares	Decreasing (Drewes et al 2004)  Not sited during this reporting period in Kimand	<ul style="list-style-type: none"> <li>Habitat loss and change</li> </ul>
6.	Montane tree frog	<i>Hyperolius cystocandicans</i>	IUCN-NT	Endemic to Kenyan highlands- Kimande- Muranga; Nyambene hills; Chogoria- Mt. Kenya; Kiambu, Tigoni, Kikuyu, Limuru; Kinangop plateau; nyandarua and thompsons falls; Aberdares National Park	Decreasing	<ul style="list-style-type: none"> <li>Livestock grazing in forests</li> <li>Illegal logging</li> <li>Reclamation of wetlands</li> <li>Agrochemicals are suspected to affect the species</li> </ul>
7.	Shimba hills banana frog	<i>Afraxalus sylvaticus</i>	IUCN- EN	Forests of South East Kenya- Shimba Hills National Reserve  Recorded in Tana River	decreasing	<ul style="list-style-type: none"> <li>Hybridization with <i>Afraxalus stuhlmanni</i></li> <li>Maintenance of its habitat in the unprotected lowland forests is critical for its survival</li> </ul>
8.	Shimba hills reeds frog	<i>Hyperolius rubrovermiculatus</i>	IUCN-EN	Shimba Hills National Reserve  Buda Forest  Gongoni Forest	Decreasing outside Shimba Hills National Reserves	<ul style="list-style-type: none"> <li>Change in habitat quality and extent especially out of the reserve</li> <li>EOO is only 426Km<sup>2</sup></li> <li>Chytrid fungus is a likely threat (Kielgast et al 2010)</li> </ul>
9.	Yellow spotted Tree Frog	<i>Leptopelis flavomaculatus</i>	IUCN-LC	Arabuko sokoke	DD	<ul style="list-style-type: none"> <li>Agricultural extension to its habitat</li> <li>Logging</li> <li>Increasing human settlement</li> </ul>
10.	Turkana Toad	<i>Amietophrynus turkanae/ sclerophrys turkana/bufo turkanae</i>	IUCN-DD	Endemic to Kenya  Loiyangalani  Ewaso Ngiro River in samburu	DD	<ul style="list-style-type: none"> <li>Infrastructure development &amp; settlements, Climate change, Water abstraction</li> </ul>

11.	Delicate spiny reed frog / Pickersgill's banana frog	<i>Afraxalus delicatus</i>	IUCN-LC	Coastal parts of the country	In urban areas is found in isolated well vegetated water hazards and stagnant seepages	<ul style="list-style-type: none"> <li>Sugar cane farming near Ramisi</li> <li>Spread of eucalyptus which dry up wetland habitats</li> </ul>
12.	Painted reed frog/ marbled Reed Frog	<i>Hyperolius marmoratus</i>	IUCN-LC	Naikara near Narok, transmara, Voi sagala hills, Kajiado	<ul style="list-style-type: none"> <li>13 subspecies</li> <li>They live in hundreds or thousands of individuals</li> <li>Due to different color of individuals there is unresolved issue and confusion on taxonomy</li> </ul>	<ul style="list-style-type: none"> <li>Habitat loss through drainage of wetlands and afforestation</li> <li>Establishment of exotic eucalyptus plantation which lower the water table thus drying pans</li> </ul>
13.	Long reed frog	<i>Hyperolius nasutus</i>	IUCN-LC	Nakuru, Chemiliil, Mpeketoni  Lamu, Tana River delta, Diani, Msambweni & Shimoni	DD	<ul style="list-style-type: none"> <li>It occurs widely in areas of limited human impact.</li> </ul>
14.	Spotted reed frog	<i>Hyperolius punctulatus</i>	IUCN-EN	Southern Coastal parts of the country (shimoni)	DD	<ul style="list-style-type: none"> <li>Habitat loss- decline in dry forest, moist forest &amp; bush land</li> </ul>
15.	Water lily reed frog	<i>Hyperolius pusillus</i>	IUCN-LC	Found in diverse environments especially in southern Kenya and far west of Kenya towards Uganda	DD	<ul style="list-style-type: none"> <li>Declining habitats especially open savannah bush land and grassland</li> </ul>



Plate: 34 Turkana Toad



Plate: 35 Shimba hills reeds frog





### 5.5.7. Status of Lizards (Skinks, Chameleons & Geckos)

There are 99 species of lizards in Kenya (Stephen Spawls and Damaris Rotich) which are divided

into 8 families thus; Gekkonidae 33 species, Agamidae 7, Chamaeleonidae 17, Scincidae 22, Lacertidae 12, Cordiidae 5, Varanidae 2 and Amphisbaenidae 1. The table 5.23 gives the status of the listed Lizard species in Kenya.

**Table 5.23 Listed Lizard Species**

Common name	Scientific name	Location	Population	Listing		Threats	Remarks
				IUCN	WCM A		
<b>Tropical geckos</b>	<i>Hemidactylus modestus</i>	Ngatana along the Tana River, and from the Arabuko-Sokoke Forest (Kilifi District) and Ukunda (Kwale District) (Spawls et al. 2002).	DD	DD	VU	Infrastructure development	<ul style="list-style-type: none"> <li>Endemic to Kenya</li> <li>Common name wrongly referred to as tropical gecko instead of Tana river gecko</li> </ul>
<b>Baobab gecko</b>	<i>Hemidactylus platycephalus</i>	Northern and eastern Kenya and Coast where there are large tree localities Gede, Kora, Malindi, Mander, Moyale, Taita & Wajir	DD	DD	VU	Habitat destruction	
<b>Keel belied lizard</b>	<i>Gastropholis parvius</i>	Watamu, Arabuko-Sokoke Forest, Diani, Malindi	DD	NT	VU	Expanding human populations along the fertile East African coast, and associated agricultural development.	
<b>Writhing skink</b>	<i>Lygosoma tanae</i>	Wide spread in Kenya's woodland, Savannah & semi desert (Eliye springs, Mander, Mumias, Nairobi, Nyambene hills, Sokoke forest, Tambach & Wajir habitat confirmed to < 2000m	DD	DD	VU	Land use conversion/change and infrastructural development	



<b>Girdled lizard (Dwarf Sungaza)</b>	<i>Cordylus tropidosternu m</i>	Dry forests in Kilifi	DD	DD	DD	Those that are arboreal are affected by deforestation while those which are rupicolous are affected by blasting of rocks	
<b>Savannah monitor lizard</b>	<i>Varanus albigularis</i>	Baringo, Bura, Diani, Garissa, Isiolo, Kainuk, Kakuma, Kibwezi, Kwale, Lamu, Lodwar, Lake Magadi, Malindi, Mombasa, Mutito Andei, Ngulia, Sankuri, Voi, Wajir & Watamu	DD	DD	VU	Hunted for leather, meat & international pet trade	Common name should start with white throated Savannah monitor  Wide spread in northern and eastern Kenya and coast. Usually found below 1500m altitude.
<b>Side stripped chameleon</b>	<i>Chamaeleo bitaeniatus</i>	Njoro, Nyahururu subukia, athi river, Gilgil, Kedong, Laikipia, Nairobi, Lake nakuru, Ngong hills.	DD	DD	VU	No known tangible threats	Five former subspecies of this chameleon have now been elevated to full species.  Traded under appendix II of CITES
<b>Flap necked chameleon</b>	<i>Chamaeleo dilepis</i>	Gede, Kitui, Kwale, Machakos, Makindu , Mombasa, Namanga, Sult an Hamud, Voi, Kakamega Kisumu	Largely distributed	LC	VU	Collected for international pet trade	Savanna and woodland of most of SE Kenya including coast alt <1500M  Is the 3 <sup>rd</sup> most heavily exported chameleon species in the world
<b>Elliot's chameleon (Mont ane Side-striped Chameleon)</b>	<i>Chamaeleo elliotti</i>	Cherangani hills, Kakamega, Kapsabet, Kitale, North Nandi forest and Saiwa swamp	DD	DD	VU	Habitat degradation & alteration (but species still thrives in open and disturbed areas)	Traded under appendix II of CITES  Last record 2011 Kenya exported 635 individuals
<b>High Casqued Chameleon</b>	<i>Chamaeleo Hohnelii / Von hohnel's</i>	Aberdares, cherangani hills mt, Elgon kaptagat, Kijabe, Kipkabus, Limuru, eastern mau, Muranga, Nairobi, Naivasha, Nyeri and north Kinagop	Largely distributed	LC	VU	Species is resilient to anthropogenic impacts	Highland of central and western Kenya. In bush grassland .Alt >1500
<b>Jackson chameleon</b>	<i>Chamaeleo jacksoni</i>	Mid altitude forests and woodland of highlands of Kenya ; Chogoria, Chuka, Embu., Meru, Muranga, Nair obi and Sagana, Aberdares Np, Mt. Kenya National Park	DD	LC	VU	Un regulated harvesting from the wild	Is the 9 <sup>th</sup> most heavily traded chameleon species in the world with virtually all exports from Kenya being farmed.
<b>Mt. Kenya chameleon / Kenya side striped chameleon</b>	<i>Chamaeleo schubotzi</i>	Native to Kenya  Mt. Kenya (Mt. Kenya National Park)	Stable	NT	VU	Natural Fire to its habitat	Endemic to Kenya from high moorlands of Mt. Kenya of Alt >3000M
<b>Black and Red Skink (Red-flanked skink)</b>	<i>Lygosoma fernandi</i>	Central African forest species recently recorded in Kakamega	DD		VU		

## 5.5.8. Status Of Listed Snakes

Presently 171 snake species divided into 4 families have been recorded in Kenya

**Table 5.23 Listed Lizard Species**

Common Name	Scientific Name	Listing	Status	Location	Remarks
<b>Lamu worm snake/ Manda Flesh-pink Blind Snake</b>	<i>Leptotyphlops boulengeri</i>	DD	Data deficient	Manda Island, Lamu Island	
<b>Gunther's Centipede-eater (cape centipede-eater)</b>	<i>Aparallactus capensis</i>	IUCN-LC	Common/Stable	Coastal bushland, Montane grassland & moist Savannah areas	No major threats to the species
<b>East Africa egg eating snake</b>	<i>Dasypeltis medici</i>	IUCN-LC	Population stable	Lamu Island	Species is mostly found in protected areas and thus stable in population
<b>Large Brown spitting cobra/ Ashe's spitting cobra</b>	<i>Naja ashei</i>	IUCN-EN		Northern and Eastern Kenya	Threatened by human activities
<b>Black-necked spitting cobra</b>	<i>Naja nigricollis</i>	IUCN-EN		Coastal Kenya	<ul style="list-style-type: none"> <li>It's a terrestrial snake found mainly in savannahs and semi arid regions.</li> <li>In some regions, it will be found in coastal scrubs</li> </ul>
<b>Speckled bush snake/ spotted green snake</b>	<i>Philothamnus punctatus/ ahaetulla kirkii</i>	IUCN-EN		Arabuko Sokoke forest edges	
<b>Puff Adder</b>	<i>Bitis arietans</i>	IUCN-EN		<ul style="list-style-type: none"> <li>Widespread all types of savannah and semi-desert; Nairobi, Tsavo, Coastal Kenya, Kajiado, Meru</li> </ul>	
<b>Green Mamba</b>	<i>Dendroaspis angusticeps</i>	IUCN-EN		Kibwezi, Chyulu Hills, Taveta among other places	<ul style="list-style-type: none"> <li>It's mainly arboreal but also inhabit bamboo thickets, mango groves and coastal shrub land</li> <li>Diurnal</li> <li>Extremely venomous</li> </ul>
<b>Kenya Sand Boa</b>	<i>Eryx colubrinus/Gonylophis colubrinus</i>	IUCN-LC, CITES-Appendix II		Northern Kenya in (semi-arid desert regions)	Over-collection for pet trade
<b>Gaboon Viper</b>	<i>Bitis gabonica</i>	IUCN-EN		Habitat is rainforest & woodlands adjacent to rain forest. Kakamega Forest	<ul style="list-style-type: none"> <li>Harvested for its venom</li> <li>Illegal trade</li> </ul>
<b>Rock Python</b>	<i>Python sabae</i>	Not listed by IUCN CITES Appendix II		Wide spread in rocky and marsh areas with adequate prey.	<ul style="list-style-type: none"> <li>Threats include reduction prey base</li> <li>Its hunted for its meat &amp; skin</li> <li>Persecution</li> <li>Collection for pets &amp; trade</li> <li>Destruction &amp; degradation of its habitat especially by quarrying</li> </ul>
<b>Mt. Kenya bush viper</b>	<i>Atheris desaixi</i>	Not listed by IUCN CITES Appendix II	EOO 2- Igembe & Chuka	Chuka Forest, South eastern Mt. Kenya & Igembe in the Northern Nyambene range	<ul style="list-style-type: none"> <li>Threats include Habitat loss &amp; degradation through Illegal collection, overgrazing, fuel wood collection, logging &amp; Agriculture</li> <li>Restricted range (EOO)</li> <li>Limited reproduction potential</li> </ul>





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## 5.5.9. Status of Listed Tortoises and Terapins

### 5.5.9.1. Crevice (Pancake) Tortoise (*Malacochersus Tornieri*)

This is a small soft shelled dorso- ventrally flattened species that basically inhabits crevices in rocks. Only a small percentage of this species lives in protected areas. About 95% of the species population is found outside the protected areas. It is distributed in two distinct population thus; Southern and Northern sub-population. The southern sub-population covers the county of Tharaka and Kitui while the Northern sub-population covers the counties of Marsabit, Samburu and Isiolo. Its population status is as yet to be established. Shifting cultivation and illegal trade are the major threats to its survival. Other threats include Quarrying and encroachment.

### 5.5.9.2. Yellow-Bellied Hinged Terrapin (*Pelusios castanoides*)

This semi-aquatic species is found in rivers, swamps and marshes. IUCN redlist classifies the species as of least concern while in the WCMA, 2013 it is classified as vulnerable. By 2002 total population estimation by IUCN was 100 adults distributed in 6 isolated populations. The species lost 80% of its range through drainage in the late 1990's and early 2000's. It is deemed that the population is still decreasing. Threats facing this species are habitat loss and deterioration caused by the drainage, reclamation pollution (rubbish dumping, sewerage and/or pesticide run off) and marsh invasion by water lettuce.

### 5.5.9.3. Turkana/Broadleyi Mud Turtle (*Pelusios broadleyi*)

This species is also referred to as the lake Turkana hinged terrapin and is a species of turtle in the pelomedusidae family. The turtle is endemic to lake Turkana and is only confirmed to be present on the Kenya part of the lake. The status of this species is presently unknown.



Plate: 36 Broadleyi Mud Turtle

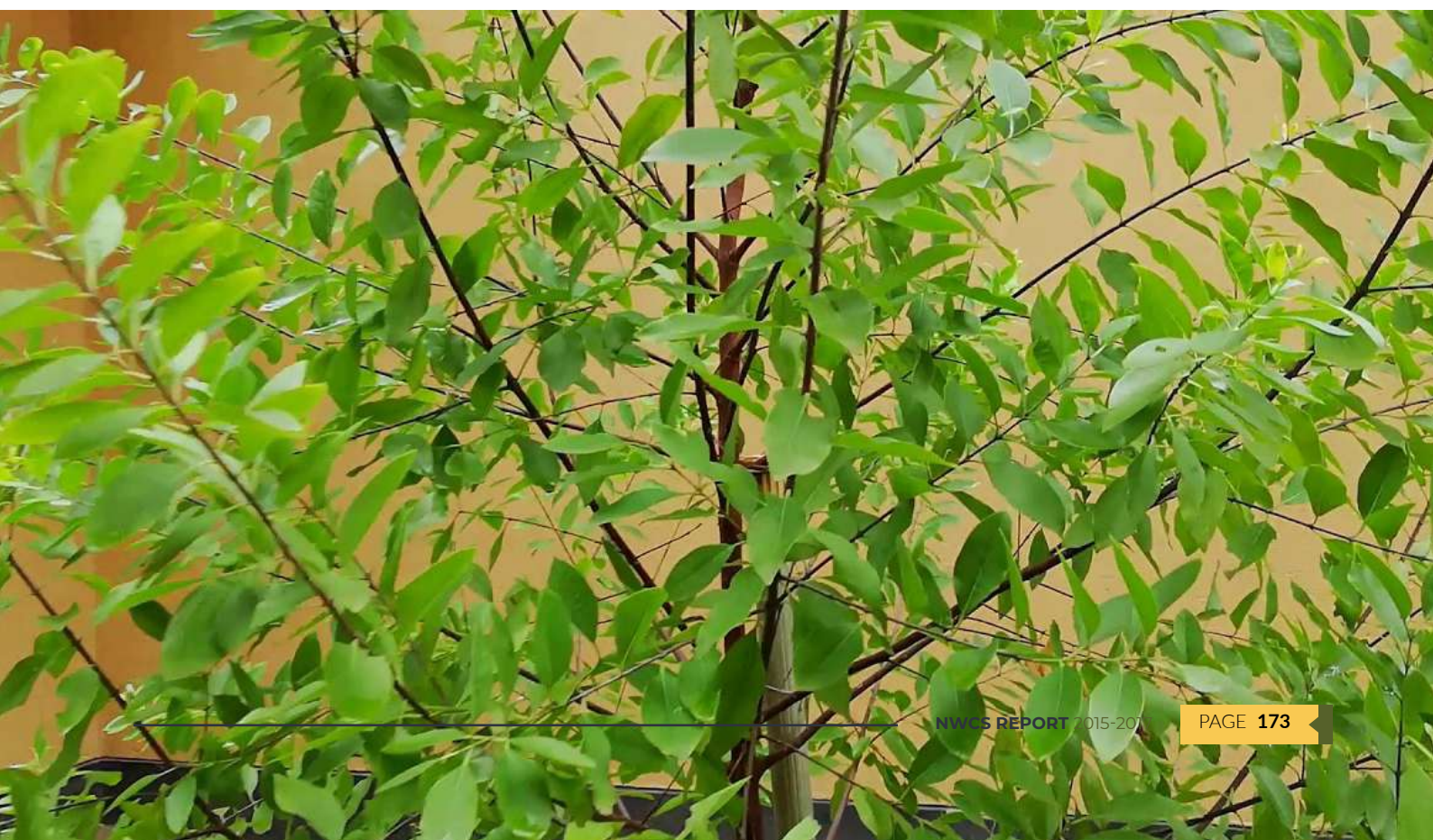
### 5.5.10. Status of Listed Trees in Kenya

Kenya has 356 plant species listed in appendix VI out of which 23 are critically endangered, 83 endangered, 169 vulnerable and 81 are near

threatened. 112 of the threatened species are endemic to Kenya. Taita hills have over 86% of the threatened species. Table 5.25 gives the status of tree species listed under WCMA, 2013.

**Table 5.25 Listed tree species in Kenya**

#	Common Name	Scientific name	Population	Status	Location	Remarks
1.	Voi Cycad	<i>Encephalartos kisambo</i>	IUCN-EN	decreasing	Maungu Hills, Mulilonyi, Nyangala, sagala, Rukinga and Kasigau hills	<ul style="list-style-type: none"> <li>Habitat loss- due to charcoal burning</li> <li>Clearance of land for agriculture</li> <li>EOO and AOO are within threshold for endangered listing</li> </ul>
2.	East African sandalwood	<i>Osyris lanceolata</i>	IUCN-Not evaluated but locally endangered		Samburu, Pokot, Baringo and other parts of the North Rift	<ul style="list-style-type: none"> <li>overexploitation food, medicine and source of wood, and for essential oil which is used in making perfume</li> </ul>
3.	Red stinkwood	<i>Prunus africana</i>	IUCN- VU		Kakamega forest, Mt. Elgon, Mt. Kenya, other highlands of Kenya	<ul style="list-style-type: none"> <li>Harvesting of its bark for medicinal uses</li> </ul>
4.	Meru Oak	<i>Vitex keniensis</i>	IUCN- VU	decreasing	Endemic to Kenya Imenti Forest Nyeri (Plantation) Mt. Elgon Londiani Nandi Hills Kakamega Forest	<ul style="list-style-type: none"> <li>loss of Forest habitat due to agricultural expansion</li> <li>illegal logging</li> </ul>
5.	Camphor	<i>Ocotea kenyensis</i>	IUCN- VU			<ul style="list-style-type: none"> <li>Over-exploitation for wood</li> </ul>
6.	Parasol tree	<i>Polyscias kikuensis</i>	IUCN- VU			<ul style="list-style-type: none"> <li></li> </ul>
7.	Rat aloe	<i>Aloe ballyi</i>	IUCN-EN WCMA-VU		Native to Kenya and Tanzania	<ul style="list-style-type: none"> <li></li> </ul>
8.	Tana River poplar	<i>Populus ilicifolia</i>	IUCN-VU		Tana, Athi and Uaso-Nyiro river	<ul style="list-style-type: none"> <li>habitat loss</li> </ul>





### 5.5.11. Status of Listed Birds

Kenya has one of the richest avifauna diversities in Africa, with around 1,105 bird species recorded. Of these, 800 species are year-round residents, 60 species are afro-tropical migrants moving within the continent and 170 are Palearctic migrants that journey from Eurasia each winter. The major migratory flyways in Kenya include the 550km long coastline with its associated creeks, reefs and beaches, and the chain of lakes stretching along the Rift Valley from Turkana in the north to Magadi in the south. Some 170 Palearctic migrant bird species migrate south to Kenya from Eurasia during the northern hemisphere's winter. Eleven of these species have local breeding populations that are year-round residents. By 2017 the listed (Endangered, Vulnerable, rare, Indeterminate, out of danger or insufficiently known) number of threatened bird species in Kenya by IUCN was 43.

#### 5.5.11.1. Avian Biomes in Kenya

There are six avian biomes (Table 5.26) in Kenya (Fishpool and Evans 2001), all with characteristic bird species. The Somali Masai biome is the most widespread and has the most representative species, (Bennun and Njoroge 1999). The Guinea-Congo Forest biome, though only represented in Kenya by the Kakamega rain Forest is represented by 43 species in Kenya. The Sudan and Guinea savannah is marginal in Kenya, being at its extreme eastern limit. Most species in this biome are not found elsewhere in the country apart, from Kongelai Escarpment and its environs.

**Table 5.26 Avian biomes in Kenya and the total number of bird species unique for each avian biome**

Biome	Location	Number of species present in Kenya
<b>Somali-Masai Biome</b>	Kenyan ASAL	92
<b>Afro-tropical Highlands Biome</b>	Mt. Kenya, Aberdares, Mt.Elgon	67
<b>Guinea-Congo Forest Biome</b>	Kakamega forest	43
<b>East African Coast Biome</b>	Kenyan Coastal forests	30
<b>Lake Victoria Basin Biome</b>	Lake Victoria Basin	9
<b>Sudan and Guinea Savannah Biome</b>	Machakos Athi Kapiti	13

(Source:Bennun and Njoroge 1999)

#### 5.5.11.2. Endemic birds of Kenya

Seven bird species have been identified as being endemic to Kenya. These birds are spread in Four globally recognized Endemic Bird Areas (EBA's as identified by Stattersfield et al 1998. Of these EBAs, the Jubba and Shabeelle valleys in North eastern Kenya is marginally represented with the bigger portion lying outside the Kenya boundary. EBAs are defined as places where two or more bird species with a world distribution of less than 50 000 km<sup>2</sup> occur together. Kenya has two globally recognized secondary areas of importance - Kakamega and Nandi forests, and the northern Kenya short-grass plains.

The 7 endemic bird species include; Williams Lark (*Mirafraga williamsi*), Sharpe's Longclaw (*Macronyx sharpie*), Hinde's Babbler (*Turdoides hindei*), Taita thrush (*Turdus helleri*), Taita Apalis (*Apalis fuscicularis*), Aberdare Cisticola (*Cisticola aberdare*), Clarke's Weaver (*Ploceus golandii*), Jackson's Francolin (*Francolinus jacksoni*). Presently these areas are facing severe anthropogenic pressure resulting to these birds habitats being threatened and thus their population facing a decline. The sixth schedule lists 98 endangered listed bird species that are found in Kenya. Some of this species are migrants.

#### 5.5.11.3. Terrestrial Birds

Table 5.27 gives the status of the listed endangered bird species found in Kenya.



