



2021 REPORT





MUSEKESE-LUMBEYA IPZ WITHIN GREATER KAFUE ECOSYSTEM



Key

Water Features

- Kafue NP Big Rivers

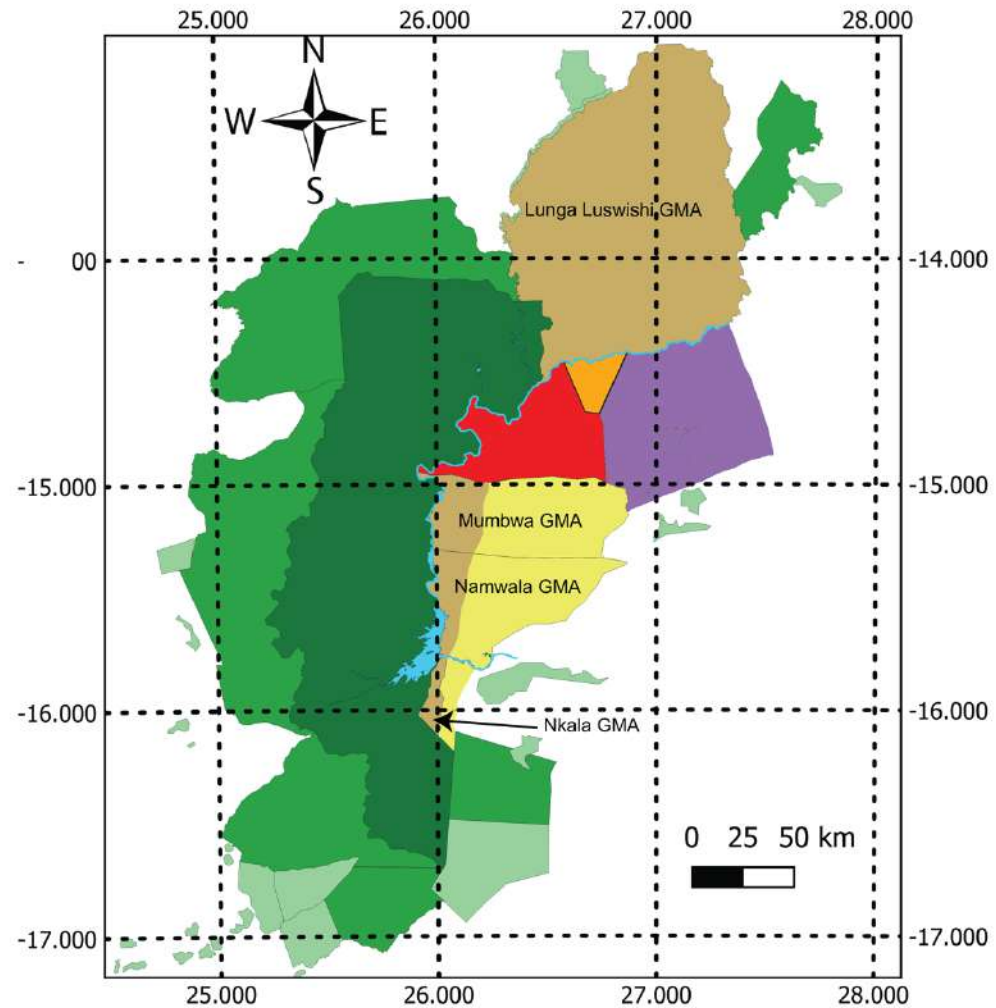
Polygons

Kafue Protected Areas

- National Park
- Game Management Area
- Forest Reserve

Kafue Hearth Project Area

- Musekese Lumbeya IPZ
- High Value Conservation Area
- Amatheon Agri and Sphere of Influence
- Sustainable Livelihoods Area
- Mushingashi

