MANAGEMENT

Progress on the Kenya black rhino Action Plan (2017–2021)

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Abstract

Kenya conserves 75% of the eastern black rhino sub species *Diceros bicornis michaeli*, which is listed as Critically Endangered by the International Union for Conservation of Nature (IUCN, Emslie 2020). The species gradual recovery has been guided by a series of national five-year conservation action plans or strategies, following its dramatic decline from around 20,000 animals in the early 1970s to less than 350 by the late 1980s. The 2017–2021 Action Plan was developed and implemented following a difficult period between 2012–2016, which saw poaching reach its highest level since the late 1980s. The Plan sets five strategic objectives to achieve the national goal of increasing rhino numbers by a minimum 5% in established populations with a national meta-population of 830 animals by 2021, and eventually 2000 animals residing in its natural habitat (Amin et al. 2017). Significant progress has been made with numbers up to 794 animals (end of 2019) and poaching reduced to less than 1% per annum since 2016. There is renewed vigour to complete planned activities and implement new ones as part of adaptive management. Resources are being ploughed into upgrading rhino capture and veterinary equipment and training staff. Protocols for rhino monitoring, immobilisation, translocation, and disease surveillance and vaccination have been enhanced and operationalized. Closely linked to this, capacity building is being undertaken and development of specialised courses such as the Rhino Protected Area Management Course has been initiated. Rhino range is being expanded into secure suitable habitats in central Kenya and the Tsavo ecosystem to sustain population growth. Assessments of populations, which are currently non-viable, are being undertaken and recovery plans being developed. Rhino DNA profiling is being scaled up to support meta-population management. Ecological carrying capacities of existing sites are also being revised based on established methods. Communication has been enhanced and lessons learnt from the Tsavo East rhino translocation tragedy of 2018.

The Action Plan has brought in a new component on sustained financing. The COVID-19 pandemic has further highlighted the critical importance of a contingency fund as revenue through tourism and funding from donors has been significantly reduced (to date: July 2020[1]). In due course, Kenya will start planning the

[1]President Uhuru lifted the "cessation of movement" order on 7 July and citizens/residents of Kenya were able to travel locally. International travel is anticipated to resume from the 1st August, at the time of going to print. However, restrictions may be imposed again if the risks prevail. https://www.news24.com/news24/Africa/News/kenya-announces-phased-reopening-from-coronavirus-lockdown-20200706

development of the 2022–2026 Action Plan. The development of the next five-year Action Plan will require adequate funding so that it can be ready when the current Plan concludes. A thorough review of progress of the current Action Plan will be undertaken at the end of its term, and lessons learnt and new best practices from elsewhere, such as the Rhino Manager's Handbook (Balfour et al. 2019), integrated.

Key words: biological management, poaching, security, conservation

Résumé

Le Kenya conserve 75% de la sous-espèce du rhinocéros noir de l'Est *Diceros bicornis michaeli*, qui est classée « En Danger Critique d'Extinction » par l'Union Internationale pour la Conservation de la Nature (UICN, Emslie 2020). Le rétablissement progressif de l'espèce a été guidé par une série de plans d'action ou stratégies de conservation quinquennaux nationaux, après son déclin dramatique de plus ou moins 20 000 animaux au début des années 70 à moins de 350 à la fin des années 80.

Le Plan d'action 2017–2021 fait suite à une période difficile entre 2012–2016, qui a vu le braconnage atteindre son plus haut niveau depuis la fin des années 1980. Le Plan fixe cinq objectifs stratégiques pour atteindre l'objectif national d'augmenter le nombre de rhinocéros d'au moins 5% dans les populations établies avec une métapopulation nationale de 830 animaux d'ici 2021, et à terme de 2000 animaux dans son habitat naturel (Amin et al. 2017). Des progrès significatifs ont été réalisés avec des effectifs allant jusqu'à 794 animaux (fin 2019) et le braconnage réduit à moins de 1% par an depuis 2016. Il y a un dynamisme renouvelé pour achever les activités prévues et en réaliser de nouvelles dans le cadre de la gestion adaptative. Des ressources sont consacrées à la modernisation des équipements de capture des rhinocéros et de l'équipement vétérinaire et à la formation du personnel. Les protocoles de surveillance, d'immobilisation, de transfert, de surveillance des maladies et de vaccination des rhinocéros ont été améliorés et opérationnalisés. Étroitement lié à cela, le renforcement des capacités est en cours et le développement de cours spécialisés tels que le Cours de gestion des aires protégées des rhinos a été lancé. L'aire de répartition des rhinocéros est en cours d'extension dans des habitats appropriés et sûrs dans le centre du Kenya et dans l'écosystème du Tsavo pour soutenir la croissance démographique. Des évaluations des populations qui sont actuellement non viables, sont entreprises et des plans de rétablissement sont en cours d'élaboration. Le profilage ADN des rhinocéros est en cours d'extension pour prendre en charge la gestion des métapopulations. Les capacités écologiques des sites existants sont également en cours de révision sur la base des méthodes établies. La communication a été améliorée et des leçons tirées de la tragédie du transfert de rhinocéros du Tsavo Est en 2018.