**Table 5.27 Status of listed endangered bird species**

NO.	Listed bird species- wildlife Act 2013	Site (Location)	Protection status of site (Location)	Level of protection of site	Population Estimates		Listing		Challenges/ Threats	Other remarks
					2015-2017	2013 Act	IUCN Red List			
1.	Taita Apalis( <i>Apalis fuscicularis</i> )	Taita hills	None	Very low	DD	CR	CR	Land use change	<ul style="list-style-type: none"><li>• Endemic</li><li>• Action plan for conservation species 2015-2020 in place</li><li>• About 210-400 individuals exist</li></ul>	
2.	Taita Thrush ( <i>Turdus helleri</i> )		None	Very low	DD	CR	CR	Land use change	<ul style="list-style-type: none"><li>•</li></ul>	
3.	Saker falcon ( <i>Falco cherrug</i> )		None	Very low	DD	EN	EN	Degradation of dry grasslands due to agriculture	<ul style="list-style-type: none"><li>• Palearctic migrant</li><li>• 12800-30800 worldwide</li></ul>	
4.	Egyptian Vulture ( <i>Neophron percnopterus</i> )		None	Very low	DD	EN	EN	<ul style="list-style-type: none"><li>• lead poisoning</li><li>• Direct poisoning</li><li>• electrocution</li><li>• reduced food availability &amp; habitat destruction</li></ul>	<ul style="list-style-type: none"><li>• Also recorded in Mara Amboseli &amp; Tsavo</li><li>• 13000-41000 worldwide</li></ul>	
5.	Sokoke Scops-owl ( <i>Otus ireneae</i> )	Arabuko Sokoke  Dakatcha woodland forest	Forest reserve	Medium	DD	EN	EN	<ul style="list-style-type: none"><li>• Habitat degradation especially removal of Brachylaena tree where it nests Persecution</li><li>• Intensive clearance of woodlands for agriculture</li></ul>	Available data 1996 1500	
6.	Spotted Ground-thrush ( <i>Geokichla guttata</i> )			Medium	DD	EN	EN	<ul style="list-style-type: none"><li>• Intensive logging pressure</li></ul>	Also found in Diani Forest.	
7.	Amani Sunbird ( <i>Hedydipna pallidigaster</i> )			Medium	5 pairs ( Mulwa, et.al. 2017)	EN	VU	-Destruction of Brachystegia woodland		
8.	Sokoke Pipit ( <i>Anthus sokokensis</i> )			Medium	9 pairs , (Mulwa, et.al., 2017)	EN	EN	<ul style="list-style-type: none"><li>-Habitat loss and degradation (Destruction of Dakatcha Woodland through tree felling for timber and fuelwood, as well as agriculture (pineapple farming)</li><li>-Intensive charcoal production</li><li>-Fragmented habitat</li><li>-Degradation of its western Palearctic breeding grounds</li></ul>	5500 Individuals remain in Arabuko Sokoke (Otieno et.al, 2014)	
9.	Aberdare Cisticola ( <i>Cisticola aberdare</i> )	Aberdare forest  Mau-Narok  Molo	Forest reserve, IBA	Medium	DD	EN	VU	Tussock grasslands/mountain grasslands facing rapid fragmentation due to cultivation and livestock production		
10.	Sharpe's Longclaw ( <i>Macronyx sharpie</i> )	Aberdare forest  Mau-Narok  Molo	Forest reserve	Medium	DD	EN	EN	<ul style="list-style-type: none"><li>Tussock grasslands/mountain grasslands facing rapid fragmentation due to cultivation livestock production and</li><li>Mooreland fires</li></ul>	2000 (D. Kimani, 2009)	
11.	Turner's Eremomela ( <i>Eremomela turneri</i> )	Kakamega Forest  Dakatcha woodlands	Forest Reserve	Medium	DD	EN	EN	<ul style="list-style-type: none"><li>-Forest fragmentation</li><li>-Charcoal burning</li><li>-Encroachment</li><li>-over grazing -Commercial logging especially of Croton megalocarpus</li></ul>	Also found in Nandi South Forest	
12.	Clarke's Weaver ( <i>Ploceus golandii</i> )		Forest	Medium	51 (Mulwa, et.al, 2017-	EN	Globa lly	-Clearance of woodland (especially brachylaena tree)	-Also occurring in Arabuko Sokoke	

			Reserve		in Arabuko Sokoke)	Threat ened	for agriculture is the main threat	and Dakactha Forest (first noticed in 2014)	
13.	Lappet-faced Vulture ( <i>Torgos tracheliotos</i> )		Forest Reserve	Medium	DD	VU	VU	-Poisoning (direct, indirect and secondary poisoning)of the sub-population  -Persecution  -Habitat alteration	-8000 in Africa  -About 500 in the Middle East
14.	White-backed vulture ( <i>Gyps africanus</i> )		Forest Reserve	Medium	DD	VU	CR	-Habitat loss  -conversion of habitats to agro pastoral system  -decline in ungulate population  -hunting for trade  -poisoning (by carbofuran)	52% decline in population in 15 years (M. Virani in litt. 2006, Virani et al. 2011)
15.	Greater Spotted Eagle ( <i>Aquila clanga</i> )	Nairobi National Park	National Park	Highest	DD	VU	VU	-Habitat loss  -persistent persecution	-there is strong evidence of hybridization between this species and the Lesser spotted eagle <i>Aquila pomorina</i> (Bergagmanis; Lohmus and Vali, 2001;Dombrovski, 2002; Vali, et al, 2010)  -Europe has a breeding population of about 1,100 breeding pairs
16.	Eastern Imperial Eagle( <i>Aquila heliaca</i> )				DD	VU	VU	-Habitat loss and degradation -adult mortality through persecution -collision with power lines -nest robbing -prey depletion	-It's a migratory bird
17.	White-winged Apalis ( <i>Apalis chariessa</i> )				DD	VU	VU	Encroachment for agriculture and unsustainable tree-felling for poles and others uses in Tana River forests	-Possibly extinct in Kenya last seen in the Lower Tana in 1961 -Presently recorded in Tanzania, Malawi and Mozambique -1600-6000-Globally
18.	Blue Swallow ( <i>Hirundo atrocaerulea</i> )	Ruma National Park	National Park  IBA	Highest	DD	VU	VU	-Destruction and degradation of its grassland and wetland habitat on both its breeding and non-breeding grounds	-Its intra African migratory species with its Northern most range being Ruma National Park -Also found in Kakamega forest
19.	Hinde's Pied Babbler ( <i>Turdoides hindei</i> )	Mt. Kenya, Nyambene and Meru	IBA	Medium	DD	VU	LC	<ul style="list-style-type: none"> <li>Increasing human population</li> <li>Intensive farming</li> <li>Fragmented habitats</li> </ul>	
20.	Abbott's Starling ( <i>Poeoptera femoralis</i> )	Aberdare  Mt. Kenya	IBA National park Forest reserve	Highest	DD	VU	VU	<ul style="list-style-type: none"> <li>Forest loss and habitat degradation of nesting sites</li> <li>Illegal logging</li> <li>Agricultural encroachment (land use change)</li> </ul>	

21.	Olive ibis ( <i>Bostrychia olivacea</i> )		IBA National park Forest reserve	Highest	DD	Prote cted	LC	-decline of range size -Fluctuation of habitat extent and quality -Severe fragmentation	Commonly known as the African Green Ibis
22.	Chapin's Flycatcher ( <i>Fraseria lendu</i> )	Kakamega forest	IBA	Medium	DD	VU	VU	-Clearance of forests for agriculture and timber -Forest fires -Land fragmentation	Global population estimated at 2,500- 9,999 mature individuals based on an assessment of known records, descriptions (IUCN)
23.	Ring-necked Francolin ( <i>Francolinus streptophorus</i> )	Kakamega Forest, Aberdar es, Mt. Kenya	IBA	Medium	DD	NT	NT	-Reasons for decline not known but habitat modification is likely a factor	Approx 6000-15,000 mature individuals exist globally
24.	Red-footed Falcon ( <i>Falco vespertinus</i> )	Tsavo, Mau Narok/Molo grassland	National Park	Highest	DD	NT	NT	-loss and degradation of natural nest sites.	Sighted also at Elementaita and East of L. Victoria
25.	Sooty Falcon ( <i>Falco concolor</i> )	Mau, Narok/Molo grassland	Variable	Variable	DD	NT	VU	-Pressure in wintering grounds -Pressure on its migration in Africa -Increased pesticides use (bioaccumulation)	-It's a Palearctic migrant -Global population 30000 -Likely not be in the country
26.	Taita Falcon ( <i>Falco fasciunucha</i> )	Taita Hills	IBA	Medium	DD	NT	VU	-Competition for food and nesting sites with the bigger peregrine falcon -Spraying of pesticides through operations to control <i>quelea</i> and locust	1000 mature individuals
27.	Ruppell's Vulture ( <i>Gyps rueppellii</i> )	Nairobi, Kajiado , Masai Mara,	Variable	Variable	DD	NT	CR	Habitat loss -Bioaccumulation (by carbofuran) -persecution -Collision (bird strikes) -Decline in ungulates -Hunting for trade	Sighted in L. Kwenia
28.	Ostrich ( <i>Struthio camelus</i> )	Widespread (Nearly all protected areas, and game farms)	High in some areas, in some areas low	Variable	Not quantified population	Prote cted	LC	-Fluctuating range size -decline in habitat extent and quality -severe fragmentation -poaching of eggs	30% decline over 10 years but estimated to have over 10,000 mature individuals (Birdlife International)
29.	Secretary bird ( <i>Sagittarius serpentarius</i> )	Wide spread (Samburu, )	Variable	Variable	DD	Prote cted		<ul style="list-style-type: none"> <li>Habitat degradation</li> <li>Disturbance</li> <li>Hunting</li> <li>Capture for trade</li> </ul>	
30.	White headed vulture ( <i>Trigonoceps occipitalis</i> )	Lowland Tana and Sabaki river areas,  Masai Mara, Samburu	Variable	Variable	DD	Prote cted	VU	-Reduction on availability of suitable food sources -Loss of habitat due to the spread of urban and agricultural development -poisoning through baits set for other carnivores such as jackals and hyenas -Targeted poisoning of vultures -Introduction of the anti- inflammatory drug (diclofenac) which is fatal to all vultures -Persecution	Global population 10500-18000 individuals in total
31.	Ayres's Hawk Eagle ( <i>Aquila ayresii</i> )	Mau Narok/Molo grassland, Arabuko Sokoke, Marsabit	IBA	Medium	DD	Prote cted	LC	-Pesticides especially DDT through the food chain -Development of wind farms in Kenya -Electrocution -Habitat loss/fragmentation and destruction	Global population estimates 670-6700 mature individuals



32.	Martial eagle ( <i>Polemaetus bellicosus</i> )	Nairobi National Park Masai Mara Samburu, Tsavo, Kongelai escarpment, Meru	Variable	Variable	DD	Prote cted	VU	-Incidental poisoning -Habitat loss -Reduction in available prey, pollution and collisions with power lines.	20 breeding pairs in the entire Masai Mara ecosystem, with at least 6 pairs utilizing Mara Triangle (Hatfield, S., 2017)
33.	Crowned Eagle ( <i>Stepanoaetus coronus</i> )	Kakamega forest Gatamaiyu forest Mt. Kenya Arabuko Sokoke Forest	Variable	Variable	DD	Prote cted	NT	-Deforestation, collisions with anthropogenic structures and electrocution on utility networks (S. McPherson <i>in litt.</i> 2016, B. Reeves <i>in litt.</i> 2016), - Competition with humans for prey species, Direct persecution and Human disturbance (Ferguson-Lees and Christie 2001, Hockey <i>et al.</i> 2005, Thomsett 2011, McPherson 2015) -Human disturbance and conflict (McPherson <i>et al.</i> 2016b).	Global population estimated to be between 40000- 50000 mature individuals
34.	Pallid Harrier ( <i>Circus macrourus</i> )	Manguo Ponds, Masai Mara, Mau Narok, L. Naivasha, L. Nakuru, L. Victoria, Kakamega Forest, Samburu, Kinangop plateau, L. Baringo	Variable	Variable	DD	NT	NT	- Destruction and degradation of 2grasslands through conversion to arable agriculture - Burning of vegetation - Intensive grazing of wet pastures - Intensive grazing of wet pastures and the clearance of shrubs and tall weeds ( - Poisoning from pesticides and other toxic chemicals	Terrestrial and fresh water
35.	Denham's Bustard ( <i>Neotis denhami</i> )	Masai Mara	National Reserve	Medium	DD	NT	VU	-Hunting -Conversion of grasslands for agricultural uses -Collision with power lines -Accidental poisoning by pesticides	5000-50000 mature individuals globally -Also found in Nairobi
36.	Striped Flufftail ( <i>Sarothrura affinis</i> )	Mt. Kenya, Aberdares, Mt. Elgon	IBA	Medium	DD	Prote cted	LC	-Loss of its grassland habitat through overgrazing, afforestation and too frequent burning (Birdlife International)	
37.	Karamoja Apalis( <i>Apalis karamojae</i> )	Masai Mara	National Reserve	Medium	DD	VU	VU	-Destruction of Acacia habitats	
38.	Cape Eagle-Owl ( <i>Bubo capensis</i> )	Mt. Kenya, Eburu forest	IBA	Medium	DD	Prote cted	LC	-Persecution	
39.	Red Chested Owlet ( <i>Glaucidium tephronotum</i> )	Kakamega Forest, Mau Forest	IBA	Medium	DD	Prote cted	LC	-fluctuating range size, habitat extent and quality - severe fragmentation	
40.	Black-rumped Buttonquail ( <i>Turnix hottentotus</i> )				DD	Prote cted	LC	-Habitat destruction	
41.	Nyanza Swift ( <i>Apus niansae</i> )	L. Nakuru, L. Naivasha, L. Victoria, Masai Mara, Hell's Gate, Eburu forest, L. Nakuru, Mau Narok/Molo grassland	Variable	Variable	DD	Prote cted	LC	Habitat destruction	

42.	Forest Wood-Hoopoe ( <i>Rhinopomastus castaneiceps</i> )	Kakamega Forest, L. Nakuru	IBA	Medium	DD	Protected	LC	Habitat destruction	Also referred to as Forest Scimitarbill
43.	Violet Wood-Hoopoe ( <i>Phoeniculus damarensis</i> )	Tsavo, L. Nakuru National Park	IBA	Medium	DD	Protected	LC	Habitat change	
44.	Taita Fiscal ( <i>Lanius dorsalis</i> )	Masai Mara <b>Samburu, Meru</b> , Tsavo East <b>and</b> West National Parks	Variable	Variable	DD	Protected	LC	Habitat destruction	
45.	Piapiac ( <i>Ptilostomus afer</i> )	Widespread	None	None	DD	Protected	LC	Habitat destruction	<ul style="list-style-type: none"> <li>• EOO 20,000Km<sup>2</sup></li> <li>• Habitat destruction</li> <li>• Population seem to be stable</li> <li>• Is a member of the crow family</li> </ul>
46.	Thekla Lark ( <i>Galerida theklae</i> )	Dida Galgalu desert, Marsabit	IBA	None	DD	Protected	LC	Habitat loss due to agricultural intensification -Increased predation	Global population size is 23,300,000-37,900,000 mature individuals (IUCN)
47.	Southern Hyliota ( <i>Hyliota australis</i> )	Kakamega Forest	Variable	Variable	DD	Protected	LC		
48.	Pale-breasted Illadopsis ( <i>Illadopsis rufipennis</i> )	Tsavo, Athi Plains Taita Hills	Variable	Variable	DD	Protected	LC	Habitat destruction	
49.	Red-billed Oxpecker ( <i>Buphagus erythrorhynchus</i> )	Marsabit, Lake Nakuru National park, Lake Baringo	Variable	Variable	DD	Protected	LC	Habitat destruction	
50.	Yellow-billed Oxpecker ( <i>Buphagus africanus</i> )	Lake Nakuru National park, Masai Mara, Lake Baringo	Variable	Variable	DD	Protected	LC	Habitat destruction	
51.	Tsavo Sunbird ( <i>Cinnyris tsavoensis</i> )	Tsavo	IBA	Medium	DD	Protected	LC	Habitat destruction	
52.	Kenya Rufous Sparrow ( <i>Passer rufocinctus</i> )	Lake Naivasha, Nairobi National Park	Variable	Variable	DD	Protected	LC	Habitat destruction	
53.	White-Winged Collared-dove ( <i>Streptopelia reichenowi</i> )	NE Kenya			DD	NT	NT	Destruction of its riverine woodland habitats owing conversion to agriculture and for fuelwood	
54.	Grey Parrot ( <i>Lophopsittacus bensoni</i> )	It inhabited the forests – southern part of Kakamega forest		-	DD	NT	EX	Species population greatly declining due to Hunting for trade.	Sighted in December 2017 bird census.
55.	Fischer's Turaco ( <i>Tauraco fischeri</i> )	Boni forest, Shimba Hills National Park	IBA	Medium	DD	NT	NT	-Trapping for cage bird trade -Habitat degradation by clearance of coastal forests for firewood, charcoal production, timber extraction and agriculture	Population estimated at 1,500-7,000 mature individuals

56.	European Roller ( <i>Coracias garrulous</i> )	Nairobi National Park, Ol pejeta Conservancy, Masai mara, Tsavo, Lake Naivasha, Mt. Kenya	Variable	Variable	DD	NT	LC	-Persecution during migration -Shooting for food -Loss of suitable breeding habitat from changing agricultural practices	The species is a migrant from Europe  Global population is estimated at 188,000-395,000 mature individuals or 282,000-593,000 individuals (IUCN)
57.	Grey-crested Helmet-shrike ( <i>Prionops poliolophus</i> )	Lake Nakuru National Park, Masai Mara National Park, Lake Naivasha, Longonot, Menengai Crater	Variable	Variable	DD	NT	NT	Habitat degradation resulting from increased livestock production and cultivation	The species is scarce and believed to experiencing a rapid population decline
58.	East Coast Akalat ( <i>Sheppardia gunningi</i> )	Arabuko-Sokoke Forest, Shimba Hills	IBA	Medium	Arabuko-Sokoke forest has an estimate of 7,500 pairs or 15,000 mature individuals	NT	NT	Extraction of timber and deadwood in coastal forests by man, and elephant damage in Shimba Hills  -Others include clearance of forests for agriculture	Global population is estimated at 15,000-29,999 individuals
59.	Semi-collared Flycatcher ( <i>Ficedula semitorquata</i> )	Mt Kenya, Kakamega Forest, Masai Mara	IBA	Medium	DD	NT	LC	Habitat degradation mostly by destruction <i>Quercus</i> and other riparian forests	The global population size is estimated at 58,000-350,000 mature individuals (Birdlife Int)
60.	Jackson's Widowbird ( <i>Euplectes jacksoni</i> )	Mau Narok-Molo grasslands  Eldoret, Nandi east Laikipia, Mt Kenya, Aberdares, Loita Nguruman Hills	IBA		DD	NT	NT	Destruction and fragmentation of montane grassland mostly for agriculture	
61.	Malindi Pipit ( <i>Anthus melindae</i> )	Tana Delta, Boni-Dodori	IBA	Medium	DD	T	LC	-Burning of grassland areas and grazing  -Demand for arable land thus diminishing water resources	It's found in both terrestrial and aquatic environments
62.	Southern Banded Snake-Eagle ( <i>Circaetus fasciolatus</i> )	Tana Delta	IBA	Medium	DD	NT	NT	-Degradation and fragmentation of coastal forests  -Charcoal burning  -encroachment due to cultivation	-Population by 1990 was 22,000 mature individuals
63.	Lesser Kestrel ( <i>Falco naumanni</i> )	Found throughout the country	N/A	N/a	Stable population		LC	Habitat loss and degradation due to agricultural intensification	<ul style="list-style-type: none"> <li>• Summer migrant to Kenya</li> <li>• Native non breeding</li> </ul>
64.	Yellow flycatcher ( <i>Erythrocercus holochlorus</i> )	Along R.Tana  Arabuko Sokoke forest					Lc		





Plate: 37 Taita Thrush



Plate: 38 Taita Apalis

#### 5.5.11.4. Marine and inland wetlands birds

No.	Listed species (water dependent)- wildlife Act 2013	Name of wetland	Population status	Listing		Challenges/ Threats	Other remarks
			2015-2016	2013 Act	IUCN Red List		
1.	Papyrus Yellow Warbler ( <i>Calamonastides gracilirostris</i> )	Lake Victoria, Yala Swamp	Data deficient	VU	VU	-Loss of habitat due to drainage for cultivation of Crop Destruction and for fuel and building materials  -Invasion by water hyacinth  -Ecological changes that are manmade	Also found in Uganda, Rwanda and Burundi  -Approx. 10000-20000 (Birdlife Int, 2014)
2.	Lesser Flamingo ( <i>Phoeniconaias minor</i> )	L. Nakuru, L. Bogoria, L. Baringo, L. Magadi, L. Turkana, L. Elementaita, L. Ondago swamp, L. Sonachi, Sabaki, Tana Delta, L. Longipi, L. Oloiden	21,793(2015 – 4 sights bogoria, nakuru, Elementaita, Naivasha	NT	NT	-Soda ash mining and hydroelectric power schemes affecting the main breeding site (L. Natron in Tanzania)  -Introduction of alien brine shrimp to clean the soda off algae  -Encroachment  -water pollution  -dilution of alkaline water by inflow of fresh water	In 2010, more than 1M birds were recorded  2015-19,778  2016-no count  2017-58,000 (IUCN)
3.	Basra Reed-wabler ( <i>Acrocephalus griseldis</i> )	Tana River delta	Data deficient	EN	NT	-Accelerating drainage of its breeding habitats especially the 130,000 hectares Tana River Delta  -Conversion of the Delta for cultivation  -Prospecting for oil and gas	-Palearctic migrant from Iran  -Entire population passes through Tsavo West National Park
4.	Madagascar Pratincole ( <i>Glareola ocularis</i> )		Data deficient	VU	VU	-Declining wetland habitat especially in Madagascar where it breeds	-Afro-tropical migrant  -Also found in the Mida creek and <b>Sabaki River-Mouth</b>
5.	Saddle billed stork ( <i>Ephippiorhynchus senegalensis</i> )	L. Nakuru, L. Elementaita, L. Turkana, L. Victoria, L. Naivasha, Sabaki river, Masai Mara, Amboseli, Meru	Data deficient	Protected	LC	-Wetland degradation  -Wetland conversion to agriculture  -Wetland pollution	3000 (RSPB, 2012)
6.	Great White Egret ( <i>Ardea alba</i> )	Widespread ( including Marshes, swamps, mangroves, deltas and estuaries and riverine areas, Mau Narok/Molo grassland)	Data deficient	Protected	LC	-Wetland degradation  -Wetland conversion to agriculture  -Wetland pollution	6700-17000, mature individuals
7.	Great Crested Grebe ( <i>Podiceps cristatus</i> )	Masai Mara, Saiwa Swamp, Samburu,	Data deficient	Protected	LC	Predation e.g. by coypu rat in L. Naivasha	915000-1400000 (Wetlands Intnal,2015)

8.	African Fish Eagle ( <i>Haliaeetus vocifer</i> )	Amboseli, L. Victoria, Busia grassland, Manguo ponds, Lake Nakuru, Mau Narok/Molo grassland, Mt. Kenya	Data deficient	Protected	LC	-Buildup of organo-chlorine pesticides in water bodies and therefore in their fish prey resulting in egg shell thinning  -Extraction  -Agro chemicals  -Invasive species	Over 350 bird species  Presence of the red knobbed coot  An endemic snake species
9.	Grey crowned Crane ( <i>Balearica regulorum</i> )		Data deficient	Protected	LC	-Habitat loss  -Illegal removal of birds and eggs (poaching) from the wild  -Degradation of wetland breeding areas  -Drainage and overgrazing  -Use of pesticides in agriculture	
10.	African darter ( <i>Anhinga rufa</i> )	L. Baringo, L. Naivasha, Sabaki river, Tana Delta, L. Nakuru, <b>Samburu</b>	Data deficient	Protected	LC	-destruction of wetland habitats  - pollution by agro chemicals	Global population estimated at 25,500-127,000 (Wetlands International 2016)
11.	Baillon's Crake ( <i>Zapornia pusilla</i> )	Lake Baringo	Data deficient	Protected	LC	-degradation and loss of seasonal and ephemeral wetlands through, drainage, overgrazing and cultivation (del Hoyo <i>et al.</i> 1996,  -Reed cutting and burning  -collisions with powerlines (Taylor and van Perlo 1998).	-The birds are found in terrestrial areas, freshwater as well as marine areas.  -It is a migrant
12.	African Finfoot ( <i>Podica senegalensis</i> )	Masai Mara, Boni-Dodori, Mt. Kenya, Nairobi	Data deficient	Protected	LC	-Habitat degradation from increased river siltation  -Reduced river flow resulting commercial afforestation) (Hockey <i>et al.</i> 2005)  -pesticide contamination	The bird is both terrestrial and Freshwater
13.	Taveta Golden Weaver ( <i>Ploceus castaneiceps</i> )	Taita hills, Amboselinalational park	Data deficient	Protected	LC	Habitat destruction	The bird is both terrestrial and Freshwater
14.	Corncrake ( <i>Crex crex</i> )	<b>Masai Mara</b> , Nairobi National Park	Data Deficient	NT	LC	-Habitat loss  -Chick mortality resulting from mechanized mowing  -Increased predation	Global population estimated at 3-7million mature individuals The bird is both terrestrial and Freshwater
15.	Black Crowned-crane ( <i>Balearica pavonina cecilliae</i> )	Samburu National Reserves, Masai Mara National Reserves	Data Deficient	NT	VU	<ul style="list-style-type: none"> <li>Degradation of suitable wetland habitat due to increasing human population</li> <li>Increased grazing pressures altering wetland habitats and that influence abundance of insect prey and availability of nest habitat</li> <li>Increased human population via wetland damming, drainage, increased sedimentation through deforestation and use of agro-chemicals</li> <li>Poaching of eggs</li> <li>Illegal trade in countries which are not to CITES</li> </ul>	<ul style="list-style-type: none"> <li>CITES appendix II</li> <li>Population in Kenya has adapted to man-made landscape especially around agricultural land with artificial wetlands</li> </ul>



16.	Chestnut-banded Plover ( <i>Charadrius pallidus</i> )	Lake Magadi	Data Deficient	NT	NT	<ul style="list-style-type: none"> <li>-pollution</li> <li>-siltation</li> <li>-water abstraction</li> </ul>	The total population has been estimated at 16,200-17,500 individuals, roughly equivalent to 11,000-12,000 mature individuals
17.	Great Snipe ( <i>Gallinago media</i> )	Lake Victoria, Lake Naivasha	Data Deficient	NT	NT	<ul style="list-style-type: none"> <li>-Nesting habitat loss in conversion to agriculture</li> <li>-Wetland drainage</li> <li>-Eutrophication</li> <li>-Hunting</li> </ul>	The bird is both terrestrial and Freshwater
18.	Black-tailed Godwit ( <i>Limosa limosa</i> )	Amboseli National Park	Data Deficient	NT	NT	<ul style="list-style-type: none"> <li>-Loss of nesting habitat owing to wetland drainage and agricultural intensification</li> <li>-Conversion of wetlands to arable land</li> <li>-Increased fertilization and drainage of grassland</li> <li>-Spring burning and scrub encroachment</li> <li>-Increased predation of eggs and chick</li> </ul>	<ul style="list-style-type: none"> <li>-The bird is terrestrial, freshwater and marine</li> <li>-The global population is estimated at 614,000-809,000 individuals (Wetlands International 2016).</li> </ul>
19.	Eurasian Curlew ( <i>Numenius arquata</i> )	Mida Creek	Data Deficient	NT	NT	<ul style="list-style-type: none"> <li>-Loss and fragmentation of the moorland habitats from afforestation and agricultural development</li> <li>-Hunting</li> <li>-High egg and chick mortalities</li> <li>-High predation</li> <li>-susceptibility to avian influenza</li> </ul>	<ul style="list-style-type: none"> <li>-The bird is terrestrial, freshwater and marine</li> <li>-The global population is estimated to number 835,000-1,310,000 individuals (Wetlands International, 2016)</li> </ul>
20.	White-eyed Gull ( <i>Larus leucophthalmus</i> )	Lake Turkana	Data Deficient	NT	NT	<ul style="list-style-type: none"> <li>-Introduction of predators e.g. rats in the breeding islands</li> <li>-Egg and chick- collection</li> </ul>	<ul style="list-style-type: none"> <li>-It's both terrestrial and marine. Global population estimate is 37,000-44,000 individuals overall (IUCN)</li> <li>-First records for Kenya: Lake Turkana, 18–21 December 1983(East African Rarities Committee Report 2010–2013)</li> </ul>
21.	African Skimmer( <i>Rynchops flavirostris</i> )	Soysambu conservancy, Lake Elementeita, Lake Turkana, Lake Naivasha	Data Deficient	NT	NT	<ul style="list-style-type: none"> <li>-Destruction of their favored habitats (large rivers) by human activities such as dam-building, farming practices causing reduced flows and siltation of large rivers</li> <li>-Egg-collection and trapping of adults</li> <li>-Disruption by recreational fishermen impacting breeding colonies</li> <li>-Bioaccumulation</li> <li>-Reduced food supply as a result of overfishing and introduction predatory fish</li> </ul>	<ul style="list-style-type: none"> <li>-The bird is terrestrial, freshwater and marine</li> <li>-Global population estimated about 10,000-17,000 mature individuals (IUCN)</li> </ul>
22.	Papyrus Gonolek ( <i>Laniarius mufumbiri</i> )	Yala swamp, Lake Victoria, Dunga Swamp	Data Deficient	NT	NT	<ul style="list-style-type: none"> <li>-Drainage, burning and the over-exploitation of wetlands</li> <li>-Conversion of wetlands points to agricultural development</li> </ul>	<ul style="list-style-type: none"> <li>-The bird is both terrestrial and Freshwater</li> <li>-Estimated at around 2 million mature individuals (Maclean et al. 2013)</li> </ul>