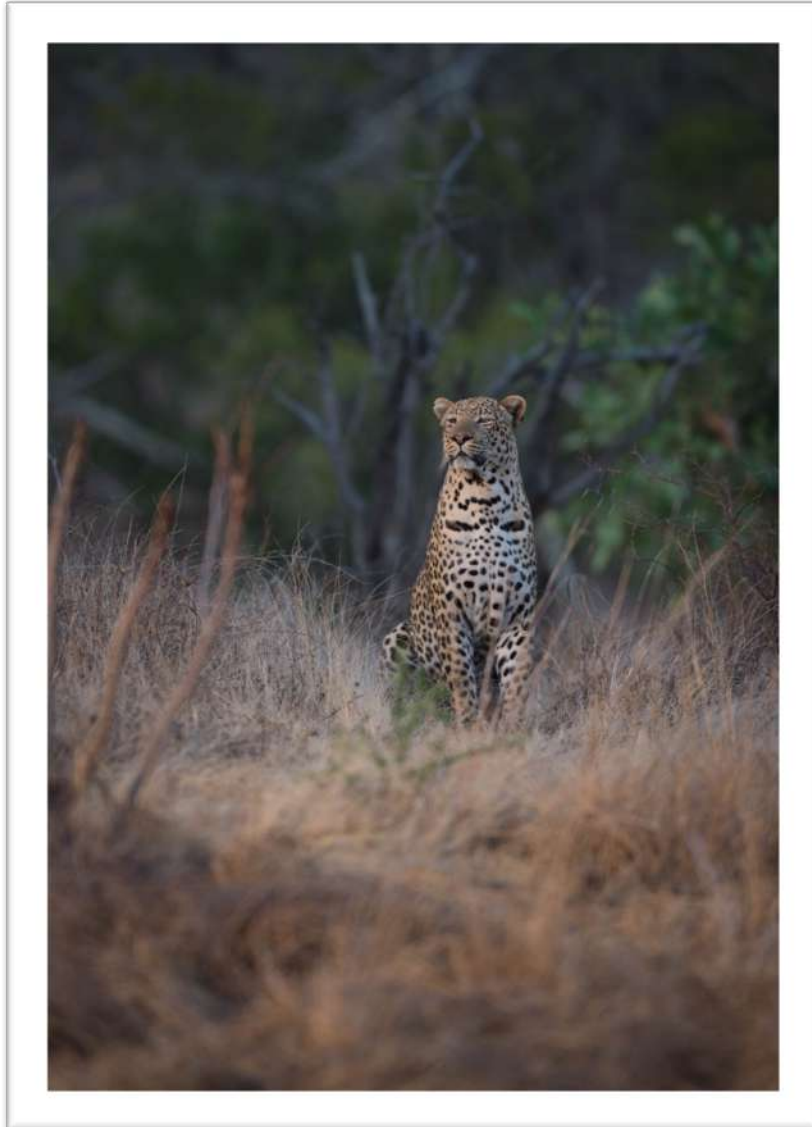


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2021 OVERVIEW



Musekese Conservation continued and enhanced its operations throughout 2021 despite the hardships of the global health and economic traumas of 2019/2020. Zambia's economy began to show signs of recovery and the country enjoyed well managed party and presidential elections; a sturdy recovery of international travel and trade networks and associated tourism activities was a welcome relief.

All this propelled us through the year against a backdrop of the much-anticipated inception phase of African Parks' Kafue National Park (KNP) Priority Support Plan and optimistic expectations of its longer-term implementation from 2022 onwards.

It was highly anticipated that we would finish the year with better than expected business and tourism returns in Zambia but Covid-19 had other plans and the acute impacts associated with the appearance and upsurge of the 'Omicron' variant quickly caught up with us. These circumstances are of fundamental significance to Zambia and indeed the world's tourism industries, which also face the chronic impacts of global climate change.

Despite or perhaps because of these exceptional circumstances Musekese Conservation is ready to take a leap of faith into 2022, and thus we briefly contextualize our plans in this review in order to build upon the organization's achievements and successes to date. We must prioritize the advances made in the conservation, management and economic development of KNP as we collectively work towards the creation of sustainable environmental and wildlife management economies.

We review the principal impacts of MC's work towards improving environmental and socio-economic security in the KNP landscape, a habitat of international significance, through its research, management, law enforcement and community engagement activities in the KNP as a whole and the Musekese-Lumbeya Intensive Protection Zone (MLIPZ) in particular.



