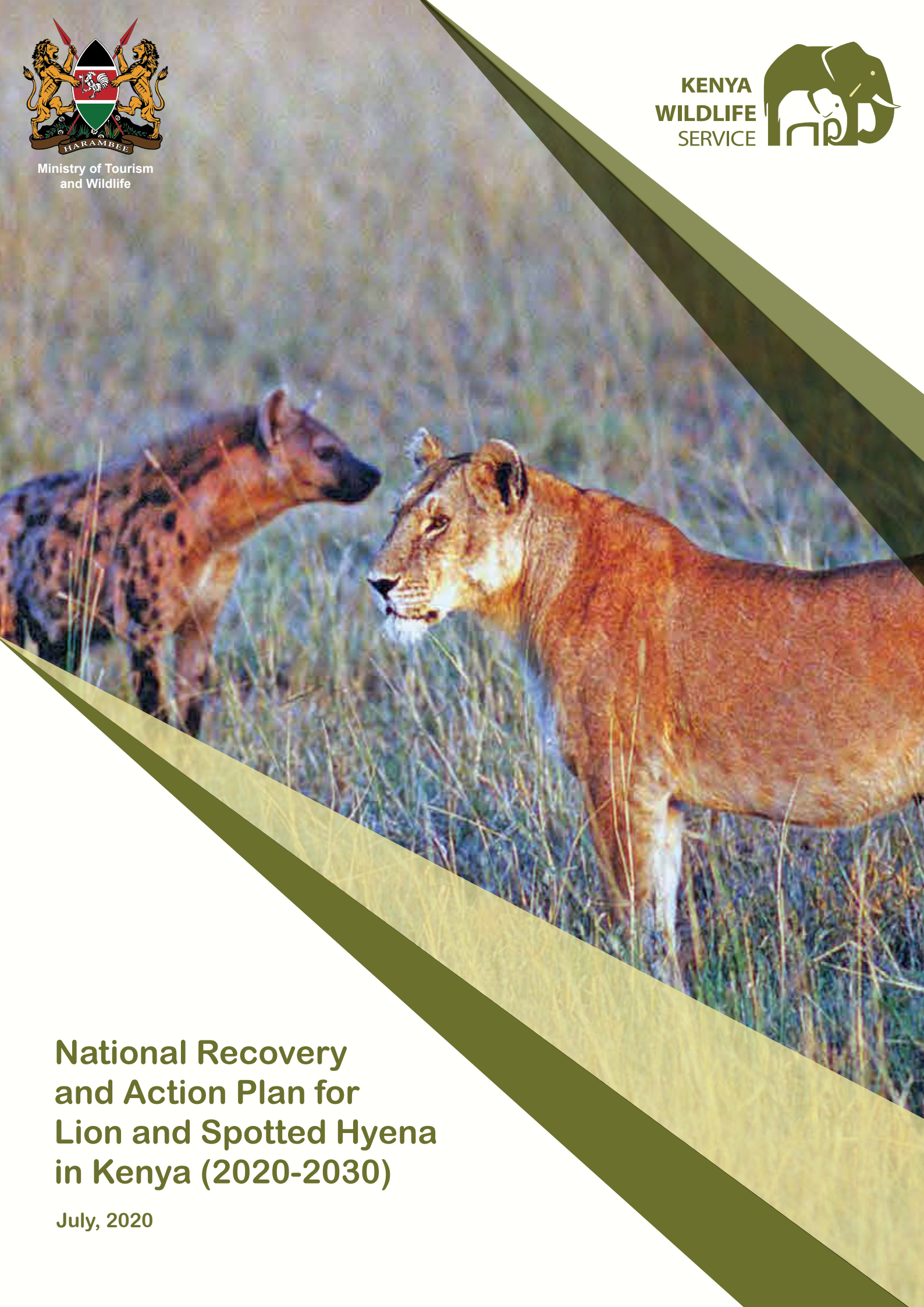


Ministry of Tourism
and Wildlife



National Recovery and Action Plan for Lion and Spotted Hyena in Kenya (2020-2030)

July, 2020

National Recovery and Action Plan for Lion and Spotted Hyena in Kenya (2020-2030)



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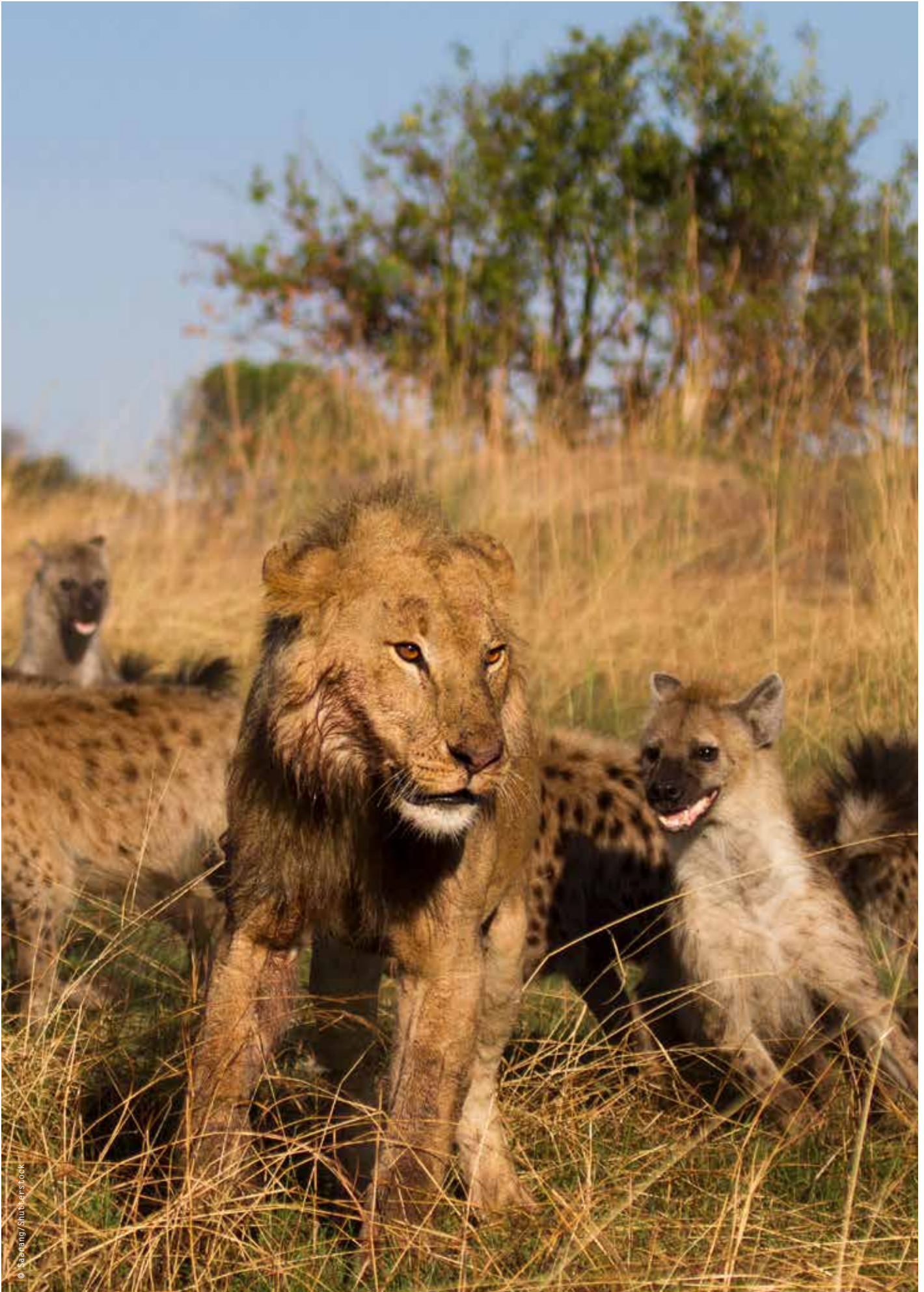




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FOREWORD



Kenya is endowed with a rich and unique flora and fauna that forms the country's vast heritage. This includes 33 mammalian, 28 avian and 356 plant species whose survival is threatened. The threats emanate from increased human population and associated land-use changes, climate change, habitat loss and fragmentation, poaching, illegal wildlife trade and human-wildlife conflict. The Government of Kenya is committed to protecting the country's wildlife resources for eco-development and posterity.

The current wildlife policy aims to enhance species conservation through active management of threatened species. The National Wildlife Conservation and Management Act (WCMA), 2013 provides for the protection and conservation of wildlife through development of species specific recovery plans for all listed species in the sixth schedule. Further the National Wildlife Strategy gives a roadmap for transforming wildlife conservation by 2030, and outlines goals and strategies anchored on four key pillars that include: resilient ecosystems, engagement by all Kenyans; research and innovation; and sustainability. It is against this background that this Recovery and Action Plan for Lion and Spotted Hyena (2020-2030) was developed. The plan will guide conservation actions for the two species across the country to ensure their long term protection. It provides a framework within which all stakeholders can work together to stop the declining trend in the two species.

The lion (*Panthera Leo*) and spotted Hyena (*Crocuta crocuta*) are classified by the International Union for Conservation of Nature (IUCN) as vulnerable and species of least concern respectively. However, Kenya categorizes lions as endangered due to its low population of about 2,000 individuals where the spotted hyena are categorised as vulnerable due to their declining number and range. The two species are found in the Tsavo Ecosystem, Amboseli-Magadi ecosystem, Maasai Mara ecosystem, Nairobi-Athi/Kapiti ecosystem, Naivasha-Nakuru ecosystem, Laikipia-Samburu Ecosystem, Meru Conservation Area, Nasalot-Rimoi-South Turkana Ecosystem and Lamu ecosystem.

This recovery and action plan aims to stabilize the population of spotted Hyena and grow the population of lions. The plan identifies threats facing the species and guides on interventions required to address them to ensure their effective conservation and management. This will be achieved through a set of objectives and activities outlined in the plan that help address the threats as well as coordination of the plan implementation.

The Ministry of Tourism and Wildlife appreciates the efforts by all stakeholders involved in the conservation and management of the two species. I encourage our stakeholders to work together and protect the two species, their prey and landscapes so as to achieve the plan's vision which is "To sustain viable populations of lions and spotted hyenas in healthy ecosystems as a world heritage valued by the people of Kenya".

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



PREFACE



Lion and Spotted Hyena are Kenya's most revered carnivore species and are an important cultural heritage, that play a vital ecological role in the ecosystems within which they exist. However, both species face widespread decline across their range due to human-wildlife conflict, wildlife disease, habitat loss and general land use changes across Kenya.

This National Recovery and Action Plan for the Lion and Spotted Hyena is a foundation for building conservation effort and enhancing our conservation effectiveness for these two species. The plan has been developed through a consultative process that involved technical people, conservation experts from governmental and non-governmental organizations, and community stakeholders. The primary goal of this plan is to take forward the agenda of lion and spotted hyena conservation in Kenya.

The Recovery Plan has identified threats facing lions and hyenas and has prescribes actions that should be undertaken to realise their populations recovery. Key among the objectives of the plan is the need to work with communities, to consolidate efforts among all stakeholders, the need for continuous monitoring to establish population status and distribution across landscapes, and adoption of conservation units for targeted actions.

A vision, goal, five strategic objectives, and four pillars will guide the implementation of this Recovery Plan. The pillars include resilient ecosystems, engagement by all Kenyans, evidence-based decision-making, and sustainability and governance. In addition, the envisaged plan implementation will require both financial, human and material resources and we call upon all stakeholders including the County Governments, local and international stakeholders, development partners, and local communities to team up with government in support of the identified conservation actions.

I hereby invite all stakeholders to join the government in realizing our national collective goal of securing the lions and spotted hyenas for the benefit of all, both now and in the future.

Prof. Fred H. Segor, CBS
Principal Secretary
State Department of Wildlife



ACKNOWLEDGMENT



This National Recovery and Action Plan for Lions and Spotted Hyena was developed within a common framework for the conservation of endangered species in Kenya. It incorporates both national and international frameworks for the species, conservation. The plan is also anchored on a consultative and collaborative process, implementation of the strategy will only be successful through the collaboration of all Kenyans, national and international organisations.

I would like to thank all the communities, landowners who support wildlife on their land and all the conservation stakeholders both of whom remain committed to lion and spotted Hyena conservation and provided valuable input and insight into the development of this action plan.

I also acknowledge the support of the KWS technical team that comprised of Dr. Patrick Omondi (Team Leader), Dr. Shadrack Ngene, Mr. Linus Kariuki, Mr. Bernard Kuloba, and Miss Monica Chege as well as Dr. Yussuf Adan and Dr. Jenny Cousins of WWF for their technical assistance and input throughout the development of the recovery and action plan. Without your efforts, this recovery and action plan could not have been realised and launched.

I thank the University of Oxford, Wildlife Conservation Research Unit (WildCRU), Southern Rift Association of Land Owners (SORALO) and World Wildlife Fund-Kenya (WWF-K) for supporting the development of this Lion and Spotted Hyena Recovery and Action Plan. I thank Dr. Guy Western (SORALO), John Kamanga (SORALO), Peter Tyrrell (SORALO) and WildCRU, Dr. Alayne Cotterill (WildCRU), Lucy Wariungi (ACC), and Prof. David Macdonald (WildCRU) for facilitating the preparation of this recovery and action plan. Lastly, I thank County Government of Narok, University of Oxford, Wildlife Conservation Unit (WildCRU) and World Wildlife Fund (WWF), Born Free Foundation (BF) and Kenya Wildlife Trust (KWT) for providing the financial support required to prepare and launch the recovery and action plan.

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





ABBREVIATIONS

CITES	Convention on International Trade in Endangered Species
CMS	Convention on Migratory Species
CUMC	Conservation Unit Management Committee
CWC	County Wildlife Committee
D-BR&P	Director -Biodiversity Research and Planning
DG	Director General
EAC	East African Community
GPS	Global Positioning System
HWC	Human Wildlife Conflict
IUCN	International Union for Conservation of Nature
IUCN-SSC	International Union for Conservation of Nature - Species survival commission
KWCA	Kenya Wildlife Conservancies Association
KWS	Kenya Wildlife Service
LAPPSET	Lamu Port, South Sudan, Ethiopia Transport Corridor
LCTF	Large Carnivore Task Force
LCU	Lion Conservation Unit
NGO	Non Governmental Organization
PAC	Problem Animal Control
SGR	Nairobi- Kisumu Standard Gauge Railway
SORALO	South Rift Association of Landowners
WCMA	Wildlife Conservation and Management Act 2013
WWF	World Wildlife Fund



EXECUTIVE SUMMARY

Lions (*Panthera leo*) and spotted Hyenas (*Crocuta Crocuta*) are two of Kenya's best-known predators and play important ecological roles within savannah ecosystems, including influencing the abundance, behaviour, and distribution of prey. Both species are also facing wide-spread declines with fewer than 25,000 lions and 50,000 spotted hyena estimated to remain across the African continent. Consequently, Kenya represents a key stakeholder for the future of these species with populations existing both inside and outside the country's protected areas. Sadly, lion population is declining across the country and is currently listed as 'endangered' under the Wildlife Conservation and Management Act, 2013. Although information of the population trend of hyena is scanty, the species is listed as vulnerable under the Wildlife Conservation and Management Act, 2013. To combat these declines this document has been developed to work in congruence with current conservation efforts and is the second "Recovery and Action Plan for Lion and Spotted Hyena in Kenya", for the years 2019 – 2024.

This action plan was developed through a consultative planning process which, in accordance with the IUCN, CITES and CMS guidelines, was participative, transparent and informed by the best available science. In total, more than 300 people, representing over 70 government and non-governmental stakeholders, contributed to the process. Considering that large portions of lion and spotted hyena range are outside of Kenya's national parks and reserves, encouraging ecosystem-scale conservation initiatives and utilising ongoing conservation efforts of stakeholders was deemed vital to the success of the action plan and the persistence of both species. Leveraging the support of, and improving the coordination and collaboration amongst these stakeholders is the foundation of this strategic approach.

Across the country human-wildlife conflict, habitat loss and conversion, wildlife disease, infrastructure development, and poor conservation management are ranked as the top five threats to lion and spotted hyena conservation. This action plan looks to address these complex threats in a holistic and collaborative manner and aims for the following long-term vision: **"To sustain viable populations of lions and spotted hyenas in healthy ecosystems as a world heritage valued by the people of Kenya"**.

This will be achieved by focusing on five key objectives, each associated with a set of specific actions and an associated set of measurable targets to gauge performance. These are:

- 1. Establish and enhance collaborative landscape-level lion and spotted hyena conservation.**
- 2. Enhance human-lion and human-spotted hyena coexistence.**
- 3. Improve education and awareness of lion and spotted hyena conservation status and ecology.**
- 4. Facilitate evidence-based decision making for lion and spotted hyena conservation.**
- 5. Build integrated and sustainable structures to facilitate lion and spotted hyena conservation**

These objectives are bold and forward thinking and embrace the twin benefits of devolution and collaboration to achieve country-wide conservation of lion and spotted hyena. A central pillar to achieving this vision is the adoption of lion and spotted hyena conservation units. The devolution of responsibilities to regional committees and coexistence working groups comprised of conservation stakeholders will create collaborative ecosystem-based institutions to implement locally relevant activities. In turn this will provide support to KWS to achieve the ultimate vision of this recovery and action plan.



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1. Introduction and Background

1.1 The rationale for species specific plans

Lion and spotted Hyena are two of Kenya's most iconic but threatened predators. The lion is a charismatic large mammal and has been revered in cultures across the globe for thousands of years. The iconic maned male is now encountered daily by millions of people worldwide on items such as bank notes and company emblems to TV documentaries and on social media. The spotted Hyena, while less well known and revered than the lion, can be found in nearly every location a lion would be found including other locations that lions do not occur, and threats to their survival are closely linked. Both species are archetypes of the large mammal community in sub-Saharan Africa, a community which supports a rich and vibrant tourism economy across the region, driving both local and national economic growth. Not only are these species important for their cultural and economic draw, but both lions and spotted Hyena are top predators who play crucial ecological roles within their ecosystems. Despite their iconic nature and ecological importance, lions are facing widespread decline across their range. Within Kenya lions are declining, and the spotted Hyena is now listed as 'vulnerable' and the lion as 'endangered' under the Wildlife Conservation and Management Act, 2013. Consequently, this "Recovery and Action Plan for Lion and Spotted Hyena in Kenya for 2019 – 2024" has been developed as a template to guide conservation action for the two species across the country with an aim to ensure their long term protection.

1.2 Lion ecology and conservation

1.2.1 Lion ecology

Africa's largest free-ranging carnivores and one of the continent's most iconic species, lions (*Panthera leo*) can weigh up to 240kg. Lions, which show sexual dimorphism in body size and vary behaviourally, are considered social felids (Schaller, 1972). Lions are the most social of all felids and live in fission-fusion groups, the foundation of which is a pride of females which are usually related. Male lions typically form coalitions and are transient to the pride (Packer et al., 1990). Communal care of young, cooperative hunting, defence of kills, and the dispersion and abundance of resources have all been proposed as explanations for lion sociality (Packer et al., 1990, Kruuk and Macdonald, 1985, Schaller, 1972, Mosser and Packer, 2009). Around two-thirds of female young will generally remain within their natal prides with some females and all males being forced to leave when they reach sub-adulthood. Pride size and composition vary widely between populations (Van Orsdol et al., 1985) and in Kenya, prides can be small, such as an average of 1.62 sub-adult and adult females in the Amboseli ecosystem (Dolrenry, 2013), or larger such as an average of 9.2 adult females recorded in the Maasai Mara (Ogutu and Dublin, 2002). Prey abundance is commonly cited as a principal determinant of pride size (Van Orsdol et al., 1985), but recent studies suggest that small prides sizes could also be an adaption used by lions living within human-dominated landscapes (Dolrenry, 2013). Prides and coalitions establish and defend territories that vary in size depending on resource availability and pride size (Loveridge et al., 2009, Kruuk and Macdonald, 1985, Macdonald, 1983).

Lions breed year-round and are usually polygamous. Female lions keep their cubs in hiding in dense habitat or rough terrain until they are about 8 weeks old. The presence of such refuge habitat structures is important in protecting young cubs from other carnivores as well as buffalo, elephant and people. The cubs are weaned at between 7 and 10 months, however, they are dependent upon adults in the pride until they are at least 16 months old (Estes et al., 1993, Schaller, 1972). Females are mainly responsible for the care of the young and cub mortality is lowest when related females in the same pride synchronously reproduce and cross-suckle. Synchronous reproduction is therefore common in prides (Mosser and Packer, 2009).



Male lions remain in their natal prides until sub-adulthood (approx. 2 years) or sexual maturity (approx. 3 years) when they are forced to leave, usually by new incoming adult males. Adult males can be solitary but are often in coalitions of 2-4 individuals that are usually comprised of littermates of similar ages, or formed between unrelated males in the absence of littermates (Packer and Pusey, 1982). Males remain nomadic until they are strong enough to challenge dominant pride males and can cover several hundred kilometres (often through human-dominated landscapes) as they search for female prides to take-over (Elliot et al., 2014). The nomadic phase typically lasts three years, and it is this demographic that is often most prone to human-lion conflict (Elliot et al. 2014b). Nomadic males must displace incumbent pride males and coalitions to become pride males and gain reproductive access to females. Their ability to do this has been shown to be a factor of their age and the size of the coalition (Borrego et al., 2018). Fights between males often result in death or serious injury. Successful males that take over prides have, on average, about 2 years before another younger, stronger coalition will replace them. During pride take-overs, males will often kill cubs within the pride to bring their mothers into oestrous early (Packer and Pusey, 1983). Having successfully taken over, new pride males will establish and expand their territory and may often associate with several groups of females (Mosser and Packer, 2009). However, almost all aspects of lion behaviour vary between different ecological circumstances.

Lions are mostly nocturnal hunters with peaks in activity shortly after dark and before dawn, although they do show periods of activity and hunt opportunistically during the day. They preferentially hunt large wild ungulates ranging between 190-550 kg (Macdonald et al., 2015, Smuts et al., 1980, Hayward and Kerley, 2005) but also take livestock in areas where they co-occur (Bauer et al., 2015b, Ogada et al., 2003). Hunting can be done cooperatively, particularly when hunting large or difficult prey, which would be hard to kill alone. Although females capture most of the small to medium-sized prey, the presence of adult male lions is important when capturing larger, more dangerous prey such as buffalo, elephant or giraffe (Funston et al., 2001).