23.	Plain-backed Sunbird ( <i>Anthreptes reichenowi</i> )	Shimba Hills National Reserve	Data Deficient	NT	NT	Habitat loss resulting from deforestation	-Population is suspected to be reducing due to continued habitat destruction  - The bird is both terrestrial and Freshwater
24.	Maccoa duck ( <i>Oxyura maccoa</i> )	Mau Narok/Molo grassland, Lake Naivasha	Severe long term decline	NT	NT	-Link between population trends and threats not understood	-Global population 9000-11000  -Sighted occasionally at  OI Pejeta Conservancy
25.	Papyrus Canary ( <i>Crithagra koliensis</i> )	Yala Swamp, Lake Victoria	Data deficient	Protected	LC	Habitat degradation due to drainage and land reclamation	The AOO is severely declining
26.	Shining-Blue Kingfisher ( <i>Alcedo quadribachys</i> )	Around Bunyala wetland	Data deficient	VU	LC		Vagrant in Kenya
27.	Madagascar Pond-heron ( <i>Ardeola idea</i> )	Coastal mangroves, inland pools and lagoon ponds, fresh water marshes & streams	Decreasing	VU	EN	<ul style="list-style-type: none"> <li>Loss of habitat due to clearing, drainage &amp; conversion</li> <li>Exploitation eggs &amp; young</li> <li>Competition by the Squacco heron</li> </ul>	

#### Protection status

1. Highest- gazetted conservation areas with international recognition ( e.g IBA, Ramsar, WHS, MAB)
2. High-gazetted (nationally protected e.g National Parks and Reserves)
3. Medium-has some protection but not legally binding
4. Low-no known protection yet



### 5.5.12. Status of Kenya's Important Bird Areas

Presently Kenya has a total of 63 important Bird Areas that cut through a variety of geographical areas. The four criteria for designating an IBA are all represented either individually or as a combination in the country's

IBA. The criteria include 1) when the site has a globally threatened species- birds threatened with extinction, 2) restricted range species- birds that have highly restricted distribution 3) Biome restricted species- a series of bird species characteristic of a particular biome 4) exceptionally large numbers of flocking birds. The status of Kenya's IBA's is given in table 5.29

**Table 5.29 Status of Kenya's IBA's**

No	Area Name	IBA Type	County	Birds	Status	Remarks
1.	Aberdares Mountain	Montane forest, grassland, bamboo and moorland	Murang'a, Nyandarua and Nyeri	Sharpe's Longclaw, Aberdare Cisticola, Abbott's Starling, Jackson's Widowbird	Aberdare National Park, Mt. Kenya National Park, Mt. Kenya Forest Reserve	Large% of IBA area outside protected area and facing threats of land use change.
2.	Ambosemi National Park	Papyrus swamps, acacia woodland and open grassland and scrub	Kajiado	Madagascar Squacco Heron, Lesser Flamingo, Lesser Kestrel and also possibly the Shoebill	Ambosemi National Park	Area outside park now facing rapid land use changes
3.	Arabuko sokoke	Coastal woodland and evergreen forest	Kilifi	Southern Banded Snake Eagle, Fischer's Turaco, Sokoke Scops Owl, Spotted Ground Thrush, Sokoke Pipit, East Coast Akalat, Amani Sunbird, Plain-backed Sunbird and Clarke's Weaver	Arabuko Sokoke Forest Reserve	
4.	Busia Wetlands	Agricultural area which includes seasonally flooded grassland and riverine scrub	Busia	Great Snipe, Blue Swallow	<ul style="list-style-type: none"> <li>No protection</li> <li>Wetland</li> </ul>	Birds facing severe threat from human activities
5.	Cherangani Hills	Montane forest, grassland, scrub, bamboo and moorland	Elgeyo Marakwet and West Pokot	No globally-threatened species but rich in bird diversity	Some area under protection by KFS	Illegal settlements, logging & development of tea plantations
6.	Chyulu Hills Forest	Montane forest, brush and rough grassland	Makueni	Abbott's Starling	Protected	Fire, illegal logging & charcoal burning
7.	Dakatcha	Coastal woodland	Kilifi	Southern Banded Snake Eagle, Fischer's Turaco, Sokoke Pipit and Clarke's Weaver	Non Protected area	Illegal logging for charcoal
8.	Dandora	Sewage works- treated water released into Nairobi river	Nairobi	Southern Pochard and Northern Shoveller found here	Restricted area	Constructed wetland
9.	Diani	Deciduous coral rag forest	Kwale	Southern Banded Snake Eagle, Fischer's Turaco, Spotted Ground Thrush and Plain-backed Sunbird	Protected	
10.	Dida Galgalu Desert	Black-lava desert	Marsabit	Williams's Lark	Un protected	Fragile ecosystem
11.	Dzombo Hills Forest	Coastal mixed forest	Kwale	Fischer's Turaco, Sokoke Pipit and Plain-backed Sunbird	Forest Reserve	
12.	Dunga Swamp	Papyrus swamp	Kisumu	Papyrus Gonolek, Papyrus Yellow Warbler	Wetland	Encroachment
13.	Gede Ruins National monument	Coastal semi-deciduous forest	Kilifi	Southern Banded Snake Eagle, Fischer's Turaco, Spotted Ground Thrush, Sokoke Pipit and Plain-backed Sunbird	Protected	
14.	Kakamega Forest	Tropical rainforest containing grassy clearings and bushy glades	Kakamega	Chapin's Flycatcher, Turner's Eremomela	Protected	



7.	Dakatcha	Coastal woodland	Kilifi	Southern Banded Snake Eagle, Fischer's Turaco, Sokoke Pipit and Clarke's Weaver	Non Protected area	Illegal logging for charcoal
8.	Dandora	Sewage works- treated water released into Nairobi river	Nairobi	Southern Pochard and Northern Shoveller found here	Restricted area	Constructed wetland
9.	Diani	Deciduous coral rag forest	Kwale	Southern Banded Snake Eagle, Fischer's Turaco, Spotted Ground Thrush and Plain-backed Sunbird	Protected	
10.	Dida Galgalu Desert	Black-lava desert	Marsabit	Williams's Lark	Un protected	Fragile ecosystem
11.	Dzombo Hills Forest	Coastal mixed forest	Kwale	Fischer's Turaco, Sokoke Pipit and Plain-backed Sunbird	Forest Reserve	
12.	Dunga Swamp	Papyrus swamp	Kisumu	Papyrus Gonolek, Papyrus Yellow Warbler	Wetland	Encroachment
13.	Gede Ruins National monument	Coastal semi-deciduous forest	Kilifi	Southern Banded Snake Eagle, Fischer's Turaco, Spotted Ground Thrush, Sokoke Pipit and Plain-backed Sunbird	Protected	
14.	Kakamega Forest	Tropical rainforest containing grassy clearings and bushy glades	Kakamega	Chapin's Flycatcher, Turner's Eremomela	Protected	
15.	Kaya Gandini	Dry deciduous Cyanometra-Terminalia forest	Kwale	Fischer's Turaco, Spotted Ground Thrush, Sokoke Pipit and Plain-backed Sunbird	Culturally protected	
16.	Kaya Waa	Coastal Cyanometra-Drypetes forest on coral rag	Kwale	Fischer's Turaco, Spotted Ground Thrush	Culturally protected	
17.	Kianyanga valleys	Steep river valleys with cultivation	Kirinyaga	Hinde's Babbler	Wetland	Farming and land use change
18.	Kikuyu Escarpment forest	Montane forest	Kiambu	Abbott's Starling	Forest Reserve	
19.	Kinangop Grasslands	Montane grassland and farmland	Nyandarua and Nakuru	Pallid Harrier, Sharpe's Longclaw, Aberdare Cisticola, Jackson's Widowbird	Wetland	Farming and land use change
20.	Kisite Island	Low scrub and coral rock	Kwale	hosts large numbers of Roseate Tern	Protected	
21.	Kiunga NMR	Sandy beaches, mangroves and coral shelves	Lamu	hosts large numbers of Crab-plovers and Roseate Terns	Protected	
22.	Koguta swamp	Papyrus swamp	Kisumu	Papyrus Gonolek, Papyrus Yellow Warbler	Unprotected wetland	
23.	Kusa swamp	Papyrus swamp	Kisumu	Papyrus Gonolek	Unprotected wetland	
24.	Lake Baringo	Shallow freshwater lake with swampy margins surrounded by basalt cliffs, bush and acacia woodland	Baringo	Madagascar Squacco Heron, Lesser Flamingo, Pallid Harrier, Lesser Kestrel	Unprotected wetland	
25.	Lake Bogoria	Alkaline lake, hot springs, woodland and brush	Baringo	Lesser Flamingo (this is an important feeding area and hosts large congregations). Also hosts large numbers of Greater Flamingo and Black-necked Grebe	Protected	

26.	Lake Elmentaita	Alkaline lake, acacia woodland, Tarchonanthus bushland and grassland	Nakuru	Greater Spotted Eagle, Lesser Kestrel, Lesser Flamingo, Grey-crested Helmet-shrike, Jackson's Widowbird. Also hosts large congregations of Black-necked Grebe, Great White Pelican, African Spoonbill, Greater Flamingo, Pied Avocet	Protected	
27.	Lake Magadi	Heavily alkaline lake with a fringe of brush	Kajiado	Lesser Flamingo	Unprotected wetland	
28.	Lake Naivasha	Freshwater lake with a papyrus swamp fringe and surrounding Acacia xanthophloea woodland.	Nakuru	Grey-crested Helmet-shrike, Basra Reed Warbler, Lesser Flamingo. Also has large congregations of Red-knobbed Coot, African Spoonbill and Little Grebe	Unprotected wetland	Pollution from flower farm and land use change
29.	Lake Nakuru National Park	Alkaline lake with surrounding Acacia xanthophloea woodland and grassland	Nakuru	Madagascar Squacco Heron, Lesser Flamingo, Pallid Harrier, Greater Spotted Eagle, Grey-crested Helmet-shrike. Also hosts large congregations of Greater Flamingo, Black-necked Grebe, Little Grebe, Great White Pelican, Yellow-billed Stork, African Spoonbill, Black-winged Stilt, Grey-headed Gull and Gull-billed Tern	Protected	
30.	Lake Turkana	Alkaline lake surrounded by sandy and rocky areas	Marsabit and Turkana	Lesser Flamingo. It is also notable because over 10% of the East African/South East Asian wintering population of Little Stint are found here	3 protected areas the rest unprotected Wetland	
31.	Masai Mara National Reserves	Vast rolling grasslands, riverine forest, swamp, Acacia woodland and scrub as well as Croton and Tarchonanthus scrub and rocky cliffs and scarps	Narok	Madagascar Squacco Heron, Lesser Kestrel, Pallid Harrier, Corncrake, Grey-crested Helmet-shrike, Red-throated Tit, Jackson's Widowbird	Protected	
32.	Machakos valleys	Acacia xanthophloea woodland, riverine bush	Machakos	Hinde's Babbler	Unprotected grassland	Illegal harvesting of trees
33.	Masinga Dam	Freshwater reservoir set in open Acacia-Commiphora bush	Embu	Hinde's Babbler also hosts congregations of White-winged Tern and Great Cormorant	Restricted wetland	
34.	Marenji Forest	Coastal mixedforest	Kwale	Fischer's Turaco, Sokoke Pipit, Plain-backed Sunbird	Forest reserve	
35.	Mau forest complex	Montane forest, bamboo groves and grassland.	Nakuru, Kericho, Narok and Bomet	Grey-winged Robin and the Purple-throated Cuckoo-shrike	Protected	
36.	Mau Narok/ Molo Grasslands	Montane grassland and farms	Nakuru and Narok	Lesser Kestrel, Pallid Harrier, Great Snipe, Sharpe's Longclaw, Aberdare Cisticola, Jackson's Widowbird	Unprotected	Wheat farming

37.	Meru National Park	Acacia-Commiphora bushland, wooded grassland	Meru and Tharaka-Nithi	Hindes Babbler, Saddle-billed Stork is known to breed in the area	Protected	
38.	Mida Creek, Whale Island, Malindi/Watamu	Sandy beaches, mangroves, intertidal rock, sand and mud, sea-grass beds and coral reefs	Kilifi	important congregatory area for Crab-plover, Lesser and Greater Sand plover, Roseate and Saunder's Tern	protected	
39.	Mirima Hill Forest	Coastal mixed forest	Kwale	Fischer's Turaco, Spotted Ground Thrush and Plain-backed Sunbird	Forest Reserve	
40.	Mt. Elgon	Montane forest, moorland, bamboo and wooded grassland	Trans Nzoia	Sharpe's Longclaw	Protected	
41.	Mt. Kenya National Park & R	Montane forest, montane grassland, bamboo and moorland	Embu, Kirinyaga, Nyeri, Laikipia, Meru, Tharaka-Nithi, Nyambene	Lesser Kestrel, Sharpe's Longclaw, Abbott's Starling, Jackson's Widowbird	Protected	
42.	Mukurwe-ini Valleys	Steep river valleys with cultivation	Nyeri	Hinde's Babbler	Unprotected	Farming and land use change
43.	Mwea National Reserves	Bush and woodland with open glades	Embu	Madagascar Squacco Heron	Protected	AOO quite restricted for Hindes babbler
44.	Nairobi National Park	Grassland, woodland, thickets, dams and ponds and upland dry forest	Nairobi	Madagascar Squacco Heron, Corncrake Lesser Kestrel, Red-throated Tit and Jackson's Widowbird. In January 2000 this IBA was the centre of attention because of the discovery of what is believed to be a new pipit	Protected	
45.	North Nandi Forest	Tropical and montane forest	Nandi	Chapin's Flycatcher	Forest reserve	
46.	Ol Donyo sabache	Basalt cliffs and Juniperus-Podocarpus forest	Samburu	Taita Falcon	Forest reserve	
47.	Ruma National Park	Grassland, thickets and open woodland	Homa Bay	Blue Swallow	Protected	
48.	Sabaki River Mouth	Estuarine site with Mud banks, sandbanks, dunes and freshwater Pools.	Kilifi	Malindi Pipit also an important area for Madagascar Pratincole, Sooty Tern, Saunder's Tern and Lesser Crested Tern	Unprotected wetland	Encroachment and land reclamation for farming
49.	Samburu, buffalo Springs National Reserves	Acacia tortilis woodland, rocky cliffs and escarpments, open bush and grassland	Isiolo and Samburu	Taita Falcon and Lesser Kestrel	Protected	
50.	Shaba National Reserves	Commiphora bushland, riverine woodland and thickets, open lava desert, alkaline swamps and grassland	Isiolo	Lesser Kestrel and Williams's Lark	Protected	



51.	Shimba Hills National Reserves	Coastal forest, grassland and scrub	Kwale	Southern Banded Snake Eagle, Fischer's Turaco, Spotted Ground Thrush, Sokoke Pipit, East Coast Akalat and Plain-backed Sunbird	Protected	
52.	Sio Port swamp	Papyrus Swamp	Busia	Papyrus Gonolek	Unprotected	Threatened by extensive rice farming and papyrus reed harvesting for handicrafts & fishing gear
53.	South Nandi Forest	Tropical forest and montane forest	Nandi	Turner's Eremomela	Forest Reserve	
54.	South Nguruman	Acacia tortilis woodland, Acacia-Commiphora brush, Tarchonanthus thicket, grassland and sub-montane forest	Kajiado	Red-throated Tit, Grey-crested Helmet-shrike, Jackson's Widowbird	Unprotected	Wildlife dispersal area
55.	Taita Hills Forest	Forest Hills	Taita Taveta	Southern Banded Snake Eagle, Taita Falcon and Abbott's Starling as well as the 3 globally-endangered endemic species; Taita Thrush, Taita White-eye and Taita Apalis	Forest Reserve	Illegal logging and charcoal burning
56.	Tana River Delta	Inter- tidal zone with riverine forests	Tana River	Southern Banded Snake Eagle, Malindi Pipit and Basra Reed Warbler. Also hosts internationally important levels of Gull-billed Tern, Caspian Tern, Lesser Crested Tern Saunders's Tern, Pink-backed Pelican, Yellow-billed Egret, Great Egret, Open-billed Stork, Yellow-billed Stork, African Spoonbill, Lesser Sand plover, Little Stint and Marsh Sandpiper	Unprotected/Ramsar site	Encroachment and land reclamation
57.	Tana River Forest	Evergreen forest, deciduous woodland, bush and grassland	Tana River	internationally important levelsof Gull-billed Tern, aspiian Tern, Lesser Crested TernSaunders's Tern, Pink-backed Pelican, Yellow-billed Egret,Great Egret, Open-billed Stork, Yellow-billed Stork, AfricanSpoonbill, Lesser Sandplover,Little Stint and Marsh Sandpiper	Not protected but primate reserve protected	Encroachment especially by beach developers, farming,fishing &illegal logging
58.	Tsavo East National Park/South Kitui National Reserves	Acacia-Commiphora bush, bushed grassland, bushland and riverine scrub	Tana River, Taita-Taveta and Kitui	Lesser Kestrel,Basra ReedWarbler andFriedmann's Lark	Protected National Park & National Reserves	Severe encroachment, illegal logging and massive charcoal burning especially in South Kitui National
59.	Tsavo West National Park	Acacia-Commiphora bush, grassy plains and riverine scrub	Taita taveta	Corncrake, Basra Reed Warblerand Friedmann's Lark	Protected including the neighboring ranches	
60.	Yala Swamp	Papyrus swamp	Siaya and Busia	Papyrus Gonolek, Papyrus Yellow Warbler	Unprotected	Drainage and land reclamation for rice farming

#### IBA category

1. Site has a globally threatened species- bird is threatened with extinction
2. Restricted range species
3. Biome restricted species
4. Exceptionally large numbers of flocking birds

## 5.6. Status of Listed Marine Wildlife Species

The Kenyan coastline is rich in marine biodiversity which ranges from Whales, Dugong, Sea cows, Rays, Tuna, Sharks, Dolphins, birds, Turtles among others some of which are resident and others migratory.

### 5.6.1. Dugong (*Dugon dugong*)

Dugongs are large aquatic marine mammals and is one of the four living species of the order Sirenia. This includes three species of Manatees. Historically, the dugong inhabited the entire shallow coastal waters of Kenya. Herds of hundreds were recorded in the 1960's. However, their numbers have dropped sharply over the years (WWF-EAME, 2004). During the 2015 marine census only two individuals were sighted.

Presently their population is threatened by degradation of sea grass habitat due to coastal development and industrial activities that cause water pollution. Bycatch especially by trawlers resulting into entanglement in nets is a major threat to their survival.

### 5.6.2. Sea turtles

Five species of sea turtles have been reported to either nest, forage or migrate through Kenyan waters. These species include the critically endangered hawksbill turtle (*Eretmochelys imbricate*), the endangered green turtle (*Chelonia mydas*), and the vulnerable olive - ridley turtles (*Lepidochelys olivacea*). The endangered loggerhead turtle (*Caretta caretta*) and the leather back turtle (*Dermochelys coriacea*) occasionally forage and migrate through Kenyan waters.

Turtles were the dominant mega-fauna recorded during an aerial census in December 2016, accounting for 38% (161 of all sightings). In March 2017, turtle sightings accounted for about 31 % (135 of all sightings). Larger aggregations of sea turtles were recorded in the March census compared to the December census. Some of the recorded sea turtles were hawksbill, olive-ridley and leather back. The figure 5.15 shows census result of some selected marine

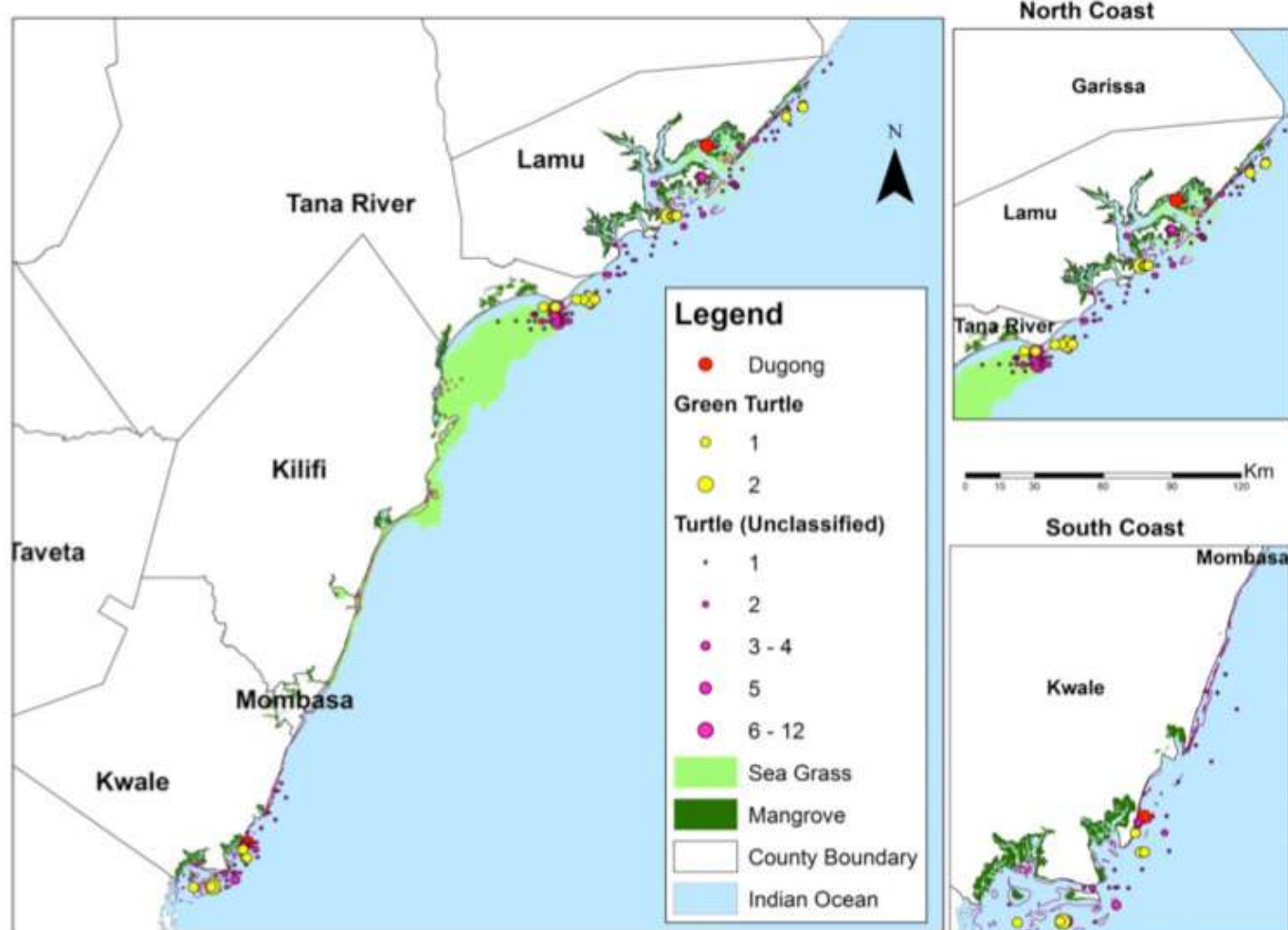


Figure 5.15 Distribution of Turtle Species

All the 5 listed turtle species(see NB below on the black turtle) are under appendix I of CITES and II of CMS Which means that no trade in the species or its products at all.Besides the CITES and CMS protection status , the Leatherback and the loggerhead turtles are given further protection through the Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA).

Both the migratory and breeding turtles in the Kenyan coast face certain specific threats

that are associated with their behaviour. These threats include by catch incidents - especially by trawlers, Pollution- especially ingestion of plastics, Commercial & subsistence poaching leading to Illegal trade in eggs and its meat , Habitat destruction (beach infrastructure development) -Encroachment on nesting sites, Climate change- affects sex ratio, Invasive and other problematic species, diseases ,high speed boat propellers and artificial lighting discourages nesting and makes it hard for hatchlings to find their way to the ocean.



**Plate: 39 Infrastructure development on turtle nesting site**

N/B Though listed in the WCMA, 2013 the status of Black turtle (*Chelonia agassizii*) in Kenyan waters is not clear since this species is recorded in the western pacific ocean.

### **5.6.3. Whales**

These are marine mammals belonging to the order cetacean of which Eight are Baleen, 2 of Sperm and 13 toothed whales which occur in the Western Indian Ocean region. In Kenya Bryde's whale (*Balaenoptera edeni*), Humpback whale (*Megaptera novaeangliae*)

and Minke whale (*B. acutorostrata*) have been recorded. Kenya is part of the migration route for the Humpback whale. The humpback is the most reported whale species in kenya, (known as Chongoe in Kiswahili) often associated with destruction of fishermen gill nets. (NEMA, 2009) . The status of the listed whale species is given in table 5.30.