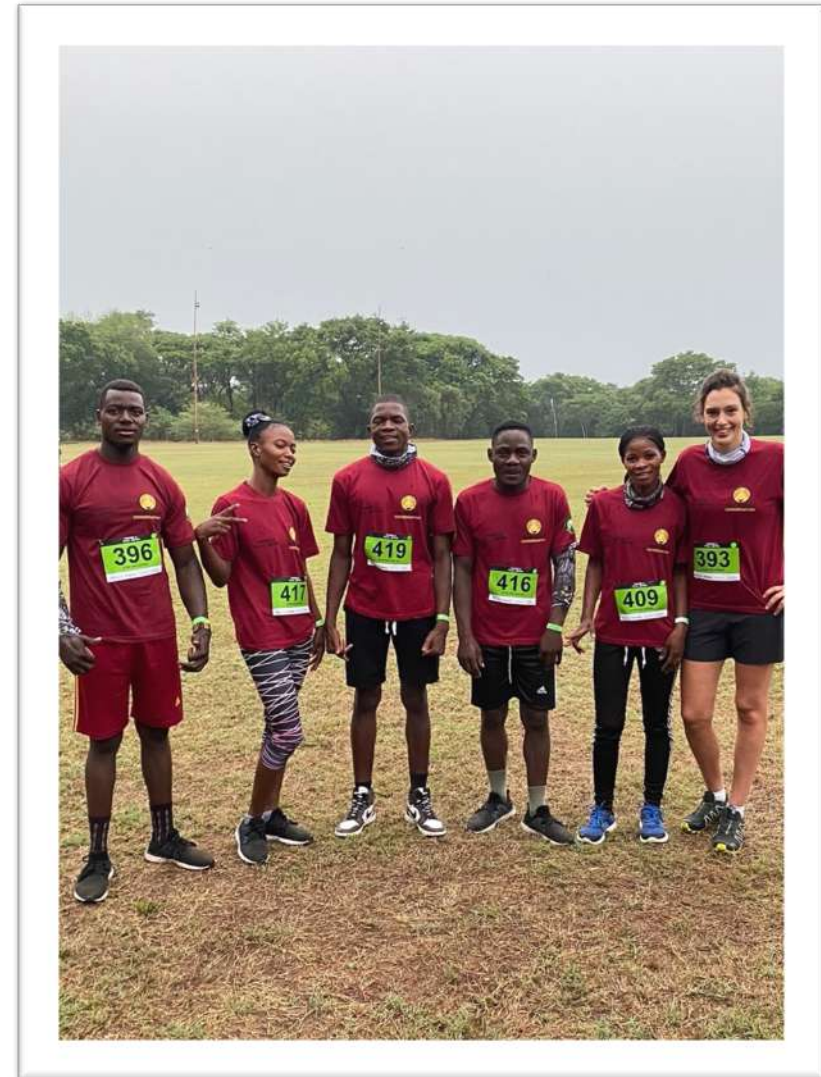
KEY MILESTONES



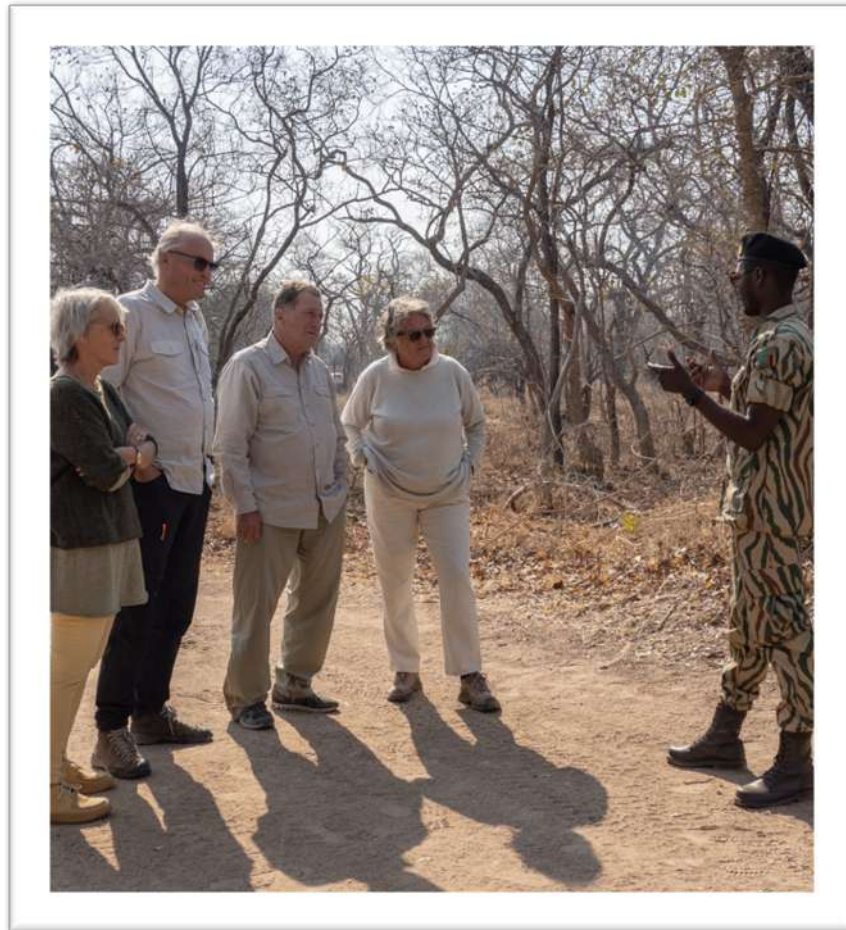
Conservation in the Kafue National Park (KNP) has taken giant leaps over the past year. African Parks (AP) signed a Priority Support Plan with the Zambian Government to boost the Kafue's social, ecological and economic potential. Along with existing cooperating partners Panthera, Game Rangers International (GRI) and the Zambian Carnivore Program (ZCP), we have developed a great synergy to collectively work together to achieve conservation goals in and around the Kafue National Park.