1.2.2 Lion conservation

The African lion is CITES listed (see section 1.3.1) and ranked 'Vulnerable' by the IUCN Red List (Bauer, Nowell, and Packer, 2008) and in Kenya the lion is listed as a protected animal in the 1986 CITES Act under Schedule I part I. The conservation of the species poses novel challenges. Lions require a stable prey base and being a wide-ranging species, they require large areas, and often cannot be conserved in protected areas alone and therefore commonly come into conflict with humans where they co-occur (Macdonald and Loveridge, 2010, Treves and Karanth, 2003).

The African lion is an apex carnivore and adults have no predators except for man, although Hyenas and leopards will kill lion cubs if given an opportunity. The main threats to lions are detailed later in this document but when considering the management of this species it should be noted that humans not only impact lion survival by killing them or reducing the availability of prey and habitat but also cause lions to make sub-optimal changes to their behavioural ecology to avoid being killed by people (Oriol-Cotterill et al., 2015) which likely impacts the long-term viability of populations. Paralleling trends in other large mammals, lion populations across Africa have rapidly declined in the last century. Estimates suggest that less than 20,000 to 35,000 lions remain in Africa today, two-thirds of which reside in 10 lion strongholds in Eastern and Southern Africa (Riggio et al., 2013, Bauer et al., 2015a). Conservation of free-ranging lions is now a global priority. Within Kenya, lions are classified as endangered by the Wildlife Conservation and Management of Act 2013 (WCMA 2013).



1.2.3 Population status of lions in Kenya

Lions are notoriously difficult to count accurately since they naturally occur at low density, are nocturnal, cryptic and wide ranging. As such, across Africa a variety of indirect methods such as track counts, call-in survey and expert opinion have been used in the past. The use of different methods of variable reliability (Gopalaswamy et al., 2015, Belant et al., 2019, Dröge et al., 2020) has hindered the ability to assess lion population trends, plan conservation interventions and measure their effectiveness.

Therefore, as part of implementation of the previous Conservation and Management Strategy for Lions and Spotted Hyena in Kenya (2009-2014), Kenya embarked on a national survey to obtain rigorous, scientifically robust and transparent estimates of population size in lion source populations using spatially-explicit capture-recapture (SECR) methods (Elliot and Gopalaswamy, 2017) and to obtain an understanding of habitat occupancy of lions and other large carnivores in the rest of the country (Madsen et al., 2020), where rigorous SECR methods are not feasible to conduct. Data collection for the national survey began in August 2018 and was due to be completed by June 2020. However, due to insecurity in some areas and the global COVID-19 pandemic this initiative is incomplete. Thus, for areas which were not surveyed using rigorous methods, guess estimates were acquired from honorary wardens and other researchers working in Wajir, Garissa, Mandera, Tana River, Marsabit, Turkana, West Pokot Baringo, Lamu Counties and other areas in Samburu and Isiolo Counties. The surveys established that Kenya has an estimated population of about 2,489 lions (Table 1). It is noted that comparisons between sites and over time are valid only when using data that have been collected and analysed using the same rigorous methodologies. Future surveys using SECR methods are currently being planned and will be useful to assess population trends. Producing regional or national totals by adding up estimates of different quality could be justified to give a general total, but should not be relied upon for accurate descriptions of lion status. Future lion surveys should focus on strategies to best understand the status of lions in areas listed with guess estimates.

Details of the specific localities for which numbers are provided (Table 1) are provided in Appendix 1A and details of persons who provided these guess estimates of lions are provided in Appendix 1B. In addition, Elliot et al. (2020a) describes in details the methodology used to obtain the rigorous estimates of the lions using the SECR model.



Table 1: Summary table of results for sightings-based surveys conducted within an SECR framework (areas 1-12) together with guess estimates provided by local stakeholders (areas 13-37)

Area surveyed	Area size (km ²)	Survey Method	Number of lions	Year of Estimate	Source
Maasai Mara Ecosystem	3,000	SECR	556 (24)	2018	Elliot et al., 2020a
Shompole and Olkirimatian	409	SECR	25 (4)	2018	Elliot et al., 2020a
Ambosemi Ecosystem	4,512	SECR	141 (24)	2018	Elliot et al., 2020a
Tsavo Conservation Area	28,419	SECR	459 (40)	2019	Elliot et al., 2020a
Nairobi National Park	147	SECR	25 (6)	2018	Elliot et al., 2020a
Lake Nakuru National Park	135	SECR	11 (1.5)	2017	Elliot et al., 2020b
Laikipia & Meru Ranches	3,752	SECR	184 (8.3)	2019	Elliot et al., 2020a
OI Pejeta	365	SECR	49 (10.5)	2019	Elliot et al., 2020a
Solio Ranch	161	SECR	66 (8.3)	2019	Elliot et al., 2020a
Sections of Samburu, Isiolo, Laikipia and Meru Counties	3,204	SECR	17 (2.8)	2019	Elliot et al., 2020a
Meru Conservation Area	1,016	SECR	55 (8)	2019	Elliot et al., 2020a
Total estimated by systematic SECR surveys			1,588 (56)		
Soysambu Ranch	190	IndID	~5	2020	KWS Database, 2020
Southern Rift Region	1,200	Guess	~45	2020	Guy Pers. Comm., 2020
Kuku Ranch	960	Guess	~60	2020	Muller Pers. Comm., 2020
Machakos Ranches	280	Guess	~10	2020	Mbithi Pers. Comm., 2020
Greater Nairobi National Park Ecosystem	401	Guess	~20	2020	KWS Database, 2020
South Turkana –Nasalat Ecosystem	2,191	Guess	~5	2020	KWS Database, 2020
Garissa County	44,753	Guess	~150	2020	HCP Database, 2020; Ali Pers. Comm., 2020; NRT, Database 2020
Wajir County	55,841	Guess	~200	2020	HCP Database, 2020; Ali Pers. Comm., 2020; Sharmake Mohamed Pers. Comm., 2020
Mandera County	25,798	Guess	~130	2020	Hussein Ahmed Mahat Pers. Comm., 2020 (Honorary Warden, Mandera)
North Horr Sub-County	38,953	Guess	~10	2020	Lesilau Pers. Comm., 2020
Moyale Sub-County	9,390	Guess	~15	2020	Lesilau Pers. Comm., 2020



Area surveyed	Area size (km ²)	Survey Method	Number of lions	Year of Estimate	Source
North Horr Sub-County	38,953	Guess	~10	2020	Lesilau Pers. Comm., 2020
Moyale Sub-County	9,390	Guess	~15	2020	Lesilau Pers. Comm., 2020
Lamu County	6,273	Guess	~40	2020	NRT, Database 2020 & KWS Database, 2020
Kiunga/ Awer conservancies, Lamu	1,869	Guess	~20	2020	NRT, Database 2020
Tana River County	35,000	Guess	~15	2020	NRT, Database 2020 & KWS Database, 2020
Tana River Conservancies & Tana River Primates Reserve	376	Guess	~25	2020	NRT, Database 2020 & KWS Database, 2020
West of Marsabit	14,775	Guess	~10	2020	Lesilau Pers. Comm., 2020
Nairobi Ranch, Lamu	47	Guess	~9	2020	Raabia Hawa of Ulinzi Africa Foundation, 2020
Hanshak-Nyongoro Community Conservancy, Lamu	779	Guess	~17	2020	Raabia Hawa of Ulinzi Africa Foundation, 2020
Shaba National Reserve/ Nakuprat Gotu	130	Guess	~10	2020	NRT, Database 2020; Ewaso Lions 2020
Biliqo Bulesa Conservancy	3,773	Guess	~20	2020	NRT, Database 2020; Ewaso Lion, 2020
Sera and Melako conservancy	8,896	Guess	~10	2020	NRT, Database 2020
Songa, Shurr and Jaldesa conservancies	6,329	Guess	~15	2020	NRT, Database 2020
Greater Namunyak conservancy	8,500	Guess	~30	2020	NRT, Database 2020; Ewaso Lions, 2020
Meibae/ Nkotieya conservancies	1,171	Guess	~5	2020	NRT, Database 2020
Naibunga conservancy	466	Guess	~15	2020	NRT, Database 2020
Ishaqbini conservancy	899	Guess	~10	2020	NRT, Database 2020
Total estimated by guesses			~901		
Total estimated population in Kenya			~2,489		

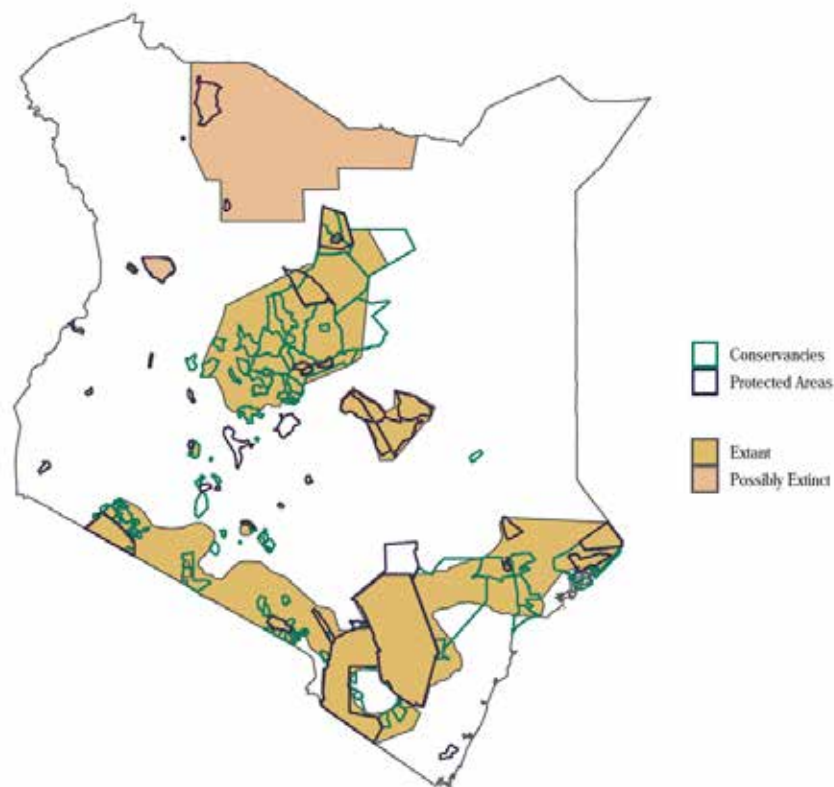


Table caption: The preliminary SECR results (areas 1-12) are presented with posterior standard deviations in brackets. There are a number of areas known to contain lions within which the systematic SECR surveys were not carried out. The figures listed in areas 13-37 above are based on guess estimates and opinions sought from people who work within the areas listed. These figures are not based on any scientific surveys and are listed here in recognition that lions likely occur in these areas and that systematic surveys should be carried out in some of these areas to provide reliable figures. It is noted that the SECR estimates are for lions over the age of 1 year, while the guess estimates are for lions of all ages. The national total estimates produced by adding up estimates acquired using different methods provides an opinion on the possible number of lions in Kenya.

1.1.1 Range of lions in Kenya

The possible range of breeding lion populations in Kenya is thought to be roughly 86,940 km², with 41% of lion range falling within Kenya's National Parks and Reserves, 40.8% in conservancies and 18% are outside of protected areas or conservancies (Figure 1 and Figure 2). Additionally, an estimated 4,037,552 people and 21,630,754 livestock live within 10km of lion range (Figure 3).

Lion Range in Relation to National Park, Reserves and Conservancies



Data from WildCRU, IUCN, Nic Elliot, KWCA and ACC

Figure 1: Map showing Kenya's approximate current (extant) and possible (possibly extinct) lion range in relation to conservancies and protected areas

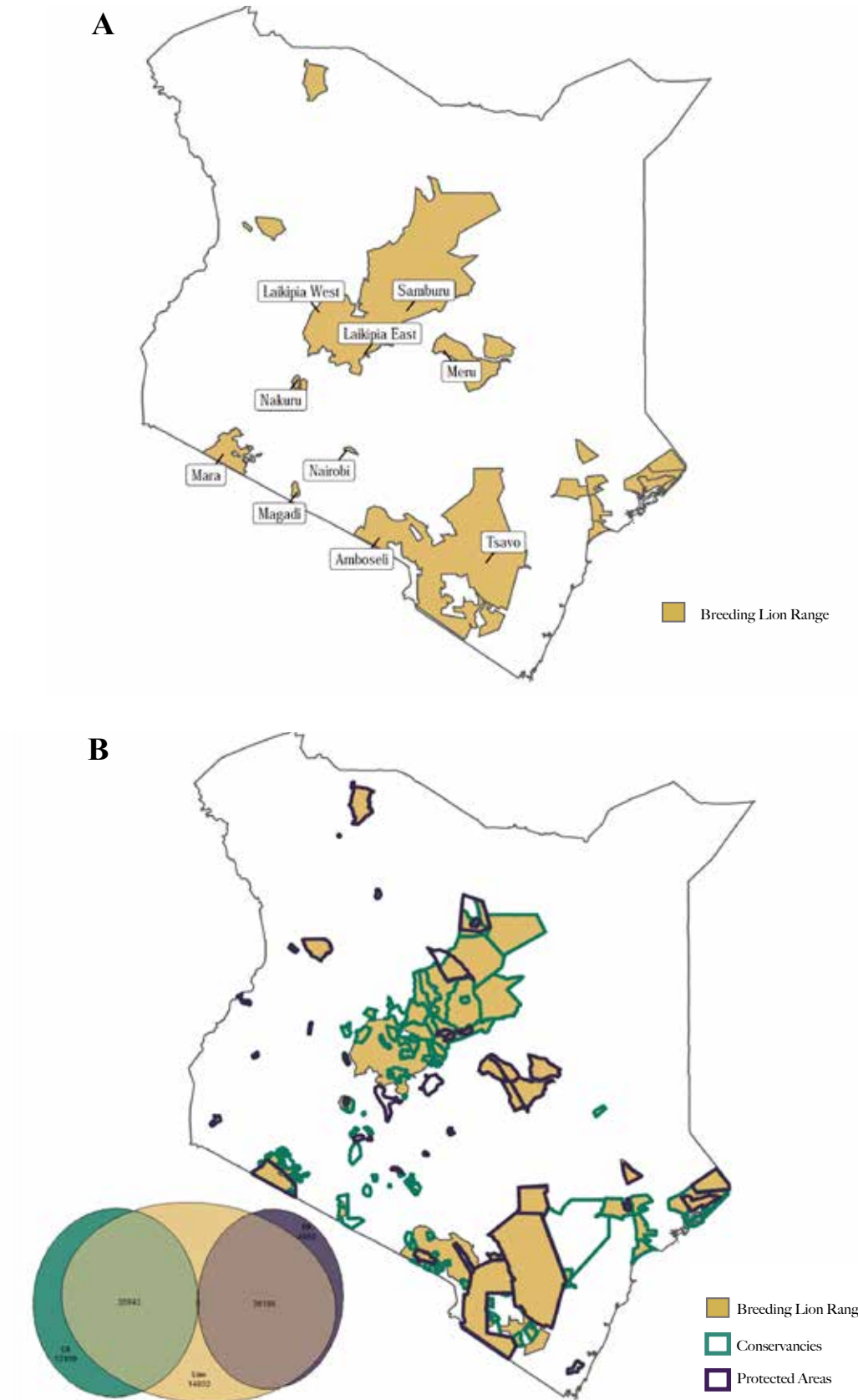


Figure 2: Map showing (A) the approximate range of breeding lion populations (Elliot, 2018) being surveyed as part of the National census and locations of stakeholder meetings, (B) the proportion of Kenya's breeding lion range falling within protected areas and conservancies (KWCA, KWS)

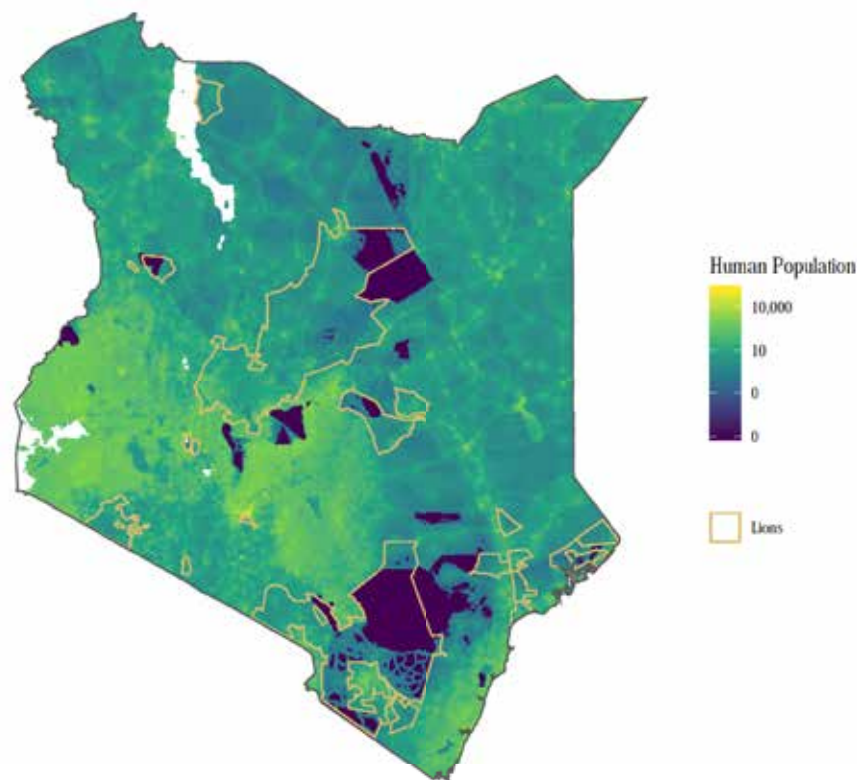


Figure 3: Map showing human population densities (worldpop.org) within and surrounding Kenya's breeding lion range (Elliot, 2018).

1.3 Spotted Hyena ecology and conservation

1.3.1 Spotted Hyena ecology

Spotted Hyenas are the second largest (40-90 kg) and most abundant large carnivore in Africa. Unlike almost all other mammalian species, sexual dimorphism results in males being smaller and socially subordinate to females (Holekamp and Dloniak, 2010). Unlike lions, which are predominantly a bushland-savannah species, spotted Hyenas are found in a diverse range of habitats ranging from deserts to high elevation mountain forests. Spotted Hyena behaviour has similarly been shown to be highly adaptable but several behavioural and social traits remain constant across populations. Spotted Hyenas live in complex social groups called clans that range in size from five to more than eighty (Mills and Hofer, 1998). Similar to lion prides, clans can be considered fission-fusion societies meaning that the composition and size of clans change through splitting into smaller sub-units for periods of time (Smith et al., 2008). Hyenas typically give birth to 1 to 2 cubs which remain dependent on their mother's milk for up to a year. Cubs are reared in a communal den but unlike lions, Hyena females do not cross suckle. Clans are based around maternal kinship with strict hierarchies and composed of related mothers and offspring (Holekamp and Dloniak, 2010). Female offspring remain within the clan but most males offspring disperse from their natal clans between the ages of two and six (Frank, 1986). Only a small portion of dispersing males successfully immigrate into other clans (Holekamp and Dloniak, 2010).

Spotted Hyenas are highly successful hunters, and their favoured prey overlaps directly with that of lions putting them in direct competition. Like lions, spotted Hyenas will also regularly scavenge or steal kills from other carnivore species, even stealing from lions if outnumbering them sufficiently (Kruuk, 1972, Eaton, 1979)



1.3.2 Spotted Hyena conservation

Spotted Hyenas do better in many human-dominated landscapes than lions and can thrive where lion densities are lower. The IUCN redlist assessment estimates 27,000 to 47,000 spotted Hyena occur across sub-Saharan Africa. Hyenas suffer from many misconceptions, including associations with witchcraft in many parts of their range, which often make them feared or disliked by people. The species otherwise faces similar threats to lions, which are covered in detail in a later section. As with lions, spotted Hyenas make behavioural changes to avoid being killed by humans, as well as by lions (Boydston et al., 2003, Kolowski and Holekamp 2009). When considering their conservation in human-dominated landscapes the impacts humans have on the behavioural ecology of Hyenas should be considered, not just the direct lethal effects. Hyena populations and range are little understood but their population is considered to be in decline across the continent except for several protected area populations within eastern and southern Africa where their populations are considered stable (IUCN Redlist). The IUCN Hyena specialist group is currently updating its range and populations estimates to provide a current and reliable range map and population estimates for Hyena ranges states. The IUCN Redlist classifies spotted Hyena as 'Species of Least Concern'. Within Kenya, spotted Hyenas are listed as vulnerable under WCMA, 2013, however, very little information exists on their range or population numbers (Figure 5).