Le plan d'action a introduit une nouvelle composante sur le financement durable. La pandémie COVID-19 a en outre mis en évidence l'importance cruciale d'un fonds de réserve, car les revenus du tourisme et le financement des donateurs ont été considérablement réduits (à ce jour: juillet 2020[1]).

Le moment venu, le Kenya commencera à planifier l'élaboration du Plan d'action 2022–2026. L'élaboration du prochain plan d'action quinquennal nécessitera un financement adéquat pour qu'il puisse être prêt lorsque le plan actuel prendra fin. Un examen approfondi des progrès du Plan d'action actuel sera entrepris à la fin de son mandat, et les leçons tirées et les pratiques exemplaires suivies ailleurs, telles que le Manuel du gestionnaire de rhinocéros (Balfour et al. 2019), seront intégrées.

Mots-clés: gestion biologique, braconnage, sécurité, conservation

Introduction

The recent rhino poaching in African range states has been at its highest level since the late 1980s. Between 2012 and 2016, 5,703 black (*Diceros bicornis*) and white (*Ceratotherium simum*) rhinos were reported poached, with Kenya losing 145 animals (Emslie et al. 2019). This threatened to undo much of the conservation achievements made during the last 20 years. The Kenyan Government responded to the crisis by putting in place sustained high impact

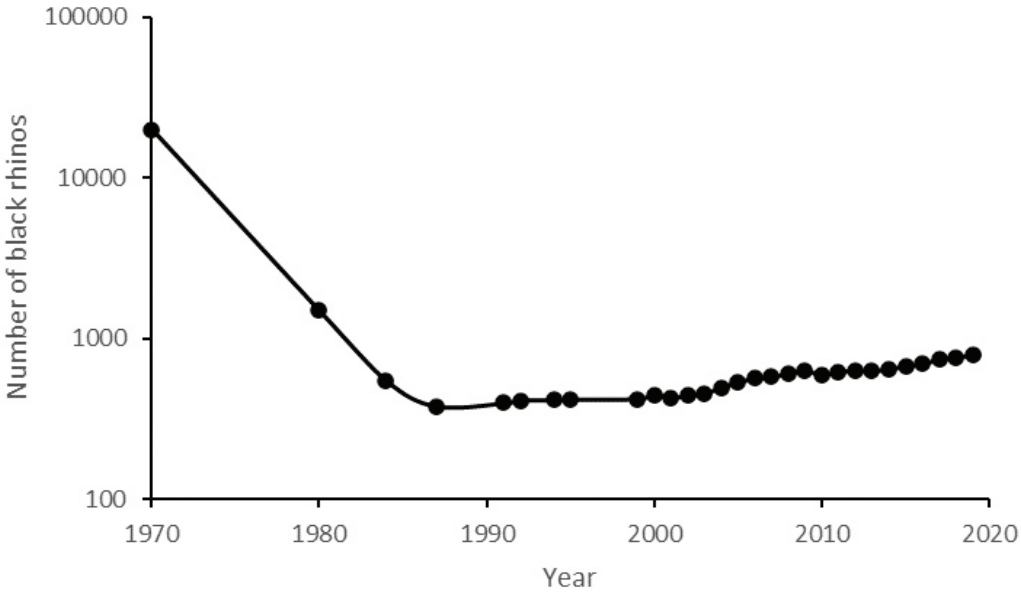

Figure 1. Black rhino numbers in Kenya from 1970 to 2019 on a logarithmic scale showing the sharp decline in the 1970s and slow recovery from the late-1980s.

anti-poaching measures and enacting the new Wildlife Conservation and Management Act of 2013. Subsequently, poaching was brought below 1% during 2015 and 2016 down from between 3–5% in the previous three years. A new five-year Black Rhino Action Plan was prepared, and implementation began in 2017 (Mulama et al. 2015).