This year we have put the aircraft in the sky and are thrilled to be a part of a broader aerial support plan for the KNP. In addition, we grew our Law Enforcement numbers to have four anti-poaching teams. We have completed various infrastructure expansions and refinements to accommodate the much-needed personnel growth over the past 12 months. Infrastructure improvements included the construction of a visitor's centre at the anti-poaching base, further integrating tourism into conservation efforts.

We acquired additional assets such as a vehicle and a boat to facilitate law enforcement operations through funding. One of our key goals for 2021 was to train the entire team in several areas, including Human Rights, First Aid and Women Empowerment.



KEY MILESTONES



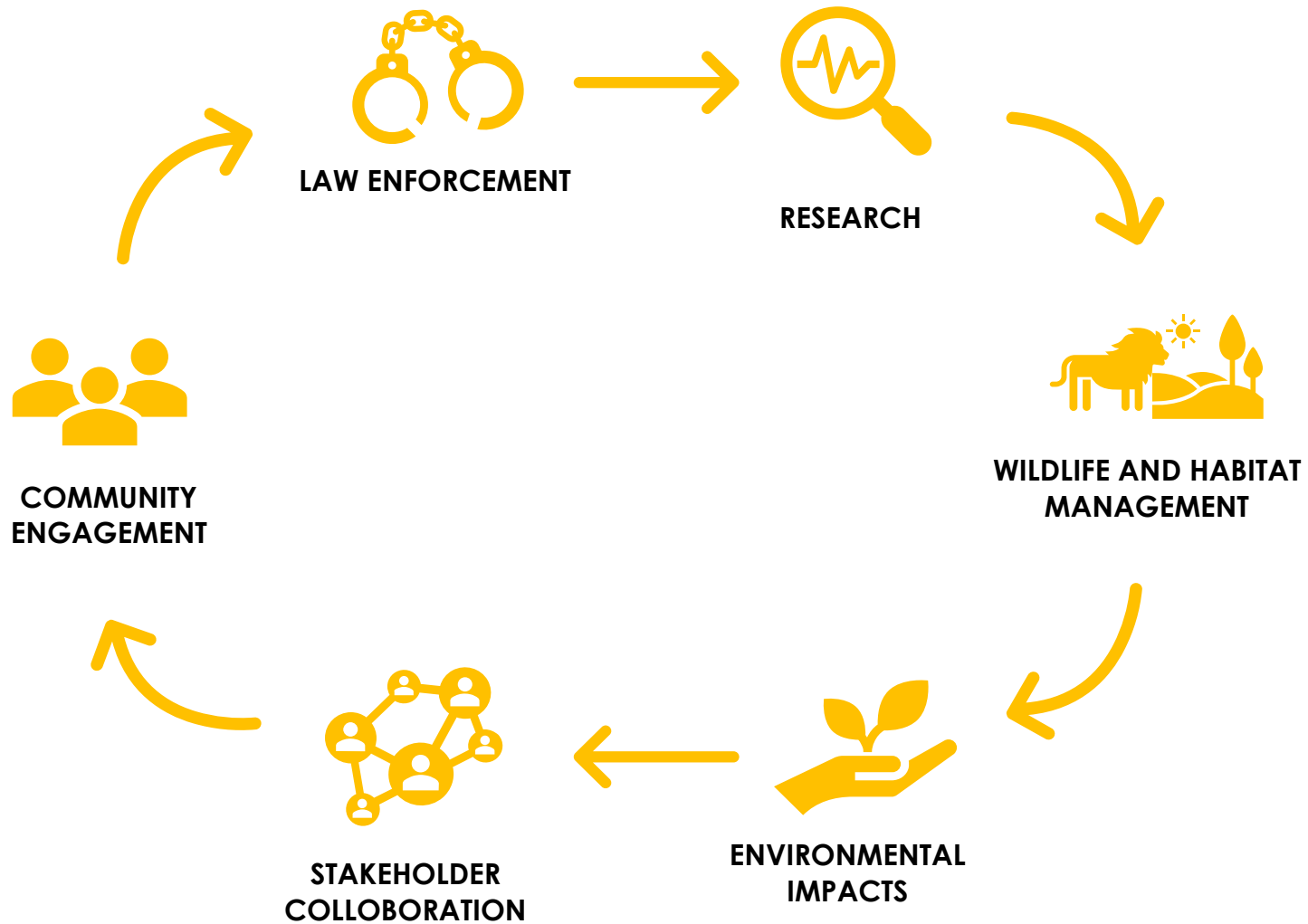
For the benefit of a diverse catchment of interests in the work of Musekese Conservation in the Kafue National Park, we have achieved the following benchmarks;