**Plate: 39 Infrastructure development on turtle nesting site**

#	Species (Scientific and common name)	Conservation status	Status 2012 - 2014	Status 2015 - 2017 (population status)	Threats	Remarks
1.	Humpback Whale ( <i>Megaptera novaeangliae</i> )	Nationally listed as 'Vulnerable' and Least Concern under IUCN Red List.  Listed in Appendix I of both CITES and CMS.	198		<ul style="list-style-type: none"> <li>• Pollution ( e.g. micro plastics, noise, oil spills)</li> <li>• Energy production and mining ( exploration of oil and gas)</li> <li>• Biological resource use ( by catch)</li> <li>• Transportation and service corridors</li> <li>• Climate change (toxic algae blooms, extreme weather conditions- storms and hurricanes)</li> </ul>	International Whaling Commission ( Indian Ocean is a whale sanctuary)
2.	Sperm whale ( <i>Physeter macrocephalus</i> )	Listed as 'Vulnerable' both nationally and under IUCN Red List  Categorized under Appendix I of CITES and Appendices I and II of CMS	1	No sightings	<ul style="list-style-type: none"> <li>• Pollution ( e.g. micro plastics, noise, oil spills)</li> <li>• Energy production and mining ( exploration of oil and gas)</li> <li>• Biological resource use ( by catch)</li> <li>• Transportation and service corridors</li> <li>• Climate change (toxic algae blooms, extreme weather conditions- storms and hurricanes)</li> </ul>	
3.	Blue Whale ( <i>Balaenoptera musculus</i> )	Listed <i>Endangered</i> both nationally and under the IUCN Red List.  The species is on Appendix I of both CITES and CMS.		3	<ul style="list-style-type: none"> <li>• Pollution</li> <li>• Climate change and severe weather</li> <li>• Biological resource use</li> <li>• Transportation and service corridors.</li> </ul>	One of this type sighted in the December 2016 and 3 in the March 2017 census.
4.	Coalfish/Sei whale ( <i>Balaenoptera borealis</i> )	Categorized as <i>Endangered</i> both nationally and IUCN Red List. This species is included in CITES Appendix I and Appendix II of CMS.			<ul style="list-style-type: none"> <li>• Biological resource use- by catch resulting in the whale being entangled</li> </ul>	

## 5.6.4. Sharks

There are 440 species of sharks worldwide and generally their population is on the decline. They are a group of elasmobranch fish characterised by a cartilaginous skeleton with 5 to 7 gills on the head and pectoral fins that are not fused to the head. They are classified into 12 orders 4 of which are extinct. The value of shark fins has led to an increase of shark catches world wide and it is now estimated that over 100 million sharks are harvested every year. Apart from commercial fishing other threats include habitat alteration, damage and loss from coastal development,

pollution especially from plastics and oil spills and persecution. Various international treaties and organizations presently are in place to monitor and regulate all issues related to shark and their conservation, The most notable is the Convention on the Conservation of Migratory Species of Wild Animals (CMS – also known as Bonn Convention) of which Kenya is signatory. In 2009 IUCN named 64 shark species as being at risk of extinction due to fishing and shark finning. The table 5.31 gives the status of the 5 listed sharks in Kenyan coastal waters.

**Table 5.31 Status of Listed Sharks in Kenya**

#	Species (Scientific and common name)	Conservation status	Status 2015 - 2017 (population status)	Threats	Remarks
1.	Grey Nurse shark (Sand tiger shark, spotted ragged-tooth shark or blue-nurse sand tiger)- <i>Carcharias taurus</i>	IUCN-VU	Population status in Kenyan water remains unknown	<ul style="list-style-type: none"> <li>Poor breeders- two pups at a time and breed only every second or third year</li> <li>Popular and highly prized food demand by trawlers and anglers</li> <li>Its hide, liver (for cosmetic oil) and fins are also in great demand</li> <li>Pups are highly susceptible to pollution</li> </ul>	<ul style="list-style-type: none"> <li>Inhabits the continental shelf</li> <li>Have low reproduction rate and this is aggravated by intrauterine cannibalism (adelphophagy)</li> </ul>
2.	Oceanic white tipped shark (also known as Brown Milbert's Sand bar shark; brown shark; Nigano shark; oceanic white-tipped whaler' Silver tip shark)	IUCN-VU		<ul style="list-style-type: none"> <li>Indiscriminately fished including bottom trawls</li> <li>Hunted for its fins</li> </ul>	<ul style="list-style-type: none"> <li>Is a Requiem shark found commonly around 150M below surface</li> <li>Is the major cause of human- shark conflict worldwide</li> </ul>
3.	Great white shark (carcharodon carcharias)- Other names: White pointer White death	IUCN-VU (listed in appendix ii) WCMA-VU	<ul style="list-style-type: none"> <li>Population status in Kenyan water and worldwide is unknown but declining</li> </ul>	<ul style="list-style-type: none"> <li>Hunted for food (especially fins) and for sports</li> <li>Teeth are kept and sold as jewelry</li> <li>Caught as bycatch</li> </ul>	<ul style="list-style-type: none"> <li>It is a mackerel (lamnidae) shark</li> <li>Is found in all the major oceans of the world and weighs up to 1900Kg at maturity</li> <li>Can live up to 70yrs and males mature at 26yrs and</li> <li>They can swim at depths of over 1000m</li> <li>Is one of the shark species with high number of Shark/Human conflict</li> <li>Are a major attraction to divers</li> </ul>
4.	Shorttail nurse shark (pseudoginglymostoma brevicaudatum)	IUCN-VU WCMA-VU	<ul style="list-style-type: none"> <li>Population status is unknown but declining</li> </ul>	<ul style="list-style-type: none"> <li>Valued for its skin which produces high quality leather</li> <li>Its fins are highly prized</li> <li>Caught as a by-catch in longline and gillnet fisheries</li> </ul>	<ul style="list-style-type: none"> <li>Belongs to the family ginglymostomatidae</li> <li>Endemic to the coast of Kenya, Tanzania and Madagascar</li> </ul>
5.	Whale shark ( <i>Rhincodon typus</i> )- papa shillingi	IUCN-VU (listed in appendix ii)	East African Whale shark trust (Mombasa) keeps database (population, Movement and habits) for this species	<ul style="list-style-type: none"> <li>Greatly hunted for meat, fins, aphrodisiac and medicinal</li> </ul>	<ul style="list-style-type: none"> <li>The largest fish in the world and can weigh up to 20 tons</li> <li>Though they are carnivores, they are basically filter feeders (plankton)- cross flow filtration</li> </ul>



Plate: 44 Whale Shark



Plate: 45 Great white shark

### 5.6.5. Rays

There are over 600 species of ray fish in the world divided into 26 families. Like sharks, rays are cartilaginous of the Chondrichthyes and are placed in the same class Chondrichthyes. Rays are classified into the following groups electric rays, sawfishes, skates, and sting rays (whip tail rays). About 20 species of electric rays are known to inhabit tropical waters. Only two ray fishes – porcupine ray and black blotched stingray – are listed as endangered in the WCMA-2013.

#### 5.6.5.1. The Porcupine Ray (*Urogymnus asperrimus*)

This is a non venomous stinging ray (the only non venomous ray) that is an abenthic invertebrate and bony fishes feeder. It is classified by the IUCN as vulnerable. The porcupine ray skin (made into a form of leather called shagreen) is of commercial value as a luxury ornamental cover for swords and sheaths especially in oriental Asia. Unregulated fishing has led to the species decline in many parts of its range. Its habitat is degraded by coastal development and also the species faces depletion of its food supply as a result of overfishing. Its status on the coastal waters of Kenya is as yet to be established.

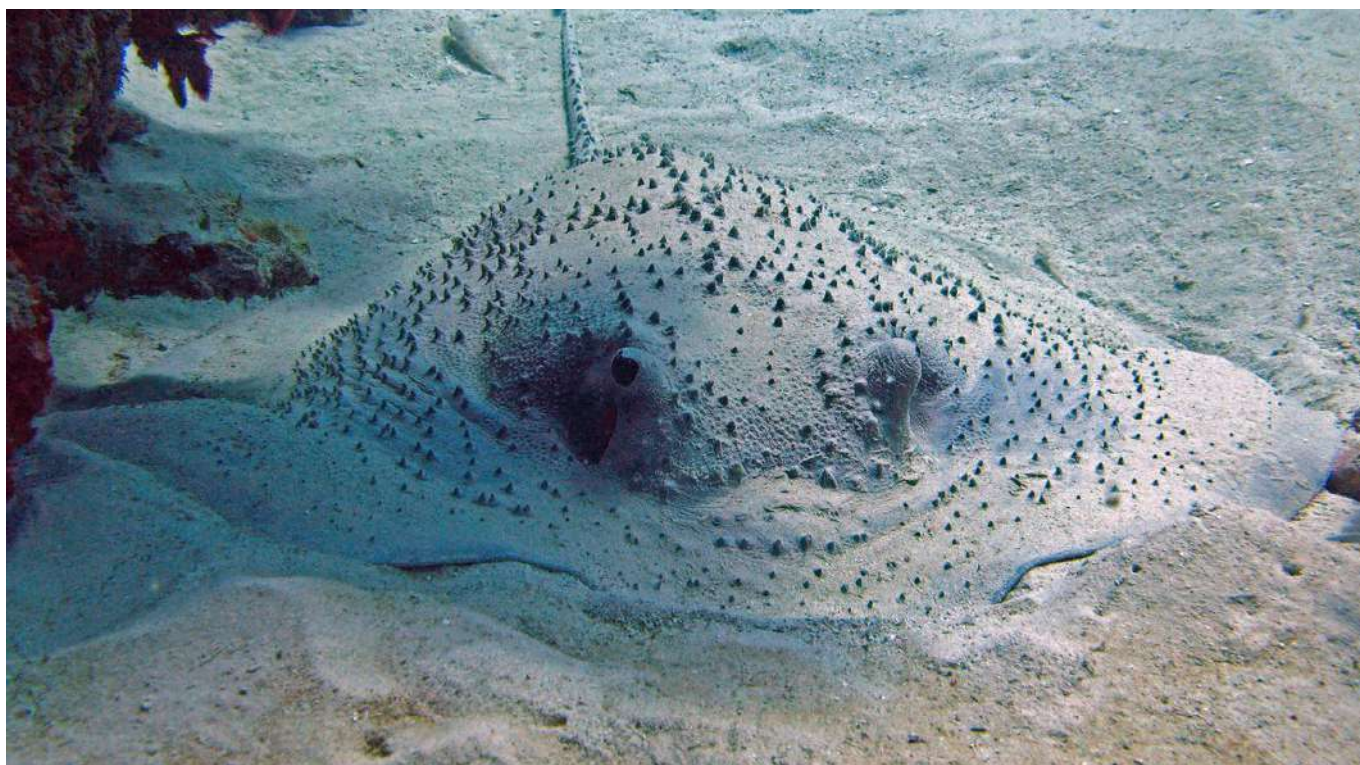


Plate: 40 Porcupine Ray



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#### 5.6.5.2. Black Blotched Sting Ray (*Taeniurops meyeri*)

This species is referred to also as the *Taeniurops meyeri*; Marbled Ray; Marbled Ribbontail Ray; Giant Reef Ray; Bull Ray Barb; Black Spotted Ray; Black Spotted Stingray; Black Blotched Stingray; blotched Fantail Ray; Fantail Ray; Fantail Stingray; Round Ribbontail Ray and

Speckled Stingray. The species inhabits coral reefs and estuaries mostly on the sandy bottoms- they are bottom feeders. The species is listed by the IUCN as vulnerable. Its status in Kenyan waters has not been established. It is fished commercially for meat and cartilage and as a sport fish. It appears in instances as a by catch



Plate: 41 Black Blotched Sting Ray

#### 5.6.6. Other Listed Marine Fishes

##### 5.6.6.1. Bowmouth Guitarfish \ Giant Guitarfish (*Rhynchobatus djiddensis*)

The species is also referred to as the White spotted Wedge fish and belongs to the family Rhinidae. It is found along the eastern coast of Africa from the Red Sea to South Africa. It is a bottom feeder and is found around sandy

and muddy areas in estuaries, lagoons and near coral and rocky reefs down to about 50M. Its status in Kenya is not well established but appears as a by catch. It is a target for fishermen. Habitat modification/degradation is most likely to be the threat to this species. It is likely that interference by fishermen to the inshore nursery areas and pollution could be affecting this species



Plate: 42 Bowmouth Guitarfish

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#### 5.6.6.2. Bigeye Tuna (*Thunnus obesus*)

Besides being a major food fish, it is a renowned highly valued sport fish that belongs to the wider mackerel family scombridae. Both IUCN and WCMA-2013 classifies it as vulnerable. Commercial fisheries of this and other Tunas in the Indian Ocean are managed by the "Indian Ocean Tuna Commission (IOTC)". This has

introduced measures such as particular sized vehicles, spatial and temporal closures, trip duration limits, observer requirements and limits on catches. It is only in the Indian Ocean where the species is deemed to be "not overfished". Longline fleets are the main causes of fishing in the Indian Ocean.



Plate: 43 Bigeye Tuna

#### 5.6.6.3. Brindle Bass (*epinephelus lanceolatus*)

Other Names- Brown spotted cod; bumblee grouper

This highly prized food fish which belongs to the serranidae family can grow to a weight of 300kg thus making it the largest bony fish in the coral reefs. Its habitat extends to estuarine, under water caves and rocky reefs. It is well represented from the Red sea down to South Africa. It is listed by both the IUCN and WCMA-2013 as vulnerable species. Its population status is not established. However its vulnerability as a species is very high. Threats to the species include

- It's a much sort for food and recreational species
- It is not a good breeder and research (Froese and Pauly-2005) has shown it takes more than 14 years to double its population

#### 5.6.6.4. Giant Wrasse (*Cheilinus undulatus*)

The Giant Wrasse (the fish grows to about 2meters and weighs about 108Kg) which is also referred to as the hump head wrasse is located in the east coast of Africa and the Red sea. Its habitat is mainly the sandy ranges that border coral reef waters. It is however also found in lagoons. It's basically found in small groups or larger combinations within their habitats. The species is a protogynous hermaphrodite (changing sex from female to male). It is listed under appendix II of CITES and exports of the species are banned. The species population has been declining due to destructive fishing techniques, habitat loss and degradation, over fishing, illegal trade. Since it feeds on the Crown of Thorn star fish it is important in the conservation of corals.





A helicopter is flying in the sky above a desert landscape. In the foreground, a person wearing a helmet and a backpack is seen from behind, looking towards the helicopter. The background features a blue sky with white clouds and some dry vegetation.

# CHAPTER 6:

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## RECOVERY PLANS FOR THE LISTED SPECIES

Section 49 (4) WCMA, 2013 states that; the Cabinet Secretary shall 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.

Section 51 (1) of the WCMA, 2013 states-

1. The Service may develop and implement recovery plans for the conservation and management of all the species listed under the sixth schedule.
2. The service shall, in developing the recovery plans, to the maximum extent practicable:-
  - a. Give priority to those rare, endangered and threatened species: and
  - b. Incorporate in each recovery plan-
    - i. A description of such site-specific management actions as may be necessary to achieve the plans goal for the conservation and survival of the species
    - ii. Objective, measurable criteria which, when met, would result in the species being removed from

## 6.1 Listing Criteria

The species listing is based on a national species status and IUCN criteria. The factors are taken into consideration when assessing conservation status includes:

- a. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations)
- b. Geographic range: either extent of occurrence and/or area of occupancy
- c. Small population size and decline: Number of mature individuals and an observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future) AND/OR an observed, estimated, projected or inferred continuing decline and at least 1 of the following conditions:
- d. Number of mature individuals in each

the list and

- iii. Estimates of the time required and the cost to carry out those measures needed to achieve the goal of the plan

Schedule six of the WCMA, 2013 lists 211 species as follows:-

1. **Mammals:** Seven as critically endangered, nineteen as endangered and thirty seven as vulnerable.
2. **Birds:** Two are listed as critically endangered, twelve as endangered, thirteen as vulnerable and thirty as near threatened. Thirty seven bird species are listed as protected.
3. **Reptiles:** two are listed as critically endangered, eight as endangered, three as threatened while thirty eight are listed as protected.
4. **Fish:** seven species are listed as critically endangered, four as endangered and fifteen as vulnerable.
5. **Tree:** Two tree species are listed as endangered while six are under the category of vulnerable.

subpopulation; % of mature individuals in one subpopulation

- e. Extreme fluctuations in the number of mature individuals
- f. Very small or restricted population: number of mature individuals, restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to criticallyendangered or Extinct in a very short time.
- g. Quantitative Analysis: based on calculated probability of extinction in the wild
- h. The convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival.

## 6.2 Recovery Plans

Section 49 (3) states that the Service may, in developing and implementing recovery plans, enlist the services of appropriate public, private or non-governmental organizations, institutions and other qualified persons.

Though, previously it was not a legal requirement to develop endangered species recovery plans, KWS in collaboration with relevant stakeholders has developed and is championing implementation of 19 species specific recovery plans.

The 2015-2017 status report has developed a guide on key components that are to be considered in development of listed species recovery plans (Annex 1).

Table 6.1 provides a summary of recovery plans that have been developed;

**Table 6.1. Status of recovery plans**

#	Name of the Recovery plan	Duration of the Recovery plan	IUCN/ National Listing	Vision and Goal	2015-2017 Implementation status	Population Estimate (Year)	Target population by end of implementation	Budget	Remarks
1	Conservation and Management Strategy for the Black Rhino in Kenya (6 <sup>th</sup> Edition)	2017-2021	CR	<b>Vision:</b> To have a meta-population of at least 2,000 black rhinos of the eastern African subspecies in Kenya, and in suitable habitats as a global heritage	Meru Rhino Sanctuary extension completed (sanctuary extended by 35km <sup>2</sup> from 48 km <sup>2</sup> to 83 km <sup>2</sup> ) 99.5 km <sup>2</sup> Tsavo East NP Rhino Sanctuary completed	1,258 – Black (745) S. White (510) N. White (3) (2017)	To achieve a meta-population of 830 black rhinos by the end of 2021;	650 million; for identified activities e.g. translocation, ear notching, construction of sanctuaries, operational costs	To be launched in April 2018
2	Conservation and Management Strategy for the Elephant in Kenya	2012-2021	EN	<b>Vision:</b> A secure future for elephants and their habitats, based on peaceful and beneficial co-existence with people, now and for generations yet to come.	Mid Term Review undertaken in 2016	34, 010	Target is to secure populations, habitats and connectivity	250 million, for census, translocations and securing corridors	The strategy is being implemented
3	National Conservation and management Strategy for	2009-2014	Cheetah - Vul Wilddog - EN	<b>Vision:</b> To secure viable and ecologically functioning cheetah and	Range maps updated	Cheetahs 1,160 Wild dogs 845 (2008)	Estimates to be provided in the 2nd edition being developed	35 million to undertake national census and disease surveillance for	The strategy is being implemented (Expired)





	Cheetah and Wild dogs in Kenya			wild dog populations as valued components of development in Kenya				wild dogs	
4	National Conservation and management Strategy for Lion and Hyena in Kenya	2009-2014	Lion – Vul Spotted hyeana – LC Striped – NT	<b>Vision:</b> To sustain viable populations of lions and hyaenas in healthy ecosystems as a world heritage benefiting local communities and the people of Kenya	Carnivore survey methodology Harmonisation workshop held; National carnivore survey plan completed to be implemented in 2018-2019	Lions – 1,970 Spotted hyena – 2000-4000 Stripped hyeana – 1,000 (2008)	Estimates to be provided in the 2nd edition being developed	25 million to undertake national census	2 <sup>nd</sup> Edition to be developed February – April 2018
5	Conservation and Management Strategy for Grevy's Zebra ( <i>Equus grevyi</i> ) in Kenya	2017-2021	EN	<b>Vision:</b> To have viable and sustainable Grevy's zebra populations and their habitats for present and future generations.	National census undertaken in 2017	2,350 (2017)		45 million for national survey and drought mitigation programmes	Awaiting publication
6	Strategy for Conservation and Management of Commercial Aloe Species In Kenya	2008		<b>Vision:</b> To contribute to improved livelihood for Kenyans through sustainable utilisation of viable Kenyas aloe populations					The strategy is being implemented
7	Strategy for Bioprospecting within and Outside protected areas	2011		Provide a framework to guide the country's bio prospecting activities				Ksh. 9,884,000	
8	National Strategy and Action Plan for the Management of Invasive species in Kenya's protected Areas	2013-2018				-			The plan is being implemented
9	National strategy for conservation of sea turtles	2011-2015	Green turtle E Hawksbill CE Olive ridley V Loggerhead E Leatherb	<b>Vision:</b> To have viable and resilient sea turtle populations and their ecosystems for the benefit of Kenyans and as a world heritage					80% implemented

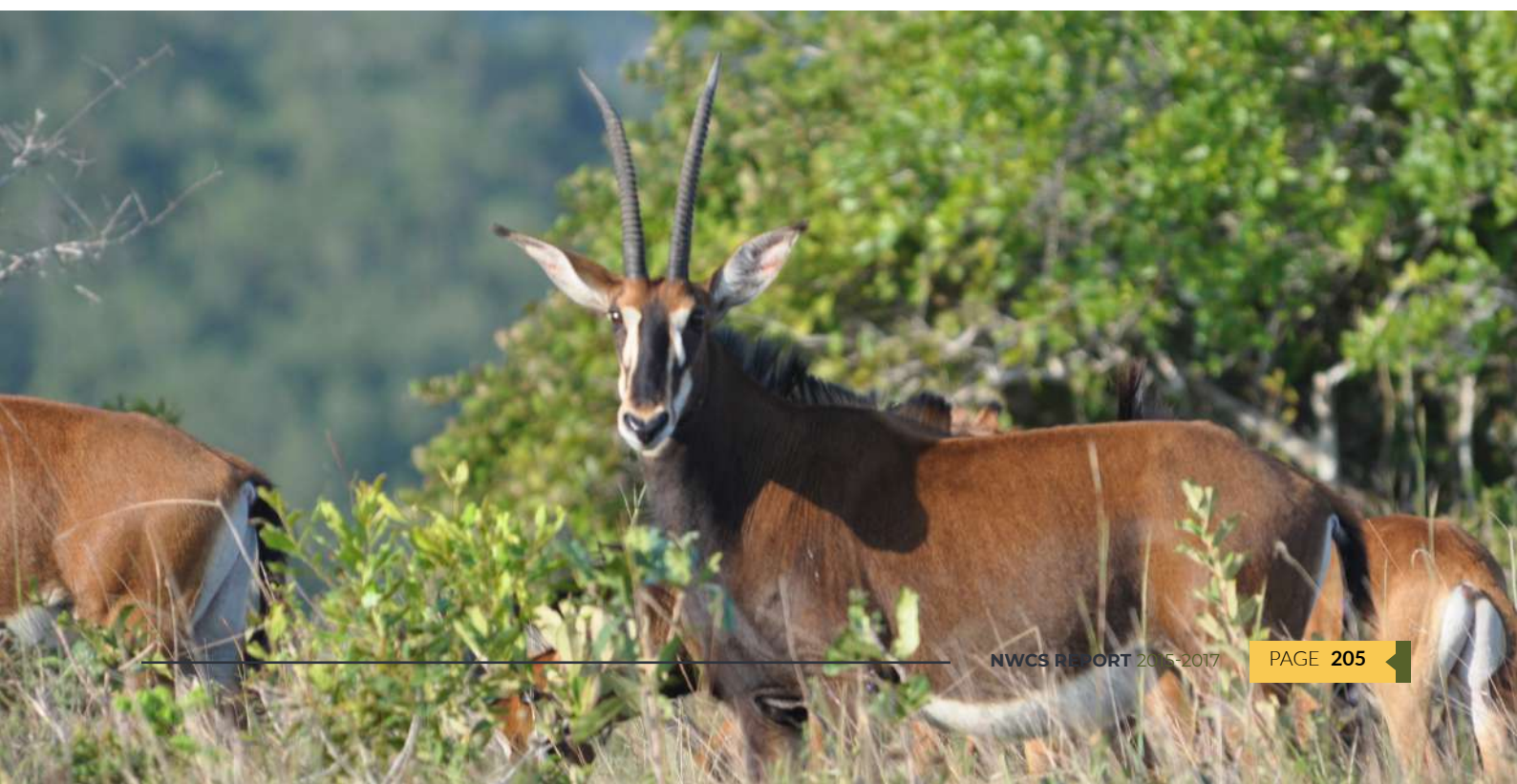
			ack CE	<b>Goal:</b> To reduce and mitigate threats, reverse declining sea turtle populations and enhance ecological, social and cultural benefits					
10	National strategy for conservation of sable antelopes	2013-2017	LC - IUCN Rare-National			41 (2017)		Kshs. 38 million for development of a predator free sanctuary	Implementation is at 33% with only 6 out of 18 targets having been or in the process of implementation
11	Coral reefs and sea grass ecosystems conservation strategy	2014-2018		<p><b>Vision:</b> Ensure healthy coral reef and sea grass ecosystems sustainably provide goods and services for posterity.</p> <p><b>Goal:</b> Maintain and restore the ecological integrity of coral reef and sea grass ecosystems through improved research and Management in partnership with stakeholders. The intent of this goal is to address existing and potential threats affecting coral reef and sea grass ecosystems by identifying key strategic objectives targets and activities that promote healthy and resilient ecosystems.</p>		Hard coral cover - 18%			36% with only few activities having been or in the process of implementation
12	National strategy for conservation of Eastern Mountain Bongo	2017-2021	NT	<b>Vision:</b> Envisage viable, free-ranging and genetically representative populations of Eastern Mountain Bongo, thriving	Recovery plan completed; site committees for management of Mt. Kenya Game ranch captive population and	96 (2017)	Secure remaining populations and habitats and plan for repatriation to boost wild populations	105 million for securing at least one breeding sanctuary and securing habitats of the wild populations	Draft in place, Awaiting approval

				across intact historic mountain ecosystem ranges, cherished by the Kenyan people and the global community.	establishment of Eburu Sanctuary				
13	National strategy for conservation of giraffes	2017-2021	Rothschild - EN Masai - Vul Reticulated - Vul	Vision: To have viable, free-ranging populations of all three giraffe subspecies, recognizing their ecological role, Kenya's unique heritage and legacy as the world centre of giraffe diversity, and ensuring benefits to Kenyans.	Updating national population estimates undertaken for the 3 sub species and working groups for the 3 sub species established	Masai Giraffe (10,030) Rothschild (415) Reticulated (8,606) (2016)	Secure habitat for the existing populations	30 million for working groups activity plans	Draft awaiting publication, Awaiting approval
14	National strategy for conservation of roan antelopes	2017-2021	LC - IUCN Rare-National	Vision: To secure viable Hirola populations in well-managed landscapes and as valued components of community development.	Request for 2 herds made to the Peoples Republic of Tanzania, through MOE&NR through MOFA&IT	16 (2016)	Boost the population with 2 herds to for enhanced breeding	Kshs. 38,581,825.00 to construct a predator free breeding sanctuary	Draft awaiting finalisation
15	National strategy for conservation of sitatunga	Expired in 2017	LC - IUCN Rare-National	-		256 (2013)		45 million drafting a new plan, national survey and protecting the habitats	To be reviewed
16	National strategy for conservation of red colobus and tana crested mangabey	-	EN	-		-			National Primate taskforce initiate the process
17	National strategy for conservation of hirola antelopes	2018-2027	CR		Population in the Ishaqini sanctuary established in 2012 with 48 individual double to 110 individuals,; plans to extend the sanctuary are in place	420-450 (2017)	Have at least 2 growing populations, habitat restoration in the free ranging areas	300 million for extension of Ishaqbini sanctuary, 1 predator free sanctuary and range rehabilitation programmes on the free ranging populations	Recovery plan completed
18	Single species action plan for conservation of Sagalla Caecilian ( <i>Boulengerula Nieldeni</i> )	2015-2020	CR	<b>Vision:</b> To have a well managed Sagalla Caecilian Population and habitat providing ecosystem	Main aim is to protect the habitat	-		1 million	In implementation phase



				services for the benefit of the local people					
19	Action plan for the conservation of critically endangered birds in Taita Hills (Taita Thrush, Taita Apalis)	2015-2020	CR	<b>Vision:</b> To have healthy populations of Taita Apalis and Taita Thrush as a global heritage benefiting the local people	Main aim is to protect the habitat	-		5 million	In implementation phase
	National strategy for conservation of Birds:	-	-	-	-	-	-	-	National Bird Taskforce to spearhead formulation
	International Action Plan for Spotted Ground Thrush ( <i>Zoothera guttata</i> )		EN		Main aim is to protect the habitat		±200 pairs		National and International (BirdLife/Nature Kenya/KWS/KFS)
	Blue Swallow	2002	Vulnerable						International-EWT/Birdlife/RSPB
20	Lesser Flamingo	2008	NT						International-CMS/AEWA
21	Madagascar Pond Heron	2008-2013	EN						International-AEWA
22	Maccoa Duck	2007-2012	Vul						International-AEWA
23	Grey Crowned Crane	2015-2025	EN						International-AEWA
24	Lappet-faced Vulture	2008	EN						Multi-species action plan for all vultures in Africa and Europe under CMS Raptor MoU to be developed

The above list of listed species recovery plans is not conclusive, the process of formulating species recovery plans is continuous and is prioritised based on availability of resources and priority for species recovery.