Kenya's black rhino conservation strategies have been based on the 1989 Wildlife Policy Framework, which was formulated to deal with the early 1970s–late 1980s poaching crisis, during which period the major poaching reductions of rhino populations occurred in Kenya (e.g. reductions from thousands of rhinos to <400 animals, fig. 1). This policy led to the strengthening of the sanctuary approach in both state and private lands (Brett 1989). It also resulted in the creation of the Kenya Wildlife Service (KWS), the national wildlife management agency that oversees the conservation activities of most species as well as coordinating rhino management and security. Since 2001, Kenya rhino conservation plans (Anon 2003, Okita-Ouma et al. 2007, Anon 2012, Amin et al. 2017) have increasingly focused on enhancing growth through biological management, and rhino numbers have increased (fig. 1)—achieving the 5% net growth per annum target for several years. Subsequently, given the need to find more areas to invest for surplus rhinos, the 2007–2011 and 2012–2016 strategies promoted range expansion through the establishment of Intensive Protection Zones (IPZs) and the extension of existing sanctuaries where possible (Okita-Ouma et al. 2007, Anon 2012).

Kenya remains the stronghold of the eastern black rhino subspecies (*D. b. michaeli*), conserving about three quarters (75%) of the wild population at the end of 2019. Kenya's rhino meta-population includes 16 populations of which 12 are of continental significance[2], as rated by the International Union for Conservation of Nature (IUCN) Species Survival Commission (SSC) African Rhino Specialist Group (AfRSG): with three rated '*Key 1*', five '*Key 2*' and four '*Important 1*' populations. Kenya's black rhinos are conserved within nine state, four private, two county and one community protected areas (PAs) established across the country. In this paper, we summarise the Kenya Black Rhino Action Plan (2017–2021) and review the progress achieved after three years of implementation.

[2]A *Key 1* population has an increasing or stable population that is >100 rhinos or conserves over 50% of a subspecies. A *Key 2* population has an increasing or stable population that is from 51–100 rhinos or conserves over 25–50% of a subspecies. An *Important 1* population has an increasing or stable population of 20–50 rhinos.

Kenya Black Rhino Action Plan (2017–2021)

Previously, the documents that guided black rhino conservation in Kenya were referred to as the National Rhino Strategy. However, at the end of the last Strategy in 2016 there was recognition of the need to emphasise that such a strategy is meant to be actioned and a decision was made to call it an Action Plan. A technical group was setup by the National Rhino Steering Committee (RSC) to lead the development of the Action Plan. Over 65 participants representing different stakeholders provided expertise in PA management, rhino ecology, strategic planning, fundraising, education, security, coordination and communication and other topics during the action planning workshop and the subsequent Plan validation workshop. The Action Plan was reviewed by three members of the AfRSG and approved by KWS.

Kenya's current Action Plan has maintained the long-term vision of having a meta-population of at least 2,000 black rhinos of the eastern African subspecies in secure suitable habitats as a global heritage. Two thousand animals are recognised as being the minimum meta-population size necessary to ensure the long-term survival of the species in Kenya (du Toit et al. 1987). The sooner this target is achieved, the greater there is a reduction in loss of overall genetic diversity. The overall goal of the Plan continues to prioritise a net growth of at least 5% per annum in established populations along with positive net growth achieved in all recovering populations, realising a meta-population of 830 black rhinos by the end of 2021.

The Plan aims to achieve this by focusing efforts and resources on five key components: rhino protection and law enforcement; biological monitoring and management; communication and engagement; sustained financing; and programme management, coordination and collaboration. Each is associated with a strategic objective, a set of Key Performance Indicators (KPIs) to gauge progress, and a log-frame. The Plan also includes a list of specific projects for each key component for funding and implementation (Amin et al. 2017). Implementation is through annual plans and monitoring and evaluation of progress towards strategic objectives and the overall goal (fig. 2).