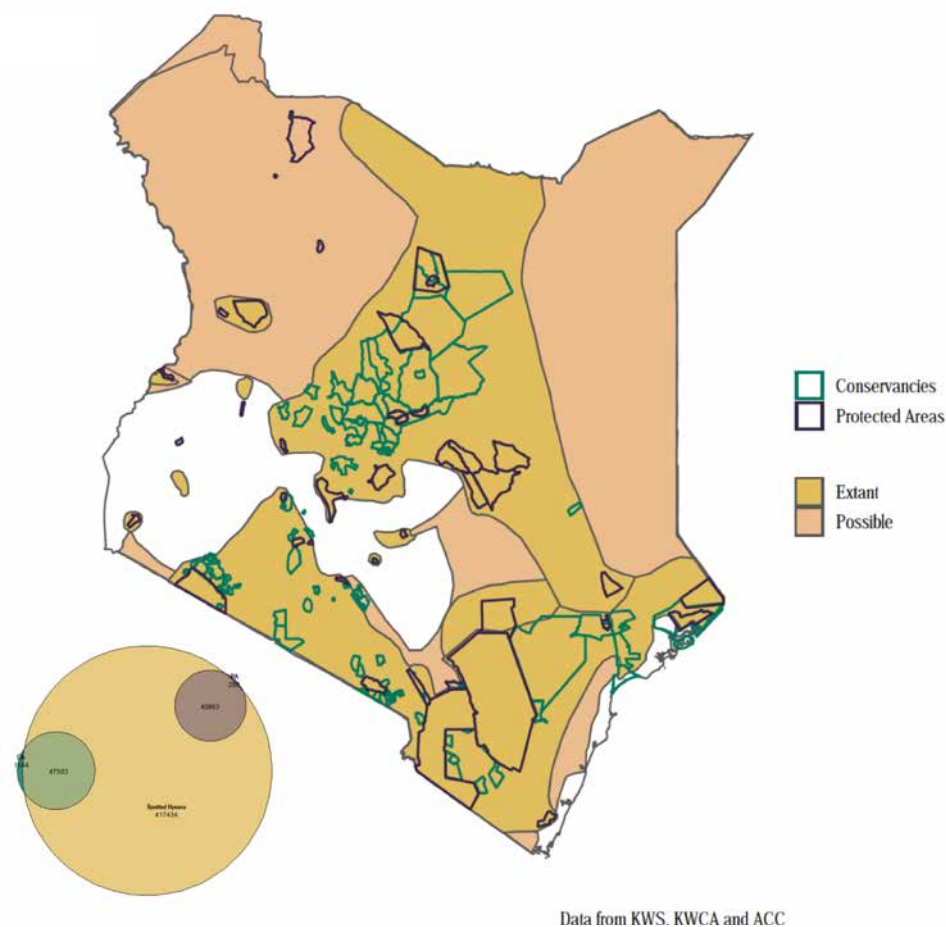


Figure 5: Map showing the distribution of spotted hyenas in Kenya

**Table2:** Estimate of some spotted hyena populations.

Conservation Area	Type Method	Estimate	Year	Source
Meru National Park	Call back - capture - recapture	98	2016	KWS
Aberdares National Park	Call back - capture - recapture	247	2015	Manchester Metropolitan University
Tsavo Ecosystem	Spoor transect	3914	2015	Henschel et al. (2014)
Amboseli	Call back - capture - recapture	346	2014	KWS

1.4 International and national framework

1.4.1 International framework (adapted from Trouwborst et al. (2017) and Hodgetts et al. (2018))

There are several international conventions to which Kenya is a signatory, which will influence the conservation of lions and spotted Hyena. This includes the Convention on International Trade in Endangered Species (CITES), the Convention on the Conservation of Migratory Species of Wild Animals (CMS), and the African Convention.

CITES' purpose is to prevent species from being over-exploited through international trade by requiring its parties to impose restrictions on the international trade of plants and animals (and the parts and derivatives thereof) which belong to species, subspecies or populations listed on one of the CITES appendices. Since 1977, African lion populations are listed on Appendix II, thus trade in the species is permissible provided that it is not detrimental to the species' survival, although Kenya has been lobbying for an uplifting of the species to Appendix I.

The CMS addresses the conservation of migratory species, and like CITES also lists species in appendices. In 2014, Kenya submitted a proposal to include the Asiatic lion on Appendix I and all other subspecies on Appendix II, which was subsequently revised to propose that all populations of *Panthera leo* be listed on Appendix II. Although lions are yet to be listed but may be listed soon, Parties to the Convention must endeavour to conclude legally binding 'agreements' for the conservation and management of Appendix II species. CMS parties are further encouraged to conclude 'agreements' in respect of taxa whose members 'periodically cross one or more national jurisdictional boundaries'. The Kenya – Tanzania border represents one of the largest remaining transboundary populations of lions, and any up-listing of lions may mandate Kenya and Tanzania to conclude legally binding agreements on lion management.

The 1968 African Convention, administered by the African Union, is in force for 21 lion range states, including Kenya. The lion – alongside six other large carnivores – is listed as a protected species in the Annex to the Convention. Consequently, contracting parties are under an obligation to ensure that lions are 'totally protected' throughout their territories, which includes prohibiting their hunting, killing and capture. As lions are subject to the flexible 'Class B' regime, this prohibition may be lifted 'under special authorization' at the discretion of the 'competent authority'. This Convention places restrictions on certain means of capture and killing, including a prohibition on the use of poisoned baits. Trade in lions and lion trophies must be regulated, and their export, import and transit made subject to an authorization 'which shall not be given unless the specimens or trophies have been



obtained legally'. Regarding lion habitat, the Convention requires parties to maintain, expand and/or newly establish 'conservation areas' – a term covering 'strict nature reserves', 'National parks' and 'special nature reserves' – so as to 'ensure conservation of all species and more particularly of those listed ... in the annex'. Concerning the peripheries of such protected areas, parties 'shall establish, where necessary, around the borders of conservation areas, zones within which the competent authorities shall control activities detrimental to the protected natural resources'.

1.4.2 National framework

Lion and spotted Hyena conservation in Kenya is guided by a Recovery and Action Plan which sits within the broader national frameworks of wildlife and habitat conservation. The justification for combining lions and spotted Hyena into a single Recovery and Action plan is two-fold. Firstly, the two species are considered to face similar threats. Secondly, lion conservation is seen as an effective vehicle to enable spotted Hyena conservation which is commonly ignored. The development of this Lion and Spotted Hyena Recovery and Action plan is guided by five key National frameworks:

(i) The Constitution of Kenya 2010

Conservation of wildlife is mandated under Section 69 of the Constitution of Kenya 2010 which requires the State to sustainably manage natural resources (including wildlife) for the benefit of all Kenyans.

- Section 18 Stipulates the formation of County Wildlife Committees (CWC) to oversee the implementation of management plans on community and private land, bring together conservation stakeholders, participate in county-level planning, and verify compensation claims.
- Section 24 and 25 state that a National Wildlife Compensation Scheme shall be established to compensate for personal injury or death or damage to property.
- Section 44 stipulates that every national park, marine protected areas, national reserve, wildlife conservancy and sanctuary should be managed in accordance with a management plan.
- Section 49 of the Wildlife Act stipulates that KWS "may develop and implement recovery plans for the conservation and management of all the species listed under the Seventh Schedule."
- Section 75 states "In furtherance of the spirit mutual coexistence in the framework of human-wildlife conflict, every decision and determination on the matter of conservation and management of the wildlife resource shall not be exercised in a manner prejudicial to the rights and privileges of communities living adjacent to conservation and protected areas:"
- Section 78 and 79 allow for the killing of wildlife considered to be a problem animal or in self-defence.
- Section 92- 100 defines the illegality and fines for the killing of wildlife except in self-defence.
- Section 95A: Under the amendments of January 2019 poisoning of any wildlife species is now a stand-alone with a penalty of a minimum of 5 million Ksh and/or a minimum of 5 years' imprisonment.

(iii) The National Wildlife Policy

The National Wildlife Policy (NB still under development) is intended to provide for an efficient and effective policy, legal and institutional framework for the conservation and management of Kenya's wildlife resources. The policy lays out the guiding principles for wildlife conservation in Kenya which include:

1. Wildlife is a public resource;
2. Integrated and ecosystem-based management;
3. Wildlife management is a form of land-use;
4. Sustainability and governance;
5. Access and equitable sharing of benefits;



6. Intra- and inter-generational equity;
7. Inclusive and participatory approaches;
8. Devolution;
9. Use of scientific and indigenous knowledge;
10. Precautionary principle;
11. Adaptive management;

(iv) National Wildlife Strategy 2030.

The National Wildlife 2030 strategy aims to ensure Kenya's wildlife is healthy, resilient and valued by Kenyans. The strategy is based on four pillars: (i) resilient ecosystems; (ii) engagement by all Kenyans; (iii) evidence-based decision making; and (iv) sustainability and governance.

Within the strategy, species-specific conservation is identified as a key strategic objective within the resilient ecosystems pillar. Under this pillar, goal 2.1 aims to "Catalyse the conservation of endangered and threatened species through the development and implementation of conservation tools for prioritizing, monitoring, and managing wildlife species". In addition, strategy goal 2.3 "Aims to promote coexistence to reduce HWC."

(v) Kenya Wildlife Service strategic plan 2018-2022

The Kenya Wildlife Service Strategic plan guides how the institution should deliver its mandate of sustainably managing Kenya's wildlife and habitats for the benefit of nature and humanity. The strategy is founded on three pillars; (1) commitment to conservation and leadership, (2) collaboration with stakeholders, (3) enterprise to ensure financial stability.

These frameworks form the basis for this species-specific recovery and action plan, and the development and implementation of this action plan are informed by international and national policy frameworks.

1.5 Strategic planning process

This strategic planning process (see below) followed the recommendations of the IUCN-SSC Species Conservation Planning Sub-Committee and the Guidelines for the Conservation of Lions in Africa 2018 published jointly by CMS, CITES, IUCN. In accordance with the IUCN guidelines, the strategic planning process was participative, transparent and informed by the best available science. This was achieved through a six-step process (Figure 6) which involved:

(i) the evaluation of the existing strategy and consolidation of the best available information, (ii) a strategic planning workshop, (iii) multiple stakeholder workshops, (iv) the development of the action plan, and (v) stakeholder review and comment, (vi) a final stakeholder workshop to validate the action plan.

Our planning process was intended to be consultative. A two-day strategic planning workshop and 12 regional stakeholder meetings involved more than 300 people who represented over 70 government and non-governmental stakeholders and provided input to the development of this document.

Strategic planning workshop: A two-day workshop was held on June 27th and 28th 2018 and brought together 65 key decision-makers from various stakeholder groups including KWS, KWCA, lion and Hyena research groups (local and international), local and international conservation NGOs, and representatives from the tourism sector. During the workshop participants completed an evaluation of the existing strategy, identified the current threats, interventions, and opportunities for lion and Hyena conservation, and drafted a vision and goals for the current action plan.

Stakeholder engagements: 12 regional stakeholder meetings were conducted in ten key lion and



Figure 6: Graphic of the strategic planning process used to develop the lion and spotted Hyena recovery and action plan. Hyena population areas across the country between July and November 2018. Regional meetings involved approximately 20-40 stakeholders per meeting, including representatives from county government, local communities and community conservancies, KWS area wardens, conservation NGOs and tourism operators. Stakeholder participation was voluntary and views expressed during these meetings represent an important insight into local perceptions but are not an expression of a representative democracy.

A Status, Threats, Opportunities (STOP) methodology (Appendix 1) was developed and used to capture information relating to stakeholders' opinions of lion and Hyena conservation in each region. Information captured during stakeholder meetings included:

- (i) Awareness of the existing strategy;
- (ii) Lion and Hyena presence and conservation status;
- (iii) The willingness of participants to see lion and spotted Hyena populations maintained;
- (iv) Current threats, interventions and opportunities for conservation.

To rank the importance of conservation, threats, interventions, and opportunities listed by stakeholders during regional meetings a salience analysis was used. Salience analysis (Smith and Borgatti, 1997) take into account how frequently an threat, intervention, or opportunity was listed by stakeholders and also considers the its position on the list.

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2. Situational Analysis – The Status of Lions and Spotted Hyena Conservation in Kenya

2.1 Review of previous conservation and management strategy

The previous *Conservation and Management Strategy for Lions and Spotted Hyena in Kenya (2009-2014)* was evaluated using its log-framework and progress indicators. An evaluation tool was developed and completed by participants who attended the strategy meeting on June 27th, 2018. Evaluation scores of the expired strategy revealed that no activity or objective was fully achieved (Appendix 2- Figure 1). Lack of funds to implement the strategy, poor coordination of conservation activities between KWS and stakeholders, and setting of unrealistic targets were cited as the main barriers to effective implementation of the strategy. It is important to highlight many of the objectives and activities proposed in the previous strategy have been implemented by conservation stakeholders working in specific landscapes (see current interventions, section 2.4)

Strategic Objective	Achievement Score	Implementation Status
Data collection and utilization of information in the conservation and management of lions and spotted hyenas in Kenya	26%	Moderate Achieved
To work with communities to enhance awareness and promote coexistence with the two species.	27%	Moderate Achieved
To change wrong perceptions on the species.	26%	Moderate Achieved
To enhance conservation education in learning institutions.	9%	Poor Achievement
To advocate and lobby for a national land use policy that integrates socio-economic development and conservation of habitat for lion, hyaena and their prey	14%	Poor Achievement
To minimize human - lion/ hyaena conflict and related issues.	25%	Poor Achievement
To develop and implement conservation and management policy on lion's and hyaenas in both protected areas and rangelands	18%	Poor Achievement
To establish an institutional framework to coordinate research, information, collection, data storage and dissemination on lions and hyaenas/large carnivores.	37%	Moderate Achieved

Figure 7: Evaluation grid showing achievement scores and implementation status of the previous strategy's objectives

2.2 Status and conservation priorities for lion and spotted Hyena populations

Regional meetings revealed that conservation stakeholders perceived there to be sufficient protection and conservation efforts in place to ensure key lion and spotted Hyena populations would still be present within their regions in ten years' time. However, in several regions, specific areas with permanent lion and Hyena populations were identified as being likely to disappear in the next few years. Lion populations within Olkeri group ranch (Magadi), Biliqo-Bulesa conservancy (Isiolo region), Taita Ranches (Tsavo region), and Kualalu ranch (Tsavo region) were all identified by stakeholders as lacking sufficient protection to ensure the population would still be present in 10 years. Spotted Hyena populations in Kaputei South group ranch (Amboseli) and South Kitui National Reserve (Tsavo region) were also identified by stakeholders as lacking sufficient protection to ensure the population would still be present in 10 years.

Across the lion range, conservation stakeholders had differing priorities for lion and spotted Hyena conservation. The majority of stakeholders (82%) wished to see lion populations increase in national parks and reserves. For lion populations outside of national parks and reserves, 50% of stakeholders desired to see lion populations increase, while 42% of stakeholders wanted to see current populations maintained (Figure 8). Conversely, stakeholders wished to see Hyena populations in parks and reserves maintained (41%) or increased (46%) but wished to see Hyena populations outside of protected areas decrease (43 %; Figure 9).

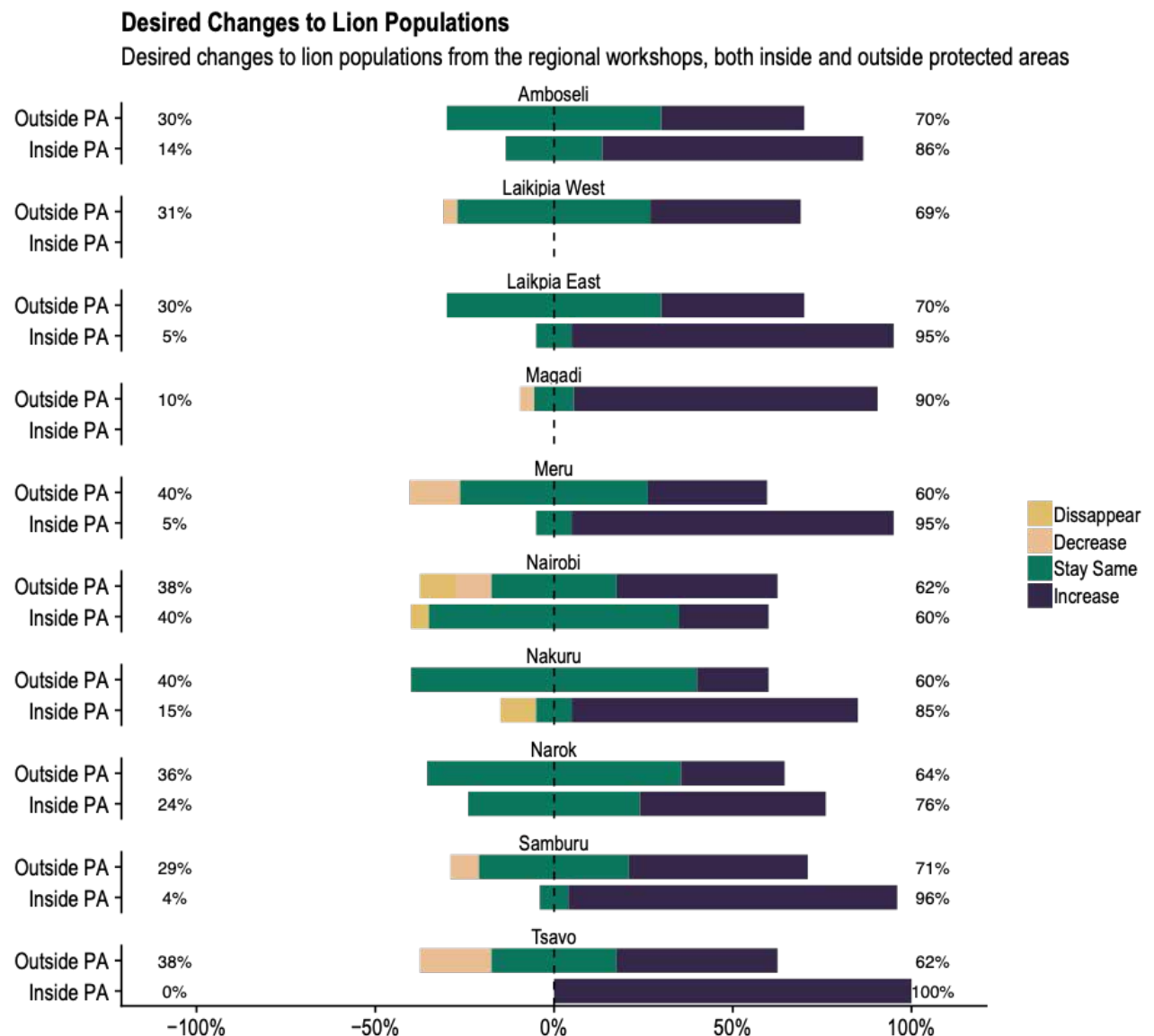


Figure 8: Likert-scale graph showing the desired changes in lion populations expressed by participants in regional stakeholder meetings. Percentages at the end of each row represent the proportion of respondents with positive and negative views towards maintaining or increasing lion populations.

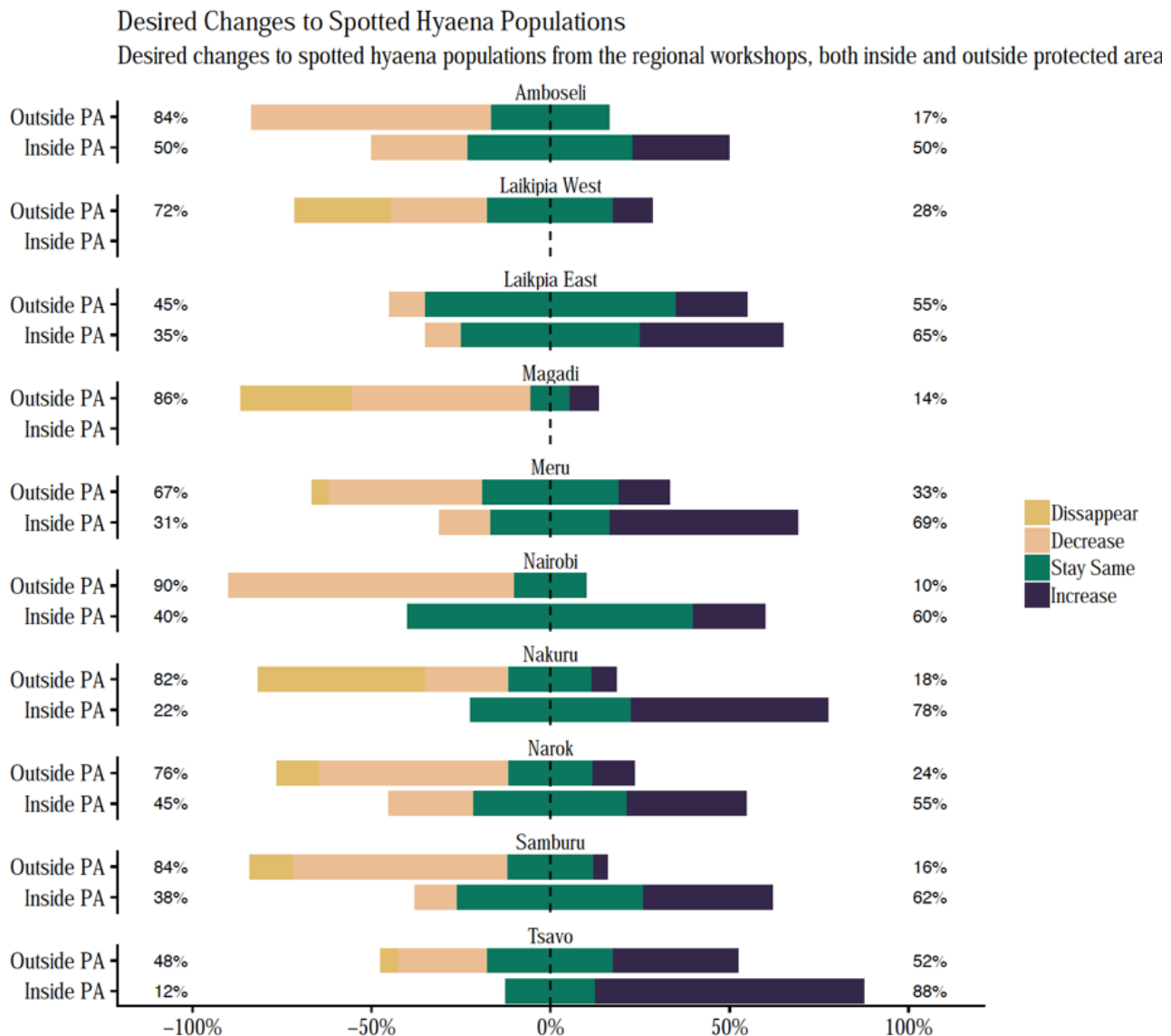


Figure 9: Likert-scale graph showing the desired changes in Hyena populations expressed by participants in regional stakeholder meetings. Percentages at the end of each row represent the proportion of respondents with positive and negative views towards maintaining or increasing spotted Hyena populations.

2.3 Threats facing lions and spotted Hyena conservation in Kenya

Four broad categories of threats facing lion and spotted Hyena in Kenya were identified; namely geopolitical, national policy, landscape management and proximate threats (Figure 10 and 11, Appendix 2 – Figure 2). Geopolitical threats such as climate change, corruption and poverty were acknowledged by stakeholders to be beyond the scope of a species-specific action plans. However, the interlinked nature of these threats means that they must be tackled in a holistic manner. Across the country human-wildlife conflict, habitat loss and conversion, wildlife disease, infrastructure development, and poor conservation management are ranked as the top five threats to lion and spotted Hyena conservation.

