REPUBLIC OF KENYA

White Rhino *(Ceratotherium Simum)* Conservation & Management Action Plan **(2021-2025) in Kenya**

White Rhino *(Ceratotherium Simum)* Conservation & Management Action Plan (2021-2025) in Kenya”

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Jamie Gaymer- Ol Jogi Conservancy

WHITE RHINO
(*Ceratotherium simum*)
CONSERVATION & MANAGEMENT ACTION PLAN (2021-2025) IN KENYA

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1. Kenya Wildlife Service
2. Wildlife Research and Training Institute
3. Association of Private Land and Community Land Rhino Sanctuaries
4. African Wildlife Foundation
5. WWF – Kenya
6. Save The Elephants
7. Zoological Society of London

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Table of Contents

Acronyms & Abbreviations

AD	Assistant Director
ADC	Agricultural Development Corporation
AfRSG	IUCN SSC African Rhino Specialist Group
APLRS	Association of Private Land and Community Land Rhino Sanctuaries
ASCC	Area Species Conservation Committee
CCTV	Closed Circuit Television
CEC Wildlife	County Executive Committee Wildlife
CEOs	Chief Executive Officers
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora
COY	Company Commander
DG	Director General
DNA	Deoxyribonucleic Acid
DRECA	Department of Regulatory Enforcement and Compliance Affairs
D-WRTI	Director Wildlife Research and Training Institute
EAC-RMG	East Africa Community–Rhino Management Group
ECC	Ecological Carrying Capacity
FLIR	Forward-Looking Infrared
GPS	Global Positioning System
H-CC	Head – Corporate Communication
H-CE	Head – Conservation Education
H-F&B	Head – Fence and Building
H-HC	Head – Human Capital
H-ICT	Head – Information Communication Technology
H-SCM	Head – Species Conservation and Management
H-VET	Head – Veterinary Services
H-WCS	Head – Wildlife and Community Services
IAPS	Invasive Alien Plant Species
ID	Identifiable
INTERPOL	International Criminal Police Organization
IUCN	International Union for the Conservation of Nature and Natural Resources (The World Conservation Union)

IVF	*In vitro* fertilization
IZW	Institute for Zoo and Wildlife Research
KWCA	Kenya Wildlife Conservancies Association
KWS	Kenya Wildlife Service
KWS BoT	KWS Board of Trustees
KWSTI	Kenya Wildlife Service Training Institute
LATF	Lusaka Agreement Task Force
LEA	Law Enforcement Academy
M&E	Monitoring and Evaluation
MCA	Mountain Conservation Area
NCO	Non-Commissioned Officer
NGO	Non-Governmental Organization
NWR	Northern White Rhino
OPU	Ovum Pick Up
PA	Protected Area
PPP	Private Public Partnership
REC	Rhino Executive Committee
RhODIS	Rhino DNA Index System
RPC	Rhino Programme Coordinator
RS	Research Scientist
RSC	Rhino Steering Committee
SAPA	Social Assessment for Protected Areas
SOOPs	Staff Officer Operations
SSC	Species Survival Commission
STE	Save the Elephants
SW	Senior Warden
SWR	Southern White Rhino
TRAFFIC	Trade Records Analysis of Flora and Fauna in Commerce
WCMA	Wildlife Conservation and Management Act
WRTI	Wildlife Research and Training Institute
WWF	World Wide Fund for Nature
ZPF	Zero Poaching Framework

Glossary

Biological growth: The natural change in a population's size, being the net result of additions from breeding and losses from natural mortalities, expressed as a percentage of the population size at the start of a year.

Biological Management: Management of white rhino populations (primarily through adjusting rhino stocking densities, but also managing the densities of other grazers and habitat management) to maintain healthy populations, to minimise inbreeding and loss of genetic diversity. Rhino removal and introduction decisions are based on a population's breeding performance, sex and age ratios, social behaviour, genetic relationships, the rhino density relative to an area's habitat carrying capacity, vegetation conditions etc.

Breeding Performance: Primarily the female reproductive performance of a population. Measured by female ages at first calving, intervals between calving and the average proportion of adult females calving per year. These indicators are affected by habitat quality, stocking densities, adult female to male ratios and age of the females.

Confirmed Rhino: An individual rhino seen, and evidenced by a date-stamped photo, within one year.

Ear Notching: A method of clipping a small section or sections (usually in a small 'v' shape) from a rhino's ears to allow the animal to be easily identified (and monitored). Each position on the ear corresponds to a different number allowing the notches to be tallied for a unique identification number.

Ecological Carrying Capacity: Also termed "ECC" – the maximum number of rhinos that can be supported by resources in a fenced area or closed system over time, at which point the number of births equals the number of mortalities. The number or density at which a rhino population will stabilise if left unmanaged by human intervention. The ECC will vary over time for a particular site. Ideally one is looking to use removals to maintain stocking densities a little below ECC to ensure faster metapopulation growth.

Founders: Rhinos used to establish a new population. Effective founder number refers to the number of founders that are capable of breeding or have bred, i.e. those that contribute or are likely to contribute to the population's original gene pool and also which as far as it is known are unrelated. Scientific guidance suggests a population should have a minimum number of ***20 effective*** founders, and that a new effective founder should be introduced to an existing population each generation to maintain genetic diversity (in rhinos, a generation is defined as 14 years).

Genetic Diversity: Genetic diversity is the total number of genetic characteristics in the genetic makeup of a species or subspecies. Fragmented populations with inadequate gene flow among subpopulations suffer from loss of genetic diversity and inbreeding with associated reduced reproductive fitness (inbreeding depression), and elevated extinction risks with reduced ability to adapt evolutionarily to environmental change.

Genetic Profiling: Using molecular genetic techniques to determine the unique genetic characteristics of an individual. Genetic profiles can be used for paternity testing, quantifying genetic diversity and inbreeding, estimating effective population sizes and in forensic applications linked to wildlife crimes.

Grazers: Species that feed primarily on grass.

Important Population: An AfRSG rating to indicate a rhino population whose survival is considered extremely valuable in terms of survival of the rhino species or subspecies. There are four sub-categories of Important Populations, *Important 1 being the most important*:

Important 1 - population increasing or stable and N = 20–50;
Important 2 - population trend unknown or decreasing >25% (3–5 years) and N = 51–100;
Important 3 - population decreasing but N = 20–50 in breeding contact in a protected area;
Important 4 - population with 20+ dispersed outside or within a protected area with good potential for consolidation in an area that can take 20 founders.

Inter-Calving Interval: Also termed "ICI" – the period of time between calves for an individual female. ICIs are used as an indicator of a population approaching density dependence. In white rhinos, inter-calving intervals should lie between 2.5–3 years.

Invasive Plant Species: A subset of introduced or alien plant species that are rapidly expanding outside their native range. Certain invasive plant species can smother and replace indigenous species and can significantly lower carrying capacities of rhinos and other species.

Key Population: An AfRSG rating to indicate a rhino population whose survival is considered critical for the survival of the rhino species and subspecies. There are three defined types of key population with ***Key 1 being the most important*** at a continental level.

Key 1 - population increasing or stable and N >100, or N >50% of subspecies;
Key 2 - population increasing or stable and N = 51–100, or N = 26–50% of subspecies;
Key 3 - population decreasing <25% and N >50, or N >100 even if population decreasing >25%.

Meta-Population: A number of sub-populations of a species or subspecies managed collectively as one single population with deliberate, managed gene flow between sub-populations.

Possible Rhino: Individual rhino that has not been seen for more than two years. Possible rhinos are not included in annual population reports.

Probable Rhino: An individual rhino that has not been seen for one year but was seen during the previous 12-month period.

Progeny: All descendants of the founder rhino.

Range state: A country or state in which rhinos currently occur or historically occurred.

R_{max} The maximum possible biological growth rate.

Reintroduction: An attempt to establish a population in an area within its historical range, from which it has become locally extinct.

Rhino Conservancy: A relatively large fenced area of primarily private land, possibly some state protected area, in which rhino live in land units that are under the control of two or more landholders, where staff are deployed at moderate to high density to protect the rhino population, and where the need for biological management is reduced. Rhino conservancies aspire towards the fusion of commercial and community-based approaches under unified management obligations and policies that support conservation and attempt to counter poaching (IUCN/SSC AfRSG).

Kenya WCMA 2013 defines conservancy as land set aside by an individual landowner, group of owners, body corporate or a community for purposes of wildlife conservation.

Sanctuary: A part of state-protected land, private land or communal land in which rhinos are deliberately confined through perimeter fencing and where law enforcement staff are deployed at high density to protect the rhino population. The confinement of rhinos within a sanctuary permits close observation and relatively intense management and protection of the rhinos.

Set Percentage Harvesting: A management approach for maintaining a rhino population at its most productive growth rate, whereby a set percentage of the population is regularly removed.

Sighting interval: The amount of time since an individually recognised rhino was last observed by the monitoring team. Sites often set targets for maximum sighting intervals for all known individual rhinos.

Translocation: Managed physical movement of individual rhinos from one area to another, either to improve chances of survival, to establish new populations, to keep established populations productive, or to increase genetic heterozygosity and improve long-term genetic variability of a population.

1. Soulé M.E. (ed.) (1987). Viable populations for conservation. Cambridge University Press, Cambridge, UK.

Viable Population: A self-supporting population with sufficient numbers and genetic variety among healthy individuals and breeding pairs that are well enough distributed to ensure a high probability of survival despite the foreseeable effects of demographic, environmental and genetic events, and of natural catastrophes (Soulé 1987)[1]

Jamie Gaymer- Ol Jogi Conservancy

Foreword by Cabinet Secretary, Ministry of Tourism and Wildlife

The Kenya Wildlife Service (KWS) is a state corporation established by an Act of Parliament, the Wildlife (Conservation and Management) Act, 1989 (CAP 376), which was later replaced by the Wildlife Conservation and Management (Amendment) Act (WCMA), 2013. KWS is mandated to conserve and manage wildlife in the country and enforce related laws and regulations. The state corporation was set up in 1990 when poaching was a major threat to wildlife in Kenya and the wildlife sector was weak due to inadequate support, infrastructure, and human capital development. Major milestones have been achieved since then such as significantly reducing rhino poaching and increasing their populations in suitable habitats countrywide. KWS has made significant efforts in the development and implementation of listed species-specific recovery and management plans, including six black rhino 5-year plans, undertaken with support from the Government of Kenya, County Governments, communities, private individuals, international and local donors, research institutions and conservation partners. The country also participated in the development of and has supported the East African and African rhino range states' Rhino Conservation Plans.

Since its introduction from South Africa, the southern white rhino (SWR) population in Kenya has increased rapidly over the last 20 years from 169 animals in 2000 to the current population of approximately 750 animals in 2020. The SWR was introduced in Kenya as a recovery strategy for the subspecies as well as for tourism and community conservation education. Kenya has continued this recovery effort by supporting other states with natural range such as Uganda and is committed to the East Africa Community-Rhino Management Group (EAC-RMG) restocking strategy. These initial objectives remain relevant as efforts to enhance recovery of the tourism sector (both national and international) from the impacts of the COVID-19 pandemic are implemented in line with Kenya's Vision 2030 development blueprint. Kenya is also now playing a critical role in the recovery efforts of the northern white rhino (NWR) which is on the verge of extinction.

The significant increase in the SWR population requires dedicated efforts in its management in compliance with the requirements of the WCMA, 2013 on the listed species. It has therefore become necessary to develop a separate conservation and management action plan for the white rhino.

The development of this Action Plan comes at a time when major efforts have been made to manage rhino poaching with zero poaching recorded in 2020. The Government recognizes and appreciates the efforts of all stakeholders which has made us achieve this target. Formulation of this plan comes at a time when the Government has established an independent institution, The Wildlife Research and Training Institute (WRTI) with the mandate to undertake wildlife research and training and regulate wildlife research in the Country. WRTI will be a key stakeholder in implementation of the Plan The Ministry of Tourism and Wildlife calls upon the relevant Government agencies, conservation partners, donor agencies, local and international research institutions, and other stakeholders to support the implementation of the activities in this Action Plan.

Hon. Najib Balala, EGH

Preface by Principal Secretary, State Department of Wildlife

The southern white rhino is listed as Near Threatened by the International Union for Conservation of Nature (IUCN) on its Red List (Emslie 2020a)[2]. However, in the CITES appendices, all southern white rhino are listed under Appendix I, except for South Africa and the Kingdom of Eswatini (formerly Swaziland) populations which are listed on Appendix II. In Kenya, the southern white rhino is listed as an endangered species, along with Kenya's indigenous black rhino, in the Sixth Schedule of the WCMA, 2013 necessitating development of this Action Plan.

A large proportion of southern white rhinos is managed by private organizations that are under the Association of Private Land and Community Land Rhino Sanctuaries (APLRS). The APLRS works closely with the Kenya Wildlife Service in the security and management of the rhino populations. Significant progress has been made to curtail rhino poaching in the country from a high of 59 individuals in 2013 to zero in 2020. With increasing numbers of southern white rhinos, the Government will also make efforts to secure more space in public, private and community areas in collaboration with county governments for the conservation of the species and to support livelihoods through tourism.

This Plan identifies key activities to conserve the species and to enhance its management. The Plan identifies best practice for management of the white rhino populations and their habitats, and for coordination of efforts and building synergy among the various stakeholders.

On behalf of the KWS Board of Trustees, I thank all those who participated in the production of this Action Plan. I am confident that by implementing the activities in this Plan, rhinos will be secure, in good health and continue to increase in numbers. To this end, I am proud to present to you this first edition of the White Rhino Conservation and Management Action Plan (2021-2025) in Kenya, and welcome all to support its implementation.

Prof. Fred H. Segor, CBS

2. Emslie R. (2020a). *Ceratotherium simum ssp. simum*. The IUCN Red List of Threatened Species 2020: e.T39317A45814320. https://dx.doi.org/10.2305/IUCN.UK.2020-1.RLTS.T39317A45814320.en

Acknowledgements by Director General, Kenya Wildlife Service

Kenya Wildlife Service (KWS) is appreciative of the efforts of the Government and various stakeholders in facilitating formulation of this first edition of the National White Rhino Conservation and Management Action Plan (2021-2025) in Kenya. I first thank the Cabinet Secretary for Tourism and Wildlife (Hon. Najib Balala), the Chief Administrative Secretary for Ministry of Tourism and Wildlife (Mr. Joseph Boinet), and the Principal Secretary, State Department of Wildlife, Ministry of Tourism and Wildlife (Prof. Fred Segor) for their support and for giving policy guidance in the development of this Action Plan.