- Full-time support of 4x Anti-Poaching Teams, Radio Operator, 2 commanders and DNPW driver.
- Extended the Solar facilities at APU, including Solar-powered geysers.
- Developed the accommodation facilities on the camp.
- Operated a light aircraft assisting Anti-Poaching Patrols and assisting partner conservation organizations.
- Expanded the infrastructure of the APU, including secure stores, workshop, visitors' centre/management office.
- Acquisition of another deployment vehicle.
- Acquisition of another deployment boat.
- Completion of an aircraft hangar at Lufupa Airstrip.
- Continued support to the Nalusanga sector of DNPW.
- Appointed a Camp and Operations Manager.
- Appointed an Assistant and Driver.
- Completed first full-field season of Research Activities.
- Fire Management.
- Made further upgrades to the radio network.
- Participated in several sporting events.
- Completed numerous training workshops.



OUR FOCUS

The above milestones fall within our three focal area, being law enforcement, community engagement and research and have been summarized in brief under the following headings;



COMMUNITY ENGAGEMENT



MC firmly believes that successful conservation relies on integrating local communities and rural livelihoods with wildlife and habitat restoration/preservation and eco-tourism. Therefore, it is of utmost importance that the project is engaged with adjacent communities and that benefits are extended to them; at the very least, this must be employment and training opportunities.

In 2021 MC signed a Memorandum of Understanding with the Community Resource Boards reaffirming and governing the project's commitment to recruiting and supporting staff and community scouts from appropriate areas. This was immediately followed by the training and recruiting of additional scouts and staff to the project.

In 2022 and upon the resolution of illegal encroachment in the surrounding Game Management Area MC will further its community engagement by implementing projects/initiatives that benefit legal communities above and beyond employment opportunities.



STAKEHOLDER COLLABORATION

One of the greatest assets to KNP is the diversity of stakeholders and their ability to work together as cooperating partners for the greater good of conservation. This is an exception to the rule across the conservation landscape in Africa however we are fortunate to work with fantastic organizations in and around the KNP, including African Parks, Panthera, Game Rangers International and the Zambia Carnivore Programme.

Great care has been taken to coordinate law enforcement efforts across the region, including the aerial support network. Other aspects of conservation such as wildlife monitoring, training and interventions would not be possible across a landscape as vast as the KNP without these partnerships and we would encourage protected areas across the region to follow suit.