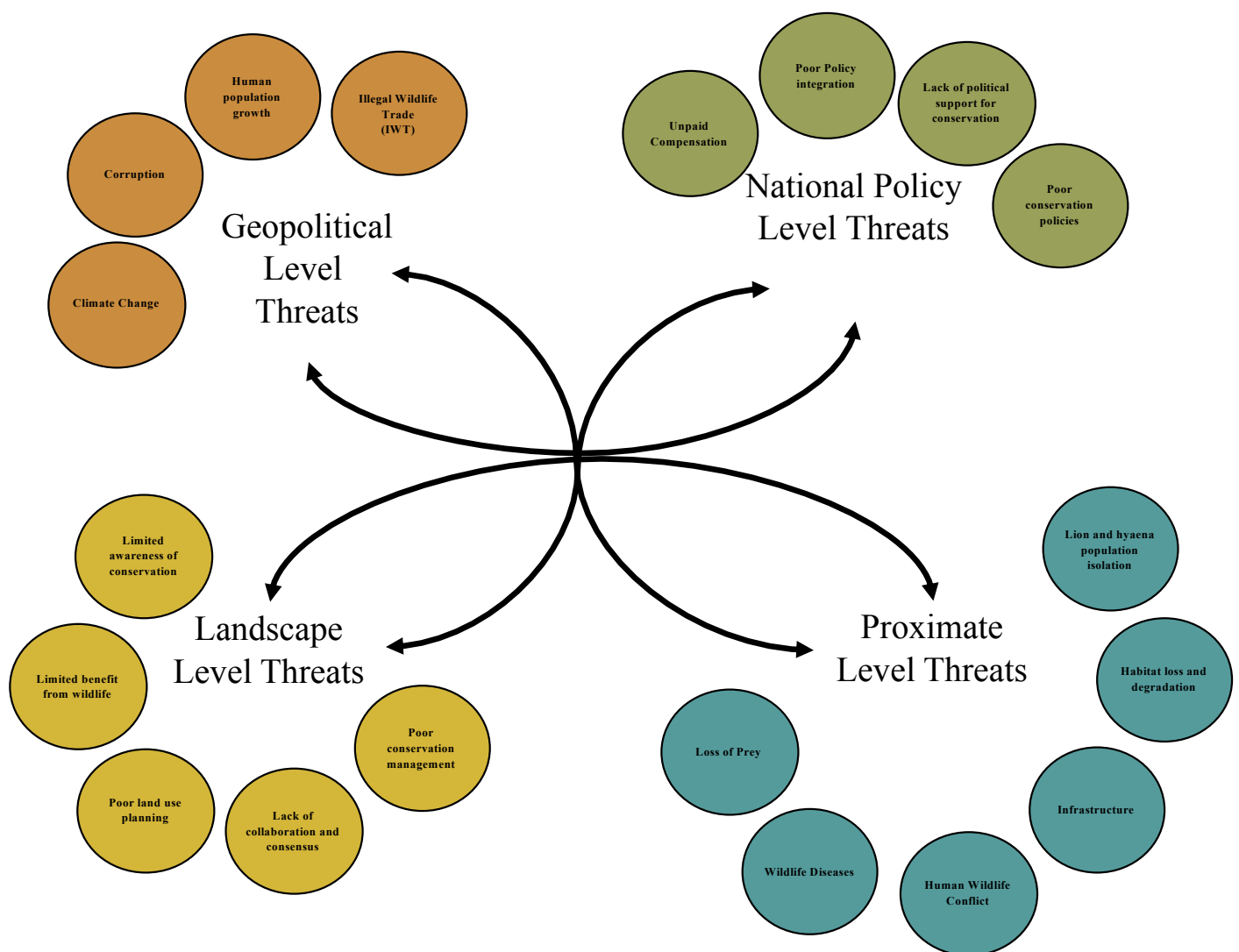


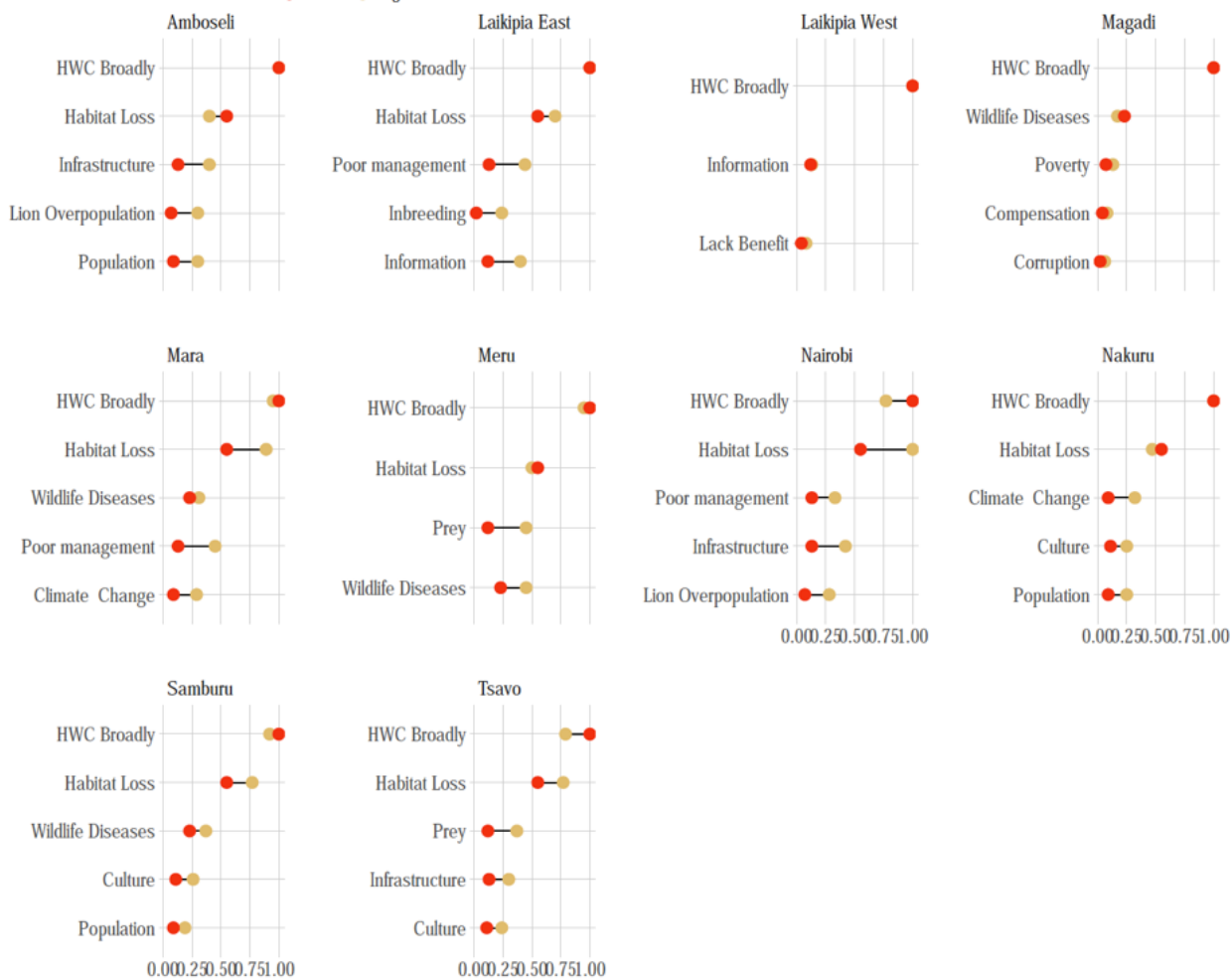
Figure 10: Schematic depicting categorization and inter-connectedness of threats to lion and spotted Hyena in Kenya



Threats to Lions and Spotted Hyena by Region

Salience index of threats to lions and spotted hyaena for each region in Kenya compared to the national ranking

● National ● Regional



Data from regional stakeholder meetings

Figure 11: The top five threats to lions and spotted Hyena conservation in each region (yellow dots) collated from stakeholder workshops, as compared to the national average (red dots). The importance of each threat was calculated from regional meetings based on Smith's salience index. Threats are further defined in section 2.3.

2.3.1 Human-wildlife conflict

Four broad categories of threats facing lion and spotted Hyena in Kenya were identified; namely geopolitical, national policy, landscape management and proximate threats (Figure 10 and 11, Appendix 2 – Figure 2). Geopolitical threats such as climate change, corruption and poverty were acknowledged by stakeholders to be beyond the scope of a species-specific action plans. However, the interlinked nature of these threats means that they must be tackled in a holistic manner. Across the country human-wildlife conflict, habitat loss and conversion, wildlife disease, infrastructure development, and poor conservation management are ranked as the top five threats to lion and spotted Hyena conservation.

Human-wildlife conflict (HWC) is multi-dimensional and dynamic (Dickman and Hazzah, 2016), and conflicts can be categorised as either direct or indirect. Direct conflicts occur when wildlife threatens the livelihood or safety of a person or community (Dickman and Hazzah, 2016, Inskip and Zimmermann, 2009). Indirect conflicts can be considered as underlying human-human conflicts like disagreements over conservation agendas or differing societal values surrounding wildlife (Madden, 2004, Redpath et al., 2013).



Human-lion conflict stemming from livestock predation is cited as a major driver of the decline in lion populations across the continent (Loveridge et al., 2017, Lindsey et al., 2017). Within Eastern Africa's livestock- and human-dominated landscapes, carnivore attacks on livestock occur frequently and can catalyse retaliatory and preventative lion killing (Hazzah et al., 2009). In Kenya, recent studies have shown that predators on private and communal ranches can kill 2-3% of the total livestock herd (Bauer et al., 2015b, MacLennan et al., 2009). Although lions are responsible for only a small proportion of these livestock attacks, often they are disproportionately killed (Kissui, 2008). HWC conflict was ranked as the most significant threat to lions and Hyena across the country (Figure 11) and this category included livestock predation leading to loss of livelihoods, the retaliatory killing of carnivores (predominantly through poisoning), and unpaid government compensation for livestock killed by predators.

2.3.2 Habitat loss and conversion

East Africa's rangelands support the highest diversity of ungulates on the planet which in turn supports a broad guild of large carnivores (Du Toit and Cumming, 1999). Over the last 50 years Kenya's rangelands have undergone significant changes in land tenure and policy that have led to land fragmentation and habitat conversion, in turn leading to the isolation of many of the country's large protected areas (PAs), while others are too small to support wildlife year round and rely on dispersal areas outside the PAs to conserve large free-ranging wildlife populations (Ogutu et al., 2016, Western et al., 2009). Habitat loss was considered a salient issue in every regional meeting expect for Magadi and Laikipia West. Expansion of human-settlement, agricultural expansion, poor land-use planning, rangeland degradation, and land sub-division was identified as the primary drivers of habitat loss and conversion.

Habitat loss can have severe consequences on lion and spotted Hyena populations. In natural systems, sub-adults leave their natal group (disperse) to either create or join other social groups. This process is important for the dynamics and genetic integrity of metapopulations but can be inhibited when suitable habitat is no longer available. This loss of suitable habitat can occur as a result of habitat conversion or, in extreme cases, when an area is fenced or partially fenced to restrict the movement of wildlife into areas dominated by humans and/or livestock (e.g. Nairobi National

Overpopulation

Overpopulation occurs when a population exceeds the available resources which can consequently have a negative impact on future resource availability or the regeneration of resources.

Inbreeding

For a population to be healthy, it needs a diverse gene pool. However, genetic diversity of a population decreases if closely related individuals breed with one another over several generations. A low genetic diversity can lead to negative outcomes such as reduced fertility and birth rates, and increased susceptibility to novel pathogens which could lead to local extinction. Genetic diversity can be maintained through mimicking natural metapopulations.

Park, Lake Nakuru National Park and some of the Laikipia ranches, Figure 12). Systems where natural movement can no longer occur are referred to as 'closed populations'. Closed populations tend to be characterised by overpopulation, genetic degradation and increased susceptibility to catastrophic events (Miller et al. 2013). In some cases, chronic inbreeding can result in negative population growth due to inbreeding depression (Trinkel et al., 2008; see Box 1 for more details). To prevent these undesired outcomes small, closed populations require intensive and costly management interventions that include, but are not limited to, translocation and birth control (see Miller et al., 2013 for an assessment and guidelines on managing lions in small fenced reserves in South Africa where at least 44 such populations exist). In addition, the maintenance of fences to minimise excursions is necessary.



To ensure that closed and semi-closed populations of lion and spotted Hyena in Kenya remain viable, it is imperative that appropriate policies and management plans are developed and implemented.

2.3.3 Wildlife diseases

The major disease risks to the national lion population include viral, bacterial and haemoparasitic disorders that may occur endemically or as an epidemic in a population. Lions are susceptible to multiple feline and canine viral diseases. Antibodies to Feline Parvovirus, Calicivirus, Herpesvirus, Coronavirus and viral antigens to Feline Leukemia Virus have been detected in free-ranging lions in Kenya, however, these diseases do not seem to affect the health of the population to any extent (Hofmann-Lehmann et al., 1996, Driciru et al., 2006). Diseases such as Canine Distemper Virus and Feline Immunodeficiency virus appear to be more problematic due to their immune-compromising effects. Feline Immunodeficiency Virus has been described to have pathological manifestations in free-ranging lions (Roelke et al., 2009). Outbreaks of Canine Distemper Virus in the Serengeti lion populations in 1994 and 2001 resulted in higher mortalities than usual. This was found to be due to the additional factors of a previous drought which led to widespread mortalities in prey species. The following rains resulted in an explosion of tick populations and lions were exposed to a higher tick challenge and corresponding Babesiosis infections. The combination of a viral disease with extreme environmental conditions and haemoparasite challenges led to the death of almost a third of the population whereas each challenge alone would most likely be insignificant (Munson et al., 2008).

Finally, rabies is a concern for both lion and spotted Hyena and there have been reported mortalities although the numbers are lower than expected. Serological studies performed in Zambia showed that 40% of the lions sampled tested positive to rabies virus neutralizing antibodies without showing clinical signs (Berentsen et al., 2013). It is possible lions can develop protective antibodies to rabies, however, no studies have been performed to determine this is the case, and vaccination of domestic dogs around lion populations remains the most effective way of controlling the disease risk.

2.3.4 Infrastructure development

Wildlife and development agendas commonly conflict. Kenya's push for economic development under Vision 2030 exemplifies this tension. Key infrastructure development projects such as the Standard Gauge Railway (SGR) and LAPPSET that propagate land conversion from natural habitats to semi-urban and agriculture lead to reduced landscape connectivity and will increase the isolation of lion and spotted Hyena populations. Furthermore, the expansion of railways and roads was cited by stakeholders in Tsavo, Amboseli, and Samburu as leading to an increase in the prevalence of lions and spotted Hyena killed by road and rail collisions.

2.3.5 Illegal trade in lions and their body parts

The illegal trade in lions and their body parts is an emerging challenge in lion conservation and illegal trade in lion cubs, skins, teeth, claws and bones have been reported in a number of lion range states (Loveridge et al., 2017a). Although some Southern African countries have CITES permits to legally export lion bones from captive bred lions (Loveridge et al., 2017b), fears remain that an increased demand for lion bone is fueling an illegal trade in wild populations (Williams, 2015). The impact on wild lion populations from the illegal trade in lion body parts is still largely unknown, yet concerns persist that this is a growing, and in some cases, already a real threat (Loveridge et al., 2017a). In addition, the domestic trade in lion body parts for traditional medicine and curio markets is perceived to be an even bigger threat to lions (Loveridge et al., 2017a). Thus, it is important to monitor if there is any trafficking of and to understand the market chain of illegal lion trade and its impact on lion conservation in Kenya.



2.3.6 Poor management

Mismanagement of protected areas has been cited as a cause for lion populations declines across Africa (Lindsey et al., 2017), and this is also presumed to apply for spotted Hyena conservation. Lindsey and colleagues' recent meta-analysis ranked Kenya's protected area management as being effective enough to ensure the protection of lions and their prey. Regional stakeholder meetings, however, revealed that poor conservation management was still perceived as a major threat to the conservation of lions and spotted Hyenas. Poor conservation management was attributed by workshop participants to the following four main factors:

- i. Lack of collaboration between conservation stakeholders (KWS, county government, NGOs, communities)
- ii. Conflicting priorities for species management (namely lion and rhino, and lion and Grevy Zebra)
- iii. Poor implementation of species-specific conservation strategies
- iv. Inadequate political and financial support from the national and county governments.

2.3.7 Other threats

Other key threats indicated by workshop participants included the loss of prey base, lack of benefits from wildlife, unpaid compensation, climate change, the cultural killing of lions, climate change, lion overpopulation and inbreeding.

The loss of carnivore prey across Kenya is well documented, with estimates suggesting that both within and outside protected areas populations of wild ungulates have decreased by as much as 70% (Ogutu et al., 2016; Western et al., 2009). Although this trend is not consistent across all regions with Nakuru and the surrounding conservation areas seeing an increase in wildlife numbers in recent years (Ogutu et al., 2017). One of the drivers of prey loss suggested in meetings was bushmeat poaching (particularly in Tsavo, Nakuru, and Meru) which is also seen as a major threat to lion survival across the continent (Lindsey et al., 2017). In Amboseli, Samburu and Nairobi the loss of prey were more likely to be attributed to changes in the ecosystem function. The loss of traditional grazing management practices in Amboseli has led to a 30% reduction in grass biomass per unit rainfall in this region (Western et al., 2015), with similar or worse trends seen in Samburu. Ecosystem fragmentation is also contributing to the loss of wildlife, a prime example of which is Nairobi National Park (Western and Gichohi, 1992), where urban expansion has severed the connectivity of the park to the wet season grazing areas of the Athi-Kapiti plains, leading to considerable losses in several species such as wildebeest and kongoni. The loss of wild prey forces carnivores to predate on livestock, exacerbating human-wildlife conflict, reducing tolerance, and potentially increasing the instances of retaliatory killing.

Stakeholders across the country also indicated that failure of the government to provide compensation for wildlife-related damages - as mandated by the WCMA 2013 - was decreasing tolerance for lions and spotted Hyena. These views were particularly salient in regions such as Magadi where there are minimal KWS presence and little government or NGO support given to community conservation efforts. Similarly, many stakeholders across the country, such as those in Western Laikipia, cited that the lack of benefits from lions and spotted Hyenas to landowners was increasing the prevalence of poisoning in the region.

The killing of lions as part of cultural rights of passage still persists in parts of Kenya. For example, in traditional Maasai Olamayio hunts the killing of male lions is used to demonstrate the bravery of young warriors during their initiation ceremonies (Hazzah et al., 2009). Stakeholders in Samburu, Nakuru and Tsavo indicated that these cultural practices posed a pertinent threat to lions in the region.

The effects of climate change on Kenya's protected areas are more nuanced, and it can be difficult to determine the impact that climate change is having on weather patterns (Western et al., 2015). An increased frequency of droughts in recent years, and other extreme events such as flooding, may



be attributed to climate change, but their effect is also magnified by poor management. The concern of increasing drought, both in terms of rainfall, but also increasing forage deficits, is a major threat for the prey base of lions and spotted Hyena, with these factors brought out in meetings in Tsavo, Mara, and Laikipia East.

Finally, in regions of the country such as Amboseli, Nairobi, and portions of Eastern Laikipia conservation efforts have led to an increase in lion numbers prompting concerns among stakeholders that these regions were overpopulated and above the social-ecological carrying capacity, leading to increased risk of human-wildlife conflict. Inbreeding among isolated populations such as those in Nairobi National Park and Lewa-Borana conservancies is also seen as a major threat.

2.4 Current efforts to conserve lions and spotted Hyena

KWS is the mandated custodian of wildlife in Kenya, and they are complemented by more than 200 stakeholders (see Appendix 3) who were identified as being involved in the conservation of Kenya's main lion and spotted Hyena populations (Figure 12). The five most prevalent conservation interventions across the country are:

- i. Awareness creation, which included conservation education and awareness such as school outreach campaigns which focused on wildlife ecology and benefit, sensitizing communities about wildlife laws and policies, and anti-poisoning campaigns.
- ii. Improved husbandry, which was mainly focused on constructing predator-proof bomas and the provision of lion lights. However, in some regions such as Samburu and Magadi improved grazing management and better herding was prevalent.
- iii. Lion monitoring and research, using GPS collars, community rangers, Lion Guardians/Simba scouts and providing information to avert livestock predation and conflict was common across most regions.
- iv. Creation of community and private conservancies to secure space for wildlife conservation
- v. Problem Animal Control (PAC) which included the translocation or euthanasia of problematic lions and spotted Hyena

Other prevalent interventions included increasing ranger and community game scout patrols to enhance *wildlife protection*, and reporting *HWC* to KWS.