Thanks go to the Association of Private Land and Community Land Rhino Sanctuaries (APLRS) for hosting a big proportion of the white rhinos and working closely with KWS to ensure the conservation success of the species. African Wildlife Foundation is thanked for financially supporting the formulation of this Action Plan. Zoological Society of London through Dr. Rajan Amin is thanked for providing technical support.

The formulation of this Action Plan would not have been possible without active participation of the rhino conservation teams in national parks (Lake Nakuru NP, Meru NP, Nairobi NP and Ruma NP), private lands (Borana Conservancy, Lewa Wildlife Conservancy, Ol Jogi Conservancy, Ol Pejeta Conservancy, Oserongoni Wildlife Conservancy and Solio Ranch) and community lands (Il Ngwesi Community Conservancy and Ol Choro Oiroua Community Conservancy).

Special thanks go to the Rhino Steering Committee (RSC) for guiding the process with specific technical input by Dr. Patrick Omondi (Wildlife Research and Training Institute), Dr. Shadrack Ngene (KWS), Dr. Rajan Amin (Zoological Society of London), Dr. Philip Muruthi (African Wildlife Foundation), Dr. Martin Mulama (WWF-Kenya), Dr. Benson Okita-Ouma, MBS, (Save the Elephants), Jamie Gaymer (Ol Jogi Conservancy/APLRS), Geoffrey Chege (Lewa Wildlife Conservancy/APLRS), Samuel Mutisya (Ol Pejeta Conservancy/APLRS), Nathan Gichohi (African Wildlife Foundation), Cedric Khayale (KWS) and Linus Kariuki (KWS). Your efforts ensured that the Action Plan was completed within the set timelines. Various members of the IUCN/SSC African Rhino Specialist Group (AfRSG) are thanked for their written comments, suggestions and input that helped to improve this Plan.

Brig. (RTD) J.M Waweru, EBS, 'ndc'(K), 'psc'(K)

Executive Summary

The White Rhino (southern and northern subspecies) Conservation and Management Action Plan provides a framework for the conservation and management of the species in Kenya by adopting best practices for protection, and population and habitat management through a consultative process involving all relevant stakeholders.

Nearly extinct at the beginning of the 20th century after being reduced to a single population of approximately 200 individuals in South Africa, subsequent conservation efforts in the country led to a dramatic recovery of the southern white rhino (***Ceratotherium simum simum***) which is currently the most abundant rhinoceros in the world, with about 18,000 individuals living primarily in South Africa (Emslie 2020a). The southern white rhino is listed as Near Threatened on the IUCN Red List of Threatened Species and on Convention on International Trade in Endangered Species of Wild Fauna & Flora (CITES) Appendix I for all populations except South Africa and Kingdom of Eswatini (formerly Swaziland) which are listed on Appendix II. The southern white rhino was introduced into Kenya to support its recovery as well as for tourism and community conservation education. This took place in the absence of a clear framework for the long-term management of the species, as there were initially few animals. However, its conservation and management was included within the existing structures for conservation and management of the black rhino (Diceros bicornis michaeli).

The southern white rhino population in Kenya has grown rapidly since 2000 at an average rate of 6.8% per annum, with 750 animals in 2020 from the 51 individuals introduced from southern Africa in the 1960s-1990s. Southern white rhinos are currently hosted in 11 conservation areas on State land – 148 animals (Meru National Park [84], Nairobi National Park [23], Ruma National Park [22], Lake Nakuru National Park [18] and Nairobi Safari Walk [1]); private land – 598 animals (Solio Ranch [422], Lewa Wildlife Conservancy and Borana Wildlife Conservancy, now joined as Lewa-Borana Landscape [103], Ol Pejeta Conservancy [37] and Ol Jogi Conservancy [36]); and community land – 4 (Il Ngwesi Community Conservancy [2], Ol Choro Oiroua Community Conservancy [2]).

The long-term vision of the Action Plan for the southern white rhino is to have viable white rhino populations in Kenya living in healthy ecosystems, valued both as a national resource and a global heritage. The overall goal is to maintain demographically and genetically healthy populations of southern white rhinos for community conservation, education, tourism, and as a conservation resource, for example, reintroduction programmes into the northern white rhino's historical range.

The Action Plan for southern white rhino is guided by five key strategic objectives:

1. ***Rhino Protection and Law Enforcement:*** to keep rhino poaching below 1% of the total population per annum by maintaining protection and law enforcement at required levels in all white rhino areas.
2. ***Biological Monitoring and Management:*** to biologically manage white rhinos,

and their habitats, for demographically and genetically healthy populations over the longer term.

3. ***Communication and Engagement:*** to use targeted communication and engagement of relevant stakeholders to increase the understanding and support for white as well as black rhino conservation.
4. ***Sustained Financing:*** to sustain financing of key components of white rhino conservation, alongside Kenya's black rhino conservation needs, for successful delivery of the Plan.
5. ***Overall Programme Management, Coordination and Collaboration:*** to ensure effective programme management, coordination and collaboration nationally and regionally so as to achieve the strategic objectives of the Plan.

The northern subspecies or northern white rhino (***C. simum cottoni)*** is listed as Critically Endangered on the IUCN Red List of Threatened Species and is believed to be extinct in the wild, with only two females remaining in the world and both in Kenya. In an effort to save the subspecies, four northern white rhinos from ZOO Dvur Kralove were moved to Ol Pejeta Conservancy, Kenya in 2009. These were 2 females (Najin and Fatu, the latter being Najin's daughter) and 2 males (Suni who died in 2014 and Sudan who died in 2018). In the absence of a living male of the subspecies, the ongoing assisted reproduction techniques are now the only hope left for saving valuable genetic material to perpetuate the subspecies. Other opportunities remain to hybridise the northern and southern subspecies also, in order to preserve valuable genetic lineage if the attempts to produce pure northern white rhino progeny are not successful.

The long-term vision is to have a stable population of the northern white rhino in Kenya that provides individuals for reintroduction into former range states and preserve genetic lineage. The overall goal for the subspecies is to have a number of northern white rhino calves born in Kenya through IVF techniques. As with the southern white rhino management plan, the recovery plan for the northern white rhino is based on five key components of Rhino Protection; Biological Management through an Assisted Reproduction Programme; Communication and Engagement; Sustained Financing; and Programme Management, Coordination and Collaboration.

The implementation of the activities listed in the Action Plan will be undertaken either jointly on cross cutting elements or undertaken through the respective site management, area committees, Association of Private Land and Community Land Rhino Sanctuaries (APLRS), the Rhino Programme, Rhino Steering Committee, KWS Senior Management, Board of Trustees and in concurrence with the parent Ministry on key decisions requiring policy direction.

Jamie Gaymer Ol Jogi Conservancy

1

Introduction

There are currently approximately 750 southern white rhinos ***(Ceratotherium simum simum, SWR, Plate 1)*** in Kenya on private, community and State lands (Table 1). The species was introduced into Kenya from South Africa to support conservation efforts (see Annex III for details). The population has grown rapidly over the last 20 years at an average rate of 6.76% (95% CI: 6.19%–7.33%) per annum (Figure 1). It has so far been managed with guidelines largely under the umbrella of the Black Rhino Conservation and Management Action Plan ***(Okita-Ouma et al. 2007)***[3]. However, due to their rapid growth, there is now an urgent need to develop a separate action plan to inform best practice management of the species, whilst recognising the overlap with some elements of the conservation of the black rhino.

Despite continuing threats, including poaching and habitat loss, the SWR is currently the most abundant rhinoceros in the world, with about 18,000 individuals living primarily in South Africa ***(Emslie 2020a)***. Nearly extinct at the beginning of the 20th century after being reduced to a single population of approximately 200 individuals in South Africa ***(Rookmaaker 2002)***[4], subsequent conservation efforts have led to a dramatic recovery of this subspecies. However, poaching remains a serious threat (Emslie 2020a) and the subspecies is listed as Near Threatened on the IUCN Red List of Threatened Species and for Kenya is on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The northern subspecies or northern white rhino ***(C. simum cottoni, NWR, Plate 2)*** listed as Critically Endangered is believed to be extinct in the wild, with only two remaining individuals, both females are held in captivity in Kenya ***(Emslie 2020b)***[5]. The NWR once ranged in large numbers throughout north-central Africa south of the Sahara (Central

African Republic, Chad, the Democratic Republic of Congo, South Sudan, Sudan and Uganda). In 1960, there were approximately 2,250 animals remaining but in the 1970s ***(Rookmaaker and Antoine 2012)***[6] and early 1980s, poachers reduced the number of NWR to 15 surviving in Garamba NP, DRC. However, by 1995, under protection, the population had recovered to 31 and for many years overall numbers remained stable.

In mid-2003 there was a major upsurge in poaching in Garamba NP and by May 2006 numbers had been reduced to approximately 3 individuals. In May 2004, 10 NWR were maintained in two zoological institutions; ZOO Dvur Kralove, Czech Republic (seven animals), and San Diego Wild Animal Park, USA (three animals) but breeding had been poor ***(Hermes et al. 2006)***[7]. As a last effort to save the subspecies the four remaining NWR (from ZOO Dvur Kralove) were moved to Ol Pejeta Conservancy, Kenya in December 2009. The recovery of the NWR faces significant challenges, and steps have been identified for a long-term programme to "rewind" the extinction process and secure a viable population with sustainable levels of genetic diversity ***(Saragusty et al. 2016)***[8].

The white rhinos are currently hosted in 11 areas;

- **State national parks (five),**
- **Private conservancies (four), and**
- **Community conservancies (two) (Table 1).**

There is one SWR in captivity in Nairobi Safari Walk and two NWR in Ol Pejeta Conservancy.

Jamie Gaymer- Ol Jogi Conservancy

3. Okita-Ouma B., Amin R. and Kock R. (2007). Conservation and management strategy for the black rhino *(Diceros bicornis michaeli)* and management guidelines for the white rhino *(Ceratotherium simum simum)* in Kenya (2007-2011), third edition. Nairobi, KWS, pp. 1-70.

4. Rookmaaker L.C. 2002. Miscounted population of the southern white rhinoceros *(Ceratotherium simum simum)* in the early 20th century? Pachyderm 32: 22-28.

5. Emslie, R. (2020b). *Ceratotherium simum ssp. cottoni*. The IUCN Red List of Threatened Species 2020: e.T4183A45813838. https://dx.doi.org/10.2305/IUCN.UK.2020-1.RLTS.T4183A45813838.en.

Table 1. Status of the southern white rhino in Kenya, December 2020.

CONSERVATION AREA	SWR NUMBER	LAND OWNERSHIP	AVAILABLE HABITAT	BLACK RHINO POPULATION
Solio Ranch	422*	Private	70 km^2	Yes
Lewa – Borana landscape	103	Private	376 km^2	Yes
Meru National Park	84	State	83 km^2	Yes
Ol Pejeta Conservancy	37	Private	300 km^2	Yes
Ol Jogi Conservancy	36	Private	50 km^2	Yes
Nairobi National Park	23	State	117 km^2	Yes
Ruma National Park	22	State	120 km^2	Yes
Lake Nakuru National Park	18	State	124 km^2	Yes
Il Ngwesi Community Conservancy	2	Community	81 km^2	No
Ol Choro Oiroua Community Conservancy	2	Community	10 km^2	No
Nairobi Safari Walk	1	State	-	No
National Total	750		1,331 km^2	

* Population estimate is based on an aerial census conducted in December 2020.

6. Rookmaaker L.C. and Antoine P.O. 2012. New maps representing the historical and recent distribution of the African species of rhinoceros: *Diceros bicornis*, *Ceratotherium simum* and *Ceratotherium cottoni*. Pachyderm 52: 91-96.

7. Hermes R., Hildebrandt T.B., Walzer C., Göritz F., Patton M.L., Silinski S., ... & Schwarzenberger F. (2006). The effect of long non-reproductive periods on the genital health in captive female white rhinoceroses *(Ceratotherium simum simum, C. s. cottoni)*. Theriogenology, 65(8), 1492-1515. https://doi.org/10.1016/j.theriogenology.2005.09.002

8. Saragusty J., Diecke S., Drukker M., Durrant B., Friedrich Ben-Nun I., Galli C., ... & Hildebrandt T.B. (2016). Rewinding the process of mammalian extinction. Zoo biology, 35(4), 280-292. https://doi.org/10.1002/zoo.21284

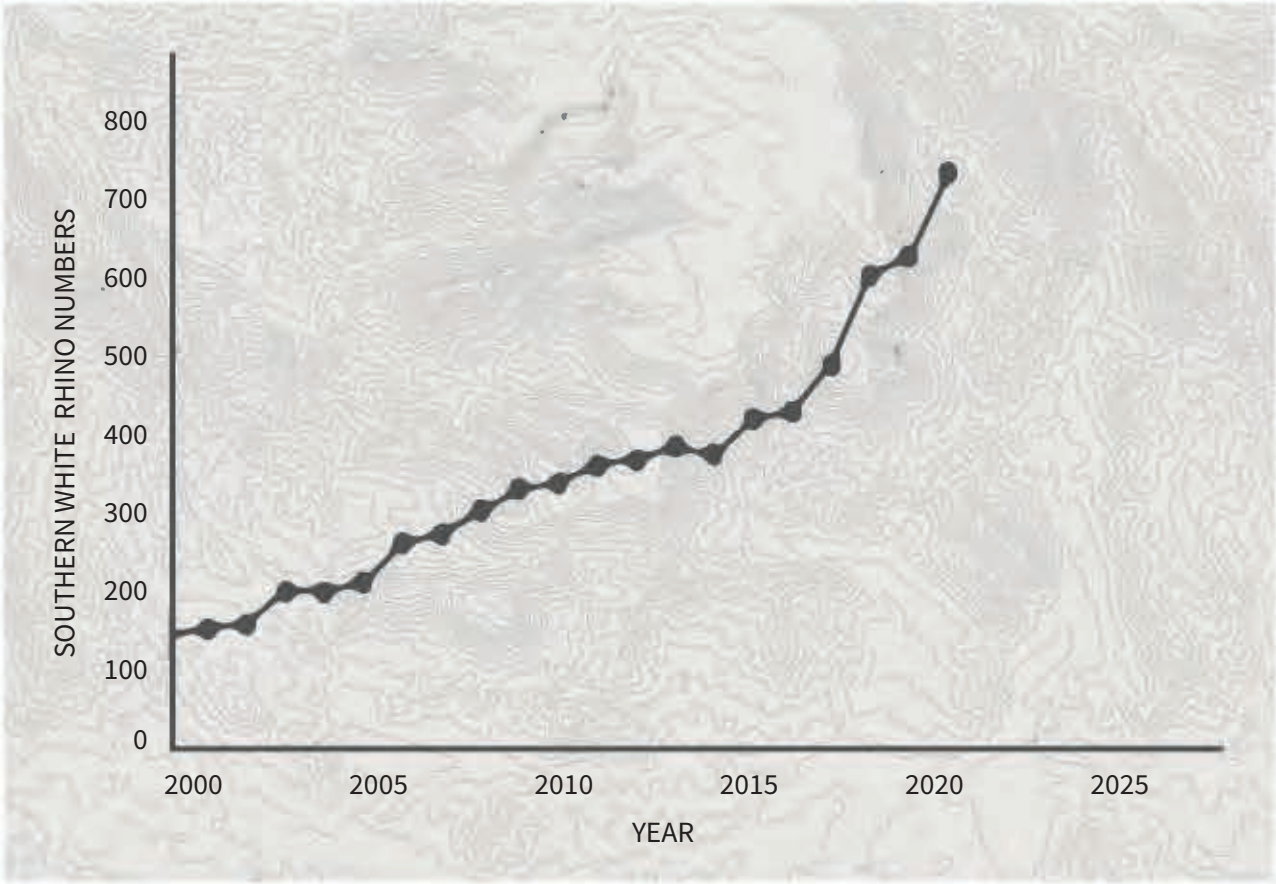

Figure 1. Population trend of southern white rhino in Kenya, 2000–2020.