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## 6.3 Challenges

- a. Number of listed species for which recovery plans are to be developed is immense (211), thus the need to identify those which can be grouped together
- b. Though WCMA,2013 mandates KWS with conservation and management of wildlife in Kenya, KWS works with various stakeholders enumerated in the chapter on wildlife management in Kenya to effectively deliver the mandate thus collating all available information related to wildlife conservation is a rigorous and lengthy process
- c. Huge amount of financial resources are required to develop and implement the recovery plans
- d. Due to limited human resource and technical capacity on some specific areas, there is inadequate information on some of the listed species thus their population status is listed as data deficient
- e. Remnant population of some of the listed species are non viable e.g. the Roan antelope and the bearded vulture. The management through the MOE&NR has requested for two herds of roan antelopes and a pair bearded vulture from the People Republic of Tanzania and Ethiopia respectively thus require follow up.

## 6.4 Intervention Measures for Species Recovery

The species recovery plans have a five or ten years implementation period. A mid-term and end term review is recommended half way through the implementation period so as to measure achievements, review challenges and lessons learnt, thus inform conservation efforts. All the plans also recognise the need to prioritise short term activities that will have immediate conservation impact on the species. To champion the implementation of recovery plans, KWS set up species specific taskforces, whose membership constitutes species experts, community representatives and various research and donor organisations.

The plans have also profiled the main threats facing the species and recommended several interventions measures that should be put in place. These management intervention measures for species recovery can either be in-situ or ex-situ as indicated below:-

### In-situ

Population of some wild ungulates has been on the decline due to various factors amongst them predation. To enhance the management of these ungulates in their natural systems, various interventions have been put in place.





**Table 6.2 Intervention measures used for In-situ Species recovery**

#	Intervention	Description	Species	Locality
1.	Predator proof Sanctuaries	Predator proof bomas are enclosed areas set up to exclude predators. To grow the population and later release to re-populate the natural range	Hirola	Ishaqbini Hirola Sanctuary Garissa
			NWR, Oryx, Grevy's Zebra, Ostrich	Olpejeta conservancy
			Various ungulates	Marula
			Eastern Mountain Bongo	MKWC
2.	Sanctuaries	A fenced off area, with intensified security	Black and white Rhinoceros	In 9 National Parks, 5 Private areas, 1 County government area, 3 community areas
3.	Ecosystem/range rehabilitation	Includes habitat restoration and improved husbandry practices through habitat manipulation i.e. mechanical removal of invasive species, grass and trees re-seeding	Hirola	Ishaqbini conservancy and other hirola natural range
			Grevy's zebra	Conservancies within grevy's zebra range
			Various	Control of invasive species in various national parks
4.	Exclusion zones	Sections of particular conservation areas are fenced off to keep certain wildlife out so as to prevent further habitat degradation and allow habitat recovery	To keep out Elephants and other large ungulates	Amboseli, Lewa wildlife conservancy
5.	Surveys/Monitoring	Population status surveys are carried out to update, monitor and establish population status. This also aids in determining the effectiveness of conservation measures put in place	Various	species range regions





## Ex-situ

Conservation of endangered species, plants or animals outside its natural range to enhance their recovery.

**Table 6.3 Intervention measures used for ex-situ Species recovery**

#	Intervention	Description	Species	Locality
1.	Repatriation	Repatriations are carried out to augment existing populations or to re-establish populations in areas where the species was formerly extant.	Northern White Rhino	OI Pejeta
			Eastern Mountain Bongo	MKWC
2.	Assisted reproduction	Where a species cannot reproduce under natural circumstances, technology is used to facilitate reproduction	Northern White Rhino	OI pejeta
3.	Captive gardens breeding	Carried out for endangered species with an aim to bolster an existing population or achieve a population size large enough to allow the species to be reintroduced in their natural range	Eastern Mountain Bongo	MKWC
4.	Donation	Certain species exist in very low numbers that are not adequate to recover the populations. Thus other countries that host similar species requested to donate to aid in population recovery	Roan antelope	Ruma National Park
			Sable antelope	Shimba Hills National Reserve
			Bearded vulture	Raptor rehabilitation Centre
5.	Genetic banks	Bio-repository which preserve genetic material. Kept as duplicate specimens in repositories both in Kenya and foreign countries in the form of DNA, semen, biological material, progeny, living libraries for breeding purposes and bio banks. Specimens can be retrieved at later stages.	Northern White Rhino, Various plants and mycological collections	San Diego Zoo, NMK, KARLO, Gene bank, Royal botanic Gardens, Kew in London
6.	Botanical gardens	establishment where plants are grown for scientific study, display to the public and preservation for future generations	Sandal wood, Prunus Africana, rose wood	KEFRI

## ANNEX 1. Structure of recovery plans

- 8.1 species description
  - 8.1.1 History and taxonomic relationship of listed species
  - 8.1.2 Biology and ecology of the listed species
  - 8.1.3 Population status, Reproduction and distribution of the listed species
  - 8.1.4 Diet and foraging (home range)
  - 8.1.5 Refuge, nesting and requirements
  - 8.1.6 Movement and social organization
- 8.2 Conservation status
  - 8.2.1 International (IUCN/CITES)
  - 8.2.2 National (Wildlife Act 2013, Schedule 6)
- 8.3 National laws/Regulations/policies and International Obligations
- 8.4 Habitat and Distribution
  - 8.4.1 Historical distribution of listed species in Kenya
  - 8.4.2 Current distribution
  - 8.4.3 Viable population sizes
  - 8.4.4 Critical habitat suitability for species survival
- 8.5 Population trends for the listed species
  - 8.5.1 National
  - 8.5.2 Site level
- 8.6 Threats to the listed species
- 8.7 Present Site Conservation measures
- 8.8 Recovery, Management practices and policies
  - 8.8.1 Recovery goals and objectives
  - 8.8.2 Listed species recovery actions
    - 8.8.2.1 Genetic profiling of existing subpopulations
    - 8.8.2.2 Translocation
    - 8.8.2.3 Health monitoring
    - 8.8.2.4 Captive breeding
    - 8.8.2.5 Public awareness
    - 8.8.2.6 Species recovery team
- 8.9 Implementation
  - 8.9.1 Strategy Implementation matrix
  - 8.9.1 Budget

## RECOVERY PLANS

S/N	Species	Numbers	Location	Remarks
	Carnivores	Cats	3	Vulnerable
		Mongoose	8	
		Leopard	1	
		Civet		
	Birds	Passarime		
		Vultures		



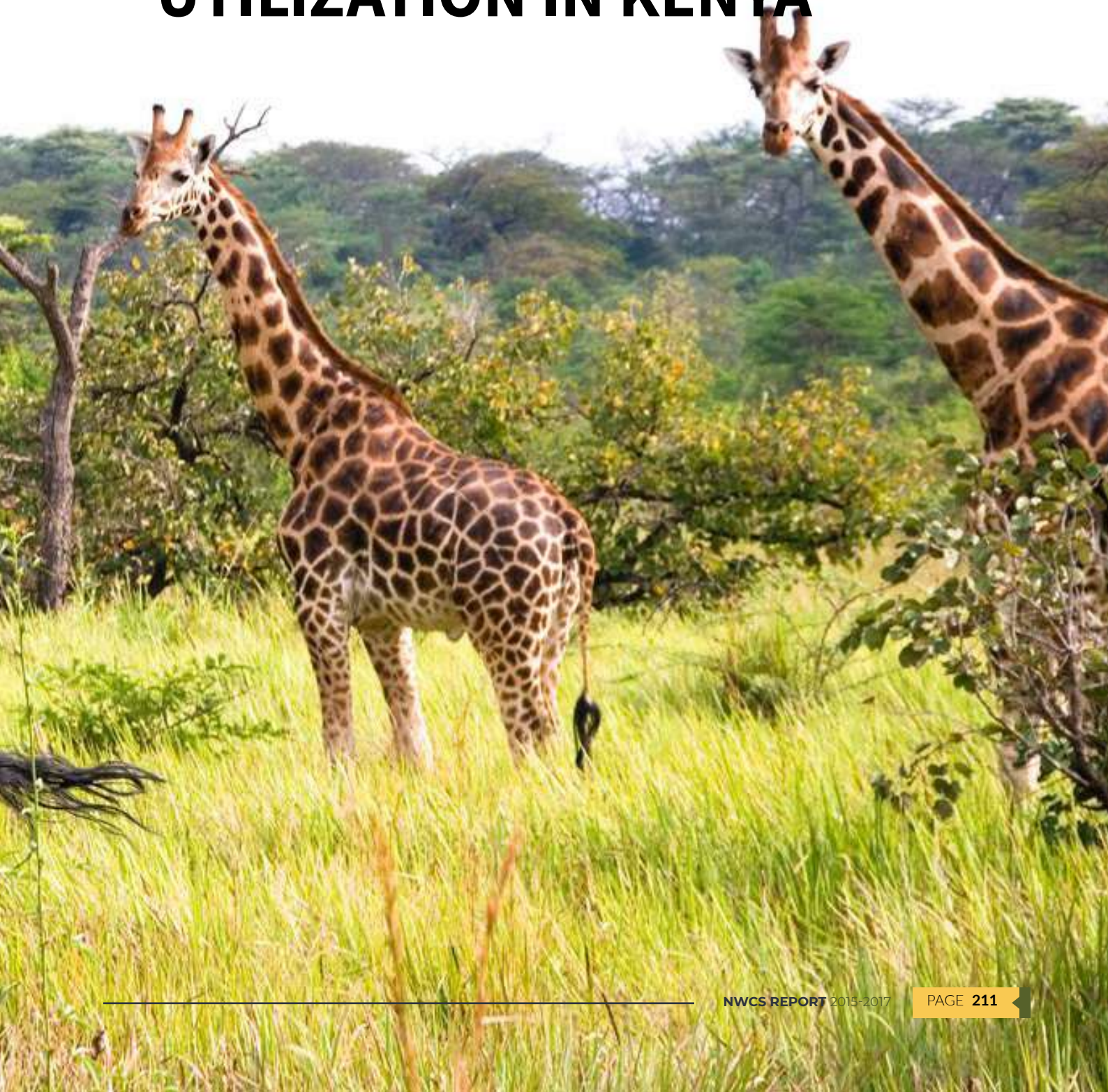


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# CHAPTER 7:

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## STATUS OF WILDLIFE UTILIZATION IN KENYA



Wildlife resources provide non-consumptive and consumptive values, namely, economic benefits, recreation, scientific, ecological and existence needs as well as physical needs (food and other necessities for human survival). Wildlife is a national resource under the Constitution of Kenya. Wildlife user rights are provided for in two broad categories: consumptive and non-consumptive wildlife utilization as outlined in Section 79 and 80 of the WCMA, 2013. The non-consumptive user rights include wildlife-based tourism, commercial photography and cinematography, education, research, cultural and religious purposes, while the

consumptive user rights include game farming, game ranching, research involving off-take, live capture, cropping and culling. The coordination, administration and regulation of wildlife utilization are done within a framework of the WCMA, 2013 and other relevant national legislations and relevant wildlife-related multi-lateral environmental agreements (MEAs) Kenya has assented to.

This chapter outlines the prevailing legislative and policy framework for wildlife utilization in Kenya, and presents reports the various wildlife utilization activities permitted during the period between 2015- 2017.

## 7.1 Legislation

Section 69 of the Constitution of Kenya obligates the State to ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources for the benefit of the people of Kenya. Every person has a right to reasonable access to wildlife resources and to enjoy the benefits accruing from them as provided for by the WCMA, 2013 and other relevant national laws. Various national legislations as required under Section 72 of the Constitution of Kenya are in place for the management of the environment, land and natural resources. These include:

1. The Environmental Management and Coordination Act (amendment) Act 2015 and Environmental Management and Coordination (Conservation of Biological Resources, Access to Genetic Resources and Benefit Sharing) Regulations of 2006.
2. The WCMA, 2013 which is presently under review and various amendments are awaiting parliamentary approval.
3. The Forest Conservation and Management Act 2016.
4. Protection of Traditional Knowledge and Cultural Expressions Act 2016.
5. The Seed and Plant Varieties Act (amendment) Act 2012.
6. The Biosafety Act (amendment) 2012.
7. The Mining Act 2016
8. The Science, Technology and Innovation Act 2013
9. Intellectual Property Laws: Industrial Property Act 2001, Trade Mark Act Cap 506, Copyright Act 2001, Anti-Counterfeiting Act 2008.
10. Film and Stage Plays Act (amendment) 2012
11. The Water Act, 2016

## 7.2 Regulations on Wildlife Utilization

Various regulations under the WCMA 2013 have been formulated for the better implementation of the WCMA 2013, and in particular, for implementing wildlife utilization programmes. These include regulations for Conservancies and Sanctuaries, Community Participation,

Licensing and Wildlife User Rights, Activities in National Parks, Mining and Game Trophy Management. The first four have gone through drafting, public participation and validation processes and are awaiting gazettment. The last has been gazetted.



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## 7.3 Policy on Wildlife Utilization

The substantive policy for wildlife conservation in Kenya is Sessional Paper No. 3 of 1975 on the policy of wildlife in Kenya. The policy seeks to optimize returns from wildlife from both consumptive and non-consumptive uses. The latter uses have been achieved through maintenance of a system of National Parks, National Reserves and sanctuaries managed by KWS and various County Governments as well as over 160 community and private

wildlife conservancies across the country. The vibrant wildlife industry envisaged by this policy under consumptive wildlife utilization could not be realized due to the ban on hunting and dealership in wildlife products which were enacted by parliament in 1977 and 1978, respectively.

The enactment of the WCMA of 2013 which has allowed a broad range of wildlife user rights calls for a new policy.

## 7.4 Multi-lateral Environmental Agreements

Section 109 of the WCMA, 2013 makes it a requirement for the Cabinet Secretary to publish the status of Kenya's implementation of wildlife-related multi-lateral environmental agreements (MEAs) Kenya is party to. Two MEAs key in wildlife utilization in Kenya are the Convention on Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on Biological Diversity (CBD).

### 7.4.1 CITES

CITES aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. This is achieved through a system of permits and international cooperation. As part of implementing CITES decisions during CITES COP 17, party states are required:

1. To ensure that their domestic legislation provides for:
  - i. designation of at least one Management Authority and one Scientific Authority;
  - ii. prohibition of trade in specimens in violation of the Convention;
  - iii. penalizing such trade; or
2. Confiscation specimens illegally traded or possessed. The government has designated KWS as both the Management Authority

and the Scientific Authority and the NMK as the Scientific Authority for purposes of implementing CITES. Kenya has largely achieved all these four requirements as shown in Chapter 5.

3. To submit to the Secretariat information on their planned and ongoing projects related to the use of electronic systems and information technologies improving the management of CITES trade. This has been achieved through the ongoing development of web-portal for regulatory agencies of the government that are involved in regulating research and development in the country (see Figure 7.1). KWS participated in a questionnaire survey from the Secretariat on the status of e-permitting in April 2017. KWS is represented in the CITES e-permitting Working Group.

Kenya participated in CITES Conference of Parties (COP) 17 in 2016 in South Africa from 24th September to 4th October 2016. Kenya presented several proposals some of which resulted in the listing of various species and passing of decisions on key species including the African elephant, rhinoceros, pangolins, Mt. Kenya bush viper and Kenya horned viper (see Table: 7.1 below). The decisions took effect immediately.



**Table 7.1: Status of proposals to CITES COP 17**

	<b>Species</b>	<b>Kenya's proposal/ Species within the range state</b>	<b>COP 17 Decision</b>
<b>1</b>	Giant pangolin ( <i>Manis gigantea</i> ), long-tailed pangolin ( <i>Manis tetradactyla</i> ) and white-tailed pangolin ( <i>Manis tricuspis</i> )	Transfer from App II to App I	All 8 species of pangolin were moved to Appendix I
<b>2</b>	African elephant ( <i>Loxodonta africana</i> )	Include all populations of African elephant in Appendix I through the transfer from Appendix II to Appendix I of populations of Botswana, Namibia, South Africa and Zimbabwe	Rejected
<b>3</b>	Pygmy chameleons ( <i>Rhampholeon</i> spp. and <i>Rieppeleon</i> spp.)	Include genera <i>Rhampholeon</i> spp. and <i>Rieppeleon</i> spp. Appendix II	Moved to Appendix II
<b>4</b>	Ashe's bush viper ( <i>Atheris desaixi</i> )	Include in Appendix II	Moved to Appendix II
<b>5</b>	Kenya horned viper ( <i>worthingtonii</i> )	Include in Appendix II	Moved to Appendix II
<b>6</b>	Thresher sharks ( <i>Alopias</i> spp.)	Include genus <i>Alopias</i> spp. in Appendix II	Moved to Appendix II
<b>7</b>	Rosewoods ( <i>Delbergia</i> spp.)	Include the genus <i>Delbergia</i> spp. in Appendix II	Moved to Appendix II

## 7.4.2 CBD

The Convention on Biological Diversity (CBD) has three main objectives: 1. the conservation of biological diversity, 2. the sustainable use of the components of biological diversity, and 3. the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Genetic resources (plant, animal and microorganisms) are used for basic research, and development of products. Users of genetic resources include research institutes, universities, and private companies in various sectors of the economy, namely, pharmaceuticals, horticulture, cosmetics, agriculture and biotechnology. The Nagoya Protocol of the CBD has established new governance systems to provide a transparent and predictable legal framework for the fair and equitable sharing of benefits arising out of the utilization of genetic resources between resource providers and users. By helping to ensure benefit-sharing, the Nagoya Protocol creates incentives to conserve and sustainably use genetic resources, and therefore enhances the contribution of biodiversity to development and human well-being. Kenya participated in the meetings of the CBD (Conference of

Parties) COP 13, and of its two protocols- the Nagoya Protocol COP (Meeting of Parties) MOP 2 and Cartagena COP MOP 8 in Cancun, Mexico, from 4th to 17th December 2016. Two key resolutions that came out of these meetings are:

1. On ratification of the Nagoya Protocol and its implementation and on Aichi 16- by 2015, all member States to ensure that the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational and consistent with national legislation.
2. Cartagena Protocol- member States to focus on streamlining permitting and licensing to promote utilization of biological resources, especially on sustainable utilization of resources and sustainable development goals. The scope included granting user rights in respect of emerging issues like synthetic biology, digital sequences, commodity trade and bio-trade.

The country has been able to put in place relevant national legislation (see Section 6.1),

set up a regulatory framework and designate competent national authorities for purposes of implementing ABS requirements under the Nagoya protocol. These achievements are seen in the outline of requirements to access genetic resources for research and development in Kenya below and in Figure 7.1:

1. Prior Informed Consent (PIC) from the resource provider (Mutually Agreed Terms + Material Transfer Agreements + detailed proposal) mostly from KWS, Kenya Forest Service, local communities
2. Research Permit from the National Commission for Science Technology and Innovation

3. An access permit from the National Environment Management Authority
4. Export permits from KWS, phytosanitary certificates from Kenya Plant Health Inspectorate, a veterinary health certificate from the Directorate of Veterinary Services, export/ import/ transit certificates from National Biosafety Authority for genetically modified organisms.

The existence of an effective ABS institutional and legislative framework is reflected by the number of ABS agreements, the number of technical assistance programmes available for strengthening national ABS programmes, and, potentially, the value of benefits shared.

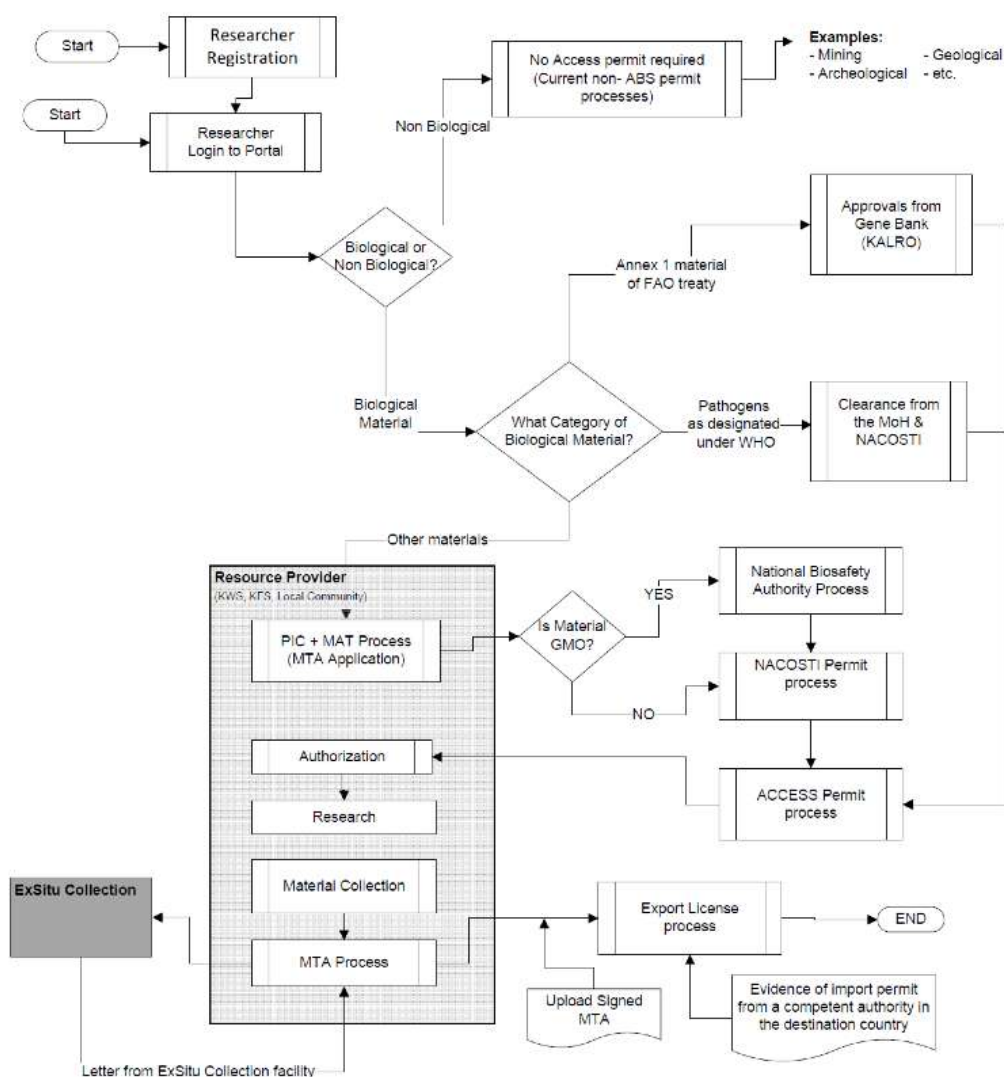
### Permitting Requirements for Access to Kenya Biological Resources

#### Introduction:

#### 1. What qualifies for an Access permit:

- Biological resources
- Genetic Resources
- DNA / RNA extracts
- Bio Chemical resources
- Derivatives
- Progeny
- Traditional Knowledge
- Digital Sequence Information and associated information

#### 2. This is applicable to both imports to Kenya and exports from Kenya



**Fig. 7.1:**  
Permitting requirements for accessing biological resources in Kenya

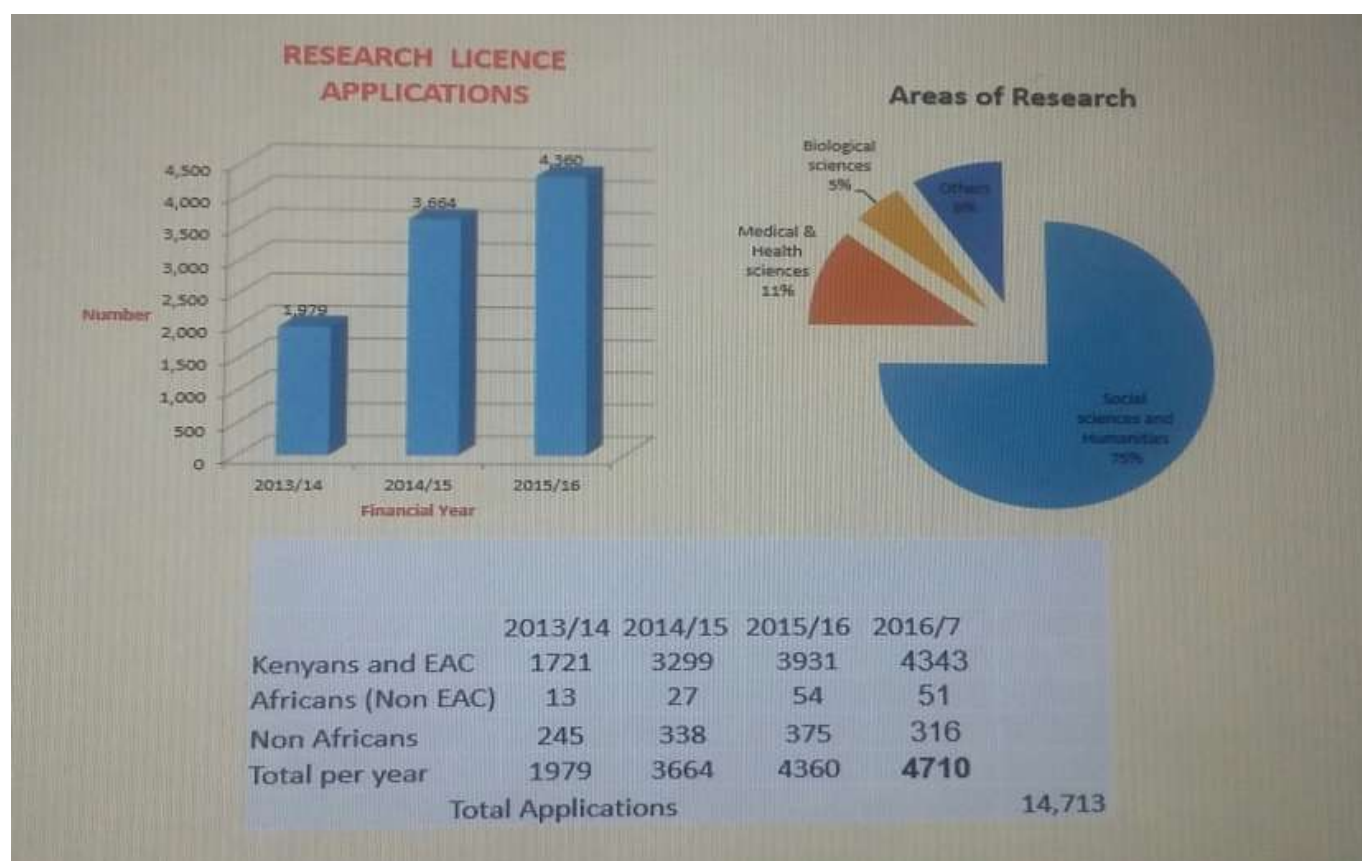
## 7.5 Wildlife User Rights Granted

A number of licenses were granted for various user rights during the reporting period. These included research and development authorizations, wildlife farms, bio-trade and filming.