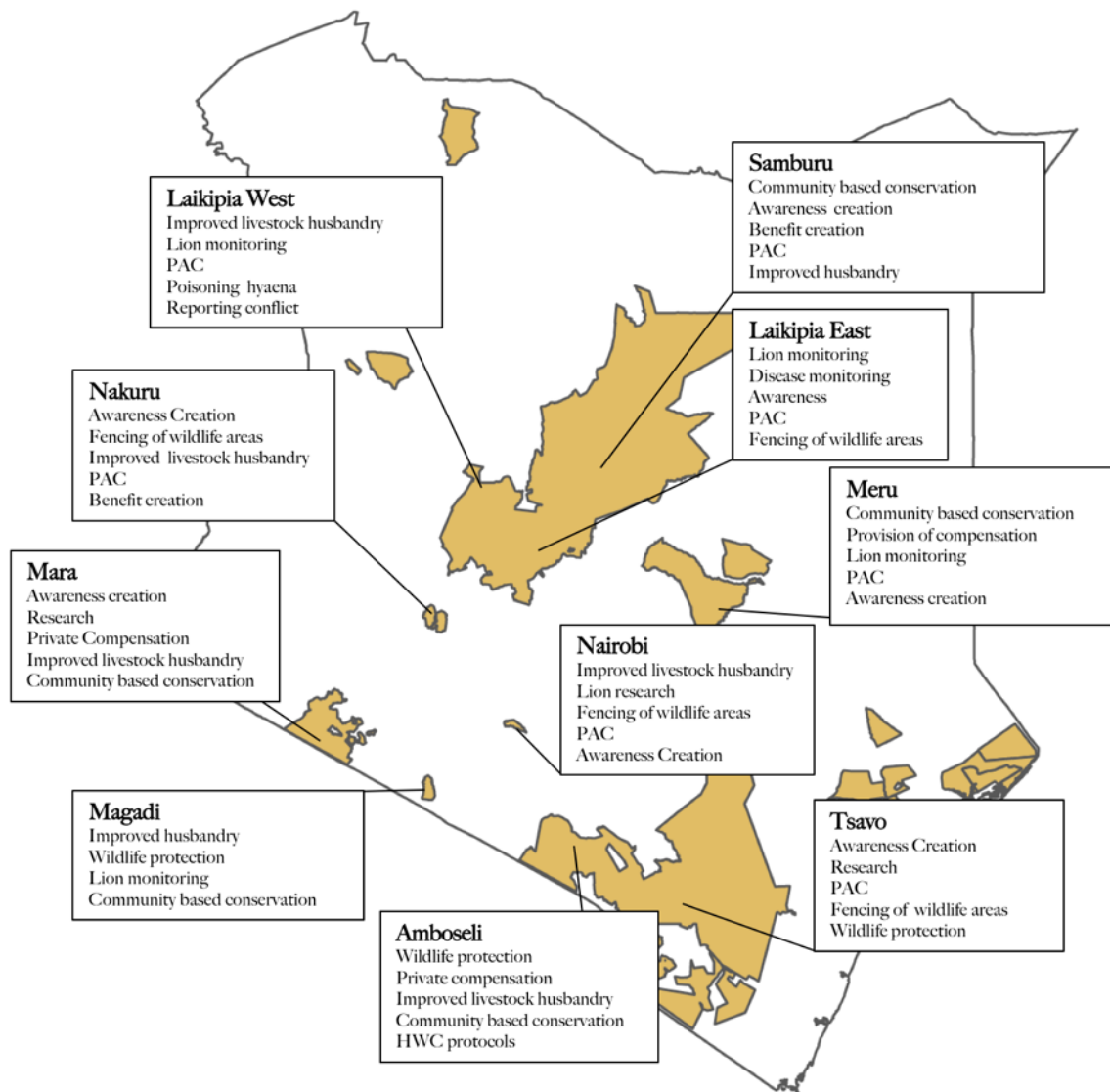


Figure 12: Map showing the top five most prevalent conservation interventions by region (see section 2.5 for definitions) calculated from stakeholder meetings based on Smith's salience index.

2.5 Opportunities for improved lion and spotted Hyena conservation

Conservation stakeholders across the country identified numerous opportunities for improving lions and spotted Hyena conservation in Kenya (Figure 13). The five most commonly cited opportunities were: the creation of greater awareness of conflict preventions techniques;

- i. the creation of greater awareness of conflict preventions techniques;
- ii. resolving issues related to unpaid government compensation;
- iii. increasing benefits to communities and landowners coexisting with lion and Hyena;
- iv. improving collaboration between conservation stakeholders, including working with county governments who are developing county level land use plans;
- v. increasing funding for lion and Hyena conservation.



Resolving issues related to compensation and increasing benefits from coexistence are critical steps in promoting conservation but are in large part beyond the scope of what a species-specific action plan is able to achieve. Consequently, emphasis should be placed on conflict prevention, improving collaboration, and increasing funding for conservation activities, and support an enabling environment for landowners and communities to benefit from the conservation of lions and spotted Hyena. Drawing on the collective expertise and resources of more than 180 stakeholders who already contribute towards lion and spotted Hyena conservation could catalyse more effective conservation action but this requires collaborative and coordinated conservation efforts.

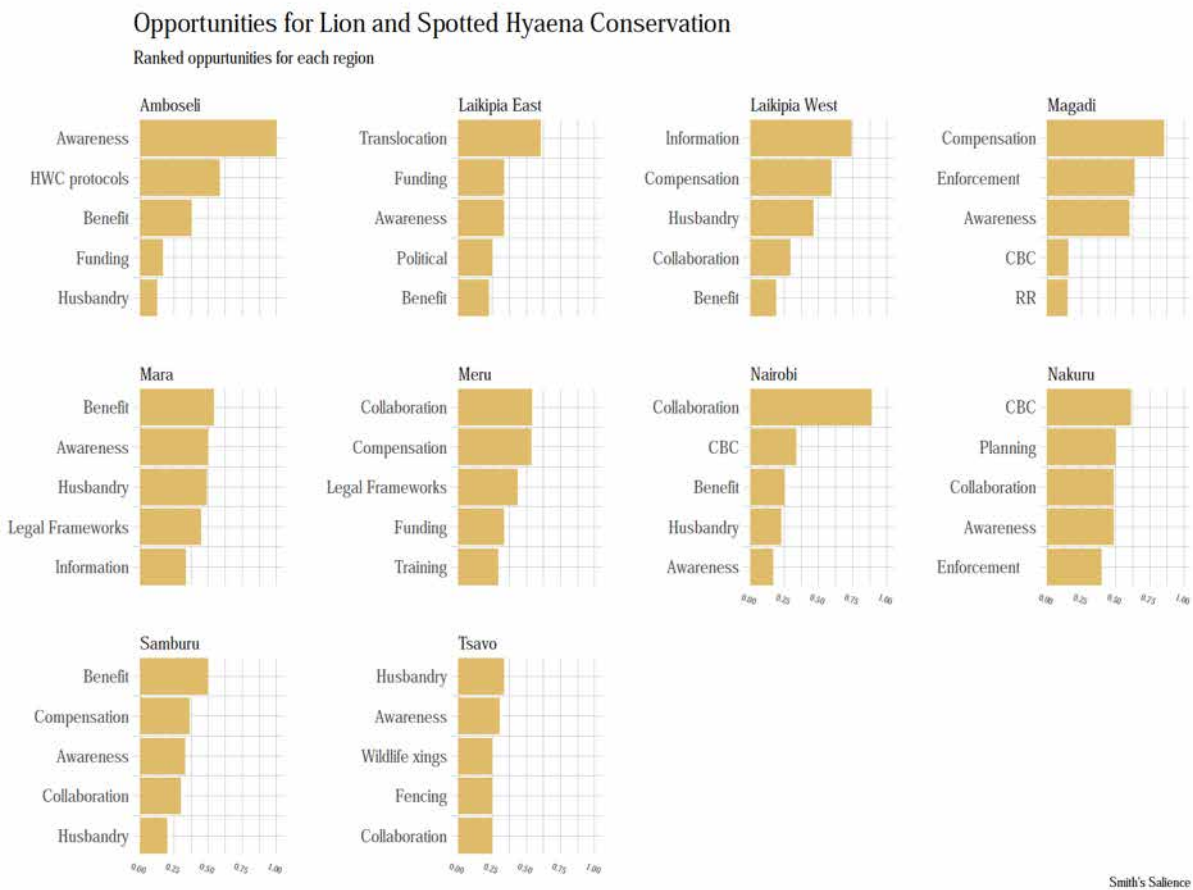


Figure 13: Opportunities for lion and Hyena conservation by region from stakeholder meetings. Bars represent smiths' salience index values ranging from 0 to 1.





3. Recovery and Action Plan

3.1 Strategic approach

The vision and the goal laid out in this document were adopted and adapted from the previous strategy based on recommendations put forward by stakeholders during the strategic planning workshop held in June 2018. The pillars, objectives, targets and priority activities were developed using (i) International and national frameworks laid out in section 1.3; (ii) stakeholder consultations which identified key threats to lions and spotted Hyena, current conservation interventions, and opportunities for improve lion and spotted Hyena conservation; and (iii) recommendations from the large carnivore taskforce, KWS staff, and the input of other stakeholders. In line with IUCN species strategy guidelines the vision, goal, and objectives are intended to be forward thinking, big picture and holistic, while the targets and activities aim to be specific, implementable, measurable and collaborative.

This Recovery and Action plan acknowledges that geopolitical threats such as corruption, climate change, and population growth are large and convoluted issues, as are the national level threats such as unpaid compensation and lack of political support. Consequently, this Recovery and Action plan focuses on providing evidence to guide and inform these higher-level threats (geopolitical and national level) while seeking to directly address landscape management and proximate level threats to the conservation of the two species that are not already being addressed as part of Kenya's broader conservation efforts. Leveraging the support and improving coordination and collaboration of the more than 180 stakeholders already involved in lion and Hyena conservation across the country is the foundation of this strategic approach.

Conservation units, conservation unit committees, and coexistence working groups are the conduits through which collaborative landscape-level conservation, utilising an ecosystem-based approach to conservation, will be achieved (see implementation pg. 30 for definitions and responsibilities). The precedent for using conservation units to guide strategic interventions comes from the IUCN regional strategy for lion conservation in East and Southern Africa, which identified 66 lion conservation units (LCU) in the region. The regional strategy defined conservation units as "an area of known, occasional and/or possible lion range that can be considered an ecological unit of importance for lion conservation". The IUCN LCU's are not restricted to, or required to, contain protected areas and are intended to aid priority setting and conservation of these areas from a biological perspective.

Building on the precedence set by the IUCN regional strategy, we adopt lion and spotted Hyena conservation units (CUs) as a foundational component in this strategy. We define conservation units as landscapes containing known, occasional and/or possible lion and spotted Hyena range that can be considered an ecological unit of importance for the species conservation. This is in line with Kenya's Wildlife Strategy 2018 and the WCMA which both promote an ecosystem-based approach to conservation practice and policy.

Landscape-level approaches towards the conservation of lions and spotted Hyenas are already taking place in Kenya and form the template from which many of the activities of the recovery and action plan are drawn. This is showcased already by the establishment of a coexistence working group and the development of conflict response protocols in the Greater Amboseli Ecosystem.



3.2 Vision

To sustain viable populations of lions and spotted Hyenas in healthy ecosystems as a world heritage valued by the people of Kenya.

3.3 Goal

To restore and maintain viable populations of lions, spotted Hyenas and their wild prey while minimizing conflict and maximizing value to local communities.

3.4 Strategic Objectives

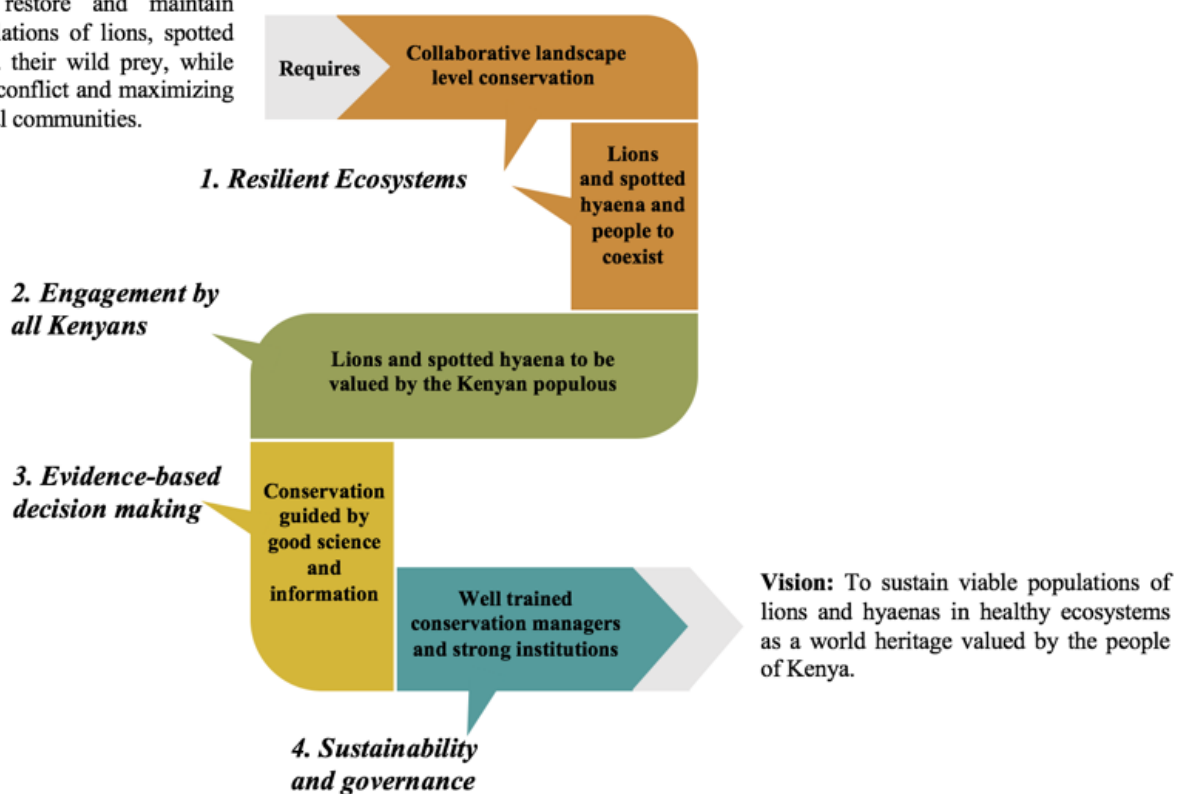
The action plan is based on five key strategic objectives which fall within the four pillars of the National Wildlife Strategy:

1. **Establish and enhance collaborative landscape-level lion and spotted Hyena conservation.**
2. **Enhance human-lion and human-spotted Hyena coexistence.**
3. **Improve education and awareness of lion and spotted Hyena conservation status and ecology.**
4. **Facilitate evidence-based decision making for lion and spotted Hyena conservation.**
5. **Build integrated and sustainable structures to facilitate lion and spotted Hyena conservation.**

3.5 Theory of Change

Our theory of change outlines the four pillars of the National Wildlife Strategy 2030 and within them, the steps required to achieve effective lion and spotted Hyena conservation

Goal: To restore and maintain viable populations of lions, spotted hyaenas and their wild prey, while minimizing conflict and maximizing value to local communities.









3.6 Pillar 1 -Resilient ecosystems

Resilient ecosystems (Pillar 1) in the Wildlife Strategy 2030 address the prioritization, planning, and protection of ecosystems and species. Currently, many lion and spotted Hyena conservation efforts in Kenya are focused on specific protected areas or conservancies rather than ecologically defined landscapes. Conservation activities are also often undertaken with little collaboration or coordination with other stakeholders within the wider region and nationally. Consequently, at the regional level conflict mitigation efforts are often disjointed leading to ineffective mitigation measures, while at the national level conservation action is unevenly distributed across the country. To reverse this trend two objectives are laid out to ensure lion and spotted Hyena conservation efforts are conducted in a collaborative and coordinated manner across a landscape and that they complement broader wildlife and habitat conservation efforts. These objective are:

Objective 1: Establish and enhance collaborative landscape- level lion and spotted Hyena conservation. **Objective 2:** Enhance human-lion and human-spotted Hyena coexistence.

Conservation Unit Committees and Coexistence Working Groups will be the two main conduits for delivering these objectives. Coexistence Working Groups consisting of KWS, County Government, and a broader range of conservation stakeholders will coordinate conservation action related to coexistence and conflict mitigation. Conservation Units Committees for each conservation unit will act as the executive of the working groups and represent them at the national level, and they will be comprised of representatives from KWS, County Government, County Wildlife Committees, NGOs and other local lion and Hyena conservation stakeholders.

3.6.1 Overview of building resilient ecosystems

Current State	Desired State	Planned Activities	Outcome
			
<ul style="list-style-type: none"> • Uncoordinated conservation activities and actors • High rates of human-wildlife conflict and slow response • Conservation support unevenly disturbed 	<ul style="list-style-type: none"> • Coordinated conservation action and actors • Landscape oriented conservation • Rapid and collaborative conflict mitigation 	<ul style="list-style-type: none"> • Establish conservation units • Create coexistence working groups • Deploy conflict response teams • Prioritize conservation units 	Collaborative and coordinated landscape level conservation efforts that promote coexistence



3.6.1 Overview of building resilient ecosystems

3.6.2 Priority actions to create resilient ecosystems

Strategic Objective 1: Establish and enhance collaborative landscape level lion and spotted Hyena conservation

Target	Activity	Outcome
1.1. Conservation units (CUs) defined, prioritized and unit committees established	1.1.1. Stakeholder workshop to define and prioritize conservation units and identify the roles of conservation unit committees	Conservation units defined and agreed, roles and responsibilities of committees agreed
	1.1.2. Stakeholder meetings in key conservation units to establish conservation unit committees	Conservation unit committees elected
1.2. Lion and spotted Hyena corridors between conservation units identified and prioritized	1.2.1. Connectivity analysis to identify critical refuges and dispersal areas, and under changing land-use and climate scenarios	Connectivity report, list of priority corridors developed, and action plan developed
	1.2.2. Engagement with Working group on Wildlife Migratory Corridors and Dispersal areas by the Large Carnivore Task Force (LCTF) to provide information on lion and spotted Hyena areas.	Working group on Wildlife Migratory Corridors and Dispersal areas and planning for the protection of lion and spotted Hyena corridors
1.3. Conservation efforts catalysed in two under-supported conservation units and corridors	1.3.1. Identify conservation unit and corridors in need of increased conservation efforts and/or funding	List of priority conservation units and corridors needing additional protection
	1.3.2. Identify partners and donors to develop and fund conservation actions in regions identified in Activity 1.3.1	Lion and spotted Hyena conservation catalysed in new areas



Strategic Objective 2: Enhance human-lion and human-spotted Hyena coexistence

Target	Activity	Outcome
2.1. Human-wildlife coexistence working groups established in key conservation units	2.1.1. Establish coexistence working groups in key conservation units	Coexistence working groups established in key conservation units
	2.1.2. Develop HWC response protocols and conflict prevention activities for key conservation units	Conflict mitigation activities coordinated across stakeholders and positive attitudes to wildlife and wildlife organisations increased
2.2. Conflict rapid response teams operational in key conservation units	2.2.1. Establish local HWC response teams in key conservation units	Local conflict response teams able to rapidly respond to human-wildlife conflict incidents
	2.2.2. Train response teams in lion and Hyena conflict prevention based on protocols laid out in Target 2.1	Local conflict response teams better equipped and trained to mitigate human-lion/spotted Hyena conflict
2.3. National human-lion and human- spotted Hyena conflict prevention and response protocols developed	2.3.1. Consolidate best practices from existing conservation unit protocols	Toolbox of best practices developed
	2.3.2. Stakeholder workshop to refine best practices into a national protocol and disseminated to the public	Guidelines for national protocol developed, used and disseminated to the public
2.4. Discussions informed on national compensation payments, performance payments, insurance schemes and other financial instruments	2.4.1. Large carnivore task force to provide possible workable solutions and case studies, and develop best practices guidelines including for local level	Report developed on best practices
	2.4.2. Large carnivore task force to seek engagement with the Environment and Natural Resources Committee, and the Ministry of Tourism and Wildlife	A working relationship established between LCTF and Government institutions







3.7 Pillar 2 - Engagement by all Kenyans

Engagement by all Kenyans (Pillar 2) in the Wildlife Strategy 2030 emphasizes the importance of making sure that all sectors of the Kenyan populous recognises the importance of wildlife and actively engage with its conservation. Despite the conservation education and awareness activities being carried out across the country, many Kenyan's still hold negative perceptions towards the two species and are unaware of the conservation threats facing them, or how they can contribute towards their conservation. The following objective is intended to counteract this situation:

Objective 3: *Improve education and awareness of lion and spotted Hyena conservation and ecology, involving local communities as conservation educators*

Providing a free and easily accessible database of learning materials to conservation educators and identify prominent Kenyan's such as opinion leaders and celebrities to be champions of lion and spotted Hyena conservation will lead to increased awareness. Working in partnership with the National Wildlife Strategy implementation committee to ensure that information on lions and spotted Hyena is included in activities planned under Goal 3 of the National Strategy is also a primary focus. Activities planned under Goal 3 of the National wildlife strategy include a National Wildlife Expo and Investment Forum, annual conservation awards to recognize achievement, national competitions, the introduction of conservation curricula, and creating of e-learning platforms.

3.7.1 Overview of engaging all Kenyans

Current State	Desired State	Planned Activities	Outcome
			
<ul style="list-style-type: none"> Limited knowledge of threats facing lions and spotted hyaena Negative perceptions of the two species especially spotted hyaena 	<ul style="list-style-type: none"> Wide spread knowledge of the threats facing lions and spotted hyaena Positive perceptions of lions and spotted hyaena 	<ul style="list-style-type: none"> Make database of education materials free and easily accessible Identify national conservation champions Catalyse outreach and engagement 	Lions and spotted hyaena valued by the Kenyan populous who are taking an active role in their conservation

3.7.2 Priority actions for engaging all Kenyans

Objective 3: Improve education and awareness of lion and spotted Hyena conservation and ecology, involving local communities as conservation educators



Target	Activity	Outcome
3.1. Open access database of learning materials created and used by conservation education teams	3.1.1. Consolidate existing materials from conservation stakeholders and create new materials customised to each audience	Lion and spotted Hyena education and awareness materials consolidated and customised
	3.1.2. Creation of an open access platform and database	Open access database cataloguing all learning and awareness materials to be made available to educators
3.2. Lions become a flagship for conserving Kenya's savannahs along with improved perceptions of Hyenas	3.2.1. Identify champions in the national government, county government, private sector, media, and prominent Kenyans and motivated citizens, and engage them all to mobilize conservation awareness	Champions actively promoting awareness of lion and spotted Hyena conservation
	3.2.2. Conduct profile raising activities such as host a national lion and spotted Hyena day to educate and engage the Kenyan public on conservation issues	All sectors of Kenyan populous more aware of and positive towards lion and spotted Hyena conservation
3.3. Lion and spotted Hyena conservation incorporated into activities planned by the National Wildlife Strategy 2030 (Goal 3) to inform and educate all Kenyans at both the national and locally customised levels about wildlife and conservation	3.3.1. Engage with national and local wildlife strategy implementation teams and provide input to the action plan	Education and awareness activities planned and incorporated into goal 3 and implemented
	3.3.2. Identify, develop and incorporate materials needed by the national wildlife strategy implementation team	Materials on lion and spotted Hyena conservation, identified, developed and incorporated in national wildlife strategy activities

3.8 Pillar 3 – Evidence-based decision making





Evidence-based decision making (Pillar 3) in the Wildlife Strategy 2030 promotes good science and data sharing as a foundation of conservation and planning. Conservation stakeholders across the country currently use a variety of methods to collect information on lion and spotted Hyena movements, population size, mortality and disease, and human-wildlife conflict. Lack of standardization of data collection hinders the ability to consolidate data for decision making. The vast quantity of data being collected, especially on human-lion/spotted Hyena conflict poses a further challenge to ensure that information is available for decision makers. In addition, there is limited information on emerging threats to lion conservation such as the illegal trade in lions and their body parts and how this may be impacting lion populations in Kenya. Objective 4 listed below is intended to help standardize data collection and ensure information is analysed and provided to decision makers in a timely manner.