The Action Plan development process

The development of the first White Rhino Conservation and Management Action Plan (2021-2025) in Kenya (the Plan), involved a six-stage process.

1. Review of existing Kenya white rhino management guidelines and laws, and a national-level population SWOT analysis (Strengths, Weaknesses, Opportunities, Threats).
2. Site-level population assessments with SWOT analysis.
3. Preparation of a zero-draft Plan for feedback from the IUCN SSC African Rhino Specialist Group (AfRSG), stakeholders and technical experts.
4. Virtual stakeholder meeting to review feedback.
5. Presentation of the updated Plan to the National Rhino Steering Committee for further comments.
6. Endorsement of the Plan by the Rhino Executive Committee and the KWS Board of Trustees (KWS BoT).

2

Southern White Rhino Management Plan

Plate 1.
Southern white rhino (*Ceratotherium simum simum*) showing the characteristic square lips and pronounced nuchal hump.

Photo credit – Ol Jogi Conservancy (Jamie Gaymer).

Southern White Rhino Management Plan

Layout of the Action Plan for the Southern White Rhino

PART OF ACTION PLAN	DEFINITION
Long-term Vision	An inspirational and relatively short statement of the envisioned status of *Ceratotherium simum* over the long-term.
Overall Goal(s)	Overall objectives that can realistically be achieved over the lifetime of the Action Plan. In turn, by meeting these overall goal(s), significant progress is made towards achieving the long-term vision of the Action Plan.
Key Components	Main heading(s) or strands under which the Action Plan is organised. Each key component addresses a logically related set of threats and constraints.
KEY COMPONENT	
Strategic Objective	An explicit objective for each key component.
Key Performance Indicators (KPIs)	A quantifiable measure used to evaluate the success of the objective.
Outputs	Statements of the strategic objective results; also activities grouped into logically related clusters, which help to promote implementation.
Activities	The activities that need to be implemented to achieve the outputs.
Timeframe	Time period to complete a particular activity.
Lead Actors	Individuals or offices responsible for a particular activity.
Indicators	Measures or a description of the conditions that would show whether or not a particular activity had been implemented successfully.
Main Assumptions	Key assumptions to achieving outputs.
Specific Projects	List of key projects for funding and implementation.

The overall goal(s) and outputs of this Action Plan are formulated to be **SMART** *(Specific, Measurable, Achievable, Realistic, Time-bound)*.

The Action Plan Framework – with KPIs and outputs

LONG-TERM VISION	**VIABLE SOUTHERN WHITE RHINO POPULATIONS LIVING IN HEALTHY ECOSYSTEMS, VALUED BOTH AS A NATIONAL RESOURCE AND A GLOBAL HERITAGE.**				
OVERALL GOAL	Maintain demographically and genetically healthy populations of southern white rhino for community conservation, education, tourism, and as a conservation resource for the East African Community.				
KEY COMPONENTS	**Rhino Protection and Law Enforcement**	**Biological Monitoring and Management**	**Communication and Engagement**	**Sustained Financing**	**Overall Programme Management, Coordination and Collaboration**
STRATEGIC OBJECTIVE	To keep rhino poaching below 1% of the total population per annum by maintaining protection and law enforcement at required levels in all SWR areas.	To biologically manage SWR, and their habitats, for demographically and genetically healthy populations over the long-term.	To use targeted communication and engagement of relevant stakeholders to increase the understanding and support for white as well as black rhino conservation.	To sustain financing of key components of white rhino conservation, alongside Kenya's black rhino conservation requirements, for successful delivery of the Plan.	To ensure effective programme management, coordination and collaboration nationally and regionally so as to achieve the strategic objectives of the Plan.
KEY PERFORMANCE INDICATORS	KPI 1a: Percentage of SWR population poached per area and nationally / year (annual status reports).	KPI 2a: Trend in proportion of confirmed animals in each SWR population (annual status reports, master ID files with date-stamped photos for individuals).	KPI 3a: Number of rhino related incursions/suspects reported by local communities (informer reports).	KPI 4a: Proportion of required funding for Plan activities secured (annual financial reports – through KWS/ partner financial review process).	KPI 5a: The Plan monitored and evaluated annually in terms of KPIs (progress reports, population status reports).

	KPI 1b: Percentage of court cases related to SWR crimes that result in deterrent sentencing of rhino poachers, horn dealers and kingpins (prosecutions and sentences compiled by and also reported to KWS).	KPI 2b: Number of suitable sites assessed for meta-population management with RSC recommendations at Plan mid-term and end (site assessment reports, Plan mid-term and final reviews).	KPI 3b: Number of major media briefings, press releases, features and articles per annum (annual status reports).	KPI 4b: Number of funding proposals developed; and proportion of projects funded annually by donors.	KPI 5b: Number of main committee (REC, RSC, ASMC and APLRS) meetings with dedicated session on white rhino (minutes).
	KPI 1c: Number of arrests related to SWR crimes per area / year (annual status reports).	KPI 2c: Number of SWR areas reporting on population status on an annual basis (annual status reports, populated Kifaru system).	KPI 3c: Number of local educational institutions and other organised groups participating in rhino conservation awareness raising activities (rhino area education reports).	KPI 4c: Number of initiatives and partnerships established for sustained financing.	
	KPI 1d: Patrol days (based on specified hours of patrolling per day) per block per area / year (monthly reports; site annual status reports).			KPI 4d: Proportion of required funding secured from national and county governments (annual financial reports – through KWS/partner financial review process).	
				KPI 4e: Trends in site visitor numbers (conservation area reports).	

KEY COMPONENTS	Rhino Protection and Law Enforcement	Biological Monitoring and Management	Communication and Engagement	Sustained Financing	Overall Programme Management, Coordination and Collaboration
OUTPUTS	1.1 Strengthened rhino protection and law enforcement systems with SWR poaching kept at less than 1% per annum.	2.1 White rhino areas managed for healthy and growing populations.	3.1 National and county governments, communities, private landowners and partners supporting implementation of the White Rhino Conservation and Management Action Plan (2021-2025) in Kenya.	4.1 Secured funding for implementation of the White Rhino Conservation and Management Action Plan (2021-2025) in Kenya.	5.1 Annual monitoring and evaluation (M&E) of the Plan.
	1.2 Rhino horn stockpiles secured and managed to CITES standards.	2.2 A standardised SWR monitoring and reporting system at site and national level.	3.2 Accurate, responsible and timely briefings, articles, websites, radio, TV and social media coverage on white rhino conservation issues. 3.3 White rhino as a flagship species promoted in education programmes. 3.4 HWC mitigation enhanced in affected white rhino areas to reduce threats to white rhino and other species.		5.2 White rhino managed as a national meta-population through the national rhino committees.

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Vision and Overall Goal

Long-term Vision

Viable southern white rhino populations living in healthy ecosystems, valued both as a national resource and a global heritage.

The minimum number of rhinos needed for a meta-population that will ensure the long-term survival of the subspecies is recognised as being 2,000 (du Toit *et al.* 1987)[9].

Overall Goal

Maintain demographically and genetically healthy populations of southern white rhino for community conservation, education, tourism, and as a conservation resource for the East African Community.

With an average annual growth rate of 6.76%, realised over the period 2000–2020 (Figure 1), there is every indication that the national population could reach 2,500 SWRs in the next 20 years (Figure 2). The white rhino plays an important role in grassland management in a number of sanctuaries. The species can also significantly support:

- **Conservation efforts through introduction and reintroduction programmes.**
- **Conservation education by using it as an iconic species; and**
- **Tourism and community conservation initiatives as a highly visible "big five" species which is relatively easy to manage and thriving in Kenyan grasslands**.

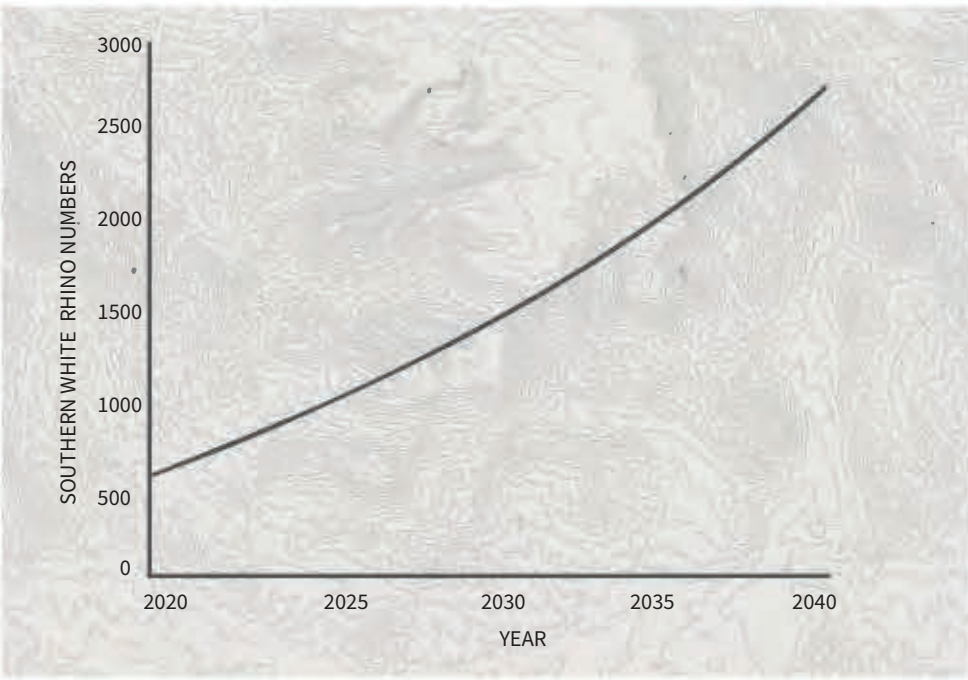

Figure 2. Projected increase in the population of southern white rhino in Kenya, 2020-2040.

9. Toit R.F., Foose T.J. & Cumming D.H.M. (1987): Proceedings of African Rhino Workshop, Cincinnati, October 1986. Pachyderm 9: 1–33.

Legal and Policy Framework

The formulation of the Plan was guided by relevant provisions of national policies and laws that govern conservation and management of natural resources in the country. Key among them are the Constitution of Kenya, 2010; the National Wildlife Strategy, 2030; the draft Wildlife Conservation and Management Policy (April 2017); Wildlife Conservation and Management Act, 2013; and the National Environmental Management Act, 1999. The Plan provides a platform to bring together relevant stakeholders in rhino conservation through a shared vision, goal and a collaborative framework for implementation of priority actions geared towards conservation and management of the species. Relevant sections of the laws and policies are provided below.

Constitution of Kenya, 2010

Chapter Four-The Bill of Rights: Article 42, Environment. Every person has the right to a clean and healthy environment, which includes the right— (a) to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69.

Article 69 (1) The State shall - (a) ensure sustainable exploitation, utilisation, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits; (d) encourage public participation in the management, protection and conservation of the environment; (g) eliminate processes and activities that are likely to endanger the environment; and (h) utilise the environment and natural resources for the benefit of the people of Kenya. (2) Every person has a duty to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.

Kenya's Vision 2030

The economic vision and strategy identifies tourism as a key sector in achieving goals of the 2030 Vision. The specific strategies in realizing the goals are diversification of the tourism product and better marketing of infrequently visited parks so as to bring more tourists to conservation areas that have not been receiving many visitors and which are located in all parts of the country.

National Wildlife Strategy, 2030

The National Wildlife Strategy 2030 is a roadmap for transforming wildlife conservation in Kenya and is aligned to Kenya's Vision 2030 and the Government's Big Four Agenda. It has five year priority goals and strategies around four key pillars: Resilient Ecosystems, Engagement by all Kenyans, Evidence Based Decision Making, and Sustainability and Governance. The strategy establishes an implementation framework to enhance communication, coordination

and collaboration to inspire engagement and participation, and catalyze conservation actions with all stakeholders.

The Draft National Wildlife Conservation and Management Policy, April 2017

The wildlife policy provides a coordinated framework for wildlife management in Kenya and considering other sectoral policies and the roles of various agencies. The goals of the policy are to ensure sustainable management of Kenya's wildlife resources through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes in order to provide for the social, economic, ecological, cultural and spiritual needs of present and future generations; contribute to the sustainable development of the country; and enhance the quality of human life.

Wildlife Conservation and Management (Amendment) Act, 2013

The WCMA, 2013 mandates Kenya Wildlife Service (KWS) to conserve wildlife and their habitats wherever they occur in collaboration with stakeholders. Section 49 of the Act recommends that KWS develops and implements recovery plans for the conservation and management of all species listed in the sixth schedule (rare, endangered and threatened species) of which the SWR is listed as Endangered.