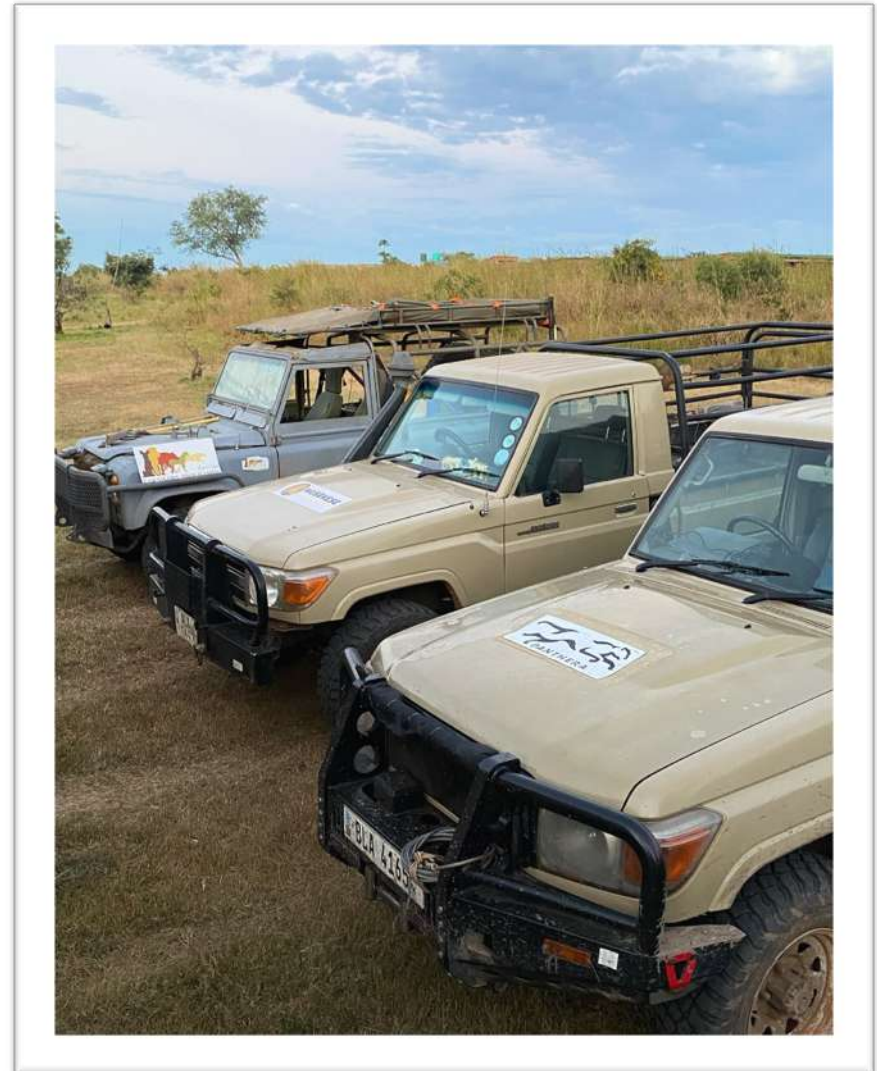




Photo Credit: African Parks

LAW ENFORCEMENT



Photo credit: Mana Meadows

Law Enforcement has always been the core of our mission. It remains our ambition to support additional anti-poaching teams and expand our outreach in securing core areas of the KNP and its surroundings.

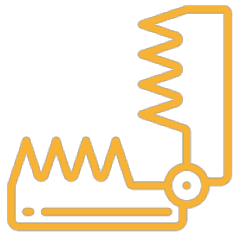
Law enforcement data is captured using SMART. This data-rich tool allows for mapping all patrol efforts and findings, including wildlife sightings, and enables effective patrol planning and debriefing. As a result, 2021 saw a substantial increase in foot-patrol coverage, with patrol teams covering > 70% of the ML IPZ and significant areas further afield in collaboration with cooperating partners.

The coordination of patrols is done in real-time using the EarthRanger platform. EarthRanger and the ancillary tools (digital radios, Garmin inReach devices) have proven highly effective on numerous occasions, resulting in the apprehension and recovery of poachers and contraband that may not have been possible otherwise.

Patrol coverage and results are displayed in the following diagram. Please do not hesitate to contact us should you require any more detailed information.



LAW ENFORCEMENT STATISTICS TO DATE



159 Snares recovered



+10,000 Patrol Days



76 Poachers arrested



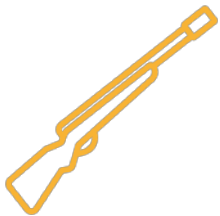
+1500kg Bushmeat recovered



4 Full time Anti-Poaching teams trained and supported



+17,000km on foot



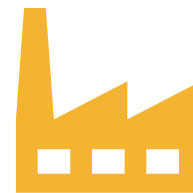
15 Firearms recovered



+21,000km in Vehicle



+40 individuals directly supported



1 Fully equipped Anti-Poaching Unit



+8,000km of Aerial Support



1 Aircraft hangar



LAW ENFORCEMENT TRAINING 2021



HUMAN RIGHTS

Human Rights is fundamental for everyone, everywhere, but especially important for law enforcement personnel who regularly encounter individuals or groups of individuals that may need apprehending and or interviewing. Wildlife Crime Prevention has worked extensively at developing a training course for anti-poaching teams. They were able to travel to the Kafue National Park and deliver numerous training sessions for all the officers, providing scenarios that regularly occur in their line of work. This training will be ongoing throughout each year to ensure that best practices are consistently applied and the highest standards regarding human rights are upheld.



FIRST AID

One of the most critical trainings for anti-poaching personnel is first-aid training. Rangers operate in remote areas where medical assistance may not be readily available. These skills save lives, from building the confidence to perform malaria self-tests to treating and dealing with severe injuries and trauma in the field.

The British Army offered a comprehensive 2-day first-aid course for officers, including a series of practical scenarios of their encounters in the field. All attendees received accreditation from First Aid Africa. This built upon the successful first-aid training administered through WildCross in 2018 and is a critical component of fieldcraft that needs refreshing from time to time, and new teams are enabled. First Aid supplies are a valuable tool in the field, and any material donations in this regard are gratefully received.



FEMALE EMPOWERMENT

The Kafue landscape is in its relative infancy in championing a change in empowering women, and we are delighted to be able to play a role in improving this. Throughout 2021 the project's first female officers proved their capability in the field and equally in all other departments.

Female staff had the opportunity of visiting the North Luangwa Conservation Programme (NLCP), which in recent years has made significant developments in empowering female rangers, many of which are integral members of the project today. DNPW Wildlife Police Officer and Canine Unit Trainer Joyce Chiluba headed up the week-long training for Lilian and Harriet, where they were exposed to various roles, including the canine unit, control room, tracking teams, and drivers. We are committed to equal opportunities and have invested in upgrading our facilities to cater to this; we look forward to welcoming more female team members soon.