Objective 4: Enhance evidence-based decision making for lion and spotted Hyena conservation



Completing the national carnivore survey will provide a foundation of information on lion and spotted Hyena populations and distributions across the country. National monitoring systems and databases for human-lion/spotted Hyena conflict, disease, trends in illegal trade in lions and their body parts, population and genetics shall enable effective evidence-based decision making by conservation managers. Finally, partnering with national and international academic institutions will help ensure that databases and monitoring systems adhere to the highest scientific standards.

3.8.1 Overview of enhancing evidence-based decision making

Current State	Desired State	Planned Activities	Outcome
			
<ul style="list-style-type: none"> Information collected independently with little standardization Information in national databases rarely available to conservation managers 	<ul style="list-style-type: none"> Basic information collection standardized and shared between stakeholders Information in national databases used to inform decision making 	<ul style="list-style-type: none"> Complete National carnivore survey Develop National data protocols Build partnerships with academic institutions Develop conservation unit management plans 	Lion and spotted hyaena conservation guided by good science and information

3.8.2 Priority actions for evidence-based decision making

Objective 4: Enhance evidence-based decision making for lion and spotted Hyena conservation

Target	Activity	Outcome
4.1. National carnivore survey completed and information provided to conservation unit committees and conservation unit working groups	4.1.1. Complete the national census, and produce a report on the conservation status of both species in each conservation unit and corridor.	Baseline information on lion and spotted Hyena populations and distribution
	4.1.2. Future stakeholder meetings in key conservation units to feedback carnivore survey results	Conservation stakeholders able to develop conservation and recovery actions based on the population status in their region and across the country



4.2. National protocols for regular monitoring of key lion source populations using SECR	4.2.1. Produce a set of guidelines that detail the key areas to be surveyed together with timelines and protocols	Conservation stakeholders able to assess trends in population numbers, distribution, sex ratios and movement together with vital rates (e.g. recruitment) that are used to evaluate and inform management interventions
	4.2.2. Continued training of key stakeholders to enable full participation in lion monitoring	
	4.2.3. Undertake regular monitoring of lions and spotted Hyena in key ecosystems	
4.3. Monitoring systems for HWC, disease, population, illegal trade in lions and their body parts and genetics established in priority conservation units.	4.3.1. Stakeholder meetings to establish standardized protocols for HWC, disease, populations and genetics of the two species	Basic information on HWC, disease, and population, collected and reported in a standardized manner
	4.3.2. Establish joint monitoring and databases for HWC, disease, population, illegal trade in lions and their body parts and genetics of the two species in priority conservation units	Conservation stakeholders jointly monitoring HWC, disease, illegal trade in lions and their body parts and population in priority CU's
4..5. National and site-specific protocols for translocation developed	4.5.1. Meeting with experts and stakeholders to establish a protocol for the translocation of lions and spotted hyenas	Clear guidelines on the translocation of lions and spotted Hyena including details on when translocations are applicable, which individuals should be translocated, where individuals should be translocated to and veterinary protocols (e.g. disease screening and vaccinating against rabies and canine distemper virus prior to release)
4.5. Operationalize national databases on HWC, disease, population, and genetics of the two species	4.5.1. Develop a research agenda for lions and Hyena in Kenya including research and collaring protocols.	Lion and spotted Hyena research used to guide conservation
	4.5.3 Partner with research/ academic institutions to manage/analyse information on national databases	Information in national databases analysed and provided to decision makers
4.6. Operationalize national databases on HWC, disease, population, and genetics of the two species	4.6.1. Develop a research agenda for lions and Hyena in Kenya including research and collaring protocols.	Lion and spotted Hyena research used to guide conservation
	4.6.2 Partner with research/ academic institutions to manage/analyse information on national databases	Information in national databases analysed and provided to decision makers



4.7. Management plans for closed and semi-closed populations of lion and spotted Hyena developed	4.7.1. Consolidate data on populations, HWC, disease and genetics for conservation units	Improved understanding of populations, HWC, disease and genetics in conservation units
	4.7.2. Stakeholder workshops in each conservation unit to develop Conservation Unit Recovery and Action Plans	Conservation interventions in conservation units guided by unit specific Recovery and Action plans
	4.8.1. Identify and assess the status of closed and semi-closed populations of lion and spotted Hyena in Kenya	Information on where management plans for closed and semi-closed populations should be implemented
		Baseline information on population structure, size and genetics to guide interventions.
	4.8.2. Meeting with experts and stakeholders to establish management plans for closed and semi-closed populations of lion and spotted Hyena	Clear guidelines on the management of closed and semi-closed populations of lions and spotted Hyena

3.9 Pillar 4 - Sustainability and governance

Sustainability and governance (Pillar 4) in the Wildlife Strategy 2030 strives to develop governance frameworks and structures that coordinate and integrate conservation activities of the national government, counties, and communities. Under the Wildlife Conservation and Management Act 2013 county wildlife committees are mandated to help coordinate conservation activities within a county. Conservation area managers are similarly responsible for overseeing conservation within a given protected area or conservancy. Unfortunately, many of members of county governments, county wildlife committees and conservation area managers lack technical training in lion and spotted Hyena conservation. Objective 5 listed below is intended to provide existing institutions with the capacity they require to effectively conserve lions and spotted Hyenas.

Objective 5: *Assist existing governance structures to facilitate lion and spotted Hyena conservation.*

This will be achieved by working with counties, county conservation committees and conservation area managers will build their technical knowledge and capacity to conserve lions and spotted Hyena. Providing information on the conservation status, population and distribution of the two species to county governments will help to support the county level conservation efforts and help to ensure that lion and spotted Hyena are considered during conservation and land-use planning. Finally, building partnerships with governments institutions, NGOs, and communities in neighbouring countries is a first step towards enabling the effective conservation of transboundary populations.



3.9.1 Overview of strengthening governance and sustainability

Current State	Desired State	Planned Activities	Outcome
<ul style="list-style-type: none"> Lack of training on how to conserve lions and spotted hyaena Limited information available to guide county level conservation efforts Lack of transboundary collaboration 	<ul style="list-style-type: none"> Conservation managers possess the technical knowhow needed to conserve the two species Information on the two species available and incorporated into county government conservation and land use planning Collaborative transboundary conservation 	<ul style="list-style-type: none"> Build capacity building of conservation managers Enable county level conservation and land use planning Enhance transboundary collaboration 	Well trained conservation managers and strong institutions that are working collaboratively to conserve lions and spotted hyaena

3.9.2 Priority actions for governance and sustainability

Objective 5: Assist existing and new governance structures to facilitate lion and spotted Hyena conservation.

Target	Activity	Outcome
5.1. Conservation area managers and county governments trained in lion and spotted Hyena conservation	5.1.1. Partner with conservation stakeholders to host training for conservation area managers and stakeholders on lion and spotted Hyena conservation	Conservation area managers possess the technical capacity and knowledge require to effectively conserve lions and spotted Hyena
	5.1.2. Workshops to train and equip county government officers and county wildlife committees in lion and spotted Hyena conservation	Counties possess the technical capacity and knowledge require to effectively conserve lions and spotted Hyena
Target	Activity	Outcome
5.2. Integrate lion and spotted Hyena conservation in county conservation and spatial planning	5.2.1. Engage with different counties were applicable	Partnerships build between lion and spotted Hyena stakeholders and county governments
	5.2.2. Provide data and information on conservation status, distribution and population to critical lion and Hyena to county governments for planning	Information on lion and spotted Hyena, conservation status, distribution and population used in county planning.



5.3. Cross-border partnerships in transboundary conservation units and corridors developed	5.3.1. Hold cross-border meetings for transboundary conservation units to develop partnerships between stakeholders	Improved transboundary collaboration
	5.3.2. Develop MOUs between KWS and Wildlife institutions in neighbouring countries	Working relationships between government institutions formalized
	5.3.3. Initiate dialogue on conservation collaboration with EAC secretariat through the Ministry	Intergovernmental dialogue on how to harmonize transboundary conservation
5.4. Governance structures that enable lion and spotted Hyena conservation supported by national policies and legislation	5. 4.1. Undertake an assessment of legal frameworks and policies supporting lion and spotted Hyena conservation at the county and national level	Policy gaps identified







4. Implementation

4.1 Oversight and Responsibilities

Effective implementation of the recovery and management for lion and spotted Hyena populations is provisional upon sufficient funding and effective oversight by KWS and coordination amongst the Large Carnivore Task Force (LCTF), Conservation unit committees (CUC), and Coexistence Working Groups as shown in figure 14

4.1.1 Kenya Wildlife Service

KWS is ultimately responsible for securing funding to implement, monitoring, and coordinate actions laid out in the Recovery and Action plan. Ultimate oversight of the action plan will be the responsibility of Director General (DG) and Director - Biodiversity Research & Planning (D-BR&P). A carnivore liaison officer employed by KWS will be responsible for coordinating the implementation of the action and provide the conduit through which information from CUC's is feedback to the LCTF.

4.1.2 Large Carnivore Task Force

The existing Large Carnivore Task Force will be reconstituted and will be responsible for aiding KWS to implement the Recovery and Action plan and providing technical oversight. It is the responsibility of KWS to act as the secretariat and the D-BR&P to chair the task force. LCTF will also play a critical role in defining conservation units and establishing Conservation Unit Management Committees.

4.1.3 Conservation Unit Committees

Conservation unit committees comprised of representatives from KWS, County Government, CWC, and local lion and Hyena conservation stakeholders will be established for each conservation unit. CUCs will be responsible for coordinating and overseeing the implementation of recovery and management plan within conservation units. CUCs will also be responsible for establishing Coexistence Working Groups within their CU.

4.1.4 Coexistence Working Groups

Coexistence Working Groups comprised of KWS, County, Government, and conservation stakeholders shall be established within each CU. Working groups shall be responsible for promoting collaboration between all conservation stakeholders, coordinating conservation action related to coexistence and conflict preventions, and developing conflict response protocols within each CU. They will be overseen and represented at higher levels by the CUC.

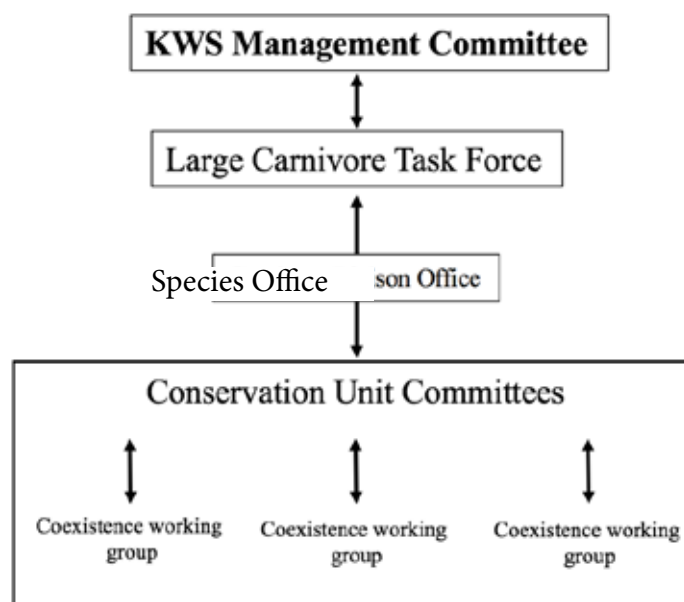


Figure 14: Implementation Structure for Lion and Spotted Hyena Recovery and Management Plan



4.2 Funding

KWS will be responsible for securing funding for the implementation of the action but it will work with the LCTF to develop funding proposals to secure additional funding. For grants in which KWS is ineligible to receive funding KWS will work with key partners to submit joint grant applications. KWS will also encourage conservation stakeholders to contribute in-kind funding to support the implementation of the action. The cost of implementation will be vary depending on the number and size of conservation units identified and prioritised for conservation action.

4.3 Budget

An approximate minimum budget (excluding KWS staff and stakeholder time) has been developed based on the implementation of activities across five to seven conservation units (size dependant) and is outlined below.

	Minimum Cost (KSH)	Maximum Cost (KSH)	Minimum Cost (USD)	Maxium Cost (USD)
Objective 1	6,250,000	9,375,000	62,500	93,750
Objective 2	27,250,000	40,875,000	272,500	408,750
Objective 3	3,000,000	4,500,000	30,000	45,000
Objective 4	17,500,000	26,250,000	175,000	262,500
Objective 5	12,250,000	18,375,000	122,500	183,750
Total	66,250,000	99,375,000	662,500	993,750



5. Monitoring and Evaluation

Objective	Target	Activity	Outcome	Timeline	Lead	Implementation	Indicator of success	Activity Completion Score	Target Completion Score	Objective Completion Score
2. Enhance human-lion and human-spotted hyaena coexistence	2.1. Human-wildlife coexistence working groups established in key conservation units	2.1.1. Establish coexistence working groups in key conservation units	Coexistence working groups established in key conservation units	3 years	KWS	LCTF, CUMC, Stakeholders	Number of active working groups	0= incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	sum actual target completion scores/ maximum possible completion score
		2.1.2. Develop HWC response protocols and conflict prevention activities for key conservation units	Conflict mitigation activities coordinated across stakeholders and positive attitudes to wildlife and wildlife organisations increased	3 years	KWS	LCTF, CUMC, Stakeholders	Number of protocols developed and implemented, change tolerance of lions and spotted hyaena	0= incomplete, 1=in progress, 2=complete		
	2.2. Conflict rapid response teams operational in key conservation units	2.2.1. Establish local HWC response teams in key conservation units	Local conflict response teams able to rapidly respond to human-wildlife conflict incidents	5 years	KWS	LCTF, CUMC, Stakeholders	Number of active conflict response teams, number of incidents responded too, average response time	0= incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
		2.2.2. Train response teams in lion and hyaena conflict prevention based on protocols laid out in Target 2.1	Local conflict response teams better equipped and trained to mitigate human-lion/spotted hyaena conflict	5 years	KWS	LCTF, CUMC, Stakeholders	Number of teams trained, number of rangers trained	0= incomplete, 1=in progress, 2=complete		
	2.3. National human-lion and human- spotted hyaena conflict prevention and response protocols developed	2.3.1. Consolidate best practices from existing conservation unit protocols	Toolbox of best practices developed	3 years	KWS	LCTF, CUMC, Stakeholders	Document of best practices produced	0= incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
		2.3.2. Stakeholder workshop to refine best practices into a national protocol and disseminated to the public	Guidelines for national protocol developed, used and disseminated to the public	5 years	KWS	LCTF, CUMC, Stakeholders	National protocol developed and implemented	0= incomplete, 1=in progress, 2=complete		
	2.4. Discussions informed on national compensation payments, performance schemes and other financial instruments	2.4.1. Large carnivore task force to provide possible workable solutions and case studies, and develop best practices guidelines including for local level	Report developed on best practices	2 years	LCTF	KWS, CUMC, Stakeholders	Report developed on best practices	0= incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
		2.4.2. Large carnivore task force to seek engagement with the Environment and Natural Resources Committee, and the Ministry of Tourism and Wildlife	A working relationship established between LCTF and Government institutions	2 years	LCTF	KWS, CUMC, Stakeholders	Active dialogue and engagement between LCTF and government institutions, number of meetings, minutes of meetings	0= incomplete, 1=in progress, 2=complete		



Objective	Target	Activity	Outcome	Timeline	Lead	Implementation	Indicator of success	Activity Completion Score	Target Completion Score	Objective Completion Score
3. Improve education and awareness of lion and spotted hyaena conservation and ecology	3.1. Open access database of learning materials created and used by conservation education teams	3.1.1. Consolidate existing materials from conservation stakeholders and create new materials customised to each audience	Lion and spotted hyaena education and awareness materials consolidated and customised	2 year	KWS	LC TF, CUMC, Stakeholders	Number of materials consolidated and number of new materials customised	0= incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
		3.1.2. Creation of an open access platform and database	Open access database cataloguing all learning and awareness materials to be made available to educators	3 years	KWS	LC TF, CUMC, Stakeholders	Database live and number of downloads	0= incomplete, 1=in progress, 2=complete		
	3.2. Lions become a flagship for conserving Kenya's savannahs along with improved perceptions of hyaenas	3.2.1. Identify champions in the national government, county government, private sector, media, and prominent Kenyans and motivated citizens, and engage them all to mobilize conservation awareness	Champions actively promoting awareness of lion and spotted hyaena conservation	4 years	KWS	LC TF, CUMC, Stakeholders	Number of champions recruited and campaigns launched, number of people reached	0= incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	sum actual target completion scores/ maximum possible target completion score
		3.2.2. Conduct profile raising activities such as host a national lion and spotted hyaena day to educate and engage the Kenyan public on conservation issues	All sectors of Kenyan populous more aware of lion and spotted hyaena conservation	5 years	KWS	LC TF, CUMC, Stakeholders	Number of activities conducted, number of people reached via media and social media	0= incomplete, 1=in progress, 2=complete		
	3.3. Lion and spotted hyaena conservation incorporated into activities planned by the National Wildlife Strategy 2030 (Goal 3) to inform and educate all Kenyans at both the national and locally customised levels about wildlife and conservation	3.3.1. Engage with national and local wildlife strategy implementation teams and provide input to the action plan	Education and awareness activities planned and incorporated into goal 3 and implemented	3 years	KWS	LC TF, CUMC, Stakeholders	Number of activities planned and implemented	0= incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
		3.3.2. Identify, develop and incorporate materials needed by the national wildlife strategy implementation team	Materials on lion and spotted hyaena conservation, identified, developed and incorporated in national wildlife strategy activities	5 years	KWS	LC TF, CUMC, Stakeholders	Number of materials developed and adopted into national wildlife strategy activities	0= incomplete, 1=in progress, 2=complete		



Objective	Target	Activity	Outcome	Timeline	Lead	Implementation	Indicator of success	Activity Completion Score	Target Completion Score	Objective Completion Score
4. Enhance evidence-based decision making for lion and spotted hyaena conservation	4.1. National carnivore survey completed and information provided to conservation unit committees and conservation unit working groups	4.1.1. Complete the national survey, and produce a report on the conservation status of both species in each conservation unit and corridor.	Baseline information on lion and spotted hyaena populations and distribution	2 years	KWS	LCTF, CUMC, Stakeholders	Survey complete and report on status in conservation unit produced	0=incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	sum actual target completion scores/ maximum possible target completion score
		4.1.2. Future stakeholder meetings in key conservation units to feedback carnivore survey results	Conservation stakeholders able to develop conservation and recovery actions based on the population status in their region and across the country	5 years	KWS	LCTF, CUMC, Stakeholders	Number of feedback meeting held, improved awareness of lion and spotted hyaena population and distribution	0=incomplete, 1=in progress, 2=complete		
	4.2. Monitoring systems for HWC, disease, population and genetics established in priority conservation units.	4.2.1. Stakeholder meetings to establish standardized protocols for HWC, disease, populations and genetics of the two species	Basic information on HWC, disease, and population, collected and reported in a standardized manner	2 years	KWS	LCTF, CUMC, Stakeholders	Number of protocols developed	0=incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
		4.2.2. Establish joint monitoring and databases for HWC, disease, population, and genetics of the two species in priority conservation units	Conservation stakeholders jointly monitoring HWC, disease, and population in priority CU's	5 years	KWS	LCTF, CUMC, Stakeholders	Number of joint monitoring systems and databases, number of incidents recorded	0=incomplete, 1=in progress, 2=complete		
	4.3. National protocols for veterinary interventions developed	4.3.1. Stakeholder meetings to establish protocol for veterinary intervention	Clear guidelines on when veterinary interventions (e.g. treatment, contraception etc.) should occur	3 years	KWS	LCTF CUMC, Stakeholders	Protocol developed and implemented	0=incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
		4.4. National and site-specific protocols for translocation developed	4.4.1. Meeting with experts and stakeholders to establish a protocol for the translocation of lions and spotted hyaenas	Clear guidelines on the translocation of lions and spotted hyaena including details on when translocations are applicable, which individuals should be translocated, where individuals should be translocated to and veterinary protocols (e.g. disease screening and vaccinating against rabies and canine distemper virus prior to release)	3 years	KWS	LCTF CUMC, Stakeholders	Protocol developed and implemented		



Objective	Target	Activity	Outcome	Timeline	Lead	Implementation	Indicator of success	Activity Completion Score	Target Completion Score	Objective Completion Score
4. Enhance evidence-based decision making for lion and spotted hyaena conservation	4.5. Operationalize national databases on HWC, disease, population, and genetics of the two species	4.5.1. Develop a research agenda for lions and hyaena in Kenya including research and collaring protocols	Lion and spotted hyaena research used to guide conservation	2 years	KWS	LCTF CUMC, Stakeholders	Research agenda and protocols developed and adopted	0=incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
		4.5.2 Partner with research/academic institutions to manage/analyse information on national databases	Information in national databases analysed and provided to decision makers	5 years	KWS	LCTF CUMC, Stakeholders	Number of MoUs, data sharing agreements, reports and papers published	0=incomplete, 1=in progress, 2=complete		
	4.6. Lion and spotted hyaena management plans developed in priority conservation units	4.6.1. Consolidate data on populations, HWC, disease and genetics for conservation units	Improved understanding of populations, HWC, disease and genetics in conservation units	5 years	KWS	LCTF CUMC, Stakeholders	Number of status reports produced	0=incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
		4.6.2. Stakeholder workshops in	Conservation interventions in	5 years	KWS	LCTF CUMC,	Number of action	0=incomplete,		
	4.7. Management plans for closed and semi-closed populations of lion and spotted hyaena developed	4.7.1. Identify and assess the status of closed and semi-closed populations of lion and spotted hyaena in Kenya	Information on where management plans for closed and semi-closed populations should be implemented	1 year	KWS	LCTF CUMC, Stakeholders	Report on closed and semi-closed populations including information on population structure, size and genetics	0=incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
			Baseline information on population structure, size and genetics to guide interventions.	3 years	KWS	LCTF CUMC, Stakeholders				
		4.7.2. Meeting with experts and stakeholders to establish management plans for closed and semi-closed populations of lion and spotted hyaena	Clear guidelines on the management of closed and semi-closed populations of lions and spotted hyaena	2 years	KWS	LCTF CUMC, Stakeholders	Protocol developed and implemented	0=incomplete, 1=in progress, 2=complete		