Environmental Management and Coordination Act CAP 387 of 1999 [Rev. 2012]

Section 50 on Conservation of Biological Diversity states that: The Authority shall, in consultation with the relevant lead agencies, prescribe measures necessary to ensure the conservation of biological diversity in Kenya and in this respect the Authority shall:

a. Identify, prepare and maintain an inventory of biological diversity of Kenya.
b. Determine which components of biological diversity are endangered, rare or threatened with extinction.
c. Identify potential threats to biological diversity and devise measures to remove or arrest their effects.
d. Undertake measures intended to integrate the conservation and sustainable utilization ethic in relation to biological diversity in existing government activities and activities by private persons.
e. Specify national strategies, plans and government programmes for conservation and sustainable use of biological diversity.
f. Protect indigenous property rights of local communities in respect of biological diversity.
g. Measure the value of unexploited natural resources in terms of watershed protection, influences on climate, cultural and aesthetic value, as well as actual and potential genetic value thereof.

Section 51 on Conservation of biological resources ***in situ*** states that: The Authority shall, in consultation with the relevant lead agencies, prescribe measures adequate to ensure the conservation of biological resources in situ and in this regard shall issue guidelines for;

a. Land use methods that are compatible with conservation of biological diversity.
b. The selection and management of protected areas so as to promote the conservation of the various terrestrial and aquatic ecosystems under the jurisdiction of Kenya.
c. Selection and management of buffer zones near protected areas.
d. Special arrangements for the protection of species, ecosystems and habitats threatened with extinction.
e. Prohibiting and controlling the introduction of alien species into natural habitats.
f. Integrating traditional knowledge for the conservation of biological diversity with mainstream scientific knowledge.

Section 52 on Conservation of biological resources ***ex situ*** states that: The Authority shall, in consultation with the relevant lead agencies;

a. Prescribe measures for the conservation of biological resources ***ex situ*** especially for those species threatened with extinction.
b. Issue guidelines for the management of germ plasm banks; botanical gardens; zoos or aquaria; animal orphanages; and any other facilities recommended to the Authority by any of its committees or considered necessary by the Authority.
c. Ensure that species threatened with extinction which are conserved ex-situ are re-introduced into their native habitats and ecosystems where: the threat to the species has been terminated; or a viable population of the threatened species has been achieved.

Policy Guidelines on Introductions, Donations and Management of Wildlife Species

The goal of the guidelines (KWS, 2020) is to regulate and administer the introduction, donation and management of alien and indigenous species to enhance wildlife conservation for posterity and as a national and international heritage.

The objective of the guidelines is to provide a policy framework to guide;

a. The purpose and conditions for introduction of alien species into the country.
b. Importation and management of alien species of wildlife into Kenya.
c. Exportation of alien species introduced into the country.
d. Donation/transfer of indigenous and/or introduced species within and from Kenya.
e. Requests by Kenya for donation of wildlife species from other countries.
f. Framework for wildlife exchange.
g. Framework for collaboration and cooperation in wildlife conservation.
h. Framework for monitoring and evaluation of alien species of wildlife in the country.

i. Introduction of potentially harmful species; control and eradication of such species which threaten natural habitats and indigenous species.

Other relevant laws and policies will be adhered to in the implementation of specific activities within this Plan.

Key Components

Key Component 1: Rhino Protection and Law Enforcement

Strategic Objective

To keep rhino poaching below 1% of the total population per annum by maintaining protection and law enforcement at required levels in all SWR areas. The Plan recognizes that the SWR population has benefited and will continue to benefit from security provided to black rhinos in the country (Table 1).

Rationale and SWOT Considerations

The recent reduction in rhino poaching in Kenya needs to be continued as part of a wider wildlife crime preventive approach. Each SWR conservation area needs to maintain and where necessary, strengthen its security and monitoring operations. It is essential that sufficient security and rhino monitoring staff are engaged, and vehicles and field equipment are provided. All rhino security and monitoring staff should be vetted, trained with regular in-field assessments, and welfare standards ensured.

Fences must be well maintained, as well as all-weather road network access for security operations in all rhino areas. The use of modern law enforcement equipment should be expanded in all rhino populations. Improved and well-coordinated intelligence networks and information sharing are also critical to ensuring threats to rhinos continue to be effectively tackled. All these activities should be addressed simultaneously within a zero-poaching framework (ZPF)[10]. In addition, the nature and scale of rhino horn poaching across Africa requires enhanced cooperation and collaboration, through security operations and intelligence sharing, at regional, continental and international levels via the East Africa Community-Rhino Management Group (EAC-RMG), INTERPOL, Lusaka Agreement Task Force (LATF), and Trade Records Analysis of Flora and Fauna in Commerce (TRAFFIC).

Standard operating procedures for investigating rhino poaching scenes and incidences must be operationalized in all rhino areas. Resources such as tracker dog units need to be used effectively and shared between areas where necessary. Improved prosecution through the use of forensics must continue, including the use of the continental Rhino DNA Index System

10. https://tigers.panda.org/news_and_stories/stories/zero_poaching_toolkit/

(RhODIS) where profiles are compatible across rhino range. Sufficient well-trained prosecution officers and experts in wildlife DNA forensics and crime scene investigators must be gazetted.

In the Plan, SWR horn stockpiles in Government and private custody are to be marked and registered according to CITES Resolution Conf. 9.14 (Rev. CoP 18) alongside black rhino stockpiles. For auditing purposes, they must be kept separately in the strong room at KWS headquarters or any other armories or strong rooms where they are stored.

The aim of the Plan is to secure not only the animals themselves but their whole environment. As such concerns about illegal encroachment and extraction of resources including cases of livestock invasion in conservation areas especially during drought conditions must also be addressed. Although the Government has been firm in preventing such encroachment, this can be achieved through transforming community antagonism to goodwill through effective engagement, private public partnership (PPP) in addition to adequate deterrence and penalties.

It is important to note that law enforcement activities for SWR have always overlapped with black rhino law enforcement activities in areas where both species exist. Therefore, the outputs, lead actors and means of verification for this key component largely overlaps with those in the Black Rhino Conservation and Management Action Plan (2017-2021). Reporting on progress on this key component will take this into consideration.

Key Performance Indicators (KPIs) – and their means of verification

KPI 1a: Percentage of SWR population poached per area and nationally / year (annual status reports).

KPI 1b: Percentage of court cases related to SWR crimes that result in deterrent sentencing of rhino poachers, horn dealers and kingpins (prosecutions and sentences compiled by and also reported to KWS).

KPI 1c: Number of arrests related to SWR crimes per area / year (annual status reports).

KPI 1d: Patrol days (based on specified hours of patrolling per day) per block per area / year (monthly reports; site annual status reports).

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (Means of Verification)
1.1 Strengthened rhino protection and law enforcement systems with SWR poaching kept at less than 1% per annum.	1.1.1 Periodically review and maintain SWR security personnel at required levels (same as that for black rhino).	By Q4 Y1, and then subsequent annual reviews	DG (KWS), CEOs (APLRS and community areas), CEC Wildlife	Rhino area security personnel strength as a percentage of desirable level (rhino area assessment and requirements document; annual status reports).
	1.1.2 Assess and maintain law enforcement and field equipment to required levels.	By Q4 Y1, and then subsequent annual reviews	Head-Security (KWS, APLRS and community areas)	Number of SWR areas with law enforcement and field equipment at required levels (rhino area assessment and requirements document; annual status reports).
	1.1.3 Maintain adequate number of reliable security and fence maintenance vehicles with adequate fuel and maintenance budget allocations.	By Q4 Y1, and then continuous	DG (KWS), CEOs (APLRS and community areas), CEC Wildlife	Rhino area security and fence maintenance vehicles as a percentage of desirable level (rhino area assessment and requirements document; annual status reports).
	1.1.4 Maintain ranger welfare standards.	By Q4 Y1, and then subsequent annual reviews	DG (KWS), CEOs (APLRS and community areas), CEC Wildlife	Number of rhino areas with ranger living conditions at defined standards (annual status reports).
	1.1.5 Ensure procedures for periodic vetting of rhino security and monitoring staff are the same as those for black rhino populations.	Annual (vetting)	Head-Security (KWS), RPC, SWs, APLRS and community area managers	Proportion (number) of rhino security and monitoring staff vetted annually in each rhino area (annual status reports).
	1.1.6 Support acquisition of firearm permits for security	Q4 Y1	Head-Security (KWS), APLRS area managers	Number and percentage of approved firearm permits that

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (Means of Verification)
	staff (National Police Reserve status or Temporary Police Permits) in relevant private rhino conservation areas.			have been applied (annual status report).
	1.1.7 Provide targeted on-site training (with evaluation) to security rangers without specialized training or those in need of refresher training in rhino protection and anti-poaching tactics.	Y1-Y5 (annually)	Head-Security (KWS, APLRS and community areas)	Number of rhino protection and anti-poaching tactics training sessions in each rhino area per annum (annual status reports). Number (and proportion) of security rangers provided with targeted rhino-protection and anti-poaching tactics training in each rhino area per annum (annual status reports).
	1.1.8 Establish/maintain adequate patrolling and response capabilities and structures through law enforcement monitoring, reporting and tactical planning.	Q1 Y1, and then continuous	Head-Security (KWS, APLRS and community areas), SWs, research scientists (data analyses)	Patrol effort and threat encounter indicators (security reports; annual status reports). State of rhino carcasses recorded in each rhino area per annum (security reports; annual status reports).
	1.1.9 Establish and maintain mobile rapid response unit(s).	Q4 Y1, and then continuous	Head-Security (KWS, APLRS areas)	Number of rhino areas with rapid response unit(s) (annual status reports).
	1.1.10 Maintain adequate all-weather road network for security monitoring operations.	Q1 Y1, and then continuous	Head-Security (KWS), SWs, APLRS and community area managers	Rhino areas with security road network issues (security reports; annual status report).

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (Means of Verification)
	1.1.11 Implement a fence maintenance plan in rhino areas without one.	Q4 Y1, and then continuous	H-F&B, SWs, APLRS and community area managers	Number of rhino areas with fence maintenance plan implemented (annual status reports).
	1.1.12 Establish and maintain observation posts at strategic locations in rhino areas.	Q1 Y1, and then continuous	Head-Security (KWS), SWs, APLRS and community area managers	Number of operational observation posts in each rhino area (security reports; annual status report).
	1.1.13 Enhance and maintain effective and coordinated intelligence gathering networks.	Q1 Y1, and then continuous	Head-Intelligence (KWS), Head-Security (APLRS and community areas)	Number of intelligence-led arrests (security reports). Number of recovered weapons and horns (security reports).
	1.1.14 Maintain and effectively use intelligence database for protection of rhinos.	Q1 Y1, and then continuous	Head-Intelligence (KWS), Head-Security (APLRS and community areas)	Number of intelligence-led arrests based on information from the intelligence database (security briefing reports).
	1.1.15 Establish and maintain fully operational GPS enabled digital radio system with command control room in selected areas with black and white rhinos (e.g., Key 1 and Key 2 populations). As minimum, maintain fully operational analogue radio	By Q4 Y2, and then continuous	Head-Security (KWS, APLRS areas)	Number of selected rhino areas with fully operational GPS enabled digital radio system with command control room (annual status reports). Number of rhino areas with fully operational analogue radio communication system (annual status reports).

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (Means of Verification)
	communication system in rhino areas.			
	1.1.16 Deploy well-tested technologies such as GSM cameras and forward looking infra-red (FLIR) cameras in rhino areas/habitats with identified need.	Continuous	RPC, SWs, APLRS and community area managers	Number of identified rhino areas using well tested technologies (security reports). Type and number of technologies being used in the rhino areas (security reports).
	1.1.17 Consolidate and maintain tracker dog units to effective levels in rhino areas (individual areas or resource shared across multiple areas) with identified need.	Q1 Y2, and then continuous	Head-Security (KWS), SWs, APLRS area managers	Number of rhino areas with tracker dog units. Number of trained dogs and number of dog handlers present in the tracker dog units in rhino areas (security reports; annual status reports). Number and percentage of poaching incidences leading to arrests with dog units (security reports; annual status reports).
	1.1.18 Continue to contribute rhino samples to the continental RhODIS database.	Continuous	H-Vet, Head-Security (KWS), Head-DRECA & D- WRTI	Number of Kenyan rhino samples and percentage of confirmed rhino population sampled and included in continental RhODIS database annually (RhODIS database). Percentage of prosecutions based on forensic evidence from RhODIS (court records; KWS security reports).

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (Means of Verification)
	1.1.19 Ensure rhino crime investigation, prosecution and sentencing is at internationally recognized standards.	Q4 Y1, and then continuous	Head-Security (KWS), H-Vet	Number and percentage of successful rhino prosecutions based on forensic or other evidence (court records; KWS security reports).
	1.1.20 Maintain adequate level of trained rangers in crime scene management.	Q4 Y1, and then biennially	Head-Security (KWS, APLRS and community areas)	Number of rangers trained in procedures on 'first respondents to a crime scene' (annual status reports).
	1.1.21 Establish contingency plans for securing rhino sanctuaries from Illegal invasion by herders, and other unforeseen threats.	Q1 Y1	KWS BoT, RSC, DG (KWS), CEOs (APLRS areas)	Approved contingency plan (RSC meeting minutes; plan).
	1.1.22 Undertake routine de-snaring in areas with bushmeat hunting, monitor changing poaching methods.	Q1 Y1, and then continuous	Head-Security (KWS), SWs, APLRS and community area managers	De-snaring plan in place in affected areas. Number and frequency of de-snaring activities, and species affected (dead, rescued) (rhino area security reports). Trends in number of snares collected and species and numbers caught, and their encounter rates (rhino area security reports). Evidence on changing poaching methods (rhino area security reports).
	1.1.23 Periodically conduct aerial patrols to enhance security of rhinos.	Q 1 Y 1, and then continuous	Head Security	Number of aerial patrol days and flying hours (rhino area monthly and annual reports).

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (Means of Verification)
	1.1.24 Conduct regular community sensitization campaigns.	Q1 Y1, and then continuous	Head-Security (KWS), SWs, APLRS and community area managers	Number of community sensitization campaigns in each rhino area (annual status reports).
1.2 Rhino horn stockpiles secured and managed to CITES standards.	1.2.1 Maintain standardized management of SWR horn stockpiles in both government and private custody (kept separate from black rhino horn stockpile in the KWS HQ strong room and other armouries or strong rooms where they are held) based on microchip transponders, accurate record keeping and reporting.	Q1 Y1, and then continuous	Head-Security (KWS), Head-DRECA, RPC, SWs, APLRS and community area managers, H-ICT	Proportion of stockpiled horns with profiles on RhODIS database (stockpile audit reports; RhODIS database). Status of KWS rhino horn strong rooms in terms of fully functioning CCTV security system and up-to-date data records (quarterly audit reports).
	1.2.2 Undertake annual auditing of stockpiles.	Q1 Y1, and then continuous	Head-Security (KWS), Head-DRECA	Dates of audited rhino horn stockpiles (stockpile audit reports).