FRANKFURT
ZOOLOGICAL
SOCIETY

9J-1

FZS Country Director Ed Sayer with one of Musekese Conservation's Female Scouts, Harriet Phiri



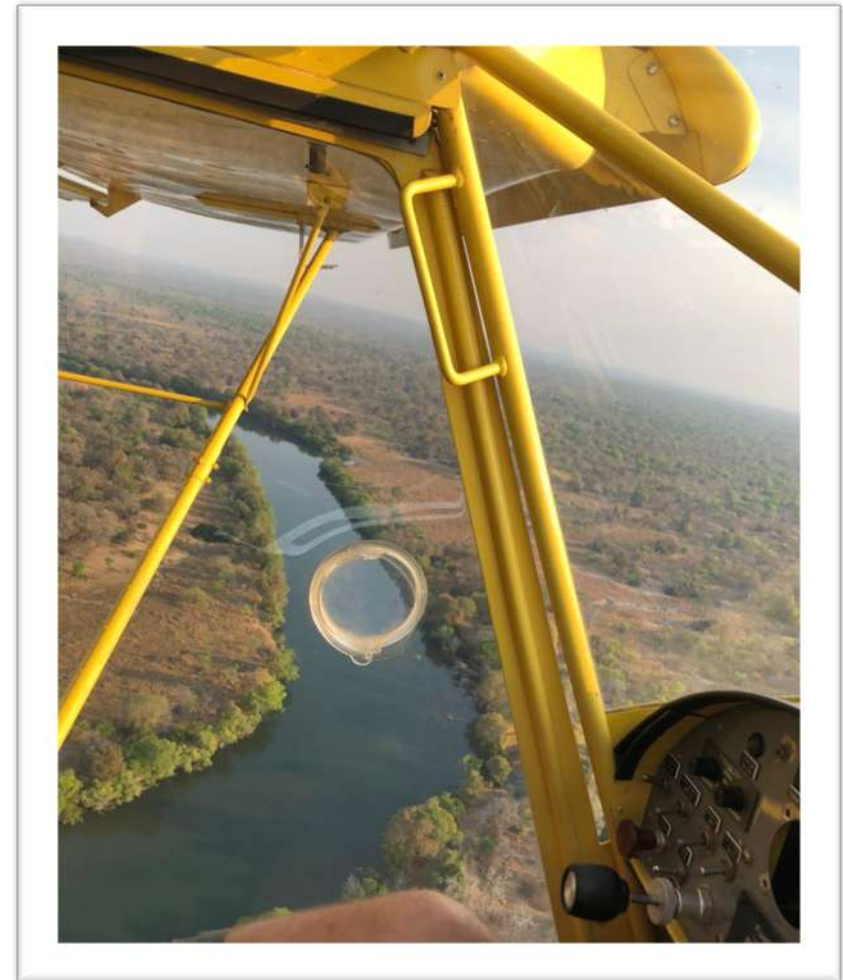
AERIAL SUPPORT



In late 2020 Musekese Conservation received generous support from the Lion Recovery Fund to acquire a light aircraft for use in aerial conservation activities, including anti-poaching and monitoring of wildlife. The Zenith Sky Jeep CH701 aircraft is a two-seater light sport aircraft with low, slow flight capabilities and excellent visibility. The total operating costs of this aircraft are approximately USD140.00/hour*.

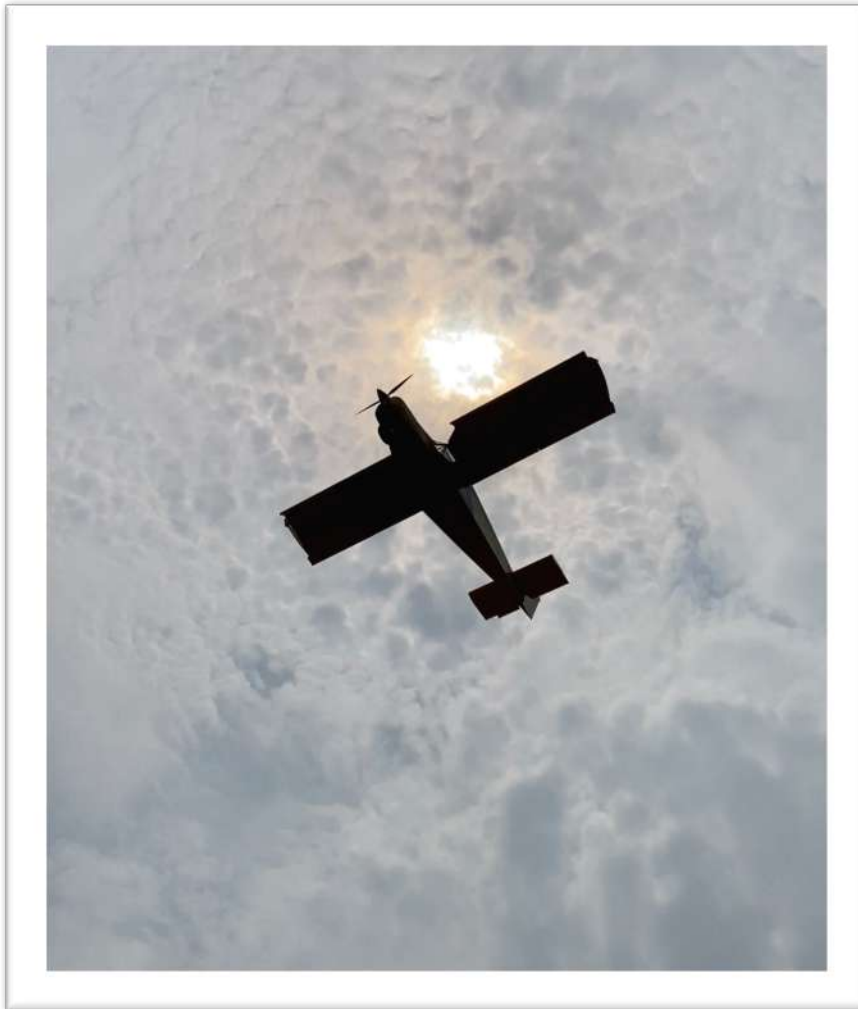
The first half of 2021 was spent designing and constructing the facilities required to operate an aircraft, including secure hangarage and fuel storage, installing a new motor and acquiring the necessary permits and clearances to operate in and around the KNP. We were delighted to position the aircraft in KNP in September and contribute to the greater conservation efforts in collaboration with DNPW and other cooperating partners.