Objective	Target	Activity	Outcome	Timeline	Lead	Implementation	Indicator of success	Activity Completion Score	Target Completion Score	Objective Completion Score
5. Assist existing and new governance structures to facilitate lion and spotted hyaena conservation.	5.1. Conservation area managers and county governments trained in lion and spotted hyaena conservation	5.1.1. Partner with conservation stakeholders to host trainings for conservation area managers and stakeholders on lion and spotted hyaena conservation	Conservation area managers possess the technical capacity and knowledge require to effectively conserve lions and spotted hyaena	5 years	KWS	LC TF, CUMC, Stakeholders	Number of participants trained, improved understanding of lion and spotted hyaena conservation	0= incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	sum actual target scores/ maximum possible completion score
		5.1.2. Workshops to train and equip county government officers and county wildlife committees in lion and spotted hyaena conservation	Counties possess the technical capacity and knowledge require to effectively conserve lions and spotted hyaena	3 years	KWS	LC TF, CUMC, Stakeholders	Number of participants trained	0= incomplete, 1=in progress, 2=complete		
	5.2. Integrate lion and spotted hyaena conservation in county planning	5.2.1. Engage with different counties were applicable	Partnerships build between lion and spotted hyaena stakeholders and county governments	5 years	KWS	LC TF, CUMC, Stakeholders	Number of active partnerships	0= incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
		5.2.2. Provide data and information on conservation status, distribution and population to critical lion and hyaena to county governments for planning	Information on lion and spotted hyaena, conservation status, distribution and population used in county planning.	2 years	KWS	LC TF, CUMC, Stakeholders	Number of plans incorporating information on lion and spotted hyaena	0= incomplete, 1=in progress, 2=complete		
	5.3. Cross-border partnerships in transboundary conservation units and corridors developed	5.3.1. Hold cross-border meetings for transboundary conservation units to develop partnerships between stakeholders	Improved transboundary collaboration	5 years	KWS	LC TF, CUMC, Stakeholders	Number of meetings and transboundary partnerships developed	0= incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
		5.3.2. Develop MOUs between KWS and Wildlife institutions in neighbouring countries	Working relationships between government institutions formalized	5 years	KWS	LC TF, CUMC, Stakeholders	Number of MOUs developed and signed	0= incomplete, 1=in progress, 2=complete		
		5.3.3. Initiate dialogue on conservation collaboration with EAC secretariat through the Ministry	Intergovernmental dialogue on how to harmonize transboundary conservation	5 years	KWS	LC TF, CUMC, Stakeholders	Action plan for transboundary conservation developed	0= incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	
	5.4. Governance structures that enable lion and spotted hyaena conservation supported by national policies and legislation	5.4.1. Undertake an assessment of legal frameworks and policies supporting lion and spotted hyaena conservation at the county and national level	Policy gaps identified	2 years	KWS	LC TF, CUMC, Stakeholders	Gap assessment completed and disseminated to stakeholders	0= incomplete, 1=in progress, 2=complete	sum actual activity completion scores/ maximum possible completion score	





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Appendix 1A: Specific areas for which lion figures are provided in table 1. Areas listed from 1-12 correspond to the areas that were systematically surveyed using the SECR framework, while areas 13 onwards list areas for which guess estimates have been provided. See table 1 for cross reference and population estimates

Ecosystems/Counties	Specific areas that hoist lion populations
Maasai Mara Ecosystem	Maasai Mara National Reserve, Mara Triangle Conservancies: Enonkishu, Lemek, Naboisho, Olarro North, Olarro South, Ol Chorro, Ol Derkesi, Ol Kinyei, Olare Motorogi, and Siana
Shompole and Olkiramatian	Shompole and Olkiramatian conservancies as well as other sections of these group ranches.
Amboseli Ecosystem	Amboseli National Park, Olgulului Group Ranch, Mbirikani Group Ranch, and Eselenkei Group Ranch
Tsavo Conservation Area	National Parks: Tsavo East, Tsavo West and Chyulu Hills Private and community ranches and conservancies: Galana, Taita Hills, Lumo, Rukinga, Ndara, Mugeno, Sagalla, Wangala, Choke, Maungu, Taita, Kasigau, Washimbu, Amaka Kambanga, Dawida, and Ngutuni
Nairobi National Park	Private and community ranches and conservancies: Galana, Taita Hills, Lumo, Rukinga, Ndara, Mugeno, Sagalla, Wangala, Choke, Maungu, Taita, Kasigau, Washimbu, Amaka Kambanga, Dawida, and Ngutuni
Lake Nakuru National Park	Confines of Lake Nakuru National Park
Laikipia and Meru Ranches/Conservancies	Barkas, Borana, Brown, Chololo, Elkarama, Enasoit, Jessel, Kamogi, Kihoto, Lewa, Loisaba, Loldaiga, Mogwooni, Mpala, Mugie, Ngorare Ranch, Ol Doinyo Lemboro, Ol Jogi, Ol Maisor, Ol Malo, Ol Pejeta, Ole Naishu, Segera, Soita Nyiro, Sosian Ranch, Suyian, and W. Smith
Ol Pejeta	Confines of Ol Pejeta and excluding the four 'lion exclusion zones'
Solio Ranch	Confines of Solio Ranch
Sections of Samburu, Isiolo and Laikipia	National Reserves: Buffalo Springs and Shaba Community conservancies and group ranches: Westgate, Mpus Kutuk, Kalama, Nasuulu, Nakuprat Gotu, Leparua, Il Ngwesi, and Lekurruki
Meru Conservation Area	National Parks: Meru and Kora National Reserves: Bisanadi and Mwingi
Sibiloi National Park	Confines of Sibiloi National Park
Southern Rift Region	Elangata Wuas, Empaash, Enkusero Sampu, Mailua, Suswa, Nailepu, Nalarami, Olepolos, Olorgesale, Oltiyani, Orkonyil Association (Naimina Enkiyo Forest)



Machakos Ranches	Lisa Farm, Machakos ranch, Hopcraft ranch and Kapiti plains ranch
Greater Nairobi National Park eco-system	Kitengela Triangle, which includes Kitengela, Sheep & goat land, Empakasi, Oloosirkon, Oloolotikoshi, Sholinge, Kipeto, Kisaju and Isenya areas
South Turkana-Nasalat Ecosystem	South Turkana National Reserve and Nasalat National Reserve
Garissa County	Bura East Conservancy, Arawale National Reserve, Rahole National Reserve, Modika area, Boni forest, Ariri abdille guled, shantabag, Balamabala and Liboi (excluding Ishabini Conservancy)
Wajir County	Wajir South Constituency: Sabuli Wildlife Conservancy, Macheza, Dabley, Malmaldheer, Burdher, Kursin, Sukela, Qoqar, Meri, Dilmaanyale, Shimbirey, Burder, Agta lahel, Alio Ismail, Buurfule, Hambalash, Guleid dheere, Likoooley, Waraha buurka dheer, and Libiga dudunt areas Eldas Constituency: Basir and Dad Cantalay areas Wajir North Constituency: Harardhe, Bute, Gurar, Tuluroba, Korondile, and Ogorji Wajir West Constituency: Hadado, Bare Godey and Waara
Mandera County	Malkamari National park, Dandu hills wildlife Conservancy , Chachabole community wildlife Conservancy, Tubo community wildlife Conservancy, Rhamu South Community conservancy, Garsesala and Diid Guchi plain, and Waranqara and Gurreh hills

Appendix 1B: Specific areas in different ecosystems and counties with lions but were not surveyed using SECR method but guess estimates were provided by experts and conservationists

Name	Organization	Ecosystem/County	Telephone No.	Email Address
Dr. Abdullahi H. Ali	Hilora Conservation Pro-gram	Garissa, Wajir and Mandera	+254722772113	a.hussein.ali@gmail.com; ali@hirolaconservation.org
Dr. Guy Western	Southern Rift Association of Land Owners	Southern Rift Region	+254722747228	gwestern@soralo.org
Anthony Wandera	Northern Rangeland Trust	Garissa, Tana River and Lamu	+254721805930	Kwsteri13@gmail.com; Anthony.wandera@nrt-kenya.org
Sharmake Mohamed	Honorary Warden, Wajir	Wajir	+254722101405	yussufsharmake@gmail.com
Hussein Ahmed Mahat	Honorary Warden, Man-dera	Mandera	+254722833402	Mahathussein5@gmail.com
Francis Lesilau	Kenya Wildlife Service	Marsabit	+254714007666	flesilau@kws.go.ke
Raabia Hawa	Ulinzi Africa Foundation	Lamu	+254-788835348	raabia@walkwithrangers.org



Appendix 2: Lion and Hyena stakeholder workshop protocol

Lion and Hyena Stakeholder Workshop Protocol

1. Opening Remarks and Introductions

Open the proceedings with a word of prayer (where appropriate) before inviting the most senior representative from the area (Governor/MCA/County Rep) and then the KWS warden to welcome the participants. Subsequently, begin a round of introduction where participants introduce themselves and state where they are from.

2. Awareness of existing strategy

Ask by a show of hands how many people are:

- Aware of the existence of a lion and spotted Hyena strategy?
- Have read the current lion and spotted Hyena strategy?

Record the number of participants who said 'yes' each the of above questions.

3. Overview of the importance of strategies and strategy review and development process

Provide an overview of conservation strategies touching on following key points:

What are conservation strategies.

- The importance of strategic conservation planning and maybe an example where it has been done well.
- Discuss the components of a good conservation strategy.
- Mention how to ensure strategies are not only developed but implemented.

After having provided an overview of conservation strategies allow for questions. Once questions have been answered and participants seem to have a basic understanding of conservation strategy, provide an over of the work plan for the review current lion and spotted Hyena strategy and development of the 2nd edition. After having completed the overview an opportunity for questions should again be provided.

4. Lion and Hyena Presence and Conservation Status

4.1. Defining regions, localities, and sub locations: Prior to the workshop the region being covered by the workshop, and the localities from which participants have be drawn should be identified. A list of the government sub locations within each locality should then be compiled to help identify areas of lion and Hyena presence. An example of region, locality, and sub location identification can be found below.

Region: Magadi

- *Localities: Olkiramatian, Shompole, Olkeri, Oldonyo Nyokie*

Locality - Olkiramatian

- Sub locations: Nguruman, Olkiramatian, Oldorko, Magadi

4.2. Group identification of lion and Hyena

Divide participants into groups based on the locality which they are representing. If a participant is not representing a specific locality, they should join the locality with which they are most familiar. Park wardens and KWS representatives should be grouped together and asked to collectively provide information on all localities. Each group shall then collectively complete separate tables of lions and spotted Hyena presence and conservation status for the sub-locations within their locality. Samples of Lion and Hyena Presence and Conservation Status tables are provided below.



Lion Presence and Conservation Status

Sub-location	Occasional Lion Presence	Permanent Lion Presence	Sufficient Lion Protection	Protection Provided by

Definitions:

Sub location - area of interest to be identified prior to meeting and sub locations listed for each locality.

Occasional Lion Presence (Yes/No): Over the last three years have lions been present intermittently or seasonally but are not predominantly found in the locality.

Permanent Lion Presence (Yes/No): Have lions been consistently present in the sub location over the last three years and can be considered a permanent or resident population.

Sufficient Lion Protection (Yes/No): Is the level of protection given sufficient to ensure that a lion population is maintained in that sub location for the next 10 years?

Protection Provided by: List the groups involved in the protection and conservation of lions within that sub-location.

Hyena Presence and Conservation Status

Sub-location	Occasional Hyena Presence	Permanent Hyena Presence	Sufficient Hyena Protection	Protection Provided by

Definitions:

Sub location- area of interest to be identified prior to meeting and sub locations listed for each locality.

Occasional Hyena Presence (Yes/No): Over the last three years have Hyenas been present intermittently or seasonally but are not predominantly found in the locality.

Permanent Hyena Presence (Yes/No): Have Hyenas been consistently been present in the sub location over the last three years and can be considered a permanent or resident population.

Sufficient Hyena Protection (Yes/No): Is the level of protection given sufficient to ensure that a Hyena population is maintained in that sub location for the next 10 years?

Protection Provided by: List the groups involved in the protection and conservation of Hyenas within that sub-location.

4.3. Feedback and verification of presence and conservation status

After having completed their tables then all participants should be reconvened. Each group will then present their collective findings back to the wider audience. After each group presentation facilitators should inquire from the broader group whether there is any other information participants would like to provide before adding the information to a master table on an A1 sheet or flip chart that is clearly visible to all participants.



5. Desired change in lion and Hyena populations

Provide each participant with a four differently coloured pieces of paper. For example, white, blue, red, yellow. Participants should then answer the each of following four questions as instructed below:

Lion

- On your **white paper** indicate whether within this region you would like lion populations **inside** national parks to increase, stay the same, decrease, or disappear completely.
- On your **blue paper** indicate whether within this region you would like lion populations **outside** national parks to increase, stay the same, decrease, or disappear completely.

Hyena

- On your **red paper** indicate whether within this region you would like Hyena populations **inside** national parks to increase, stay the same, decrease, or disappear completely.
- On your **yellow paper** indicate whether within this region you would like Hyena populations **outside** national parks to increase, stay the same, decrease, or disappear completely.

NB: If participants within the audience are illiterate desired population changes can be indicated using symbols of your choosing.

6. Current threats, Interventions and Opportunities for Conservation

Have participants count off into five groups and ensure each group has a mixture of stakeholders. Each group shall then be deliberate and provide a collective response to the following six questions pertaining to lion and Hyena:

Lion

- What are the current threats facing lions within in this region?
- What actions or interventions are currently being taken to address the threats facing lions in this region?
- What additional actions could be taken to improve lion conservation in this region?

Hyena

- What are the current threats facing Hyena within in this region?
- What actions or interventions are currently being taken to address the threats facing Hyena in this region?
- What additional actions could be taken to improve Hyena conservation in this region?

After group deliberation are finished and each group has developed their collective response all groups reconvene all groups. Each group will then present their collective findings back to the wider audience.

7. Open Forum Discussion

After having completed the the group identification of threats, interventions and opportunities a facilitator should allow for open forum discussion. Participants should be encouraged to raise any comments, issues, suggestions that they feel have not be adequately captured or expressed throughout the course of the workshop.



Appendix 3: Development of the 2nd edition of the ‘conservation and management strategy for lions and spotted Hyena in Kenya’ (2020-2030)



**Stakeholder Planning Workshop Report
June 27th and 28th 2018**

Compiled by SORALO and WildCRU

Funded by WWF and KWS



Agenda

DAY 1

Time	Discussion	Speaker
Session 1- Opening Ceremony: Chairman – Dr. Shadrack Ngene		
8:30 – 9:00	Registration	
9:00 – 9:15	Introductions	Dr. Shadrack Ngene
9:15 – 9:30	Welcome Remarks	Dr. Samuel Kasiki
	Opening Speech	Julius Kimani
Session 2 Chairman – Prof. David Macdonald		
9:30 – 10:00	Overview of Conservation Priority Setting	
10:00- 10:30	Overview of Stakeholder Consultations <ul style="list-style-type: none"> • Overview of the process • Progress to date 	John Kamanga
10:30- 11:00	Successes and Failures of the Previous Strategy	Monica Chege and Bernard Kuloba
11:00 – 11:30	Coffee break	
11:30–13:00	Break out sessions – Conservation Challenges and Threats	John Kamanga
13:00 – 14:40	Lunch break	
14:00 – 16:00	Break out sessions – Conservation Opportunities	Guy Western
16:00 – 16:30	Discussion	Prof. David Macdonald
16:30 – 17:00	Coffee Break	

DAY 2

Time	Discussion	Speaker
8:30 – 9:00	Arrival	
9:00 – 9:10	Review of Day 1	Guy Western
9:15 – 9:45	Key Challenges, Threats, and Opportunities <ul style="list-style-type: none"> • Status of Lion and Hyena in Kenya • Keys Threats, Challenges and Opportunities 	Dr. Alayne Cotterill
9:45 – 10:30	Overview of the National Wildlife Strategy	Lucy Wariungi
10:30 – 11:00	Coffee break	
11:00 – 13:00	Break out sessions- Priority Setting	Prof. David Macdonald
13:00 – 14:40	Lunch break	
14:00 – 16:00	Priority Setting (continued) <ul style="list-style-type: none"> • Plenary Discussion • Way forward 	Prof. David Macdonald
16:00 – 16:30	Closing Remarks	Dr. Samuel Kasiki
16:30 – 17:00	Coffee Break	

Evaluation of Previous Strategy

The log framework and progress indicators from the previous strategy formed the basis of an evaluation tool which was completed by the 38 participants who attended the Nairobi Lion and Spotted Hyena Strategy meeting on June 27th and 28th 2017. Evaluation scores of the existing strategy revealed that no activity or objective was fully and effectively achieved. Objective 1, 2, 3 and 8 were partially achieved. Objective 4, 5, 6, and 7 were not achieved (Figure 1).



Objective 1 - Data collection and utilization of information in the conservation and management of lions and spotted hyaenas in Kenya		Achievement Score	Implementation Status
Creation of a carnivore liaison office at KWS.		65%	Fully Achieved
Establish standardised database and protocols for data collection on spotted hyaenas and lions.		29%	Partially Achieved
Current and accurate distribution and abundance of lions and hyaenas in Kenya established.		22%	Partially Achieved
Creation of capacity building program (lion and hyaena conservation program)		11%	Not Achieved
Lion & hyaena conservation program integrated within KWS conservation education program.		13%	Not Achieved
Management oriented research on lions and spotted hyaenas promoted or enhanced.		30%	Partially Achieved
Manual on coexistence with lions and hyaenas developed, availed and distributed to communities		14%	Not Achieved
Objective 1 - Total Score		26%	Partially Achieved
Objective 2 - To work with communities to enhance awareness and promote coexistence with the two species.			
Outreach program developed and implemented in lion and hyaena ranges areas in three years.		25%	Not Achieved
Existing community conservancies within lion and hyaena ranges supported in four regions within 3years.		29%	Partially Achieved
Objective 2 - Total Score		27%	Partially Achieved
Objective 3 - To change wrong perceptions on the species.			
Knowledge base (inclusive indigenous) on ecology conservation status of the 2 species established		29%	Partially Achieved
Linkage with local institutions (inclusive of Community Based Organizations) and media formed within one year.		24%	Partially Achieved
Objective 3 - Total Score		26%	Partially Achieved
Objective 4 - To enhance conservation education in learning institutions.			
School outreach programs reviewed to incorporate lion and hyaena conservation issues in 6 months		13%	Not Achieved
Information base on lion and hyaena packaged and implemented for various levels of formal education in 2 years		5%	Not Achieved
Objective 4 - Total Score		9%	Not Achieved
Objective 5 - To advocate and lobby for a national land use policy that integrates socio-economic development and conservation of habitat for lion, hyaena and their prey			
Prepare and develop a wildlife conservation proposal to be presented to the National land use review committee for integration.		14%	Not Achieved
Objective 5 - Total Score		14%	Not Achieved
Objective 6 - To minimize human - lion/ hyaena conflict and related issues.			
Reduce human -lion/hyaena conflict by 50%		21%	Not Achieved
Reduction of number of predators (Lions/hyaenas) killed indiscriminately		32%	Partially Achieved
Disease surveillance and monitoring system established		24%	Partially Achieved
Objective 6 - Total Score		25%	Not Achieved
Objective 7- To develop and implement conservation and management policy on lion's and hyaenas in both protected areas and rangelands			
Policy guidelines on conservation and management of Lions and hyaena developed and gazetted into subsidiary regulations		5%	Not Achieved
Conservation area-specific management plans for Lions and spotted hyaenas and replicate the principles for site-specific areas.		16%	Not Achieved
Produce guidelines on Incentives to local communities and landowners to actively participate in the conservation and management of lions and hyaenas		11%	Not Achieved
International cooperation on conservation and management of cross border (shared) populations of Lions and hyaenas promoted.		17%	Not Achieved
Reduced availability and usage of furadan and other poisons and provide alternatives within a given time		40%	Partially Achieved
Objective 7 - Total Score		18%	Not Achieved
Objective 8 -To establish an institutional framework to coordinate research, information, collection, data storage and dissemination on lions and hyaenas/large carnivores.			
Relevant information on Lions and spotted hyaenas collected, analysed and stored in a database		37%	Partially Achieved
Information on Lions and spotted hyaenas disseminated to enhance their conservation and management		37%	Partially Achieved
Objective 8 - Total Score		37%	Partially Achieved

Figure 1: Evaluation grid showing achievement scores and implementation status of the previous strategy's objectives and activities.



Challenges and Threats

Breakout sessions identified 24 different threats and/or challenges facing lion and spotted Hyena conservation in Kenya. Challenges and threats were then grouped into four broad hierarchical categories, namely geopolitical, national policy, landscape management and proximate threats (Figure 2).

Conservation Opportunities

Breakout groups were subsequently asked to identify possible opportunities to improve lion and spotted Hyena conservation in Kenya. Twenty-six different opportunities were identified which fall broadly into four categories, namely economic opportunities, engagement opportunities, improvement of know-how, and technology and innovation (Figure 3).