The intervention logic is that if security for rhinos is sufficient this will reduce poaching levels; when poaching occurs stringent law enforcement should lead to deterrence. This should be combined with active biological monitoring to ascertain the state of the meta-population and manage it for growth by ensuring rhino areas are not overstocked relative to available habitat resources. Alongside this, is the support for stakeholders, who are engaged through good communication and participation, so that relevant resources and skills, including funds are used to achieve the goal of the Action Plan (of 830 individual animals by the end of 2021). The programme management, coordination and collaboration will integrate the inputs, monitor the outputs and outcomes that should lead in time to the achievement of the long-term vision of 2000 rhinos in Kenya. Key assumptions for this are political goodwill from government, regional and international actors; commitment from rhino hosts in the national and county governments as well as private and community rhino sites; an engaged donor community; and, adequate resources for planned activities.

Progress and lessons learnt to date

In order to track progress, a tracking matrix was formulated with the aim of keeping track of the implementation of planned activities. Rhino site managers and other stakeholders report on their activities to the Kenya Rhino Programme, responsible for monitoring and coordinating implementation. At the end of 2019, out of the 100 activities earmarked in the Action Plan, 25 had been completed, 68 partially completed while seven had not yet started partly due to lack of resources and logistical constraints. The majority of the partially completed activities are on-going developments in security operations, intelligence gathering, rhino monitoring, database maintenance, rhino genetic profiling, rhino range expansion, capacity building and fundraising. Following the tragic loss of 11 black rhino during the Tsavo East rhino translocation exercise in 2018, it was prudent to halt all activities related to immobilisation/translocation of rhinos. The subsequent review of the procedures has caused implementation of