### 7.5.1 Research and Development

We have no comprehensive monitoring system. However, mechanisms for monitoring research

and development are being developed through the development of a web portal for linking the regulatory institutions to enhance streamlining research and development. Figure 7.2 below shows that approximately 5% of all research projects processed by the National Commission for Science, Technology and Innovation in 2015/16 were in biological sciences.



**Figure 7.2: Research permits applications for various fields of study**

KWS issued 283 wildlife research authorizations at various levels between 2015 and 2017 as shown in the Table 7.2 below. Table 7.3 shows research and development authorizations

subjected to the Nagoya access to genetic resources and sharing of benefits from their utilization (ABS) regulations.

**Table 7.2: Number of authorizations issued by KWS for wildlife research**

Level of study	2015	2016	2017	Total
1. Certificate	2	5	2	9
2. Diploma	2	2	3	7
3. Undergraduate	16	23	18	57
4. Masters	22	30	22	74
5. PhD	14	20	18	52
5. Post- doctoral	19	22	43	84
<b>Total</b>	<b>75</b>	<b>102</b>	<b>106</b>	<b>283</b>



**Table 7.3: Research and Development Projects**

Year	Project	Proponents	PIC	MAT	MTA	Research permits	Access	Export permit
2015	Understanding seasonality of resource use by animals in Amboseli National Park	Catherine Badgley	✓	✓	✓	✓	✓	✓
	Microbial ecology on glacier and its effect to glacier melting in Mt Kenya	Dr. Jun Yuu Uetake	✓	✓	✓	✓	✓	✓
	Ecological and social considerations for endangered species protection in Laikipia and Samburu districts of Kenya	Sara Elizabeth Heisel	✓	✓	✓	✓	✓	✓
	Nutritional strategies of blue monkeys ( <i>Cercopithecus mitis</i> ) in Kakamega forest Kenya	Maressa Takahashi	✓	✓	✓	✓	✓	✓
	The development, structure and function of social bonds among baboons	Joan Barbara Silk	✓	✓	✓	✓	✓	✓
	Mara Hyena Project	Dr. Kay E. Holekamp	✓	✓	✓	✓	✓	✓
	The Amboseli Baboon Research Project for demography, behaviour and genetics	Prof. Susan Alberts	✓	✓	✓	✓	✓	✓
2016	Coping with environmental uncertainty, behaviour, morphology, genetics and physiology of African birds	Dr. Dustin Reid Rubenstein	✓	✓	✓	✓	✓	✓
	An analysis of the Nutritional and Mechanical properties of East African Savanna plants and baboon foods	Abigael Koppa	✓	✓	✓	✓	✓	✓
	An ecolocal trap for parasites and its impacts on human disease risk, nutrition and income	Dr. Sharon Okanga	✓	✓	✓	✓	✓	✓
2017	Monitoring of lion movement in Nairobi National Park	Francis Lesilau	✓	✓	✓	☒	☒	✓
	Analysis of the Nutritional and mechanical properties of east African Savanna plants and baboon food	Abigale Koppa	✓	✓	✓	✓	✓	✓
	Snail related studies of transmission and control of schistosomiasis in Kenya	Gerald Mkoji	✓	✓	✓	✓	✓	✓

**Key:** ✓- Available ☒-Not Available

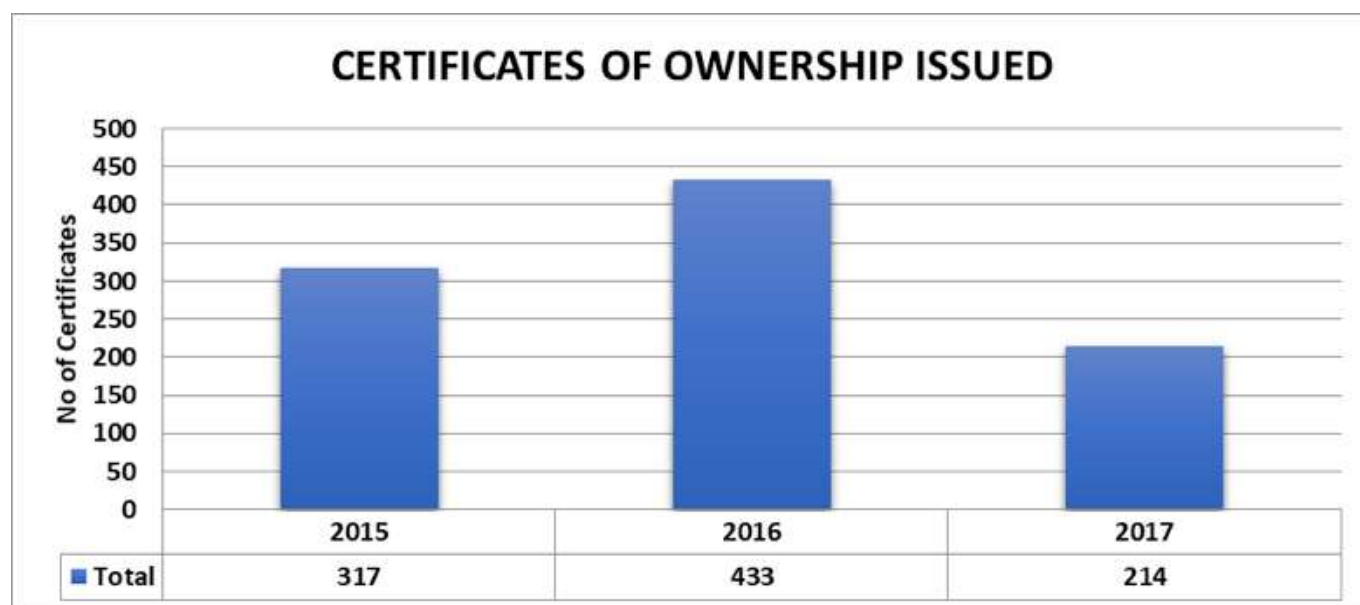
## 7.6 Wildlife farming

Section 80 of WCMA makes provision for consumptive wildlife user rights, including game farming, game ranching, and live capture, research involving off-take, cropping and culling. There were no permits granted for live capture of wildlife, research involving off-take and culling from the wild during the reporting period. Game farming involves rearing of wildlife in an enclosed and controlled environment for wildlife conservation, trade (commerce) and recreation. The gazettment of regulations on Licensing and Wildlife User Rights will be instrumental in guiding consumptive wildlife user rights. Live capture and sale of animals

as well as cropping are practiced by licensed game farming operations. These sales help stock newly licensed game farms and supply the export market with live animals for the pet industry and a range of products. Table 7.4 presents a summary of various wildlife farming operations for trade and where they are located. A number of certificates for legal possession of live animals, mainly small wild birds, and other trophies were also granted during the period as shown in Figure 7.3 below as per the provisions of Section 95 of the WCMA, 2013.

**Table 7.4: Wildlife farming operations for trade**

Wildlife farming activity	No	Location
Crocodile farming	4	Sagana, Kilifi, Baringo, Mombasa
Tortoise	4	Mogotio, Namanga, Kitui
Chameleon	2	Kiambu, Kirinyaga
Biological organisms for pest control	3	Naivasha, Kiambu
Ostrich	1	Kitengela
Aloe	4	Kiambu, various self-help groups- Kwale, Laikipia Kitui
Butterflies	3	Kakamega, Kilifi
Snails	4	Migori, Kisumu, Nairobi
Captive keeping for ecotourism	>10	Various location across the country



**Fig. 7.3: Certificates for legal possession of wildlife**

## 7.7 Bio-trade

This covers both CITES- listed and non- CITES specimens obtained from licensed wildlife farms and those harvested from the wild for research, biomedical or cosmetics development purposes which have been exported from or imported into or re-exported from Kenya with or without monetary value on the specimen. The bulk of the biological materials is traded as

exports of products from licensed wildlife farms for trade/commercial purposes. Over three-quarters of all trade consisted of exports during the period. Twenty-two percent of the total number of trade permits (import/export/re-export) were for CITES- listed wildlife materials (Table 7.5).

**Table 7.5: Summary of wildlife trade permits granted**

	2015	2016	2017	Grand Total
EXPORT				
<b>CITES</b>	190	289	297	776
<b>Non- CITES</b>	1,796	1,936	1,958	5,690
EXPORT Total	<b>1,986</b>	<b>2,225</b>	<b>2,255</b>	<b>6,466</b>
IMPORT				
<b>CITES</b>	28	25	31	84
<b>Non- CITES</b>	26	19	27	72
IMPORT Total	<b>54</b>	<b>44</b>	<b>58</b>	<b>156</b>
RE-EXPORT				
<b>CITES</b>	159	100	159	418
<b>Non- CITES</b>	31	5	27	63
RE-EXPORT Total	<b>190</b>	<b>105</b>	<b>186</b>	<b>481</b>
Grand Total	<b>2,230</b>	<b>2,374</b>	<b>2,499</b>	<b>7,103</b>

An analysis by source of exported wildlife material during the three years reveals that 26.2% was from licensed operations for artificial propagation of plants and 70% from licensed operations for breeding animals in captivity and ranching (Table 7.6). This demonstrates that wildlife farming has the potential to

contribute to the economy of the country through creating employment opportunities thereby improving local people's livelihoods. Exploitation of animal and plant materials from wildlife farming helps ease the pressure of depleting them from their natural habitats.

**Table 7.6: Source of exported wildlife materials**

SOURCE	2015	2016	2017	Grand Total
<b>Artificially propagated plants</b>	145	64	126	335
<b>Animals, parts and derivatives bred in captivity</b>	225	342	288	855
<b>Confiscated or seized specimens</b>			1	1
<b>Pre-Convention specimens</b>			3	3
<b>Ranched specimens</b>	7	8	10	25
<b>Specimens taken from the wild</b>			59	59
Grand Total	<b>377</b>	<b>414</b>	<b>487</b>	<b>1278</b>



An analysis of the purposes for trade of the wildlife materials during the reporting period reveals that 87% was for commercial materials that is from captive animal breeding and artificial propagation of plants (Table 7.7). Wildlife farming has the potential to contribute to the economy of the country through creating

employment opportunities thereby improving local people's livelihoods and contributing to the creation of wealth. Exploitation of animal and plant materials from wildlife farming helps ease the pressure of depleting them from their natural habitats.

**Table 7.7: Purposes of imports/ exports/ re-exports**

PURPOSE	2015	2016	2017	Grand Total
Hunting trophy			1	1
Law enforcement / judicial / forensic		3	1	4
Medical (including biomedical research)	16	37	12	65
Personal	8	14	12	34
Circus or travelling exhibition			1	1
Scientific	17	15	16	48
Commercial	336	345	443	1124
Zoo			1	1
Grand Total	377	414	487	1,278

A total of 50,570 live tortoise hatchlings including leopard tortoise, hinge-backed tortoise and pancake tortoises were exported from licensed tortoise farms (see Annex 1). Hong Kong and Taiwan were the main destinations of export. A total of 24,395 live chameleons consisting of various species were exported from licensed chameleon farms (Annex 2). The main export destinations were Germany, Spain and Hong Kong. There was a total of 19,783 Nile crocodile skins exported between 2015 to 2017. These were mainly exported to Singapore (Annex 3). Two kinds of crocodile farming are practiced in Kenya, namely captive breeding which is a closed intensive farming which does not rely on the wild for breeding and ranching which relies on an annual quota of harvesting of wild eggs from the lower Tana River for rearing. The latter form maintains linkages with local people who derive benefits from such harvesting through egg collection fees paid to egg collectors engaged by the licensed farmers, social development projects to the community, collection of levies by the County Government of Tana River and reduction of human-crocodile conflicts. Three crocodile farms were given permits to collect 45,000 crocodile eggs from lower Tana River during the three egg collection seasons between 2015-17.

There are three licensed butterfly farmers in the country. Two of these farmers are in Malindi with

a network of out-growers consisting of local members of communities around Arabuko Sokoke Forest Reserve and Shimba Hills National Reserve. The butterfly farming programme not only provides supplemental income to the local participating households but is important in motivating local people to conserve wild vegetation on which butterfly life depends. The live butterfly pupae were exported mainly to the United Kingdom and the USA (Annex 4).

Predatory mites, beneficial fungi and beneficial nematodes bred in three licensed game farms constituted the bulk of non-CITES permits granted for trade (commercial) purposes. The demand for these beneficial organisms is on the increase as is demonstrated by the increase in quantities exported between 2015 and 2017 (Annex 5). The continued production and export of bio-control technology to deal with pests in in-door and out-door flower and food crop production is not only environmentally friendly but demonstrates the important link between wildlife resources and other sectors of the economy.

The demand for aloes derivatives for manufacture of cosmetic, cultural and pharmaceutical products has been observed. The utilization of commercial aloes is guided by the WCMA, 2013 and other relevant national legislations (see section 1.1 above) as well as the report on

the Status and Distribution of Commercial Aloes in Kenya, the Strategy for Conservation and Management of commercial Aloes in Kenya and the Aloe Regulations of 2007 as provided for by the transitional clause 119 (c) of the WCMA, 2013. An upcoming women self- help group in Doldol- Laikipia which is registered to artificially propagate aloe for export has been mainly exporting Aloe secundiflora leaves to Canada, United Kingdom and Japan with the help of a strategic partner (see Annex 6). Aloe gum was obtained from registered aloe farming self-help groups in Kwale through the help of a strategic partner and from controlled wild harvests from West Pokot and parts of Baringo. Regulated trade in aloe promotes sustainable utilization of aloe, competitiveness and improved living standards of the local people. Regions where aloes occurs naturally experience arid or semi- arid climatic conditions and low economic growth and the sustainable utilization of aloe has the potential for incomes for local communities.

One licensed company in Kiambu has been engaged in the artificial propagation of Rhipsalis spp and Aloe spp. and re-exporting the same. The starter suckers were initially imported from the Netherlands. During the years 2015, 2016 and 2017, the company exported 2,198,975 and 994,000 unrooted cuttings (stems) of Rhipsalis spp. and Aloe spp., respectively, mainly to the Netherlands (Table 7.8). During the period, 1,543.9 kgs (gross) and 5,000 pieces of fishing flies made from peacock (Pavo cristacus) feathers were re-exported to various countries, with the main destination being the USA. Importing of peacock feathers, Rhipsalis spp. and Aloe spp. For value addition or for propagation for re- export has not only created jobs for local people but enabled economic growth for the country.

**Table 7.8: Exports and Re- exports select specimens**

Species/ Specimen	Export/ Re-export	Description	Quan tity	2015	2016	2017	Grand total
<b>Aloe secundiflora</b>	Export	Gum	kgs	15,980	286,970	280,056	583,006
		Leaves	pcs	1,110	680	370	2,430
<b>Rhipsalis spp.</b>	Re- export	Stems (unrooted cuttings)	pcs	1,436,975	185,000	577,000	2,198,975
<b>Aloe spp.</b>		Stems (unrooted cuttings)	pcs	-	50,000	944,000	994,000
<b>Pavo cristacus (peacock)</b>	Re- export	Feathers on fishing flies	Kgs (gross)	318.13	755.36	470.31	1,543.8
			Pcs	2,500	-	2,500	5,000



## 7.8 Filming

Commercial photography and cinematography in National Parks is governed by the Film and Stage Plays Act and the WCMA, 2013. A total K Sh 3,051,600 was generated during the period 2015-2017 out of 224. Filming Authorities were issued for filming

and cinematography in KWS- managed Parks (Table 7.9). Amboseli, Nairobi and Tsavo East National Parks were top ranking destinations for commercial filming/ photography among KWS- managed Parks and Reserves.

**Table 7.9: Filming Authorities granted for different National Parks**

Park	2015	2016	2017	Total
Aberdare	-	1	2	3
Amboseli	13	14	23	50
Chyulu Hills	1	-	1	2
Hell's Gate	1	6	9	16
Kakamega Forest	-	-	2	2
Kisite Mpunguti Marine	-	-	1	1
Kiunga Marine	-	1	-	1
Kora	-	-	1	1
Lake Nakuru	3	1	2	6
Malindi Marine	-	2	1	3
Meru	1	3	2	6
Mombasa Marine	1	3	2	6
Mt. Elgon	-	-	1	1
Mt. Kenya	1	3	4	8
Mt. Longonot	-	2	1	3
Mwea	-	1	-	1
Nairobi	5	27	21	53
Nairobi Animal Orphanage	-	2	3	5
Oi Donyo Sabuk	-	1	-	1
Safari Walk	-	1	-	1
Sibiloi	-	1	-	1
Tsavo East	7	13	14	34
Tsavo west	3	7	8	18
Watamu Marine	1	2	2	5
Total Filming Authorities issued	37	89	98	224

## 7.9 Wildlife conservancies

The WCMA, 2013 identifies conservancies as a land use. Section 80 provides for the CS to grant a general permit for non-consumptive user rights including cinematography and photography, wildlife-based tourism, tourism, research and cultural uses after registration by the relevant

CWCCC. There are 160 wildlife conservancies that have been in existence and operational before the enactment of WCMA 2013. The Regulations that are envisaged to help govern wildlife conservancies (Conservancies, Wildlife Associations and Wildlife Managers) as required



by WCMA 2013 are awaiting gazettelement. The wildlife conservancies are set to be licensed

when the regulations become gazetted.

## 7.10 Mining

The Mining Act, 2016 vests the powers to access, regulate and control prospecting and mining activities in the Commissioner of Mines. This Act excludes all wildlife protected areas (National Parks, National Reserves and wildlife conservancies and sanctuaries) unless conformity with the WCMA 2013. The WCMA requires any person who would like to mine or quarry to obtain approval and consent of the Service. The Service shall only approve and give consent for mining and quarrying where: a) the area does not contain endangered or threatened species; b) the area is not a critical habitat and ecosystem for wildlife; c) the area is not an important catchment area or source of springs; d) an environmental impact assessment has been carried in accordance with EMCA, 2015; e) approval has been obtained in accordance with the appropriate law regulating mining; and, f) a bond to rehabilitate the site upon completion of the operation has been executed.

Mining in protected areas was suspended on several occasions in the 80's due to environmental concerns and increased

incidences of poaching. An inter-ministerial committee was set up to look into the mining in protected areas in 1990s to guide the government. Several recommendations were made, including only serious miners who had invested to be allowed back in the park and additional regulations be developed to address the issues of insecurity and mitigation of environmental concerns. A caveat was placed, as recommendation by the inter-ministerial committee, no new claims will be allowed in the National parks. At present, there are six mining companies licensed to mine in Tsavo West National Park. These mining companies were in existence in the 1980's prior to the suspension of mining in protected areas due to environmental concerns and increased incidences of poaching. More requests for consent to mine in Tsavo West continue to be received.

Exploration and extraction of oil or gas in National Parks requires the consent of the Cabinet Secretary and prior approval of the National Assembly.

## 7.11 Government game trophies

The WCMA, 2013 outlines government game trophies as any trophy found without an owner, any animal found dead or killed by accident or mistake, any animal killed in defense of life or in other circumstances authorized by or under this Act, any animal or trophy in respect of which a breach of any of the provisions of this Act or any animal killed by a member of the Service in the course of duty.

Prior to the ban in hunting and dealership in wildlife products in 1977 and 1978, respectively, all government trophies were quantified in monetary terms and were part of Government revenue to the exchequer. However, after the bans, the trophies no longer generate any revenue to the exchequer. At present the focus

is on securing government trophies of critical concern, especially, elephant ivory and rhino horns. Kenya Wildlife Service has put in place an elaborate and prudent management system for the ever-accumulating stockpile.

### 7.11.1 Elephant ivory and rhinoceros horns stocks

The WCMA, 2013 mandates KWS to conduct annual audit government game trophies in her possession and publish in the government gazette. Table 7.10 presents a summary of quantities of elephant ivory and rhinoceros horns in the custody of KWS.

**Table 7.10: Elephant ivory and rhinoceros horns in KWS custody**

	Elephant ivory	Rhino horn
Stock in stores	Qty (kgs)	Qty (kgs)
2015	135,784.00	1,515.90
2016	40,176.15	364.9
2017	55,883.3	419.29

### 7.11.2 Disposal

The government has had two disposals through burning during the report period to send a strong signal and a statement to the world, that poaching was a penance and was wiping out the country's heritage. Both occasions were presided over by H.E, The President Hon. Uhuru Kenyatta.

- 3rd March 2015- 15 tonnes on the occasion to mark the 3rd World Wildlife Day
- 30th April 2016, 105,037.13 kg elephant ivory and 1,350 kg rhino horns.

### 7.11.3 Electronic system of game trophy management

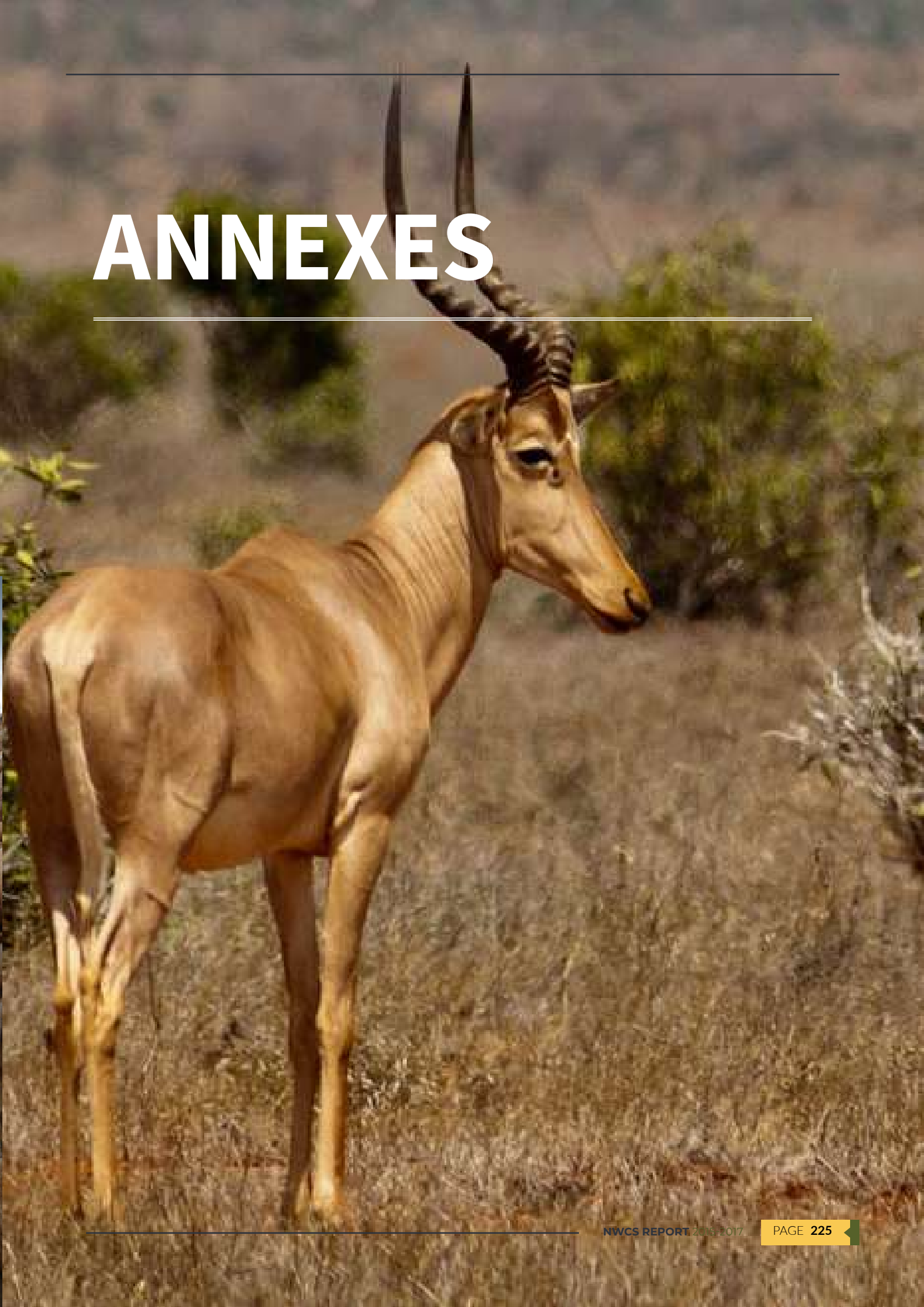
The implementation of an electronic game trophy stockpile management system (ESMS) in 21 key Stations and Parks is on course. The ESMS will strengthen the manual management system that has been operational for many years.