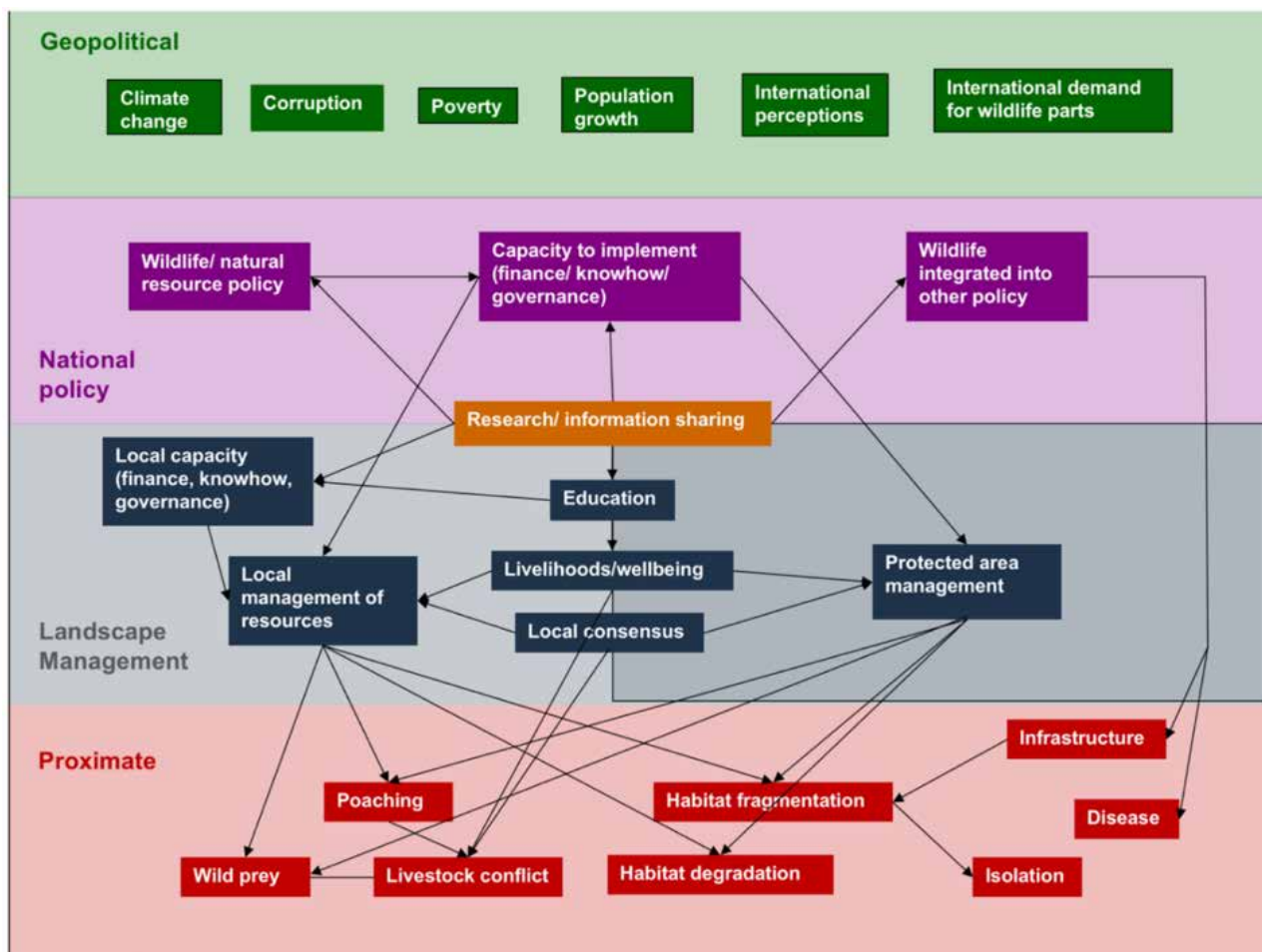


Figure 2: Overview of the threats and challenges facing lion and spotted Hyena conservation in Kenya.



Priority Setting

Of the twenty-six threats and challenges identified in the breakout session it was acknowledged that those categorized as geo-political were beyond the scope of the strategy. Participants were given three votes and asked to decide which of the 18 remaining threats and challenges they felt should be prioritized in the strategy. Participants were also asked to indicate which of the threats and challenges they felt could be tackled in isolation by the lion and spotted Hyena conservation community alone.

Addressing human-wildlife conflict was identified as the main priority for the strategy, followed by integration of wildlife into national policy, and building local capacity to implement conservation. It was acknowledged that only research and information sharing could be tackled in isolation by the lion and spotted Hyena conservation community.

Opportunity	Categorization
Wildlife friendly enterprise e.g. conservation beef	Economic
Ecosystem services approach	
Wildlife utilisation	
Other sources of money linked to climate change and development	
Investment opportunities	
Payment (taxes) on other enterprises for wildlife conservation	
Tourism	Engagement
Compensation/performance payments	
Cultural value (lions)	
Devolution to allow for area and culturally specific approaches	
Use social media to share information/messaging	
Trans frontier conservation efforts	Knowhow
Use local knowledge and traditional conservation cultural practices	
Many conservation/research projects with external funding	
Livelihoods e.g. livestock fattening and sale programs	
Both private and community conservancy networks	
Rehabilitation and preparing for increasing wildlife areas after urbanisation - lessons from Europe	
Education - school outreach, formal education	
Policies and management plans from other areas and organisations	
Zoning e.g. core areas	
Livelihoods - improve veterinary care for livestock	
Standardise the response to poisoning	Technology and innovation
Sharing of huge amounts of available data and fine-scale, real-time monitoring capabilities	
Effective and cheap communications e.g. video and social media for messaging, WhatsApp groups, better radio communication	
More efficient food production e.g. permaculture	
Protecting livelihoods e.g. boma designs, lights, sounds	

Figure 3: Overview and categorization of the opportunities to improve lion and spotted Hyena conservation in Kenya



Rank	Challenge	Priority		Can be tackled in isolation
		Vote Count	Vote Proportion	
1	Human wildlife conflict	18	18%	No
2	Lack integration of wildlife conservation in other national policy	18	18%	No
3	Building local capacity to implement conservation	16	16%	No
4	Provision of livelihoods	12	12%	No
5	Lack of conservation education	11	11%	Maybe
6	Environmental degradation	5	5%	No
7	Infrastructure and development projects	4	4%	No
8	Local consensus about resource management and conservation	3	3%	No
9	Land fragmentation	2	2%	No
10	Lion population isolation	2	2%	Maybe
11	Wild prey reduction	2	2%	No
12	Poor protected area management	2	2%	No
13	Research and information sharing	2	2%	Yes
14	Local level resource management	2	2%	No
15	Wildlife and natural resource policy	1	1%	No
16	Capacity to implement conservation efforts at national level	1	1%	No
17	Diseases	0	0%	Maybe
18	Lion and hyena poaching	0	0%	No

Figure 4: List of key challenges and priorities (based on proportion of votes) for lion and Hyena conservation in Kenya

Vision

Breakout groups were asked to develop their own 10-year vision for lion and spotted Hyena conservation in Kenya. Five different but overlapping visions were proposed.

Group 1

A viable lion and Hyena population relevant to the current and future generations, co-existing in a healthy ecosystem.

Key words: Viable population; healthy ecosystem; co-existence (value); relevance (future and current).

Group 2

A Kenya where lions and spotted Hyenas are co-existing harmoniously and all Kenyans value and appreciate them. A Kenya where communities are benefiting from these species culturally, scientifically, aesthetically and economically. No compensation demanded.

Group 3

Resilient and connected populations of lions, Hyena and wild prey that support human livelihoods and well-being. Improved understanding of the values of lions and Hyenas through inclusivity in policy formulation and implementation.

Group 4

Viable and healthy populations of lions and spotted hyenas for the benefit of Kenyans. Healthy ecosystems that support thriving populations of predator, prey and people. Connectivity between different lion and Hyena populations. Permeable landscape.

Group 5

Multiple viable populations of large carnivores throughout Kenya, in suitable habitat, with corridors for connectivity.

Acknowledgments

We would like to thank the KWS team comprised of Dr. Shadrack Ngene, Mr. Bernard Kuloba, and Miss Monica Chege for their support in organizing the workshop. The workshop would also not have been possible without the financial support of WWF Kenya.



Appendix 4: List of stakeholders identified to be directly or indirectly engaged in lion and spotted Hyena conservation across Kenya

List of stakeholders identified to be directly or indirectly engaged in lion and spotted Hyena conservation across Kenya.

Number	Area	Type	Stakeholder Name
1	Amboseli	Conservancy	Chyulu West
2	Amboseli	Conservancy	Eselenkei Imbirikani Conservation Area
3	Amboseli	Conservancy	Maasai Wilderness Conservation Trust
4	Amboseli	Conservancy	Kilitome (Tawi)
5	Amboseli	Conservancy	Kitenden Land Owners
6	Amboseli	Conservancy	Ilengarunyani
7	Amboseli	Conservancy	Losikuto
8	Amboseli	Conservancy	Motikanju
9	Amboseli	Conservancy	Nailepu
10	Amboseli	Conservancy	Nalarami
11	Amboseli	Conservancy	Olenarika
12	Amboseli	Conservancy	Olepolos
13	Amboseli	Conservancy	Oltiyani
14	Amboseli	Conservancy	Osupuko
15	Amboseli	Conservancy	Rombo Emampuli
16	Amboseli	Conservancy	Satao Elerai
17	Amboseli	Conservancy	Sidai Oleng Wildlife Sanctuary (Kimana)
18	Amboseli	Conservancy	Kimana Community
19	Athi/Nairobi	Conservancy	Ereto Kipeto
20	Athi/Nairobi	Conservancy	Kipwa Conservancy
21	Athi/Nairobi	Conservancy	Nanapa
22	Athi/Nairobi	Conservancy	Olerai Wildlife Community Conservancy
23	Central Rift	Conservancy	Ng'enyin Community Conservation Area
24	Central Rift	Conservancy	Wilele Wildlife Conservancy
25	Central Rift	Conservancy	Ruko Community Wildlife Conservancy
26	Central Rift	Conservancy	Kaptuiya Wildlife Conservancy
27	Central Rift	Conservancy	Olerai Sanctuary
28	Central Rift	Conservancy	Kiborgoch Wildlife Conservancy
29	Central Rift	Conservancy	Kabarion Conservancy
30	Central Rift	Conservancy	Irong Community Conservancy
31	Central Rift	Conservancy	Chuine Community Conservancy
32	Central Rift	Conservancy	Morop Tarambus
33	Central Rift	Conservancy	Kimngochoch
34	Central Rift	Conservancy	Kiplombe Community Conservancy
35	Mara	Conservancy	Enonkishu Conservancy
36	Mara	Conservancy	Lemek Conservancy
37	Mara	Conservancy	Mara Naboisho Conservancy
38	Mara	Conservancy	Mara North Conservancy



Number	Area	Type	Stakeholder Name
39	Mara	Conservancy	Mara Siana Conservamcy
40	Mara	Conservancy	Motorogi conservancy
41	Mara	Conservancy	Nashulai Maasai Conservancy
42	Mara	Conservancy	Ol kinyei conservancy
43	Mara	Conservancy	Olara Orok conservancy
44	Mara	Conservancy	Olarro Conservancy
45	Mara	Conservancy	Olchorro Oirowa Conservancy
46	Mara	Conservancy	Olderkesi Wildlife Conservancy
47	Mara	Conservancy	Oloisukut Conservation
48	Mara	Conservancy	Pardamat Conservation Area
49	Samburu/Isiolo	Conservancy	Awer Community Conservancy
50	Samburu/Isiolo	Conservancy	Biliqo-Bulesa
51	Samburu/Isiolo	Conservancy	Hanshak Nyongoro Conservancy
52	Samburu/Isiolo	Conservancy	Il Ngwesi Group Ranch
53	Samburu/Isiolo	Conservancy	Ishaqbini
54	Marsabit	Conservancy	Jaldesa Community Conservancy
55	Samburu/Isiolo	Conservancy	Kainuk
56	Samburu/Isiolo	Conservancy	Kalama Wildlife Conservancy
57	Samburu/Isiolo	Conservancy	Katilu
58	Samburu/Isiolo	Conservancy	Kiunga Marine Community Conservancy
59	Samburu/Isiolo	Conservancy	Lekurruki Conservation Ltd
60	Samburu/Isiolo	Conservancy	Leparua Community Conservancy
61	Samburu/Isiolo	Conservancy	Lochakula
62	Samburu/Isiolo	Conservancy	Lokichar
63	Samburu/Isiolo	Conservancy	Lower Tana Delta Conservation trust
64	Samburu/Isiolo	Conservancy	Ltungai Community Conservancy
65	Samburu/Isiolo	Conservancy	Masol
66	Samburu/Isiolo	Conservancy	Meibae Community Conservancy
67	Marsabit	Conservancy	Melako
68	Samburu/Isiolo	Conservancy	Mpuskutuk Community Wildlife
69	Samburu/Isiolo	Conservancy	Conservancy
70	Samburu/Isiolo	Conservancy	Naibunga Conservancy Trust
71	Samburu/Isiolo	Conservancy	Nakuprat-Gotu Community Conservancy
72	Samburu/Isiolo	Conservancy	Namunyak
73	Samburu/Isiolo	Conservancy	Nasuulu Community Conservancy
74	Samburu/Isiolo	Conservancy	Ndera Community Conservancy
75	Samburu/Isiolo	Conservancy	Ngare Ndare
76	Samburu/Isiolo	Conservancy	Pate Island Conservation Group
77	Samburu/Isiolo	Conservancy	Pellow
78	Samburu/Isiolo	Conservancy	Sera Community Conservancy
79	Marsabit	Conservancy	Shurr
80	Marsabit	Conservancy	Songa Community Conservancy



Number	Area	Type	Stakeholder Name
81	Samburu/Isiolo	Conservancy	Westgate Community Conservancy
82	South Rift	Conservancy	Elangata Wuas
83	South Rift	Conservancy	Empaash
84	South Rift	Conservancy	Enkusero Sampu
85	South Rift	Conservancy	Mailua
86	South Rift	Conservancy	Suswa
87	South Rift	Conservancy	Olkeri
88	South Rift	Conservancy	Oldonyo Nyokie
89	South Rift	Conservancy	Elanganta Enkatatoto
90	South Rift	Conservancy	Olkiramatian
91	South Rift	Conservancy	Olorgesale
92	South Rift	Conservancy	Orkonyil Association
93	South Rift	Conservancy	Shompole
94	Tsavo	Conservancy	Lualenyi Community
95	Athi/Nairobi	Conservancy	Kwa Kyelu Sanctuary
96	Athi/Nairobi	Conservancy	Lisa Ranch
97	Athi/Nairobi	Conservancy	Machakos Ranching
98	Athi/Nairobi	Conservancy	Rimpa Consevancy
99	Athi/Nairobi	Conservancy	Silole sanctuary
100	Athi/Nairobi	Conservancy	Ulu Conservancy
101	Athi/Nairobi	Conservancy	Hopcraft ranch
102	Central Rift	Conservancy	Kigio Wildlife Conservancy
103	Central Rift	Conservancy	Hippo-point Naivasha Conservancy
104	Central Rift	Conservancy	Lentolia Farm
105	Central Rift	Conservancy	Mundui Estate
106	Central Rift	Conservancy	Kongoni Conservancy
107	Central Rift	Conservancy	Sanctuary Farm
108	Central Rift	Conservancy	Soysambu Conservancy
109	Central Rift	Conservancy	Loldia Conservancy
110	Central Rift	Conservancy	Crater Lake Game Sanctuary
111	Central Rift	Conservancy	Bila Shaka
112	Central Rift	Conservancy	Oserengoni
113	Central Rift	Conservancy	Crescent Island
114	Laikipia	Conservancy	Borana Conservancy
115	Laikipia	Conservancy	Laikipia Nature Conservancy
116	Laikipia	Conservancy	Loisaba Conservancy
117	Laikipia	Conservancy	Mugie Conservancy
118	Laikipia	Conservancy	OI Jogi Ltd
119	Laikipia	Conservancy	OI Pejeta Conservancy
120	Laikipia	Conservancy	OI-Lentile Conservancy
121	Laikipia	Conservancy	Sangare Ranch
122	Laikipia	Conservancy	Sossian



Number	Area	Type	Stakeholder Name
123	Laikipia	Conservancy	Impala Research Centre
124	Laikipia	Conservancy	Mugie Conservancy
125	Laikipia	Conservancy	Lewa Conservancy
126	Tsavo	Conservancy	Lumo Wildlife Conservation Trust
127	Central Rift	Conservancy	Loldiaga ranch
128	Central Rift	Conservancy	Ensoit ranch
129	Central Rift	Conservancy	Marula Estate
130	South Rift	Conservancy	Magadi Conservation
131	Tsavo	Conservancy	Taita Ranch
132	Tsavo	Conservancy	Oza Group Ranch
133	Tsavo	Conservancy	Wangala Ranch
134	Tsavo	Conservancy	Golini Mwaluganje
135	Tsavo	Conservancy	Rukinga
136	Tsavo	Conservancy	Taita Hills Wildlife Sanctuary
137	Tsavo	Conservancy	Mbulia Conservancy
138	Tsavo	Conservancy	Ngutuni Sanctuary
139	Tsavo	Conservancy	Kasigau Ranching Company Ltd
140	Tsavo	Conservancy	Mkuki Ranch
141	Tsavo	Conservancy	Amaka Ranch
142	Tsavo	Conservancy	Maungu Ranching Company Ltd.
143	Tsavo	Conservancy	Wushumbu Ranch
144	Tsavo	Conservancy	Dawida Ranching Company Ltd
145	Tsavo	Conservancy	Kambanga Ranching Company Ltd
146	Tsavo	Conservancy	Mgeno Ranching Company Ltd
147	Tsavo	Conservancy	Bura Ranch
148	Tsavo	Conservancy	Mramba Ranch
149	Tsavo	Conservancy	Galana Wildlife Conservancy
150	Tsavo	Conservancy	Izera
151	Tsavo	Conservancy	Taita Sisal Estate Sanctuary
152	Tsavo	Conservancy	Ndara
153	Tsavo	Conservancy	Peregrine Conservation Area
154	Amboseli	Government	Kajiado county
155	Athi/Nairobi	Government	Machakos County
156	Coast	Government	Lamu County
157	Laikipia	Government	Nyeri County
158	Marsabit	Government	Marsabit County
159	Meru	Government	Meru County
160	National	Government	KWS
161	National	Government	Kenya Water Towers Agency
162	National	Government	Kenya Forest Service
163	Samburu/Isiolo	Government	Samburu county
164	Samburu/Isiolo	Government	Isiolo County



Number	Area	Type	Stakeholder Name
165	Tsavo	Government	Taita Teveta County
166	Tsavo	Government	Kwale County
167	Amboseli	NGO	Lion Guardian
168	Amboseli	NGO	BigLife
169	Amboseli	NGO	Wildlife direct
170	Amboseli	NGO	ACC
171	Amboseli	NGO	AET
172	Amboseli	NGO	Amboseli Tsavo Game Scouts Association
173	Amboseli	NGO	Born Free
174	Amboseli	NGO	African Conservation Centre
175	Central Rift	NGO	Rhino Ark
176	Laikipia	NGO	Laikipia Wildlife Forum
177	Laikipia	NGO	The Nature Conservancy
178	Laikipia	NGO	Lion Landscapes
179	Laikipia	NGO	San Diego Zoo
180	Magadi	NGO	SORALO
181	Mara	NGO	Maasai Mara Conservancies Association
182	Mara	NGO	Anne Kent Taylor Fund
183	Mara	NGO	Mara Hyena project
184	Mara	NGO	Mara Predator
185	National	NGO	Nature Kenya
186	National	NGO	Wildlife Clubs of Kenya
187	National	NGO	IFAW
188	National	NGO	WWF
189	National	NGO	KWCA
190	National	NGO	Kenya Wildlife Trust
191	National	NGO	Conservation International
192	National	NGO	African Wildlife Foundation
193	National	NGO	Peregrine Fund
194	Samburu/Isiolo	NGO	Northern Rangeland Trust
195	Samburu/Isiolo	NGO	Ewaso lions
196	Samburu/Isiolo	NGO	Grevy Zebra Trust
197	Samburu/Isiolo	NGO	STE
198	Tsavo	NGO	Tsavo Trust
199	Tsavo	NGO	Zoological Society of London
200	Tsavo	NGO	Tsavo Conservation Trust
201	Tsavo	NGO	David Sheldrick Wildlife Trust
202	Tsavo	NGO	Wildlife Works
203	Central Rift	Research	Leiden University
204	Amboseli	Tourism	Porini Camps
205	Amboseli	Tourism	Great Plains
206	Tsavo	Tourism	Lions Bluff Camp



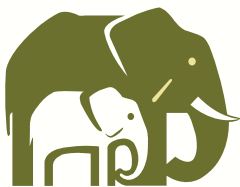
Appendix 5: membership of large carnivore task forces

Name	Organization	Designation	Position
Dr. Patrick Omondi	Kenya Wildlife Service	Director, Biodiversity Research and Planning	Chairman
Dr. Shadrack Ngene	Kenya Wildlife Service	Head, Species Conservation and Management	Alternate Chairman
Linus Kariuki	Kenya Wildlife Service	Senior Research Scientist, Endangered Species	Secretary
Aggrey Maumo	Kenya Wildlife Service	Assistant Director, Community Conservation Programme	Member
Dr. David Ndeere	Kenya Wildlife Service	Head, Veterinary and Capture Services	Member
Femke Broekhuis	Consultant, Large Carnivores	Kenya Wildlife Trust	Member
Dr. Rosie Woodroffe	Samburu Laikipia Wild dog Project	Coordinator	Member
Dr. Philip Muruthi	African Wildlife Foundation	Vice-President	Member
Dr. Yusuf Adan	World Wildlife Fund, Kenya	Species Programs	Member
Titus Adhola	National Museums of Kenya	Large Carnivore Specialist	Member
Shivani Bhalla	Ewaso Lions	Founder	Member
Dr. Nick Mitchell	Range Wide Conservation Program for Cheetah and Wild Dog	Cheetah and Wild Dog Specialist	Member
Stephanie Dolrenry	Lion Guardians	Founder	Member
Stephanie Dloniak	Hyena Specialist	Chair, IUCN Hyena Specialist Group	Member





**KENYA
WILDLIFE
SERVICE**



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