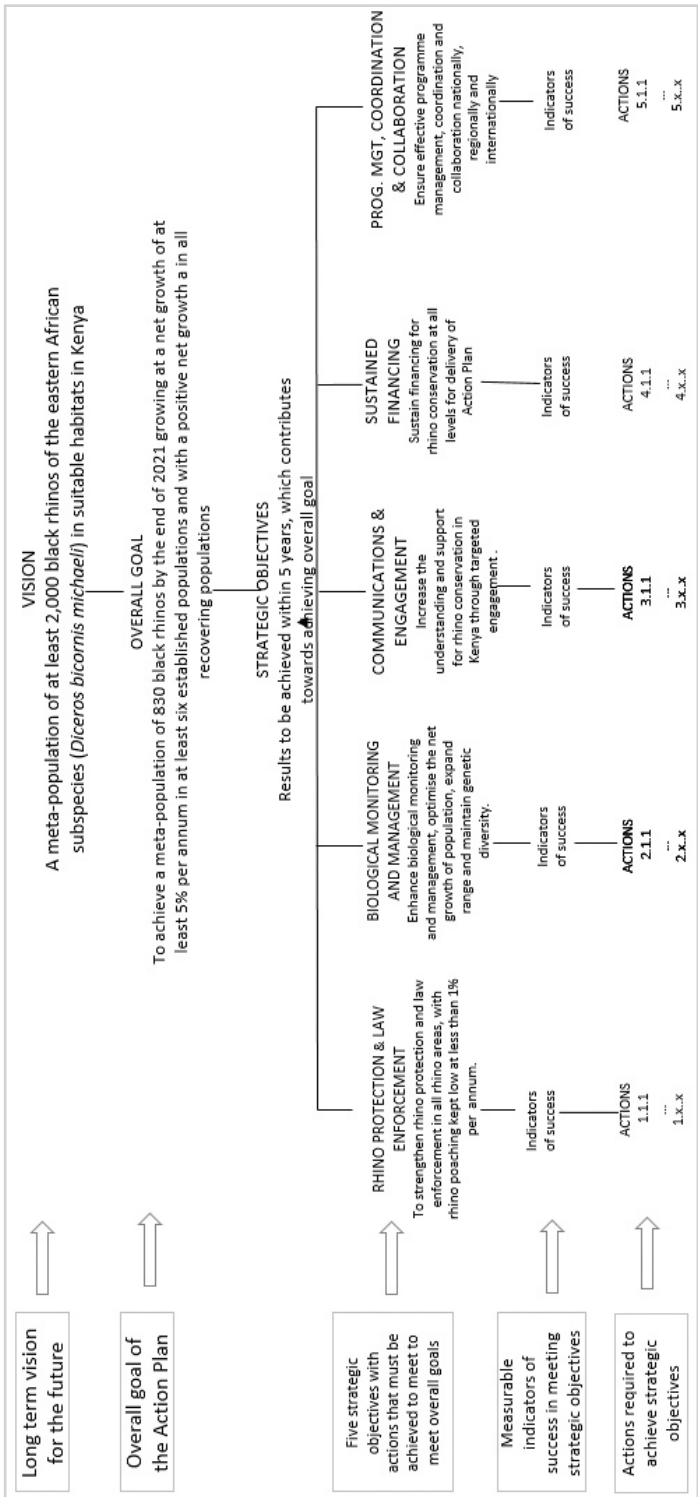

Figure 2. Framework of the Kenya Black Rhino Action Plan 2017–2021, showing the connection of actions or activities to the overall goal of achieving 830 rhinos by the end of 2021.

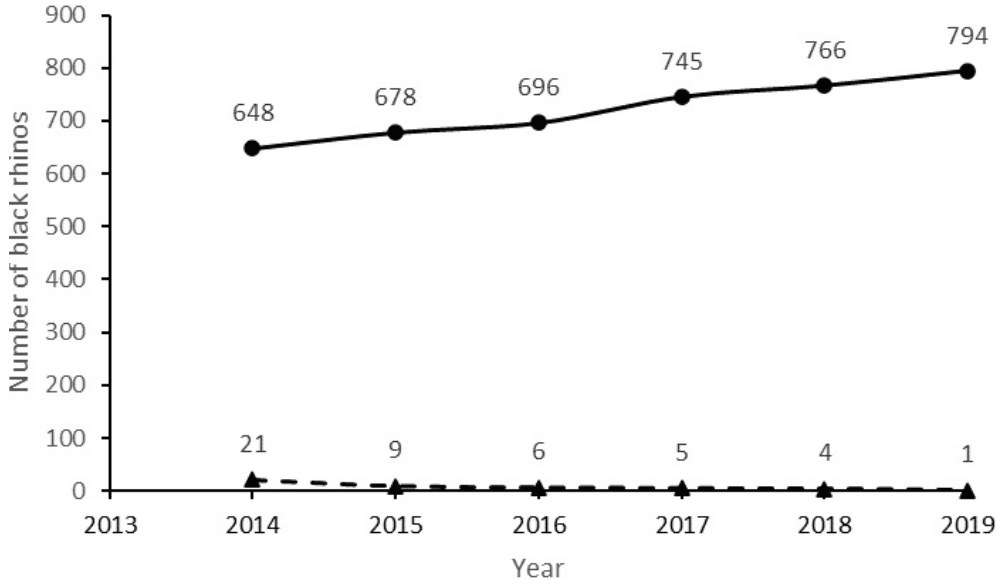

Figure 3. Black rhino population size (top line) and poaching (bottom line) trends (2014–2019).

immobilisation/translocation activities to be delayed, with the biological management component of the strategy affected the most. These activities have since resumed following the adoption of the new rhino immobilization and translocation guidelines, lessons learned, and as such rhino notching in Ol Pejeta and Ngulia RS have been successfully undertaken.

Towards the goal: black rhino population status

Kenya's black rhino population has increased from 745 individuals at the start of the Action Plan in 2017 to 794 individuals at the end of 2019 (fig. 3). This represents a growth rate of 3.7% per annum. A key element to achieving this modest growth rate has been the continuing anti-poaching efforts keeping the poaching rate below 1% per annum over the past five years (fig. 3). However, rhino mortality due to other causes has been on the increase, especially predation on young calves, and disease. Delayed management interventions in key populations exhibiting density dependence effects have also been hypothesised to have contributed to the low national rhino growth rate.

The deaths of eleven rhinos during a translocation exercise to Tsavo East Rhino Sanctuary (RS), contributed to the decline in the growth rate to below the 5% annual target.

The number of "missing"[3] rhinos has also been reduced through intensive monitoring and auditing of difficult-to-monitor populations in the dense scrub and/or forest habitats of Tsavo West, Nakuru and Nairobi National Parks (NPs). These efforts have been complemented by further training of rhino monitors, ear notching of clean animals (i.e. rhinos that have no distinct identification features), deployment of camera traps, and improved standard operating procedures of rhino critical sighting intervals.

Rhino protection and law enforcement

The Action Plan has incorporated a zero-poaching framework to overcome the threat of poaching. The framework is a suite of tools that help in the monitoring, tactical planning and implementation, and performance evaluation of anti-poaching activities. It has been developed with six key pillars: regular assessment, use of best available technology, adequate field staff capacity, local community engagement, improved approaches for prosecution, and cooperation in sharing information regionally and nationally (https://www.zeropoaching.org).