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Important Assumptions

a. White rhino conservation areas and KWS support programmes have sufficient financial, trained/competent personnel and equipment resources.

b. Local, national and regional political goodwill and support continues.

c. Programme management and coordination structures are inclusive of SWR conservation needs.

Specific Projects/Activities

a. Training and equipping security teams to a minimum standard in all white rhino areas.

b. Establishing clear systems and Standard Operating Procedures for marking, registering and transferring rhino horns from all SWR areas to designated KWS strong rooms in a timely manner.

Key Component 2: Biological Monitoring and Management

Strategic objective

To biologically manage SWR, and their habitats, for demographically and genetically healthy populations over the long-term.

Rationale and SWOT considerations

The management of stocking densities is a key biological management need for ensuring SWR populations and their habitats remain healthy. This can be undertaken largely through adaptive management by assessing rhino social interactions, body condition and reproductive parameters, and establishing a standardized rangeland condition assessment system. Best practice to be adopted in management of the southern white rhinos based on effective founders, site densities, population structures, reproductive performances, and the conservation needs of native grazers, for maintaining overall genetic diversity and health.

Genetic profiling of the Kenyan SWR population is recommended to determine number of founders, quantify genetic diversity and inbreeding levels with the aim of guiding metapopulation management to maintain population viability. This would use microsatellite markers on DNA extracted from existing tissue samples which can be supplemented with targeted sampling during interventions.

The growing national population will require more secure space. However, in considering this need, conservation of native species will be prioritized. The ecological carrying capacity (ECC) of existing areas can be improved through grassland management including controlling invasive alien plant species, implementing fire management plan, and maintaining sustainable grazing levels.

Ensuring a reliable supply of adequate quality water, providing food and mineral supplements where needed, and monitoring and controlling diseases will help ensure healthy rhino populations. The expansion of selected sanctuaries along with securing former sites is emphasized. A regional meta-population management approach through the EAC-RMG is also encouraged to help recolonize some of the former NWR range.

Biological management requires reliable population data. Apart from assessing changes in population size over time, a number of metrics (such as average inter-calving interval, age at first calving, mortality rate) need to be used to assess population performance through annual status reporting. Rhino monitoring capacity and data quality need to be improved to the required standard in all SWR conservation areas.

For Solio Ranch, with a population of over 400 SWR, a reliable census method needs to be implemented on an annual or biennial basis along with routine monitoring. The use of ***Kifaru*** monitoring and reporting database system needs to be expanded to SWR populations as the species monitoring and reporting needs are the same as that for the black rhino. To be able to compare data over time and between protected areas within and outside Kenya, it is essential that the AfRSG's recommended standardized age and condition classes are used in all SWR areas. Each area should also have at least two accredited rhino monitoring instructors and all staff trained in the implementation of the rhino monitoring protocol.

Key Performance Indicators (KPIs) – and their means of verification

KPI 2a: Trend in proportion of confirmed animals in each SWR population (annual status reports, master ID files with date-stamped photos for individuals).

KPI 2b: Number of suitable sites assessed for meta-population management with RSC recommendations at Plan mid-term and end (site assessment reports, Plan mid-term and final reviews).

KPI 2c: Number of SWR areas reporting on population status on an annual basis (annual status reports, populated ***Kifaru*** system).

Jamie Gaymer- Ol Jogi Conservancy

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (Means of Verification)
2.1 White rhino areas managed for healthy and growing populations.	2.1.1 Estimate competing grazer densities for areas with evidence of resource competition with SWR.	Q4 Y1	RPC, D-WRTI	Number of SWR areas (with evidence of resource competition) with grazer density estimates and recommendations for management (annual status reports; survey reports).
	2.1.2 Undertake microsatellite genetic profiling across the meta-population using existing tissue samples supplemented by targeted sampling during interventions.	Q4 Y2, and then continuous	H-Vet, RPC, D-WRTI APLRS area managers, relevant research institutes	Number of genetically profiled populations (research reports/publications; annual status reports).
	2.1.3 Develop and implement best practice for SWR meta-population management based on stocking levels, reproductive performance, and genetic diversity.	Q4 Y1-Y5	H-Vet, RPC, D-WRTI SWs, APLRS area managers	Number of areas at or below recommended rhino densities, number of supplemented populations (annual status reports).
	2.1.4 Promote implementation of national invasive alien plant species (IAPS) management plan in SWR habitats.	Q1 Y1, and then continuous	D-WRTI RPC, APLRS area managers	Number of areas implementing IAPS management plan (annual status reports). Levels of infestation (distribution and cover) of IAPS in SWR habitats (annual status reports).
	2.1.5 Develop and implement site specific holistic grassland management plan based on tested "best practice" approaches (standalone or as part of PA management	Q1 Y2, and then continuous	D-WRTI RPC, SWs, APLRS area managers	Number of sites with grassland management plan, and implementation status (annual status reports; national grassland management workshop report; training report).

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (Means of Verification)
	plan). Conduct a national grassland management workshop; conduct targeted training of PA management staff.			
	2.1.6 Implement management interventions based on the species harmonisation toolkit in areas where SWRs are significantly predated or at significant risk of predation.	Q1 Y1, and then continuous	D-WRTI, H-Vet, RPC	Number of timely interventions based on the species harmonisation toolkit (veterinary reports; annual status reports).
	2.1.7 Ensure a fire management plan is in place and implemented by trained staff in all SWR areas at risk.	Q2 Y1, and then continuous	RPC, SWs, APLRS area managers	Number of sites with a fire management plan and implementation status (annual status reports).
	2.1.8 Maintain adequate water points all year for rhino and other species in sites experiencing water issues.	Q2 Y1, and then continuous	RPC, SWs	Number of sites with water issues and number of new/old water points established/rehabilitated to required standards (annual status reports).
	2.1.9 Review and update disease/health surveillance protocols; implement protocols in all SWR areas; ensure adequate veterinary capacity in each area/management unit.	Q2 Y1, and then continuous	H-Vet, RPC	Number of SWR areas using the revised protocols (veterinary reports). Number of SWR areas/management units with veterinary capacity (annual status reports).
	2.1.10 Investigate disease outbreaks; implement control mechanisms in a timely manner.	Continuous	D-WRTI, H-Vet	Number of disease outbreaks investigated, and control mechanisms implemented in a timely manner (veterinary reports; annual status reports).

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (Means of Verification)
	2.1.11 Develop a tsetse control plan and implement effective control measures in high-risk areas.	Continuous	H-Vet, D-WRTI, relevant research institutions	Number of high-risk areas with tsetse fly vector monitoring, and control plan implemented (veterinary reports).
	2.1.12 Develop and implement guidelines for food supplementation in areas with need.	Q4 Y1, and then continuous	H-Vet, RPC, D-WRTI, relevant research institutions, SWs, APLRS area managers	Number of affected SWR areas implementing guidelines (annual status reports).
	2.1.13 Identify and conduct assessments of potentially suitable areas for SWRs (suitable areas may include Lewa-Borana landscape expansion to Il Ngwesi, Ol Pejeta–ADC Mutara, Ol Jogi Conservancy, Loisaba, Segera, and former sites such as Oserongoni) and implement recommendations.	Q4 Y1, and then continuous	D-WRTI, RPC, APLRS area managers	Number of areas with suitability assessments. Number of new areas with SWRs (annual status reports; rhino site suitability assessment reports).
	2.1.14 Supplement small populations for maintaining healthy populations (Ruma NP, Lake Nakuru NP, Nairobi NP).	Q4 Y1, and then continuous	D-WRTI, RPC, SW	Number of populations supplemented (annual status reports; translocation reports).
	2.1.15 Incorporate SWR meta-population management as a component in the EAC-RMG.	Q1 Y2, and then continuous	RPC	EAC-RMG meeting minutes and reports.
	2.1.16 Maintain/enhance capacity within KWS and	Y1, and then	RSC, H-Vet D-WRTI,	Number of facilities with necessary capacity to nurture orphaned SWR

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (Means of Verification)
	partner facilities to nurture orphaned SWR calves with aim of releasing them into the wild.	continuous		calves (national status report). Number of SWR calves held in facilities (national status report). Number of SWRs released back into the wild (national status report).
	2.1.17 Identify sections in wildlife veterinary practice policies that may require review to include private practitioners.	Y1	RSC	Report on number of policies identified and reviewed (annual status reports).
	2.1.18 Carry out white rhino immobilisations/interventions in consultation with and approval from KWS.	Continuous	RPC, RSC	White rhino ear-notching and translocations undertaken following agreed protocols (translocation guidelines; veterinary records).
2.2 A standardised SWR monitoring and reporting system at site and national level.	2.2.1 Develop and implement appropriate SWR survey methods and monitoring protocol for Solio Ranch with >400 rhinos and limited ID-based monitoring.	Q2 Y1, and then continuous	RPC, D-WRTI, site manager	SWR survey methods and monitoring protocol (document). Population size and structure (annual status reports).
	2.2.2 Develop and implement SWR monitoring protocol with safe, warning and critical rhino sighting intervals in each rhino area.	Q1 Y1, and then continuous	RPC, SWs, D-WRTI, APLRS area managers	Number (and percentage) of SWRs within safe, warning and critical sighting intervals in each population (monthly reports).
	2.2.3 Develop a standardised SWR ear notching plan, implement plan with periodic ear-notching of SWR as a means of ensuring all animals can be reliably identified in rhino areas.	Q4 Y1-Y5, and then continuous	RPC, SWs, D-WRTI, APLRS area managers	Number of SWR populations with all rhinos audited; proportion of population ear notched at each site (annual status reports; proportion profiled in RhoDIS).

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (Means of Verification)
	2.2.4 Maintain at least two accredited rhino monitoring instructors based on IUCN AfRSG standards, and a trained and well-equipped rhino monitoring team in each SWR area.	Q1 Y1, and then continuous	RPC, SWs, D-WRTI, APLRS area managers	Number of accredited rhino monitoring instructors in each SWR area (annual status reports). Number of training sessions and number of rhino rangers provided refresher training per site / year (annual status reports). Number of refresher courses for rhino monitoring instructors (annual status reports). Status of monitoring equipment in each area (annual status reports).
	2.2.5 Implement SWR database monitoring system using *Kifaru* and master ID file, with at least two trained rhino personnel in their use at each rhino area (with >5 rhinos).	Q1 Y1, and then continuous	RPC, SWs, D-WRTI, APLRS and community area managers	Number of SWR areas using upgraded *Kifaru* database (monthly reports) and with up-to-date master ID files, and with trained staff in their use (annual status reports).
	2.2.6 Consolidate historical data on origin, movement and status of SWR populations into database system.	Q2 Y1	RPC, SWs, D-WRTI, APLRS and community area managers	Number of areas with individual SWR history profiles in the database system (database system).
	2.2.7 Conduct monitoring resource needs assessment in KWS areas; ensure the required level of monitoring capacity including trained rhino monitoring instructors; minimise staff turnover and	Q1-2 Y1, and then continuous	SWs, RPC D-WRTI	Rhino monitoring resource needs assessment report (KWS report). Number (and percentage) of experienced rhino monitoring personnel in each KWS SWR area (annual status reports).

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (Means of Verification)
	retain at least 50% of experienced rhino monitoring personnel.			
	2.2.8 Update and implement site level SWR monthly and annual status reporting templates.	Q4 Y1-Y5	RPC, SWs, D-WRTI, APLRS area managers	Number of areas submitting monthly and annual status reports on a timely basis (monthly and annual status reports).
	2.2.9 Synthesize national SWR status report biennially and provide timely status update to the AfRSG, RSC and area managers.	Q4 Y1, Y3, Y5	RPC, D-WRTI	Timely national population status updates (AfRSG report; RSC meeting minutes; national status report).

Important assumptions

a. SWR conservation areas and KWS support programs have sufficient financial, trained/competent personnel and equipment resources.

b. Local, national and regional political goodwill and support continues.

c. Programme management and coordination structures are inclusive of SWR conservation needs.

Specific Projects/ Activities

a. Upgrading of existing black rhino monitoring and reporting database system for SWR.

b. Suitability assessment of potential SWR sites.

c. Genetic profiling of SWR populations.

d. Development and set up of appropriate SWR survey method(s) and monitoring protocol in Solio Ranch.

e. A national grassland management workshop for conserving habitats for native species as well as SWR.

f. Ear notching of SWR rhinos.

g. Identification of source and destination sites and implementation of SWR translocation plan.

h. Training and equipping rhino monitoring teams.

i. Preparation of biennial national SWR status report.

Key Component 3: Communication and Engagement

Strategic Objective

To use targeted communication and engagement of relevant stakeholders to increase the understanding and support for white rhino as well as black rhino conservation.

Rationale and SWOT considerations

If the intended outcomes of the Plan are to be achieved, it is important that people's support is gained for the different white rhino conservation initiatives. This will require targeted messaging to prioritized sections of the Kenyan population to raise awareness and levels of engagement. Given the significant role of local communities and landowners in wildlife conservation issues in Kenya, particularly in the country's designated conservancies, targeted engagement to gain their support will be vital. Communication of white rhino conservation issues (alongside black rhino issues) needs to be enhanced through a dedicated communication officer for both positive messaging and also to respond to negative press.

The media will also be a key conduit of rhino related communication to enhance their role of positive messaging. National and county governments need to be lobbied to increase their support for white rhino conservation particularly focussing on the species' benefits for local people in the areas where they occur. Human-wildlife conflict resulting from other species, such as elephants and predators can erode local support. This needs to be minimised in affected white rhino areas. White rhino can also play an important role in educating key audiences with tailored lessons and activities on wildlife conservation in learning institutions.

As stated in the rationale for the Key Component 1 'Rhino Protection and Law Enforcement', activities under the 'Communication and Engagement' component overlap with those in the Black Rhino Conservation and Management Action Plan (2017-2021). Therefore, reporting on progress for this key component will take this into consideration.

Key Performance Indicators (KPIs) – and their means of verification

KPI 3a: Number of rhino related incursions/suspects reported by local communities (informer reports).

KPI 3b: Number of major media briefings, press releases, features and articles per annum (annual status reports).