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# ANNEXES

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### Annex 1: Captive- bred live tortoise hatchlings exported

Year	Country	Quantity (pcs)
2015	Germany	160
	Great Britain	65
	Hong Kong	6,520
	Japan	30
	Malaysia	100
	Pakistan	330
	Singapore	10
	Taiwan	2,160
<b>Sub-total</b>		<b>9,375</b>
2016	Czechoslovakia	170
	Germany	1,655
	Spain	700
	Great Britain	110
	Ghana	30
	Hong Kong	6,920
	Japan	125
	Pakistan	350
	Singapore	30
	Malaysia	250
	Taiwan	1,400
<b>Sub-total</b>		<b>11,740</b>
2017	China	1,400
	Germany	800
	Hong Kong	22,055
	Japan	30
	Korea	68
	Malaysia	260
	Netherlands	125
	Poland	700
	Spain	300
	Taiwan	5,946
	Thailand	156
	UAE	100
	United Kingdom	300
	Vietnam	15
<b>Sub-total</b>		<b>29,455</b>
<b>Grand Total</b>		<b>50,570</b>

**Annex 2: Captive- bred live chameleons exported**

Year	Country	Quantity (pcs)
2015	Canada	180
	Germany	1,240
	Spain	1,200
	Great Britain	480
	Hong Kong	1,273
	Japan	270
	Netherlands	315
	Singapore	10
	Taiwan	830
	USA	285
<b>Sub- total</b>		<b>6,083</b>
2016	China	120
	Germany	2,040
	Spain	2,050
	Great Britain	734
	Hong Kong	3,276
	Japan	400
	Taiwan	624
<b>Sub- total</b>		<b>9,244</b>
2017	Canada	125
	United Kingdom	180
	Germany	2,233
	Hong Kong	2,580
	Japan	180
	Netherlands	780
	Chameleon	50
	Spain	1,000
	Taiwan	250
	United Kingdom	700
	USA	890
<b>Sub-total</b>		<b>9,068</b>
<b>Grand total</b>		<b>24,395</b>

**Annex 3: Nile crocodile skins exported**

Year	Country	Quantity (pcs)
2015	Korea	904
	Singapore	5,600
<b>Sub- total</b>		<b>6,504</b>
2016	Korea	1,459
	Singapore	4,000
<b>Sub- total</b>		<b>5,459</b>
2017	Italy	120
	Korea	1,000
	Singapore	6,200
	Zimbabwe	500
<b>Sub- total</b>		<b>7,820</b>
<b>Total</b>		<b>19,783</b>

**Annex 4: Live butterfly pupae exported to various countries**

Year	Destination country	Species name	Quantity (pcs)	mixed species Grand total
2015	Belgium	<i>Gynanisa maja</i>	20	20
	Ethiopia	<i>Papilio dardanus</i>	20	50
		<i>Papilio demodolus</i>	20	
		<i>Papilio nireus</i>	10	
	France	<i>Charaxes brutus</i>	100	500
		<i>Hypolimas Montaronis</i>	100	
		<i>Papilio Jacksonii</i>	100	
		<i>Papilio nireus</i>	100	
		<i>Papilio Pardanus</i>	100	
	United Kingdom	<i>Amauris</i> spp	55	29,723
		<i>Argema</i> spp	1020	
		<i>Charaxes</i> spp	10924	
		<i>Euxanthe</i> spp	3706	
		<i>Graphium</i> spp	4884	
		<i>Hypolimas</i> spp	9009	
		<i>Junonia</i> spp	50	
		<i>Papilio dardanus</i>	25	
		<i>Papilio demodolus</i>	25	
		<i>Papilio phoicas</i>	25	
		<i>Papilio</i> spp	5744	
	Netherlands	<i>Argema mimosae</i>	150	890
		<i>Epiphora mythimnia</i>	58	
		<i>Graphium</i> spp	10	
		<i>Gynanisa maja</i>	72	
		<i>Hypolimas</i> spp	200	
		<i>Papilio Dardanus</i>	200	
		<i>Papilio phsicas</i>	200	
2016	France	<i>Argema Mimosae</i>	150	4950
		<i>Charaxes</i> spp	2000	
		<i>Nymphalid</i> spp	600	
		<i>Papilionid</i> spp	1800	
		<i>Saturniid</i> spp	400	
	United Kingdom	<i>Argema</i> spp	1112	64,183
		<i>Charaxes</i> spp	20203	
		<i>Graphium</i> Spp	10864	
		<i>Hypolimnus</i> spp	27,384	
		<i>Papilio</i> spp	36,270	
	Japan	<i>Charaxes</i> spp	80	100
		<i>Nymphalid</i> spp	20	
	Netherlands	<i>Papilio dardanus</i>	3340	7548
		<i>Papilio phorcus</i>	3508	
		<i>Papilio nireus</i>	350	
		<i>Papilio parhassus</i>	350	
	Turkey	<i>Argema mimosae</i>	700	15700
		<i>Catopsilia florella</i>	200	
		<i>Charaxes</i> spp	2970	



Year	Destination country	Species name	Quantity (pcs)	mixed species Grand total
		Graphium spp	2200	
		Hypolimnus spp	1270	
		Junonia oenone	490	
		Papilio spp	6500	
		Salamis spp	950	
		Saturniid spp	420	
	USA	Charaxes spp	46000	<b>71300</b>
		Lepideptora	6900	
		Nymphalid spp	13800	
		Papilio spp	4500	
		Saturnid spp	1000	
2017	Canada	Argema mimosae	200	<b>940</b>
		Charaxes spp	120	
		Epiphora mythimnia	70	
		Graphium antheus	50	
		Junonia oenone	60	
		Papilio spp	440	
	United Kingdom	Argema spp	450	<b>11780</b>
		Charaxes spp	2900	
		Hypolimnus spp	950	
		Papilio spp	4600	
		Salamis spp	2880	
	Netherlands	Charaxes spp	750	<b>3000</b>
		Nymphalid spp	750	
		Papilionid spp	750	
		Saturniid spp	750	
	Saudi Arabia	Byblia anvatara	100	<b>6360</b>
		Catopsilia florella	760	
		Charaxes Spp	2200	
		Danaus chrysippus	100	
		Hypolimnus misippus	100	
		Papilio demodocus	3100	
	Turkey	Argema mimosa	700	<b>11470</b>
		Belenois creona	100	
		Catopsilia florella	200	
		Charaxes Cithaeron	2750	
		Charaxes pythodoris	50	
		Charaxes varanes	120	
		Graphium angolanus	800	
		Graphium antheus	1400	
		Graphium colonsae	1200	
		Junonia oenone spp	220	
		Papilio constantinus	600	
		Papilio dardanus	2100	
		Papilio nireus	2120	
		Papilio ophidicephalus	1000	

Year	Destination country	Species name	Quantity (pcs)	mixed species Grand total
	USA	Charaxes spp	12525	30870
		Nymphalid spp	4125	
		Papilionid spp	11325	
		Saturniid spp	2895	
Mixed butterfly species Grand Total				259,384

**Annex 5: Bio-control organisms bred and exported to various countries<sup>1</sup>**

Year	Destination country	Description	Species name	Quantity in Kgs	Quantity in Pcs
2015	Belgium	Predatory mite	<i>Phytoseiulus persimilis</i>		100,000,000
	Canada	Predatory mite	<i>Amblyseius andersoni</i>		188,000,000
			<i>Amblyseius californicus</i>		32,000,000
			<i>Phytoseiulus persimilis</i>		234,000,000
	Denmark	Predatory mini-wasps	<i>Diglyphus isaea</i>		20,100,000
		Predatory mites	<i>Neoseiulus californicus</i>		2,000,000
			<i>Neoseiulus cucumeris</i>		20,000,000
			<i>Phytoseiulus persimilis</i>		40,100,000
	Denmark	Predatory mites	<i>Amblyseius Andersoni</i>		36,000,000
	Ethiopia		<i>Amblyseius californicus</i>		592,000,000
			<i>Amblyseius cucumeris</i>		208,000,000
		Predatory mites	<i>Amblyseius Swirskii</i>		481,000,000
		Predatory mites	<i>Phytoseiulus persimilis</i>		997,000,000
	United Kingdom	Predatory mites	<i>Amblyseius californicus</i>		1,483,000,000
			<i>Amblyseius cucumeris</i>		1,367,000,000
			<i>Amblyseius swirskii</i>		1,372,000,000
			<i>Phytoseiulus persimilis</i>		638,000,000
			<i>Phytoseiulus persimilis</i>		214,000,000
	Morocco	Beneficial fungi	<i>Paecilomyces lilacinus</i>	50	
		Bio-nematicide, bio-fungicide, bio- fertilizer	<i>Trichoderma asperellum</i>	50	
	Netherlands	Predatory mites	<i>Phytoseiulus persimilis</i>		60,000,000
		Beneficial nematodes	<i>Steinernema Feltiae</i>	750	
	Rwanda	Bio-nematicide, bio-fungicide, bio- fertilizer	<i>Trichoderma asperellum</i>	100	
	Turks and Caicos Islands	Predatory mites	<i>Phytoseiulus persimilis</i>		500,000
Tanzania	Predatory mites	<i>Phytoseiulus persimilis</i>		1,000,000	
Uganda	Beneficial fungi	<i>Arbuscular mycorrhizae</i>	100		
	Beneficial fungi	<i>Paecilomicus Lilacinus</i>	100		

<sup>1</sup> More beneficial organisms have been sold locally.

Year	Destination country	Description	Species name	Quantity in Kgs	Quantity in Pcs
	USA	Predatory mites	<i>Phytoseiulus persimilis</i>		200,000,000
	South Africa		<i>Amblyseius andersoni</i>		75,000,000
			<i>Amblyseius californicus</i>		71,000,000
			<i>Amblyseius cucumeris</i>		94,000,000
			<i>Amblyseius Swirskii</i>		3,000,000
	Beneficial fungi	<i>Beauvaria Bassiana</i>	5850		
	Predatory mites	<i>Neoseiulus californicus</i>		240,000,000	
	Predatory mites	<i>Neoseiulus cucumeris</i>		120,000,000	
	Beneficial fungi	<i>Paecilomyces lilacinus</i>	5550		
	Beneficial nematodes	<i>Phasmarhabditis hermaphrodita</i>	8300		
	Predatory mites	<i>Phytoseiulus persimilis</i>		694,500,000	
	Beneficial nematodes	<i>Steinernema feltiae</i>	8750		
	Bio-nematicide, bio-fungicide, bio- fertilizer	<i>Trichoderma asperellum</i>	10,350		
		Beneficial fungi	<i>Vertiallium lecanii</i>	4850	
	Zambia	Predatory mites	<i>Neoseiulus californicus</i>		500
		Predatory mites	<i>Phytoseiulus persimilis</i>		10,000,000
		Beneficial fungi	<i>Vertiallium lecanii</i>	20	
	Zimbabwe	Beneficial fungi	<i>Beauvaria bassiana</i>	350	
		Predatory mites	<i>Neoseiulus californicus</i>		20,500,000
			<i>Neoseiulus cucumeris</i>		30,000,000
		Beneficial fungi	<i>Paecilomicus lilacinus</i>	300	
		Predatory mites	<i>Phytoseiulus persimilis</i>		12,000,000
		Beneficial nematodes	<i>Steinernema feltiae</i>	50	
		Bio-nematicide, bio-fungicide, bio- fertilizer	<i>Trichoderma asperellum</i>	600	
			<i>Trichoderma harrianum</i>	250	
		Beneficial fungi	<i>Vertiallium lecanii</i>	350	
2016	Belgium	Predatory mites	<i>Amblyseius californicus</i>		78,000,000
		Predatory mites	<i>Amblyseius cucumeris</i>		6,300,0000
		Predatory mini-wasps	<i>Diglyphus isaea</i>		42,000,000
		Predatory mites	<i>Phytoseiulus persimilis</i>		76,000,000
	Canada		<i>Amblyseius californicus</i>		162,000,000
			<i>Amblyseius andersoni</i>		115,000,000
			<i>Amblyseius cucumeris</i>		22,000,000
			<i>Amblysieus andersonii</i>		8,000,000
		Predatory mites	<i>Hypuasps miles</i>		20,000,000
	Predatory mites	<i>Phytoseiulus persimilis</i>		281,000,000	
	Denmark	Predatory mites	<i>Amblyseius californicus</i>		1,000,000
		Predatory mini-wasps	<i>Diglyphus isaea</i>		100,000



Year	Destination country	Description	Species name	Quantity in Kgs	Quantity in Pcs
		Predatory bug-egg and lava of leaf mining moths	<i>Nesidiocoris tenuis</i>		200,000,000
		Predatory mites	<i>Phytoseiulus persimilis</i>		20,000,000
	Ethiopia	Predatory mites	<i>Amblyseius californicus</i>		824,000,000
		Predatory mites	<i>Amblyseius cucumeris</i>		451,000,000
		Predatory mites	<i>Amblyseius swirskii</i>		556000000
		Beneficial nematodes	<i>Beauveria bassiana</i>	2450	
		Predatory mites	<i>Hypuaspis miles</i>		1,000,000
		Beneficial fungi	<i>Lecanicillium lecanii</i>	500	
		Beneficial fungi	<i>Paecilomyces lilacinus</i>	2,000	
		Predatory mites	<i>Phytoseiulus persimilis</i>		977,004,000
		Bio-nematicide, bio-fungicide, bio-fertilizer	<i>Trichoderma asperellum</i>	1 600	
		Beneficial fungi	<i>Verticillium lecanii</i>	3050	
	United Kingdom	Predatory mites	<i>Neoseiulus californicus</i>		28,000,000
		Predatory mites	<i>Amblyseius californicus</i>		733,000,000
		Predatory mites	<i>Amblyseius cucumeris</i>		14,000,000
		Predatory mites	<i>Amblyseius swirskii</i>		8,000,000
	Italy	Predatory mites	<i>Amblyseius californicus</i>		20,000,000
		Predatory mites	<i>Amblyseius cucumeris</i>		20,000,000
		Predatory mini-wasps	<i>Diglyphus isaea</i>		20,000,000
		Predatory mites	<i>Phytoseiulus persimilis</i>		70,000,000
	Morocco	Beneficial fungi	<i>Paecilomyces lilacinus</i>	100	
	Netherlands	Predatory mites	<i>Neoseiulus cucumeris</i>		20,000,000
		Predatory mites	<i>Amblyseius californicus</i>		190,000,000
		Predatory mites	<i>Amblyseius cucumeris</i>		230,000,000
		Predatory insect	<i>Cryptolaemus montrouzieri</i>		20,000,000
		Predatory mini-wasps	<i>Diglyphus isaea</i>		65,000,000
		Predatory mites	<i>Hypuaspis miles</i>		160,000,000
		Beneficial nematode	<i>Phasmarhabditis hermaphrodita</i>	1 650	
		Predatory mites	<i>Phytoseiulus persimilis</i>		210000000
		Beneficial nematodes	<i>Steinernema feltiae</i>	1 150	
	Rwanda	Predatory mites	<i>Phytoseiulus persimilis</i>		2,000,000
	Uganda	Predatory mites	<i>Amblyseius californicus</i>		30,000,000
		Predatory mites	<i>Amblyseius cucumeris</i>		31,000,000
		Predatory mites	<i>Hypuaspis miles</i>		25,000,000
		Beneficial fungi	<i>Paecilomyces lilacinus</i>	1700	

Year	Destination country	Description	Species name	Quantity in Kgs	Quantity in Pcs
		Beneficial nematodes	<i>Phasmarhabditis hermaphrodita</i>	600	
		Predatory mites	<i>Phytoseiulus persimilis</i>		10,000,000
		Beneficial nematodes	<i>Steinernema feltiae</i>	1,200	
		Bio-nematicide, bio-fungicide, bio- fertilizer	<i>Trichoderma Asperellum</i>	2,000	
		Beneficial fungi	<i>Trichoderma harzianum</i>	200	
	USA	Predatory mites	<i>Amblyseius californicus</i>		120,000,000
			<i>Amblyseius cucumeris</i>		150,000,000
			<i>Hypuaspis miles</i>		120000000
	South Africa	Predatory mites	<i>Neoseiulus californicus</i>		120,000,000
			<i>Neoseiulus cucumeris</i>		140,000,000
			<i>Amblyseius californicus</i>		297,000,000
			<i>Amblyseius andersoni</i>		33,000,000
			<i>Amblyseius cucumeris</i>		3,000,000
		Bio-nematicide, bio-fungicide, bio- fertilizer	<i>Arbuscular mycorrhiza</i>	1,500	
		Beneficial nematodes	<i>Beauveria bassiana</i>	9,500	
		Predatory insect	<i>Cryptolaemus montrouzieri</i>		60,000,000
		Predatory mini-wasps	<i>Diglyphus isaea</i>		3,000,000
		Beneficial fungi	<i>Metarhizium anisopliae</i>	500	
		Predatory bug-egg and lava of leaf mining moths	<i>Nesidiocoris tenuis</i>		40,000,000
		Beneficial fungi	<i>Paecilomyces lilacinus</i>	10,000	
		Beneficial nematodes	<i>Phasmarhabditis hermaphrodita</i>	11,500	
		Predatory mites	<i>Phytoseiulus persimilis</i>		44,000,000
		Beneficial nematodes	<i>Steinernema feltiae</i>	10,500	
		Bio-nematicide, bio-fungicide, bio- fertilizer	<i>Trichoderma asperellum</i>	12,500	
		Beneficial fungi	<i>Trichoderma harzianum</i>	1,000	
		Beneficial fungi	<i>Verticillium lecanii</i>	1,000	
	Zambia	Predatory mites	<i>Amblyseius californicus</i>		20,000,000
		Beneficial fungi	<i>Beauveria bassiana</i>	1,500	

Year	Destination country	Description	Species name	Quantity in Kgs	Quantity in Pcs
	Zimbabwe	Predatory mites	<i>Phytoseiulus persimilis</i>		20,000,000
		Beneficial nematodes	<i>Steinernema feltiae</i>	1,500	
		Predatory mites	<i>Amblyseius californicus</i>		60,000,000
		Predatory mites	<i>Amblyseius cucumeris</i>		60,000,000
		Predatory mites	<i>Amblyseius californicus</i>		20,000,000
		Beneficial fungi	<i>Beauveria bassiana</i>	6,200	
		Predatory mini-wasps	<i>Diglyphus isaea</i>		20,000,000
		Predatory mites	<i>Hypuaspis miles</i>		20,000,000
		Predatory mites	<i>Amblyseius californicus</i>		60,000,000
		Beneficial fungi	<i>Paecilomyces lilacinus</i>	7,100	
		Predatory mites	<i>Phytoseiulus persimilis</i>		112,000,000
		Beneficial nematodes	<i>Steinernema feltiae</i>	1,500	
		Bio-nematicide, bio-fungicide, bio-fertilizer	<i>Trichoderma asperellum</i>	7,250	
		Beneficial fungi	<i>Trichoderma harzianum</i>	750	
		Beneficial fungi	<i>Verticillium lecanii</i>	4,200	
2017	Belgium	Predatory mites	<i>Amblyseius californicus</i>		52,000,000
			<i>Amblyseius andersoni</i>		4,000,000
			<i>Amblyseius californicus</i>		12,000,000
			<i>Phytoseiulus persimilis</i>		51,000,000
	Canada	Predatory mites	<i>Amblyseius californicus</i>		3,000,000
			<i>Amblyseius andersoni</i>		27,000,000
			<i>Amblyseius cucumeris</i>		9,000,000
			<i>Phytoseiulus persimilis</i>		69,000,000
	Ethiopia	Predatory mites	<i>Amblyseius californicus</i>		178,000,000
			<i>Amblyseius andersoni</i>		6,000,000
			<i>Amblyseius cucumeris</i>		124,000,000
			<i>Amblyseius swirskii</i>		67,000,000
			<i>Phytoseiulus persimilis</i>		190,000,000
		Bio-nematicide, bio-fungicide, bio-fertilizer	<i>Trichoderma asperellum</i>	1,000	
		Beneficial fungi	<i>Verticillium lecanii</i>	800	
	United Kingdom	Predatory mites	<i>Amblyseius californicus</i>		190,000,000
			<i>Amblyseius cucumeris</i>		1,000,000
			<i>Hypuaspis miles</i>		5,000,000
			<i>Phytoseiulus persimilis</i>		173,000,000
		Beneficial	<i>Steinernema feltiae</i>	100	



Year	Destination country	Description	Species name	Quantity in Kgs	Quantity in Pcs
		nematodes			
	Italy		<i>Phytoseiulus persimilis</i>		40,000,000
	Netherlands	Predatory mini-wasps	<i>Diglyphus isaea</i>		50,000
		Predatory mites	<i>Hypuaspis miles</i>		20,000,000
			<i>Neoseiulus Cucumeris</i>		20,000,000
			<i>Phytoseiulus persimilis</i>		50,000,000
		Beneficial nematodes	<i>Steinernema feltiae</i>	250	
	USA	Predatory mites	<i>Amblyseius californicus</i>		60,000,000
		Predatory mites	<i>Amblyseius cucumeris</i>		150,000,000
		Predatory mites	<i>Hypuaspis miles</i>		60,000,000
			<i>Neoseiulus cucumeris</i>		50,000
			<i>Neoseiulus californicus</i>		50,000
			<i>Phytoseiulus persimilis</i>		150,000,000
	South Africa	Predatory mites	<i>Amblyseius californicus</i>		40,020,000
		Predatory mites	<i>Amblyseius cucumeris</i>		63,000,000
		Beneficial fungi	<i>Beauveria bassiana</i>	1,600	
		Predatory insect	<i>Cryptolaemus montrouzieri</i>		400,000,000
		Predatory bug-egg and lava of leaf mining moths	<i>Nesidiocoris tenuis</i>		400,000,000
		Beneficial fungi	<i>Paecilomyces lilacinus</i>	2,000	
		Beneficial nematodes	<i>Phasmarhabditis hermaphrodita</i>	1,500	
		Predatory mites	<i>Phytoseiulus persimilis</i>		188,000,000
		Beneficial nematodes	<i>Steinernema feltiae</i>	2,000	
		Bio-nematicide, bio-fungicide, bio-fertilizer	<i>Trichoderma asperellum</i>	2,000	
		Beneficial fungi	<i>Trichoderma harzianum</i>	500	
		Predatory mites	<i>Verticillium lecanii</i>	1,600	
	Zambia	Beneficial nematodes	<i>Beauveria bassiana</i>	1,000	
		Beneficial nematodes	<i>Heterorhabditis bacteriophora</i>	500	
		Beneficial nematodes	<i>Steinernema feltiae</i>	1,000	
	Zimbabwe	Predatory mites	<i>Amblyseius californicus</i>		40,000,000
		Predatory mites	<i>Amblyseius cucumeris</i>		20,000,000

Year	Destination country	Description	Species name	Quantity in Kgs	Quantity in Pcs
		Beneficial fungi	<i>Beauveria bassiana</i>	100	
		Beneficial fungi	<i>Paecilomyces lilacinus</i>	1,000	
		Predatory mites	<i>Phytoseiulus persimilis</i>		40,000,000
		Beneficial nematodes	<i>Steinernema feltiae</i>	700	
		Bio-nematicide, bio-fungicide, bio-fertilizer	<i>Trichoderma asperellum</i>	1,500	
		Predatory mites	<i>Verticillium lecanii</i>	600	



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# **CHAPTER 8:**

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## **FINANCIAL STATUS**



In the 2015/2016 financial year the largest budgetary allocation of government funding went to Education both in terms of recurrent and development expenditure taking 38.2% and 57.4% respectively. During this period, KWS was allocated Ksh 3.8 billion which besides normal recurrent expenditure targeted three main areas- (a) to raise ranger coverage area to 1 ranger per 16Km<sup>2</sup>; (b) to reduce poaching incidences countrywide by 40% and (c) increase wildlife population by 10%. Environmental protection which included wildlife and Forestry was equally catered for in the budget but at the middle tier of it as Table 8.1 shows. In the 2016/2017 funding for global goals- The wildlife sector was highlighted under 2 goals-thus goal number 14 and

15. Goal number 14 stated "Conserve and sustainably use the oceans, seas and Marine resources for sustainable development". Goal number 15 stated "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss. These two goals together with goal number 13 (take urgent action to combat climate change and its impacts) was given an allocation of Ksh 4.653 billion. However half year analysis of expenditure to Gross estimates showed that the Environmental protection, water and natural resources had an absorption rate of 24% for recurrent and 14% for development.