Several major activities have been undertaken which are critical for rhino security and law

[3]An individually identifiable rhino is defined as "missing" (unaccounted for) if not seen within 12 months.

enforcement. At the beginning of the Action Plan period, an assessment of knowledge gaps indicated that most rhino rangers required training in the use of security equipment and anti-poaching tactics. It also highlighted that transfers and departures of trained staff were having a significant impact on maintaining security. To address these challenges, field equipment has been standardised across sites. This enabled cost savings and helped transferred staff to adapt quickly to their new duty stations.

More than 14 training sessions in anti-poaching tactics, and DNA forensics and scene of crime investigation have so far been provided to over 260 rangers. Use of K-9 (acronym for "canine") units has been enhanced and intelligence gathering led to the foiling of six cases of attempted poaching as well as 25 seizures of rhino horns and rhino horn derivatives in 2018–2019. Training has also been conducted on the use, care and maintenance of basic equipment including binoculars, cameras, Global Positioning System (GPS) receivers and digital radios, and specialised equipment such as thermal imagers, camera traps and Forward Looking Infrared Radar (FLIR) surveillance systems[4]. Over 90% of sites have now adopted the use of digital radios, smart phones and GPS receivers in rhino and law enforcement monitoring and patrol planning. This has strengthened the integration of security operations and scientific assessments. Having scientists and security personnel collaborating more closely is essential for effective implementation of the Plan.

Work has also continued with tissue samples from a further 114 rhinos analysed and profiled into the Rhino DNA Indexing System (RhODIS). RhODIS has been instrumental in identifying source countries for seizures and in providing credible evidence to support prosecution (Harper et al. 2013). 143 clean rhinos have been ear notched during the Action Plan period to strengthen rhino monitoring and security, in key populations in both state managed national parks and private conservancies.

[4]See https://en.wikipedia.org/wiki/Forward-looking_infrared

Biological monitoring and management

The Plan has continued on from the previous two strategic plans, using the well-established sanctuary populations as a 'breeding bank' to restock former range areas capable of supporting large populations, not only in Kenya but also across East Africa. Kenya played a key role in the establishment of the East African Rhino Management Group for regional cooperation to conserve the eastern black rhino (Okita et al. 2009). Emphasis continues to be placed on high quality individual ID-based rhino monitoring in all rhino areas to provide data to assess population performance through a number of metrics including growth rate, age and sex structures, calving rates (i.e. female breeding performance) and mortality rates (by age and sex). The individual ID-based rhino monitoring also functions as an important audit and provides early warning of possible missing or poached animals, and animals in poor health or injuries.

Several activities under the Plan KPIs have been completed or are underway. Development of a rhino PA management course for managers and scientists has been initiated in partnership with Manchester Metropolitan University, WWF-Kenya, Zoological Society of London (ZSL) and KWS Training Institute. An AfRSG rhino monitoring instructors training workshop was also conducted with 40 participants from all rhino areas. This training has contributed to reducing the prevalence of missing rhinos. The training was complemented by a Kenya-wide workshop on the national rhino monitoring and reporting system '*Kifaru*'. It covered data recording systems, data analysis and standardised status reporting at each site. Recommendations on additional useful features were compiled and will be implemented by the end of 2020. Critical sighting interval protocols have also been enhanced in all rhino areas providing guidance on what needs to be done in case an animal has not been sighted within a specified time interval.

Steps have been taken to increase available habitat for black rhino in Kenya. These range expansion efforts are important for achieving the national meta-population goals. The aim is to create space to facilitate the implementation of the required stocking levels, set percentage off-take of rhinos, improve reproductive performance and minimise inbreeding (Balfour et al. 2019). A rhino range expansion workshop in the Laikipia region was undertaken in 2019 and attended by 40 participants from Kenya, South Africa and the