KPI 3c: Number of local educational institutions and other organised groups participating in rhino conservation awareness raising activities (rhino area education reports).

Important assumptions

a. Appropriate messages on rhino conservation issues are packaged and provided to the communication offices for dissemination using the relevant communication platforms.

b. Support from neighboring local communities will be maintained. Relevant skills and resources will be available to SAPA to conduct attitude surveys.

Specific Projects/Activities

a. Development of white rhino information packs/materials for use in various platforms.

b. Identification of relevant ongoing education and awareness programmes to collaborate with for a cost-effective delivery of this key component's activities.

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OUTPUT	ACTIVITY	TIME FRAME	LEAD ACTORS	INDICATORS (MEANS OF VERIFICATION)
3.1 National and county governments, communities, private landowners and partners supporting implementation of the White Rhino Conservation and Management Action Plan (2021-2025) in Kenya.	3.1.1 Extract relevant sections on perception and expectations of local communities and landowners on white (and black) rhino conservation from social assessments such as SAPA survey reports.	Y1, Y5	H-WCS, SWs, APLRS and community area managers	Documented changes in level of engagement of communities and landowners in white (and black) rhino conservation (survey reports).
	3.1.2 Integrate white (and black) rhino conservation into targeted community awareness raising campaigns and events (such as local cultural events).	Annually	H-WCS, communication teams in APLRS and community areas	Number of wildlife campaigns and events which include white rhino conservation (annual site status reports; site annual reports). Number of wildlife communication packages/messages delivered which include white rhino conservation (publications; media reports). Number of local groups and partners supporting white (and black) rhino conservation (rhino area reports).
	3.1.3 Lobby national and county governments to support white rhino conservation areas and local communities.	Q1 Y1, and then continuous	DG, KWCA, CEC Wildlife in counties hosting white rhinos, relevant partners	Number of lobbying meetings (reports; minutes). Amount of funds from national and county governments for rhino conservation and local communities in terms of employment etc. (audited accounts; % of employees from local communities).
	3.1.4 Develop and disseminate Plan	Q1 Y1	RPC, partners	Number of copies of Plan summary

OUTPUT	ACTIVITY	TIME FRAME	LEAD ACTORS	INDICATORS (MEANS OF VERIFICATION)
	3.1.4 Develop and disseminate Plan summary to local stakeholders.	Q1 Y1	RPC, partners	Number of copies of Plan summary disseminated (M&E reports).
3.2 Accurate, responsible and timely briefings, articles, websites, radio, TV and social media coverage on white rhino conservation issues.	3.2.1 Develop a social media plan to communicate both black and white rhino conservation messages.	Q4 Y1	H-CC, RSC, RPC	Social media plan (RSC meeting minutes; social media plan).
	3.2.2 Plan and proactively respond to positive stories and controversial issues on white (and black) rhino.	Continuous	H-CC, CEC Wildlife, APLRS and community area managers	Number of briefings and press communications released on white and black rhino issues (KWS and APLRS press records).
	3.2.3 Maintain KWS, APLRS area and partner websites with up-to-date information on white (and black) rhino conservation in Kenya.	Continuous	RPC, H-CC, H-ICT, CEC Wildlife, APLRS and community area managers, partners	Number of hits on websites (website records).
	3.2.4 Promote white rhino conservation in radio and TV special features and documentaries on wildlife conservation in Kenya.	Continuous	H-CC, CEC Wildlife, APLRS and community area managers, relevant partners	Number of special features and documentaries including elements of white rhino conservation (KWS press records).
3.3 White rhino as a flagship species promoted in education programmes.	3.3.1 Promote white rhino as a flagship species in education and training programmes, in schools, KWSTI, in-house training, KWS LEA etc.	Q1 Y1, and then continuous	H-CE, partners	Number of education and training programmes including elements of white rhino conservation (M&E reports; area education reports).
	3.3.2 Incorporate/ enhance white rhino conservation activities/topics	Q1 Y2, and then	H-CE, conservation	Quality of rhino education material (education material and reports). Number of local educational institutions engaging in conservation of rhinos and

OUTPUT	ACTIVITY	TIME FRAME	LEAD ACTORS	INDICATORS (MEANS OF VERIFICATION)
3.3 White rhino as a flagship species promoted in education programmes.	3.3.1 Promote white rhino as a flagship species in education and training programmes, in schools, KWSTI, in-house training, KWS LEA etc.	Q1 Y1, and then continuous	H-CE, partners	Number of education and training programmes including elements of white rhino conservation (M&E reports; area education reports).
	3.3.2 Incorporate/enhance white rhino conservation activities/topics within each rhino area's environmental education programme.	Q1 Y2, and then continuous	H-CE, conservation education officers	Quality of rhino education material (education material and reports). Number of local educational institutions engaging in conservation of rhinos and other species, e.g., schools with active Wildlife Clubs of Kenya programme (education reports).
3.4 HWC mitigation enhanced in affected white rhino areas to reduce threats to white rhino and other species.	3.4.1 Develop and implement plans (as part of site management plans) to manage human-wildlife conflict (HWC) due to other species, integrating both local communities and other stakeholders in participatory planning.	Q1 Y2, and then annual reviews	H-WCS, senior wardens, APLRS and community area managers	Comprehensive HWC plan produced and implemented in affected white rhino areas (annual status reports; rhino area reports). Frequency and trends in HWC in white rhino areas (KWS HWC reports).
	3.4.2 Train and deploy personnel experienced in HWC issues and mitigation in affected communities neighbouring white rhino areas.	Q1 Y2, and then continuous	H-WCS, senior wardens, APLRS and community area managers	Number and proportion of desired qualified personnel deployed in affected white rhino areas (annual status reports; rhino area reports).

Main assumptions

a. Appropriate messages on rhino conservation issues are packaged and provided to the communication offices for dissemination using the relevant communication platforms.
b. Support from neighboring local communities will be maintained.
c. Relevant skills and resources will be available to SAPA to conduct attitude surveys.

Specific Projects/Activities

a. Development of white rhino information packs/materials for use in various platforms.
b. Identification of relevant ongoing education and awareness programmes to collaborate with for a cost-effective delivery of this key component's activities.

Key Component 4: Sustained Financing

Strategic objective

To sustain financing of key components of white rhino conservation, alongside Kenya's black rhino conservation requirements, for successful delivery of the Plan.

Rationale and SWOT considerations

Majority of white rhino populations in Kenya occur in areas with black rhino, as such the conservation and management of the white rhinos continue to share resources allocated for black rhino conservation. However, additional resources will be required for certain activities specific to white rhinos. Therefore, sustainable and innovative financing is a key prerequisite to successful rhino protection, monitoring and management, as well as for the dedicated communication and engagement requirements. Unprecedented challenges such as the COVID-19 pandemic has highlighted the need for institutions to set aside contingency funds and seek global support. A key component in mobilising adequate sustained funding to implement the Plan must therefore be the development of a long-term funding plan based on diverse funding streams.

Tourism is a vital part of Kenya's national park, and private and community reserves' funding strategies and the white rhino, being much easier to view than the black rhino or some of the other "big-five" species, can significantly help promote tourism, both national and foreign, and support local economies. This Plan should be used to facilitate financial support from the national and county governments, partners, and donors. Since the majority of the existing white rhino areas also conserve the more threatened and regionally endemic eastern black rhino, it will be important to optimise funding efforts for related black and white rhino activities on protection and management.

KWS and APLRS have traditionally set aside and committed financial resources (internal and support from partners) and human capacity for the conservation of white rhinos on State, private and community lands. This commitment is commendable and is encouraged to continue throughout the life span of this Plan in order to successfully implement the activities contained herein.

Key Performance Indicators (KPIs) – and their means of verification

KPI 4a: Proportion of required funding for Plan activities secured (annual financial reports – through KWS/partner financial review process).

KPI 4b: Number of funding proposals developed, and proportion of projects funded annually by donors.

KPI 4c: Number of initiatives and partnerships established for sustained financing.

KPI 4d: Proportion of required funding secured from national and county governments (annual financial reports – through KWS/partner financial review process).

KPI 4e: Trends in site visitor numbers (conservation area reports).

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OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (MEANS OF VERIFICATION)
4.1 Secured funding for implementation of the White Rhino Conservation and Management Action Plan (2021-2025) in Kenya.	4.1.1 Develop budgets, in a timely manner based on detailed workplans, for all key component activities at a site, landscape and national level (ideally as projects documented during annual review of the Plan).	Q1 Y1, and then annually or as per needs basis	RSC, APLRS and community area managers, RPC	Budgets for key component activities (project documentation).
	4.1.2 Identify key component activities that can be supported jointly through funds for black rhino conservation.	Q1 Y1, and then annually	RSC, APLRS and community area managers, RPC	Joint black and white rhino activities funded (Plan annual reviews).
	4.1.3 Identify funding sources and prepare proposals either integrated with black rhino activities or as standalone.	Q1 Y1, and then annually or as per needs basis	RSC, APLRS and community area managers, partners, RPC	Proportion of required funding raised; activities undertaken (annual financial reports). Number of proposals prepared and proportion of successful proposals yearly (RSC meeting notes).
	4.1.4 Identify and develop initiatives and partnerships, using the Plan, to generate sustainable revenue for white rhino (and black rhino) conservation over the long-term.	Q1 Y1, and then ongoing	RSC, APLRS and community area managers, partners, RPC	Proportion of required funding raised (annual financial reports). List of organizations providing long-term support for rhino conservation (annual financial reports).
	4.1.5 Promote white rhinos via various platforms, to bolster national and international tourism, and support.	Q1 Y1, and then ongoing	RSC, APLRS and community area managers, partners, RPC	Number of platforms promoting white rhino conservation (Plan annual reviews).
	4.1.6 Lobby national and		DG, CEC Wildlife	

	4.1.6 Lobby national and county governments to financially support white rhino conservation under the Plan.	Q1 Y1, and then ongoing	DG, CEC Wildlife, APLRS and community area managers, relevant NGOs	Proportion of required funding raised (annual financial reports).

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (MEANS OF VERIFICATION)
	4.1.5 Promote white rhinos via various platforms, to bolster national and international tourism, and support.	Q1 Y1, and then ongoing	RSC, APLRS and community area managers, partners, RPC	Number of platforms promoting white rhino conservation (Plan annual reviews).
	4.1.6 Lobby national and county governments to financially support white rhino conservation under the Plan.	Q1 Y1, and then ongoing	DG, CEC Wildlife, APLRS and community area managers, relevant NGOs	Proportion of required funding raised (annual financial reports).

Main Assumptions

a. Institutions hosting white rhinos remain committed.

b. The prepared budgets and workplans are accurate.

c. National and county governments, donors and partners remain engaged and supportive of white rhino conservation.

Specific Projects/Activities

a. Development of fund-raising proposals to implement specific priority activities.

b. Fund raising events for rhinos e.g. cycle with the rhino, Running for Rangers, rhino adoption and naming programmes.

c. Development of detailed annual work plans and budgets.

Key Component 5: Overall Programme Management, Coordination and Collaboration

Strategic objective

To ensure effective programme management, coordination and collaboration nationally and regionally so as to achieve the strategic objectives of the Plan.

Rationale and SWOT considerations

The Kenya Rhino Programme and the existing management committees for the black rhino are also responsible for the national white rhino conservation programme. However, the lack of a formal action plan for the white rhino has impeded the species management at a meta-population level across the country. Implementation of this Plan shall be led by the three committees, APLRS, a national Rhino Programme Coordinator office, and Secretariat as constituted and with similar roles as outlined in the Black Rhino Conservation and Management Action Plan. The committees are (1) Rhino Executive Committee (REC) which shall have overall oversight and be responsible for guiding on major decisions; (2) the Rhino Steering Committee (RSC) which shall provide technical support and take an overall lead in the implementation of this Plan; (3) the Area Species Management Committees, who along with the APLRS shall develop site specific annual action plans and oversee their implementation.

Collaboration is critical for gaining management, political, technical and financial support for both black and white rhino conservation. Collaboration is encouraged at the national level (e.g. with corporate sector, traditional/cultural leaders, local communities, private landowners, national and county governments, security agencies, judiciary, immigration, etc.) and at the international level (e.g. with CITES, TRAFFIC, LATF, AfRSG and countries that form the EAC-RMG.

The African Rhino Conservation Plan, yet to be endorsement by all African rhino range states, provides a framework for collaboration at the continental level. Collaboration also creates opportunities for the private sector and local communities to conserve white rhinos on their lands. In addition, this Plan encourages technical support and research from both national and international agencies to enhance the outputs of the Plan.

Key Performance Indicators (KPIs) – and their means of verification

KPI 5a: The Plan monitored and evaluated annually in terms of KPIs (progress reports, population status reports).

KPI 5b: Number of main committee (Senior Management, RSC, Area Site Management Committees (ASMC) and APLRS) meetings with dedicated session on white rhino (minutes).

Specific Projects/ Activities

a. Needs assessment and audit of the status of staffing, equipment and competencies at all levels for white (and black) rhino.
b. Capacity building on rhino monitoring and management of selected white rhino areas.
c. Annual monitoring and evaluation of the Plan.

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (MEANS OF VERIFICATION)
5.1 Annual monitoring and evaluation (M&E) of the Plan.	5.1.1 Develop an M&E plan.	Q1 Y1	RPC, RSC	M&E plan (plan).
	5.1.2 Carry out M&E of the Plan annually.	Q4 Y1-Y5	RPC, area managers, RSC secretariat	M&E reports feeding into implementation plans (reports; annual status reports).
	5.1.3 Review and update the Plan implementation plan.	Q1 Y2, and then annually	RPC, RSC	Updated implementation plan (plan; RSC meeting minutes).
	5.1.4 Report progress on implementation of the Plan.	Annually	RPC	Number of stakeholders and partners receiving the Plan M&E report in a timely manner (stakeholder and partner feedback; papers in journals, Pachyderm, Swara and Komba magazine).
5.2 White rhino managed as a national meta-population through the national rhino committees.	5.2.1 Coordinate white rhino management across all rhino areas and landscapes.	Q1 Y1, and then ongoing	RPC	Standardised white rhino monitoring and reporting in all rhino areas (monthly reports; annual status reports). Partnership agreements between rhino areas and also local associations and conservancies).
	5.2.2 Circulate rhino status reports to RSC, ASCC and APLRS for feedback.	Q4 Y1, and then biennially	RPC	Status report feedback (RSC meeting minutes).
	5.2.3 Provide required information to and participate in EAC-RMG, AfRSG, CITES and RhODIS meetings.	Ongoing	RSC, RPC	Number of meetings participated (meeting documents).
	5.2.4 Ensure white rhino	Q1 Y1	RPC	Composition of the management

	5.2.4 Ensure white rhino areas are represented in rhino committees.	Q1 Y1	RPC	Composition of the management committees (committee structures).
	5.2.5 Encourage all non-State white rhino conservation areas to join the APLRS for improved coordination.	Q1 Y1, and then ongoing	RSC, APLRS	Number of non-State white rhino areas not members of APLRS joining (APLRS membership).
	5.2.6 Support restoration of white rhino populations in EAC range states which used to host the NWR, where suitable conditions exist and on request from respective governments.	Q1 Y1, and then ongoing	RSC, senior management	Required actions of the IUCN Conservation Translocation Guidelines have been adhered to (translocation reports). Number of sites evaluated for reintroducing white rhinos (reports). Number of sites with reintroduced rhino. Progress on regional meta-population management (EAC-RMG minutes and reports).