**Table 8.1:**

<b>COFOG* Classification</b>	<b>**Compensation to Employees</b>	<b>Other Recurrent Expenditures</b>	<b>Total</b>	<b>% Of recurrent Spending</b>
<b>1. Education</b>	225.04	74.56	299.60	38.2
<b>2. General public service</b>	76.19	69.42	145.61	18.6
<b>3. Defense</b>	67.63	44.84	112.47	14.3
<b>4. Public Order and safety</b>	72.63	32.37	105.00	13.4
<b>5 Economic Affairs</b>	33.23	25.44	58.67	7.5
<b>6. Health</b>	18.47	10.05	28.52	3.6
<b>7. Environmental Protection</b>	10.23	6.81	17.04	2.2
<b>8. Social protection</b>	5.12	4.19	9.31	1.2
<b>9. Housing and community amenities</b>	3.42	1.62	5.04	0.6
<b>10. Recreation, culture and Arts</b>	1.36	1.59	2.95	0.4
<b>Recurrent Spending</b>	513.32	270.88	784.20	100

Table 8.2

COFOG Classification	GoK Funding (Including local A/A)	External Funding	Amount	% Of Development Spending
1. Economic Affairs	161.16	252.68	413.84	57.4
2. General Public Service	99.50	33.77	133.27	18.5
3. Environmental Protection	17.07	26.66	43.73	6.1
4. Education	32.20	4.46	36.66	5.1
5 Health	11.64	19.02	30.66	4.3
6. Housing and community amenities	15.09	13.47	28.56	4.0
7. Social protection	13.31	2.27	15.58	2.2
8. Public Order and safety	15.16	0.15	15.31	2.1
9. Recreation, culture and Arts	3.50	0.14	3.64	0.5
10. Defense	0.00	0.04	0.04	0.0
<b>Recurrent Spending</b>	<b>368.63</b>	<b>352.66</b>	<b>721.29</b>	<b>100</b>

In the 2016/2017 budget allocation the Ministry of Education again got the highest allocation of Ksh 339billion while the sector under Environmental Protection (Ministry of water, Ministry of Environment, Natural Resources and RDAs and Ministry of Mining) received an

allocation of 92.9b. The Ministry Of Environment, Natural resources and RDAs under which the wildlife sector (together with KFS and KFRI) is housed received an allocation of 26billion- representing 1% of the total Government Budget of Ksh 2479.4 billion

## 8.1 Financial function of the service

The financial functions of the service are enumerated in Part II- Establishment of the Service section 7 (d) and (e). Section 7 (d) states- promote or undertake commercial and other activities for the purpose of achieving

sustainable wildlife conservation. Section 7 (e) states-collect revenue and charges due to the national government from wildlife and, as appropriate, develop mechanisms for benefit sharing with communities living in wildlife areas

## 8.2 Financial Provisions

Are covered under Part III- Financial Provision

Section 14- the funds of the service shall comprise of –

a. (a) Such money as may be approved and allocated to the service by the National Assembly as part of the budget process;

b. (b)Such money or proceeds from investments as may vest in the service from the performance of the duties; and

c. (c)Any sum lent or donated to the service revenue from joint partnership on bio-prospecting

**Table 8.3**

<b>INCOME</b>	<b>2015-2016</b>	<b>2016-2017</b>	<b>2017-2018</b>
	<b>KSH.000</b>	<b>KSH.000</b>	<b>KSH.000</b>
KWS A-in-A	2,822,613	3,034,421	3,131,446
GoK Subvention- Recurrent	754,681	1,380,827	2,380,827
GoK Subvention- Development	360,950	733,000	893,380
Grants (Development partners)	1,376,533	1,025,123	1,329,137
Kenya Roads Board	500,000	866,871	1,151,287
KeNHA/SGR Funds	2,693,940	894,100	0
<b>OVERALL INCOME</b>	<b>8,508,717</b>	<b>7,934,342</b>	<b>8,886,077</b>
<b>RECURRENT EXPENDITURE</b>			
Salaries, allowances and benefits	4,052,408	4,199,520	4,526,830
Operating and maintenance expenses	2,685,772	2,702,957	3,462,042
Total Capital Expenditure	1,270,537	1,495,327	1,774,010
Depreciation	500,000	1,100,000	1,120,000
<b>TOTAL EXPENDITURE</b>	<b>8,508,717</b>	<b>9,497,804</b>	<b>10,882,882</b>
<b>SURPLUS / (DEFICIT)</b>	<b>-</b>	<b>(1,563,462)</b>	<b>(1,996,805)</b>

**Table 8.4**

	Item	2015				
	Donor agencies	452,953,000				
	Donations	240,075,000				
	GoK Subvention	3,186,758,000				
		3,879,789,000				

**Table 8.5**

2015									
Donor agencies				Donations			GoK		
expected	Received		remarks	Expected	Received		Expected	received	
	45295300				240075000			318675800	



During the said period the organization raised revenue through various means as indicated in the table 8.6 below

**Table 8.6**

No		2015/2016	2016/2017	
1	Park Entry Fees	2,084,000,000		
2	Rental income	208,067,000		
3	Hire of aircrafts and vehicles	169,789,000		
4	Tuition Fees-KWSTI	95, 331,000		
5	Training services	47, 9433,000		
6	Accommodation and hire of training facilities-KWSTI	47,794,000		
7	Insurance compensation	24,234,000		
8	Airwing sales	2,2614,000		
9	KWS shops	18,331,000		
10	KWS officers Mess	11,996,000		
11	Telecommunication facilities	5,496,000		
12	Other miscellaneous income	94,289,000		
	Total	2,866,279,000		

During the reporting period the disbursement to the various areas was

**Table 8.7**

No		2015		
1	Salaries and allowances	3,146,147,000		
2	Leave pay accrual	106,893,000		
3	Gratuity contribution, pension and NSSF	252,682,000		
4	Passage and leave expenses	57,191,000		
5	Medical expenses	247,925,000		
6	Operating and maintenance expenses	2,946,257,000		
7	Total	6757095200		
10	Deficit	3890816200		

## 8.3 Budget of Conservancies

In the year 2016 the 35 member conservancies had an operating budget of Ksh 862,807,701 and employed a total of 938 persons. The table 8.8 below shows the number of conservancies

under each county (under NRT management) and the total operating budget per county.

**Table 8.8**

No	County	No of conservancies	Operating Budget	
			2015/2016	2016/2017
1	Baringo	1	9,488,466	
2	Garissa	1	37,458,277	
3	Isiolo	5	73,786,681	
4	Laikipia	4	75,038,229	
5	Lamu	4	145,123,316	
6	Marsabit	4	77,019,461	
7	Meru	1	23800,990	
8	Samburu	7	160,624,493	
9	Tana	2	63,688,470	
10	Turkana	4	131,186,212	
11	West Pokot	2	65,593,106	
<b>Total</b>			862,807,701	

There are 245 species listed in the sixth schedule which cut across different species both terrestrial and marine. The major threat presently facing conservation in the country is encroachment into conservation areas. This is manifested in the form of direct loss of land, change in land use and introduction of negative attributes into conservation areas (invasive species, pollutants etc) and interfering with attributes that maintain systems in the conservation areas (massive water

abstraction). Although considerable effort has been expended and successfully to secure large species such as the Elephant and Rhino similar such species are facing severe pressure and can easily be decimated. These include the greater Kudu, Lelwel hartebeest, Roan Antelope (17 remaining), Sable Antelope (41 remaining). This situation is more precarious with birds, fish (has been the most affected), turtles and small wildlife species

## ANNEXES

### Annex I IUCN Endangered Species List

No	Common name	Scientific Name
1	Abbott's Starling	
2	Aberdare Cisticola	
3	Aberdare Mole Shrew	
4	African White-backed Vulture	
5	African Gray Parrot	
6	African Skimmer	
7	Amani sunbird	
8	Asian Dowitcher	
9	Basra Red Warbler	
10	Black Crowned-crane	
11	Black-tailed Godwit	
12	Blue swallow	
13	Buff-breasted Sandpiper	
14	Chapin's Flycatcher	
15	Chestnut-banded Plover	
16	Clarke's Weaver	
17	Corncrake	
18	Denham Bustard	
19	East Coast Akalat	
20	Egyptian Vulture	
21	Eurasian Curlew	
22	Eurasian Peregrine Falcon	
23	Fischers Turaco	
24	Gray-crested Helmet-shrike	
25	Great Snipe	
26	Greater Spotted Eagle	
27	Hinde's Pied-babbler	
28	Jackson's Widowbird	
29	Karamoja Apalis	
30	Lappet-faced Vulture	
31	Lesser Flamingo	
32	Lesser Kestrel	
33	Maccoa Duck	
34	Madagascar Pond heron	
35	Madagascar Pranticole	
36	Malindi Pipit	
37	Morden's Owlet	
38	Pallid harrier	
39	Papyrus gonolek	
40	Papyrus yellow warbler	
41	Plain-backed Sunbird	
42	Ring-necked Francolin	
43	Rueppell's Vulture	



44	Saker Falcon	
45	Semi-collard Flycatcher	
46	Sharpe's Longclaw	
47	Shoebill	
48	Soko Pipit	
49	Southern Banded Snake-eagle	
50	Spotted Ground thrush	
51	Taita Apalis	
52	Taita Falcon	
53	Taita Thrush	
54	Turner's Eremomela	
55	White-headed Vulture	
56	White-winged Collared Dove	
	<b>MAMMALS</b>	
1	Ader's Duiker	
2	African Elephant	
3	African Golden cat	
4	African Lion	
5	African White-Bellied Pangolin	
6	Arrogant Shrew	
7	Barbour's Vlei Rat	
8	Beisa Oryx	
9	Black and Rufous Elephant Shrew	
10	Black Rhinoceros	
11	Eastern Mountain Bongo	
12	Cheetah	
13	Common Hippopotamus	
14	Decken's Horseshoe Bat	
15	Delectable furred Mouse	
16	Dugong	
17	East African highland Shrew	
18	East African Collard Fruit Bat	
19	Gerenuk	
20	Giant Ground Pangolin	
21	Giant Thicket Rat	
22	Golden-rumped Elephant Shrew	
23	Grevy's Zebra	
24	Hildegard's Tomb Bat	
25	Hunter's Antelope	
26	Indo-pacific Hump-backed Dolphin	
27	Jackson's Mongoose	
28	Large-eared Free-tailed Bat	
29	Lesser Kudu	
30	Mountain Dwarf Galago	
31	Mt. Kenya Mole Shrew	
32	Smoky White-toothed Shrew	
33	Soko Bushy-Tailed Mongoose	

34	Straw-coloured Fruit Bat	
35	Stripped Hyaena	
36	Stripped Roundleaf Bat	
37	Taita Shrew	
38	Tana River Mangabey	
39	Tana River red colobus Monkey	
40	Tanzania Vlei Rat	
41	Temnick's Ground Pangolin	
42	Thomson's Gazelle	
43	White Rhinoceros	
	<b>FISHES</b>	
1	Barbus Sp. Nov. Nzoia	
2	Bigeye Tuna	
3	Black-blotched Stingray	
4	Blacksaddled Coral Grouper	
5	Blackspot Shark	
6	Bowmouth guitarfish	
7	Brindle Bass	
8	Brown-marbled Grouper	
9	Bumphead Parrotfish	
10	Camouflage Grouper	
11	Ctenochromis aff. pectoralis	
12	Dwarf Bigeye Scraper	
13	Estuary Cod	
14	Ewaso Nyiro Labeo	
15	Giant Guitarfish	
16	Giant Wrasse	
17	Graham Cichlid	
18	Gray Nurse Shark	
19	Great White Shark	
20	Hammerhead Shark	
21	Haplochromis sp. Nov amboseli	
22	Haplochromis acidens	
23	Haplochromis argenteus	
24	Haplochromis cavifrons	
25	Haplochromis chilotes	
26	Haplochromis chromogynos	
27	Haplochromis granti	
28	Haplochromis bayoni	
29	Haplochromis heusinkveldi	
30	Haplochromis ishmaeli	
31	Haplochromis lividus	
32	Haplochromis Maculipinna	
33	Haplochromis maxillaris	
34	Haplochromis megalops	
35	Haplochromis nuchisquamulatus	
36	Haplochromis obliquidens	

37	Haplochromis paropius	
38	Haplochromis phytophagus	
39	Haplochromis prodromus	
40	Haplochromis sauvagei	
41	Haplochromis serranus	
42	Haplochromis spekii	
43	Haplochromis victorianus	
44	Hardnose Shark	
45	Harpagochromis sp. Nov “frogmouth”	
46	Labeo sp. Nov Baomo	
47	Labeo sp. Nov. Mzima	
48	Labeo sp. Nov trigiceps	
49	Lagynias pallidiflora	
50	Lake Magadi Tilapia	
51	Lake Victoria Deepwater Catfish	
52	Macroleuroodus bicolor	
53	Malabar Grouper	
54	Marcusenius sp. nov Malindi	
55	Marcusenius sp. nov Turkwell	
56	Marcusenius victoriae	
57	Northobranchius bojiensis	
58	Northobranchius elongatus	
59	Northobranchius interruptus	
60	Northobranchius sp. nov Lake Victoria	
61	Northobranchius patrizili	
62	Northobranchius willerti	
63	Oceanic Whitetip Shark	
64	Oreochromis andersonii	
65	Oreochromis esculentus	
66	Oreochromis hunteri	
67	Oreochromis jipe	
68	Oreochromis variabilis	
69	Paralabidochromis victoriae	
70	Platyaeniodus degeni	
71	Porcupine Ray	
72	Ptyochromis sp. nov “rainbow sheller”	
73	Ptyochromis sp. nov “rusinga oral sheller”	
74	Pundamilia nyerere	
75	Rhabdalestes leleupe	
76	Roving Coralgrouper	
77	Spotted Eagle Ray	
78	Synodontis victoriae	
	<b>INSECTS</b>	



1	Chlorocnemis pauli	
2	Chlorocnemis abboti	
3	Chlorocypha jacksoni	
4	Coryphagrion	
5	Montane Dancing-jewel	
6	Notogomphus maathaiaie	
7	Onychogomphus styx	
8	Pseudagrion bicoerulans	
9	Red jungle-Skimmer	
10	Seychelles Fineliner	
11	Thermochoria jeanneli	
	<b>REPTILES</b>	
1	Crevice Tortoise	
2	Turkana Mud Turtle	
	<b>AMPHIBIANS</b>	
1	Du Toits Torrent Frog	
2	Forest Banana Frog	
3	Irangi River frog	
4	Jozani River frog	
5	Lonnbergs Toad	
6	Sagala Caecilian	
7	Shimba Hills Reed Frog	
8	Tigoni Reed frog	
	<b>Plants</b>	
1	Afrocarpus usambarensis	
2	Allophylus zimmermannianus	
3	Aloe ballyi	
4	Angylocalyx braunii	
5	Aristogeitonia monophylla	
6	Baphia keniensis	
7	Bauhinia mombassae	
8	Bread palm	
9	Bread Palm	
10	Brown mahogany	
11	Bucea macrocarpa	
12	Buxus obtusifolia	
13	Camptolepis ramifora	
14	Canthium robynsianum	
15	Canthium kilifiensis	
16	Canthium keniense	
17	Cephalosphaera usambarensis	
18	Chytranthus obliquinervis	
19	Coffea fadenii	
20	Coffea pseudozanquebariea	
21	Colpodium chionogeiton	
22	Colpodium hedbergii	
23	Combretum chaetocarpa	

24	Combretum tenuipetiolatum	
25	Cynometra lukei	
26	Cynometra suaheliensis	
27	Cynometra webberi	
28	Dasylepis integra	
29	Deschampsia angusta	
30	Dialium holtzii	
31	Dicraeopetalum stipulare	
32	Diospyros amanuensis	
33	Diospyros greemwayi	
34	Diospyros shiambaensis	
35	Diphasiopsis fadeni	
36	Entandrophragma angolense	
37	Erythrina saclexii	
38	Euphorbia cussinoides	
39	Euphorbia tanaensis	
40	Euphorbia wakefieldii	
41	Fig tree	
42	Gardenia transvenulosa	
43	Gigasiphon macrosiphon	
44	Holmskiodia gigas	
45	Julbernardia magnistipulata	
46	Kola nut	
47	Kola Nut	
48	Kraussia speciosa	
49	Lettowianthus stellatus	
50	Macaranga conglomerate	
51	Memecylon teitense	
52	Micrococci scariosa	
53	Mildbraedia carpinifolia	
54	Mimusops riparia	
55	Mkilua fragrans	
56	Moringa arborea	
57	Multidentia sclerocarpa	
58	Newtonia paucijuga	
59	Ocotea argylei	
60	Ocotea kenyensis	
61	Ouratea schusteri	
62	Oxystigma msso	
63	Pandanus kajui	
64	Pavetta linearifolia	
65	Pavetta tarennoides	
66	Polyscias kikuyuensis	
67	Populous ilicifolia	
68	Premna maxima	
69	Psychotria alsophila	

70	Psychotria crassipetala	
71	Psychotria petiti	
72	Psychotria pseudoplatyphylla	
73	Psydrax faulknerae	
74	Pycnocomma littoralis	
75	Rosewood	
76	Rothmannia macrosiphon	
77	Rushfoil	
78	Rytigynia eickii	
79	Sapium triloculare	
80	Sclerocarya gillettii	
81	Sorindela calantha	
82	Sterculia schliebenii	
83	Strychnos mellodora	
84	Stuhlmannia moavi	
85	Synsepalum kassneri	
86	Synsepalum subverticillatum	
87	Tarenna drummondii	
88	Toussaintia orientalis	
89	Uvariadendron anisatum	
90	Uvariadendron gorgonis	
91	Uvariadendron kirkii	
92	Vepris glandulosa	
93	Vepris sambruensis	
94	Vepris sansibarensis	
95	Vitellariopsis kirkii	
96	Vitex keniensis	
97	Vitex zanzibarensis	
98	Warbugia stuhlmannii	
99	Zimmermannia ovata	
	<b>CORALS, JELLYFISH and SEA ANEMONES</b>	
1	Acropora coral	
2	Acropora coral	
3	Acropora coral	
4	Acropora coral	
5	Acropora coral	
6	Acropora coral	
7	Acropora coral	
8	Acropora coral	
9	Acropora coral	
10	Acropora coral	
11	Acropora coral	
12	Acropora coral	
13	Acropora coral	



14	Acropora coral	
15	Acropora coral	
16	Acropora coral	
17	Acropora coral	
18	Acropora coral	
19	Acropora coral	
20	Acropora coral	
21	Alveopora allingi	
22	Alveopora daedalea	
23	Alveopora fenestrata	
24	Alveopora spongiosa	
25	Astreopora expansa	
26	Blue Coral	
27	Bracket Coral	
28	Bubble Coral	
29	Cat's Eye Cynarina coral	
30	Caulastrea connate	
31	Caulastrea tumida	
32	Cauliflower coral	
33	Closed Brain coral	
34	Crisp Pillow Coral	
35	Crust Coral	
36	Crust Coral	
37	Diploastrea Brain Coral	
38	Echinopora forskaliana	
39	Echinopora mammiformis	
40	Echinopora robusta	
41	Elegance coral	
42	Fungia curvata	
43	Fungia fungitea	
44	Goniastrea Columella	
45	Goniastrea deformis	
46	Goniastrea favulus	
47	Goniastrea minuta	
48	Goniastrea palauensis	
49	Goniastrea peresi	
50	Goniopora lobata	
51	Goniopora minor	
52	Goniopora stokesi	
53	Grape Coral	
54	Green Torch Coral	
55	Horastrea indica	
56	Hydnophora Coral	
57	Hydnophora Coral	
58	Isopora brueggemanni	
59	Isopora cuneate	
60	Isopora palifera	

61	Knob Coral	
62		
63	Knob Coral	
64	Knob Coral	
65	Knob Coral	
66	Knob Coral	
67	Knob Coral	
68	Knob Coral	
69	Knob Coral	
70	Least valley	
71	Leptoseris incrustans	
72	Montastrea annuligera	
73	Montastrea magnistellata	
74	Montastrea serageldini	
75	Montastrea valenciennesi	
76	Monitipora calcearea	
77	Monitipora caliculata	
78	Monitipora cryptus	
79	Monitipora efflorescens	
80	Monitipora effusa	
81	Monitipora foliosa	
82	Monitipora foveolata	
83	Monitipora nodosa	
84	Monitipora peltiformis	
85	Monitipora stilosa	
86	Monitipora undata	
87	Monitipora venosa	
88	Moon Coral	
89	Moon Coral	
90	Moon Coral	
91	Moon Coral	
92	Moon Coral	
93	Moon Coral	
94	Moon Coral	
95	Moon Coral	
96	Moon Coral	
97	Moon Coral	
98	Moon Coral	
99	Octopus coral	
100	Octopus Coral	
101	Open Brain Coral	
102	Organ Pipe Coral	
103	Oulophyllia crispa	
104	Pachyseris rugosa	
105	Pavona cactus	
106	Pavona decussate	
107	Pavona venosa	

108	Pearl Bubble Coral	
109	Pectinia africanus	
110	Pectinia lactuca	
111	Platygyra acuta	
112	Platygyra carnosus	
113	Platygyra crosslandi	
114	Platygyra lamellina	
115	Plesiastrea devantieri	
116	Porites cyclindrica	
117	Porites echinulata	
118	Porites lobata	
119	Porites murrayensis	
120	Porites nigrescens	
121	Porites somaliaensis	
122	Psammocora contigua	
123	Smooth cauliflower coral	
124	Starry cup coral	
125	Starry cup coral	
126	Starry cup coral	
127	Turbinaria coral	
128	Turbinaria coral	
129	Turbinaria coral	
	<b>SNAILS</b>	
1	Bellamya constricta	
2	Bellamya costulata	
3	Bellamya jocunda	
4	Bellamya phthinotropis	
5	Bellamya trochearis	
6	Bellamya Tuna	
7	Bulinus hightoni	
8	Bulinus transversalis	
9	Burnupia crassistriata	
10	Burnupia stuhlmanni	
11	Cleopatra cridlandi	
12	Cleopatra exarata	
13	Gabbiella rosea	
14	Gulella snail	
15	Pila speciosa	
16	Subuliniscus arambourgi	
17	Thapsia buraensis	
18	Zingis radiolata	
	<b>CRUSTACEANS</b>	
1	Deckenia imitatrix	
2	Deckenia mitis	
3	Potamoautes gerdalensis	
4	Potamoautes pilosus	

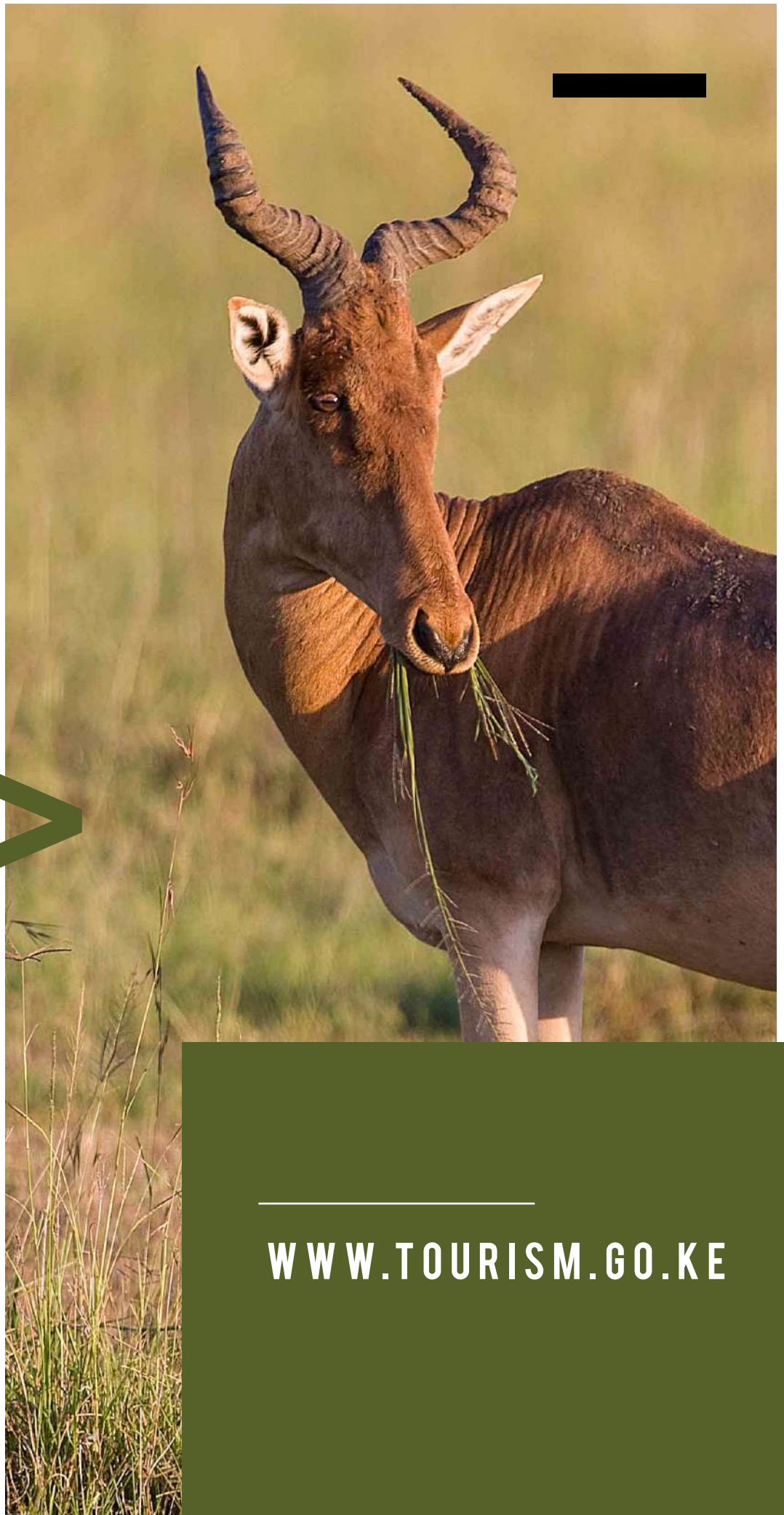
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5	Potamoautes platycentron	
6	Potamoautes raybouldi	
7	Thrmodiaptomus galebodies	
8	Tropodiaptomus neumanni	
9	Tropodiaptomus stuhlmanni	









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