UK. As identified in the previous (2012–2016) rhino conservation strategy, opportunities to secure habitats for rhinos exist in State PAs and private conservancies. Communities are also being encouraged to embrace rhino conservation by setting aside land to establish sanctuaries with viable populations. The expansion of Meru RS, from 48 km^2 to 83 km^2, has been completed and rhinos have started to utilise the extension area. In Loisaba RS (70 km^2) habitat assessment has been completed for reintroducing rhinos and the report is under review by KWS management. The expansion of Lewa WC and Borana WC into Il Ngwesi to form the Il Ngwesi Community Conservancy (combined area 465 km^2) is also at an advanced stage following a habitat suitability assessment; an environmental and social impact assessment (ESIA) and development of a management plan. The Ol Pejeta-Mutara Conservation Area expansion (combined area 384 km^2) has also been given conditional approval, and habitat assessment and feasibility studies are being undertaken. When completed the expansion will contribute to the larger Laikipia rhino expansion programme, connecting Ol Pejeta Conservancy, Laikipia NP, Segera Ranch and up to Ol Jogi GR.

The Tsavo complex (Tsavo West IPZ, Ngulia RS and Tsavo East RS) remains important in the Kenya's rhino expansion plan, due to the very large areas of high quality rhino habitat within the largest of Kenya's PAs. The Ngulia RS has played a critical role in the recovery of black rhino numbers in Kenya. As the population in the sanctuary has continued to increase, the current rhino density has exceeded the ecological carrying capacity resulting to a decline in its growth rate below the set threshold for established populations (KWS 2017). A site-specific plan for destocking the sanctuary and expanding Tsavo West NP rhino population is being developed. Discussions are also underway for re-assessing the Tsavo East RS. Proposals for supplementing the non-viable populations in Chyulu and Aberdare NPs have been approved by the KWS management board, and detailed recovery plans are being finalised by site managers with technical input from the RSC. A national level rhino genetic database (Farugen BIT) has been set up in collaboration with Jomo Kenyatta University of Agriculture and Technology and will be linked to the national rhino monitoring and reporting system (*Kifaru*) to inform selection of suitable rhinos for translocations. Intervention measures to reduce surplus rhinos and improve productivity in underperforming populations were not undertaken during the review period due to financial constraints and the delayed decision-making process following the Tsavo East rhino translocation debacle.

In response to the Tsavo East RS translocation tragedy, new rhino immobilisation and translocation guidelines have been developed. Further capacity building is being undertaken to minimise rhino deaths during translocation and post-release phases. A rhino medicine workshop was conducted at Mpala Research Centre, bringing together veterinarians to share current best practices and to build relationships. Five KWS Veterinary Services staff also attended the Advanced Course in Wildlife Chemical Immobilisation and Field Practice in Kruger NP, South Africa.

Ten rhinos were vaccinated following an anthrax outbreak in Lake Nakuru NP and Tsavo West IPZ. The Lake Nakuru NP area seems to be a hotspot for anthrax, with recurrent outbreaks of the disease (Gachohi et al. 2019). A disease surveillance and vaccination protocol has also been put in place involving KWS Veterinary Services, The Rhino Programme, site managers, local authorities and other relevant institutions.

Communication and engagement

Black rhino conservation in Kenya has maintained a consistent presence in local, national and international media following the launch of the Action Plan. This has been overwhelmingly positive, except for the tragic deaths of rhinos during the Tsavo East RS translocation. The challenges experienced following this translocation debacle have emphasised the need for a careful and well-managed crisis communication plan. Public engagement is promoted through various events, including National Rhino Day (22 September) to celebrate this iconic animal of national and global significance, while also highlighting the species' economic importance and its status as a symbol of Kenya's deep commitment to the conservation of biodiversity.

Sustained funding

Rhino conservation requires substantial financial, material and human resources, and this has been a major constraint in the delivery of previous Kenya rhino plans. The current poaching challenge also requires significant support. Funding from central and county government sources remains one of the most challenging areas, given competing development priorities.

A longer-term funding plan has been initiated that centres on the Government of Kenya with support from the county governments, APLRS, and local and international donors. The Rhino Programme is continuing to work closely with different partners and has secured more than USD 1,000,000 of funding for rhino security, biological management and monitoring during the Plan period. Furthermore, the Rhino Impact Investment Project (Balfour et al. 2019), an innovative funding mechanism for rhino conservation is at an advanced stage for three earmarked sites in Kenya, namely Tsavo West NP, Lewa-Borana WC and Ol Pejeta Conservancy. There is a continuing need to coordinate funding proposals to strengthen these aspects as well as the communication and programme management components.