OUTPUT	ACTIVITY	TIMEFRAME	LEAD ACTORS	INDICATORS (MEANS OF VERIFICATION)
	5.2.3 Provide required information to and participate in EAC-RMG, AfRSG, CITES and RhODIS meetings.	Ongoing	RSC, RPC, D-WRTI	Number of meetings participated (meeting documents).

Important assumptions

a. Cooperation and collaboration by various stakeholders.

b. Functional national rhino coordination office and rhino management committees.

3

Northern White Rhino Recovery Plan

Plate 2.
The two remaining northern white rhinos *(Ceratotherium simum cottoni)*, Najin and Fatu.
Photo credit – Ol Pejeta Conservancy (Rio The Photographer).

Northern White Rhino Recovery Plan

Background

On 11th May 2009, senior representatives of the African rhino range states, wildlife agencies and stakeholders working under the umbrella of the East African Community held the first meeting of the EAC-RMG and produced the Nairobi Declaration (Okita-Ouma et al. 2009)[11]. Among its main goals, the participants agreed to "support all efforts to re-establish and recover the northern white rhino within its former eastern African range states". Kenya is not a range state but supporting the recovery efforts of the NWR.

In December 2009, four NWR were transported to Kenya (Ol Pejeta Conservancy) from the Czech Republic where they had been housed in ZOO Dvur Kralove since 1975. A custodian agreement was made in the hope that bringing the rhinos into a natural environment close to their original habitat and conditions might encourage their natural, social and territorial behaviour and thus prompt their successful breeding. These included two females (Najin and Fatu, the latter being Najin's daughter) and two males (Suni and Sudan, Sudan being the only one that was born in the wild). The two males died of natural causes: Suni died on the 16/17 October 2014 and Sudan on 19th March 2018.

After no successful natural breeding was observed during the first five years after the translocation, health checks in late 2014 showed that none of the remaining female animals were capable of natural reproduction. Consequently, in January 2015, a decision was made to ask a team of experts from ZOO Dvur Kralove, IZW Berlin and Avantea Cremona to develop an Assisted Reproduction Technique protocol and contingency plan. It was identified as necessary to produce an embryo ***in vitro***, either through fertilization of oocytes (immature egg cells) harvested from live NWR donors (with NWR semen that is currently cryopreserved) or through fertilization of artificial gametes that would be produced from induced pluripotent stem cells.

Such an embryo would be inserted into a SWR female and carried to term by this surrogate mother. Crucial for the large-scale generation of transferrable embryos produced ***in vitro*** was the optimization of the oocyte harvesting technique, so called ovum pick-up (OPU). In the following years, the OPU technique was developed on captive SWR in European zoos, which involved the ovarian stimulation of females as well as the collection of their eggs. In vitro procedures needed to generate a viable embryo from these eggs were also developed.

In August 2019, five oocytes were collected from Najin and five from Fatu. Two of Fatu's eggs developed into embryos that were cryopreserved for future transfer. The procedure was repeated in December 2019 when three oocytes were collected from Najin and six from Fatu,

11.Okita-Ouma B., Kock R., Amin R. and Kasiki S. (2009). Proceedings of the East African Community Rhino Management Group inaugural meeting. Nairobi, KWS, pp. 1-34

and one of Fatu's eggs developed into an embryo. The procedure thus proved to be safe and reproducible, and could be performed on a regular basis before the animals become too old.

In December 2019, semen of Sudan, and tissue and blood samples of Sudan, Najin and Fatu were transported to IZW Berlin. The aim is to use the samples in future for production of more embryos. Due to the restrictions related to COVID-19, only minor operations could be conducted in 2020. None of the 10 oocytes collected in August 2020 developed into a viable embryo.

Another procedure was undertaken in December 2020 and 10 oocytes were harvested from Fatu out of which two eggs developed into embryos bringing the total number of NWR viable embryos to five at the end of 2020. In March 2021, 19 oocytes were collected from Fatu and four of them made it to viable embryos, bringing the total number of NWR embryos to nine at the end of May 2021. All the embryos were created with semen from the NWR rhino male Suni.

Vision and Overall Goal

Long-term vision for the NWR in Kenya: A stable population of the NWR in Kenya that provides individuals for reintroduction of the NWR to former range states and preservation of NWR genetic lineage.

The only hope for saving the NWR lies in artificial techniques of reproduction. This work is currently ongoing seeking first to develop and optimize the technology with SWR. However, even if NWR calves conceived through IVF are born, it will still take many years to reach a sufficient number of animals to have individuals available to achieve the ultimate goal of reintroduction into the wild in their former range states. Given the long generation time of rhinos, this is likely to take several decades to achieve.

Overall goal for the NWR in Kenya: A number of NWR calves born in Kenya through IVF techniques.

Given the situation as at May 2021 of nine viable NWR embryos produced, but not a fully successful embryo transfer conducted yet, and given the long terms of rhino gestation, it is clear that having few calves in the coming decade would be a significant achievement and provide very good foundation for accomplishing the long-term objective of the Plan that is aligned with the objectives of EAC-RMG.

Key Components

Key Component 1: Rhino Protection

Security of the last two NWR and their possible progeny will be within the protection component of Kenya's overall White Rhino Conservation and Management Action Plan.

Key Component 2: Biological Management through the Assisted Reproduction Programme

The main activity of the Plan is to conduct OPU three to four times a year, depending on the health condition of the animals. The aim is to produce as many viable NWR embryos as

possible before the health of the two females eventually deteriorates to a level at which it will be too risky to anaesthetize them for the procedure. At the same time, work on perfecting the embryo transfer method would continue, with eventual transfer of the embryos into surrogate SWR in Kenya.

Embryo transfer has to coincide with approximately a nine-day period after ovulation. Four SWR females have been identified as surrogates in Ol Pejeta Conservancy. To determine the time of ovulation in these females, the use of a SWR teaser bull, to live with the would-be surrogate mothers has been identified as the best option. The teaser bull was translocated to Ol Pejeta Conservancy from Lewa Conservancy in November 2020 and in December 2020 he was successfully sterilized.

To give the NWR the best chances to circumvent extinction, it is necessary to work—apart from harvesting oocytes from live donors—with cellular technologies. At present, cell cultures from 12 specimens are available in Europe and the US. The current plan is to produce ***in vitro*** primordial germ cells from iPS cells (induced pluripotent stem cells) obtained from the NWR somatic cells cryopreserved on previous occasions in the past, and through a second step these germ cells will then be transformed into eggs and sperm. This would substantially enlarge the founding genetic diversity of the future NWR population.

Key Component 3: Communication and Engagement

For every successful conservation activity, it is necessary to gain broad stakeholder support. The NWR are kept in a fenced and well secured area in Ol Pejeta Conservancy and the place is regularly visited by visitors to the conservancy. During these visits, environmental and educational messages are delivered. As the plight of the NWR attracts attention of the media, the conservation messages are repeatedly shared both in local and international media.

However, this assisted reproduction project to save the NWR introduces a totally new approach to conservation that might at first seem unconventional and for people difficult to understand. For this reason, it is necessary, whenever possible, to provide sensitive communication on all levels, including workshops for media, and important stakeholders and state authorities that would be interested in knowing more about the whole process. It is also necessary to share information on project progress amongst expert colleagues, including those in the AfRSG, and for this reason peer-reviewed papers will be one of the planned outputs.

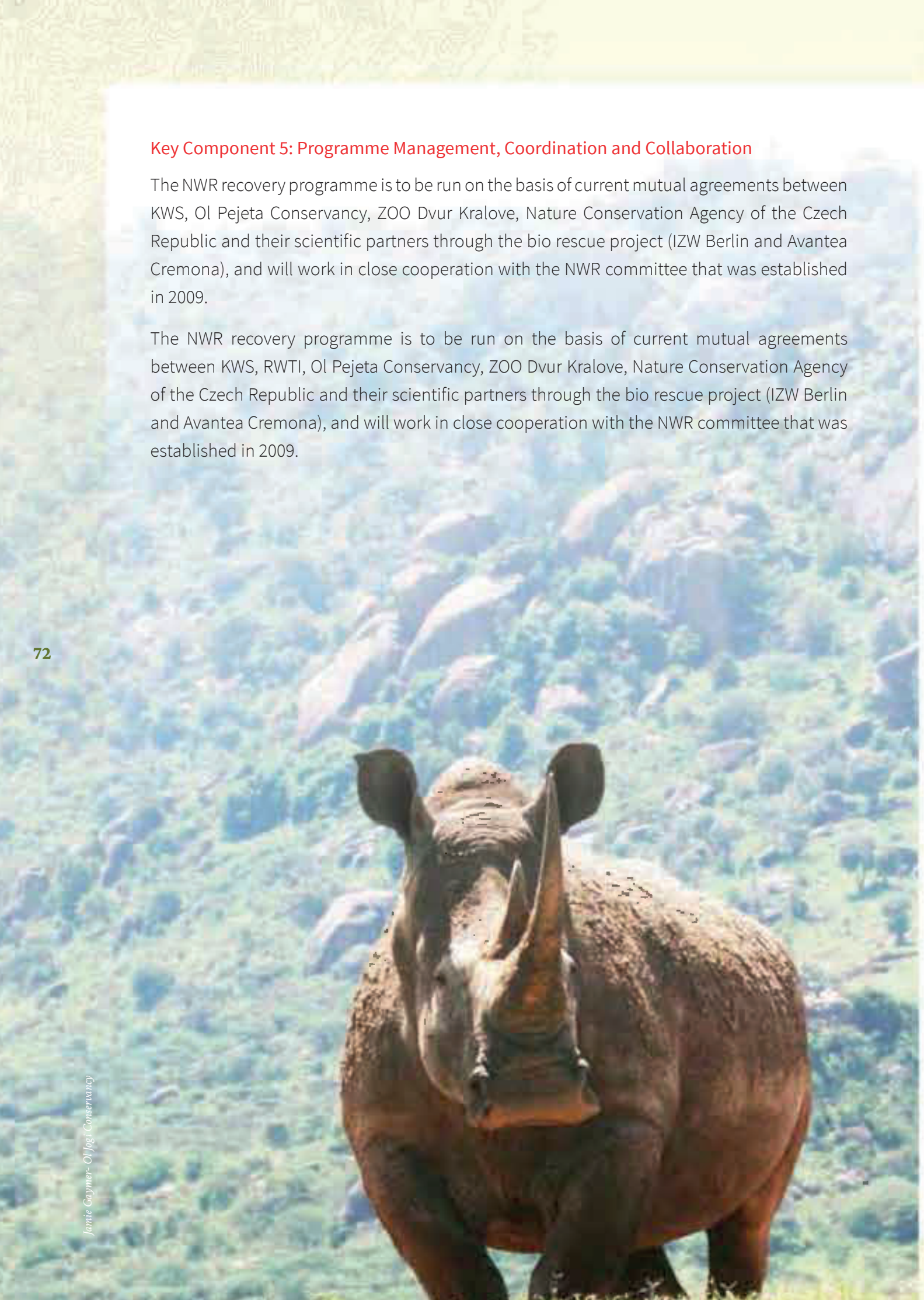
Key Component 4: Sustained Financing

To successfully achieve objectives of the NWR Recovery Plan, it is necessary to secure sufficient funding. KWS, Ol Pejeta Conservancy and ZOO Dvur Kralove contribute to the project from their own budgets, but the main funding for the first few years of the project has been provided by third-party donors, including the German Federal Ministry of Education and Research, Czech foundation Nadace CEZ, and American private donor, Richard McLellan. All parties involved in the project will do their utmost to assist with securing financing for the whole period of the Plan.

Key Component 5: Programme Management, Coordination and Collaboration

The NWR recovery programme is to be run on the basis of current mutual agreements between KWS, Ol Pejeta Conservancy, ZOO Dvur Kralove, Nature Conservation Agency of the Czech Republic and their scientific partners through the bio rescue project (IZW Berlin and Avantea Cremona), and will work in close cooperation with the NWR committee that was established in 2009.

The NWR recovery programme is to be run on the basis of current mutual agreements between KWS, RWTI, Ol Pejeta Conservancy, ZOO Dvur Kralove, Nature Conservation Agency of the Czech Republic and their scientific partners through the bio rescue project (IZW Berlin and Avantea Cremona), and will work in close cooperation with the NWR committee that was established in 2009.



Jamie Gayner- Ol Jogi Conservancy

ANNEXES

Annex I. List of southern white rhino priority activities

To facilitate implementation of the White Rhino Conservation and Management Action Plan (2021-2025) in Kenya, some key cross cutting activities have been identified and listed below with indicative budgets in Annex II.

1. Maintain adequate number of reliable security and fence maintenance vehicles with adequate fuel and maintenance budget allocations for each site.
2. Develop and implement a fence maintenance plan in white rhino areas.
3. Maintain and effectively use intelligence database to curb rhino poaching and illegal wildlife trade.
4. Deploy well-tested technologies such as GSM cameras and forward looking infra-red (FLIR) cameras in rhino areas/habitats with identified need.
5. Continue to contribute white rhino samples to the continental RhODIS database.
6. Maintain standardized management of white rhino horn stockpiles (kept separate from black rhino horn stockpile in the strong room) based on microchip transponders, accurate record keeping and reporting.
7. Develop standardized rangeland condition assessment system and train selected scientists in its use.
8. Estimate competing grazer densities for areas with evidence of resource competition with white rhinos.
9. Undertake genetic profiling across the meta-population.
10. Develop and implement a white rhino meta-population translocation plan based on stocking levels, set percentage harvesting, reproductive performance, and genetic diversity.
11. Implement the national invasive alien plant species (IAPS) management plan in white rhino habitats.
12. Develop and implement site specific grassland management plans based on tested "best practice" approaches (standalone or as part of the PA management plan).
13. Ensure a fire management plan is in place and implemented with trained staff in all white rhino areas at risk.
14. Develop a tsetse control plan and implement effective control measures in high-risk areas.
15. Identify and conduct assessments of potentially suitable areas for destocked white

rhinos (suitable areas include the Lewa-Borana landscape expansion to Il Ngwesi, Ol Pejeta – ADC Mutara, Ol Jogi Conservancy, Loisaba, Segera and former sites such as Oserongoni) and implement recommendations.