Programme management, coordination and collaboration

The new national rhino management structure (fig. 4) has been largely implemented and it has enhanced decision-making processes within the KWS parastatal system. As part of this, the RSC Chair represents the committee in the bi-weekly meetings of the KWS senior management, enabling timely communication of recommendations and technical input into the meetings for action. A total of five RSC meetings and seven APLRS meetings have been held in the first quarter of the Plan where key recommendations on rhino management actions were made and forwarded to the Rhino Executive Committee (REC) for approval. At the regional level, the Kenya Rhino Programme has collaborated with rhino range states through sharing of expertise under the East Africa Community Rhino Management Group (EAC–RMG) umbrella aimed at regional meta-population management of the eastern black rhino. It is also an active member of the IUCN SSC AfRSG. There are now plans to host a national rhino conference in Kenya to highlight the achievements and challenges of conserving Kenya's black rhinos over the last five years.

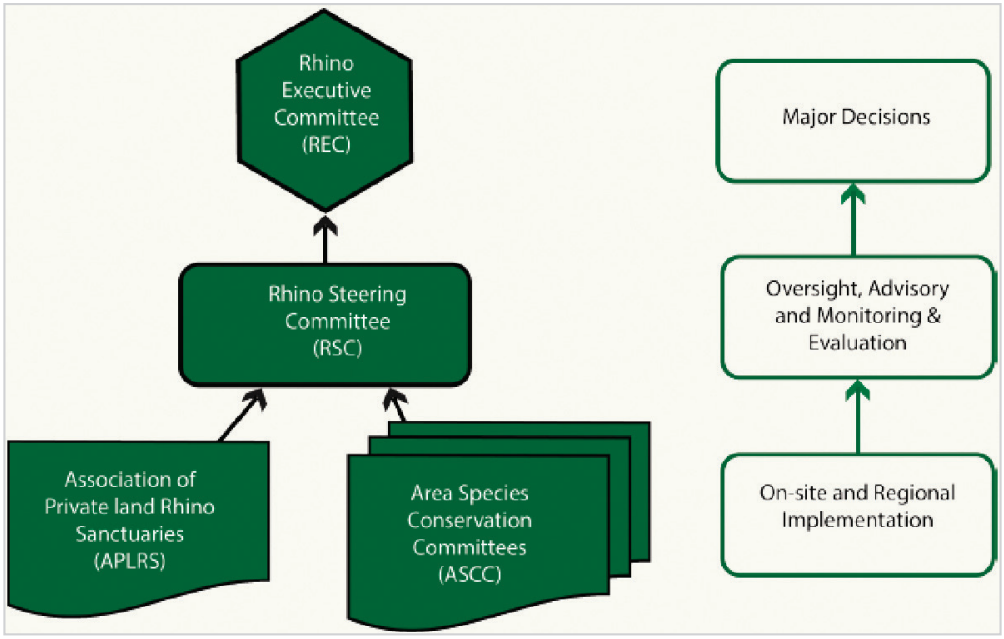

Figure 4. Structure for programme management, coordination and enabling collaboration.

Conclusion

Towards a new Action Plan

The COVID-19 pandemic has brought new challenges. Global tourism has been halted and has significantly impacted income for carrying out operations and management activities in State PAs and also in community and private reserves which hold a significant proportion of the national rhino population (MoT&W 2020). Covid-19 is therefore undermining the financial sustainability of these different land regimes for rhinos in Kenya. Donor partners are also expecting significant reductions from their supporters and this may mean that implementation of some of the actions currently planned may be delayed. This unprecedented situation emphasises the need for rapidly adaptable conservation planning, which has fortunately already been embedded into the current Action Plan. Timely support from the Government, businesses, national and international NGOs and other stakeholders is crucial to ensure as many of the State, community and private rhino conservation area employees as possible are retained to implement the Action Plan. The Kenya Government provided approximately USD 20 million financial stimulus in May 2020 to support the community wildlife conservancies and the KWS. This will go a long way towards securing rhinos on community, private and State lands as well as sustaining suitable habitat for future rhino range expansion.

In due course, the KWS will be collaborating with stakeholders to start planning the development of the 2022–2026 Action Plan. This will require adequate resources so that it can be ready when the current Plan comes to an end in just over a year's time (at time of going to print). A thorough review of progress (at the end of the programme cycle) will be undertaken, and "Lessons Learnt" and new best practices from elsewhere will also be integrated to continue securing Kenya's black rhino populations.

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