16. Supplement small populations to maintain rhino health (Ruma NP, Lake Nakuru NP, Nairobi NP, Ol Choro Oiroua).
17. Replace the white rhino exhibit in Kisumu Impala Sanctuary with a suitable (semi-captive) facility for education, awareness and tourism.
18. Develop and implement appropriate white rhino survey methods and monitoring protocol in Solio Ranch.
19. Implement a white rhino database monitoring system using Kifaru and master ID file, with at least two trained rhino personnel in their use at each rhino area.
20. Consolidate historical data on origin, movement and status of white rhino populations into the database system.
21. Synthesize national white rhino status reports biennially and provide timely status updates to the AfRSG, RSC and area managers.
22. Identify funding sources and prepare proposals either integrated with black rhino activities or as standalone as appropriate.
23. Identify and develop initiatives and partnerships, using the Action Plan, to generate sustainable revenue for white rhino (and black rhino) conservation over the long-term.Annex II. Budget for southern white rhino priority activities

Annex II. Budget for southern white rhino priority activities

Currently, eight of the 10 white rhino areas also host black rhinos. The white rhinos in these areas benefit from the resources allocated for black rhino conservation. However, there are activities which are specific to white rhinos which require additional financial resources above and beyond those already budgeted for, these are listed in the table below.

No.	STRATEGIC OBJECTIVE	ACTIVITY	BUDGET ITEM DESCRIPTION	AMOUNT (Ksh)	AMOUNT (USD)
1	Law enforcement	Capacity building for security staff	Basic training of new recruits, refresher training of exiting staff	4,500,000.00	45,000
		Security infrastructure	Two watch towers each for three rhino sites (Solio Ranch, Ruma NP, Nairobi NP)	600,000.00	6,000
		Ranger welfare	Fabricated container houses / brick houses	7,800,000.00	78,000
		Surveillance equipment	Night vision equipment, telescopes and rifle scopes	5,000,000.00	50,000
2	Biological management	Monitoring equipment	GPS, binoculars, digital cameras	3,000,000.00	30,000
		Capacity for monitoring and database management	Two training-of-trainers workshops (monitoring and database operation), site-based refresher training	4,000,000.00	40,000
		Upgraded *Kifaru* that includes white rhino and/or development of a white rhino database	Data consolidation, cleaning and development of database	2,500,000.00	25,000
		Ear notching	100 animals each at Ksh.120,000 (exclusive of Solio Ranch population estimated using aerial census)	12,000,000.00	120,000

No.	STRATEGIC OBJECTIVE	ACTIVITY	BUDGET ITEM DESCRIPTION	AMOUNT (Ksh)	AMOUNT (USD)
		Translocations	Potential recipient sites; Nairobi NP, Ruma NP, Lake Nakuru NP, Loisaba, Segera and Ol Pejeta Conservancies), potential source sites (Meru NP, Solio Ranch and Lewa-Borana Conservancy), 70 rhinos at Ksh.150,000	10,500,000.00	105,000
		Translocation equipment	Five white rhino crates @ Ksh.500,000; plant, vehicle and machinery maintenance @ Ksh.2,000,000; capture equipment accessories @ Ksh. 1,000,000; personal protective equipment @ Ksh.500,000	6,000,000.00	60,000
		Clinical and emergency veterinary interventions	Immobilization drugs and darting accessories, veterinary consumables, aircraft support for 50 cases @ Ksh.100,000	5,000,000.00	50,000
		Tsetse management in Ruma NP and Meru NP	Chemicals, target traps and servicing, vehicle running costs, personnel costs	4,500,000.00	45,000
		White rhino habitat improvement	1.5 acres per hour @ Ksh.3,000 per hour (Nairobi NP, Ruma NP, Lewa/Borana Conservancy)	15,000,000.00	150,000
		Water provision	Water pans, water troughs (Ruma NP, Nakuru NP)	4,500,000.00	45,000
		Mineral supplementation	Nairobi NP, Nakuru NP	4,000,000.00	40,000
		Invasive plant species management	Manage invasive species in Nairobi NP, Lake Nakuru NP and Ruma NP @ Ksh.500,000 per park twice in the Action Plan period	3,000,000.00	

No.	STRATEGIC OBJECTIVE	ACTIVITY	BUDGET ITEM DESCRIPTION	AMOUNT (Ksh)	AMOUNT (USD)
		Standardized rangeland condition assessment system	Develop a standardized system referring to work done in other African range states. Team of four pax working for 4 days @ Ksh.20,000 per day per person	320,000.00	3,200
		Field scientist and manager capacity for rangeland condition assessment	Training in six conservation areas for five pax in each area for six days @ Ksh.10,000 per day	2,000,000.00	20,000
		Range expansion assessments	Lewa-Borana landscape expansion to Il Ngwesi, Ol Pejeta – ADC Mutara, Ol Jogi Conservancy, Loisaba, Segera and former sites such as Oserongoni)	2,500,000.00	25,000
		White rhino genetic profiles	200 animals @ Ksh.20,000 (samples from stockpiles, ear notching, translocations, and clinical interventions)	4,000,000.00	40,000
		Capacity for nurturing orphaned white rhino calves with aim of releasing them into the wild	Existing facilities at Lewa, Ol Pejeta conservancies, and Nairobi animal orphanage; hand raising 5 calves @ Ksh.1.6 M/year (each calf hand raised for 1.5 years then weaned)	12,000,000.00	120,000
		Appropriate white rhino survey methods and monitoring protocol in areas with high number of white rhino	Develop a standardized method based on work done in Solio Ranch, Kruger and other areas. Team of four pax working for 4 days @ Ksh.20,000 per day per person	320,000.00	3,200

No.	STRATEGIC OBJECTIVE	ACTIVITY	BUDGET ITEM DESCRIPTION	AMOUNT (Ksh)	AMOUNT (USD)
3	Coordination	Stakeholder engagement at national level	Annual national rhino status validation and stakeholder engagement	2,500,000.00 1,000,000.00	25,000 10,000
		Rhino Coordination Office support	Vehicle for the Rhino Programme office, office equipment, field coordination support (field visits)	4,500,000.00 2,500,000.00 2,500,000.00	45,000 25,000 25,000
		Community engagement for enhancing support for white rhino conservation	Enhance support to existing livelihood programs	0	
		Contingency plan for emergencies e.g., disease outbreaks, drought, fire outbreak, flooding, increase in security threats	Development and implementation of the contingency plan team of 12 pax working for 4 days @ Ksh.20,000 per day per person Emergency fund (seed money)	950,000.00 2,000,000.00	9,500 20,000
		Action Plan M&E	Annual review Mid-term review	1,500,000.00 1,500,000.00	15,000 15,000
		Participation in EAC-RMG, AfRSG, CITES and RhODIS meetings	Support participation of international rhino meetings	1,000,000.00	10,000
		Coordinated NWR breeding programme activities	Technical committee meeting Assisted reproduction field activities	950,000.00	9,500
Total				133,940,000.00	1,339,400

Annex III. Information on south white rhino introductions to Kenya

A	INFORMATION ON SOUTHERN WHITE RHINO INTRODUCTIONS TO KENYA	
#	Rhino Area	Notes
1	Meru National Park	The first introductions of white rhinos were undertaken in Meru NP in 1965. These composed of a group of 6 rhinos (3 males and 3 females) from Natal Parks, South Africa. Management of the six rhinos was initially carried out in paddocks with supplemented feeding. The introductions were carried out as a pilot phase with the intentions of further additions based on the performance of the founder population. During the initial stages of the introduction, the animals showed signs of trypanosomiasis infection but were treated with no further issues. In 1968, the rhinos were moved into a five-acre free ranging area where they were allowed to roam under supervision during the day and returned to secure paddocks during the night. Five calves were born between 1970 and 1976. As the animals grew to maturity, social pressure started to build up with in-fighting resulting in the death of 3 rhinos (2 males and 1 female) between 1969 and 1974. To minimise the fighting, the herd was latter split where the adult rhinos without calves were set free. Three free ranging rhinos were killed by poachers at the end of 1976 when poaching erupted in the park. The remaining rhinos were rounded up and secured in paddocks. At the end of 1976, the population was down to 5 individuals (2 adult females from the founder herd of 6 adults, 2 sub adults and 1 calf) with no mature male. In 1980, a calf was born bringing the population back to 6 individuals (2 males and 4 females). The population was all poached in the early 80s with exception of one male (Mukora) that was later translocated to Lewa WC to join other rhinos introduced there from Solio Ranch making him the only contributor of genes from the first Meru population.

2	Solio Ranch	The second introduction in the country was received by Solio Ranch in three shipments from South Africa. The first shipment of 8 rhinos (4 males and 4 females) was received in 1978, the second one of 8 rhinos (all females) was received in 1980, while the last one with 4 rhinos (all females) received in early 1980s. Of this final batch, two females failed to breed during their time in Solio Ranch (i.e., total founder population was 14 animals); however at least one of these two females did breed when subsequently moved to Lake Nakuru NP.
3	Lewa Wildlife Conservancy	The third introduction in the country was 5 white rhinos (3 females and 3 males) into Lewa WC in 1992 from Natal Parks, South Africa. The 6 rhinos joined a group of 5 other rhinos (4 females and 1 male) which had been translocated to Lewa WC from Solio Ranch in 1988. One white rhino was translocated to Lewa WC from Meru NP in 1984 and back to Meru NP in 2001 after siring several calves in Lewa with the 5 Solio rhinos before the South African introductions. A further 7 rhinos (3 females and 4 males) were translocated from Solio Ranch to Lewa WC in 2004-2005.
4	Ol Choro Oiroua and Lake Nakuru National Park	The fourth and last introduction of 20 white rhinos was carried out in 1992-3 from South Africa of which 10 were released in Ol Choro Oiroua Group Ranch north of the Maasai Mara NR and 10 in Lake Nakuru NP. Six of the Ol Choro rhinos died due to disease. Ol Choro Oiroua also received two white rhinos from Lewa WC but they were translocated back in 1992 when the South Africa group arrived. Lake Nakuru NP also received an additional 2 rhinos from Solio Ranch in 1990.

B	Areas previously hosting southern white rhinos in Kenya	
1.	Lake Chem Chem (Malindi)	The 2 rhinos translocated to Lewa WC.
2	Oserongoni Wildlife Conservancy	Translocated to Ol Pejeta Conservancy and Ruma NP. The site is still available for future consideration.
3	Enasoit	The two rhinos translocated to Ol Pejeta Conservancy.
4	Mugie	The one rhino translocated to Nairobi NP.
5	Kigio	One died, one translocated to Ol Pejeta Conservancy.
6	Mt. Kenya Wildlife Conservancy	Both died.
7	Delta Cresent	Translocated to Ruma NP.

Annex IV. List of contributors

NO.	NAME	ORGANIZATION	DESIGNATION
1	Dr. Patrick Omondi	WRTI	Director/CEO Wildlife Research and Training Institute
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9	Mr. Collins Ochieng	KWS	Ag. SW – Lake Nakuru NP
10	Mr. Allan Maina	KWS	Ag. SOOPs – Central Rift Conservation Area
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22	Mr. Martin Omondi	KWS	Coy Commander – Nairobi NP
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31	Mr. Bernard Chira	Ol Pejeta Conservancy	Research Scientist – Ol Pejeta Conservancy
32	Mr. Abraham Njenga	Ol Pejeta Conservancy	Security – Ol Pejeta Conservancy
33	Mr. Jamie Gaymer	Ol Jogi Conservancy	Conservation Manager
34	Mr. Mike Watson	Lewa Wildlife Conservancy	CEO – Lewa Wildlife Conservancy
35	Mr. Geoffrey Chege	Lewa Wildlife Conservancy	Conservation and Wildlife Manager
36	Mr. Kip Ole Polos	Il Ngwesi Community Conservancy	Chairman – Il Ngwesi Community Conservancy
37	Dr. David Kimiti	Lewa Wildlife Conservancy	Lewa Wildlife Conservancy
38	Mr. Patrick Leresi	Il Ngwesi Community Conservancy	Project Manager – Il Ngwesi Community Conservancy
39	Mr. John Pameri	Lewa Wildlife Conservancy	In Charge General Security – Lewa Wildlife Conservancy
40	Mr. Edwin Kisio	Lewa Wildlife Conservancy	Researcher – Lewa Wildlife Conservancy
41	Mr. Kenneth Onzere	Lewa Wildlife Conservancy	Researcher – Lewa Wildlife Conservancy
42	Mr. Abdi Sora	Borana Wildlife Conservancy	General Manager – Borana Conservancy
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44	Mr. Bakari Mungumi	KWS	AD – Eastern Conservation Area
45	Mr. Muraya Githinji	KWS	Ag. Senior Warden – Meru NP

46	Mr. John Plimo	KWS	In Charge Security – Meru Conservation Area
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49	Mrs. Pauline Okode	KWS	In Charge Community and education – Meru NP
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52	Mr. Mathew Maina	KWS	Ranger – Meru Rhino Monitoring unit
53	Mr. Paul Bett	KWS	NCO – Meru Rhino Monitoring unit
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55	Mr. Lende Ole Maitai	Ol Choro Oiroua	Security – Ol Choro Oiroua
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59	Dr. Jan Stejskal	ZOO Dvur Kralove	Northern White Rhino Management and Technical committee
60	Dr. Rajan Amin	Zoological Society of London	Member of RSC

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62	Dr. Richard Emslie	AfRSG	Scientific Officer
63	Raoul du Toit	AfRSG	Member
64	Dr. Holly Dublin	AfRSG	Member
65	Dr. Lucy Vigne	AfRSG	Member
66	Dr. Dave Balfour	AfRSG	Member
67	Dr. Rob Brett	AfRSG	Member
68	Dr. Sam Ferreira	AfRSG	Member
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