Between September and December, the aircraft flew a total of 52 missions accumulating 98hrs of flight time, covering a distance of 10,100km and an approximate area of 13,500 sq. km. (60% KNP). Flights are monitored in real-time using a Garmin inReach device integrated into the EarthRanger platform. Data from each flight is collected by an observer on a SMART device and uploaded to SMART Connect. All flights were conducted in close coordination with DNPW and cooperating partners to ensure that rapid responses were affected and that information was shared accordingly.





AERIAL SUPPORT



Significant results include observing numerous poaching trails and camps, leading to the recovery of bushmeat, wire snares, firearms, ivory and other contraband. One of the most significant single recoveries included two firearms, seven suspects and 360kg of bushmeat. In addition, much information was gathered regarding illegal logging in and around the Park and seasonal poaching hotspots identified.

The aircraft is currently in Lusaka undergoing routine maintenance (MPIs) whilst recruiting a full-time pilot is underway. In 2022 the project aims to establish sufficient facilities at the airstrip to house a rapid response team with the capabilities of quickly responding to information from the aircraft. This includes accommodation and catering facilities for up to 6 persons and a suitable patrol vehicle (see our wish list and budget for 2022).

African Parks Network has also brought in a Helicopter under their Priority Support Plan; this asset is used across the entire Park. They have been training all Anti-Poaching teams across the Park on being deployed in the helicopter. This is an invaluable asset for the National Park with its ability to land in most areas and carry teams of officers to respond to poaching activity.

**Direct operating costs (DOCs) include insurances, fuel and lubricants, maintenance, licencing and pilot fees.*

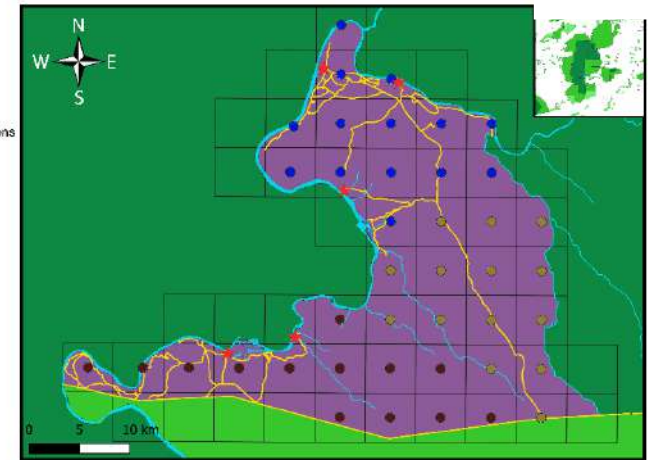


RESEARCH ACTIVITIES 2021

2021 was the research department's first entire season and, alongside the support from DNPW, continued close collaboration with the Zambian Carnivore Programme (ZCP) and Panthera. In 2021 Ruth Kabwe, joint intern became a full member of the MC/ZCP team as a Field Ecologist. The research team had three key objectives: camera trapping, distance sampling and large carnivore monitoring. Over the research season, the team drove over 5000km across the ML IPZ in 160 man-days, intensively covering a core area of approximately 900km². All large carnivores were detected in the core area.

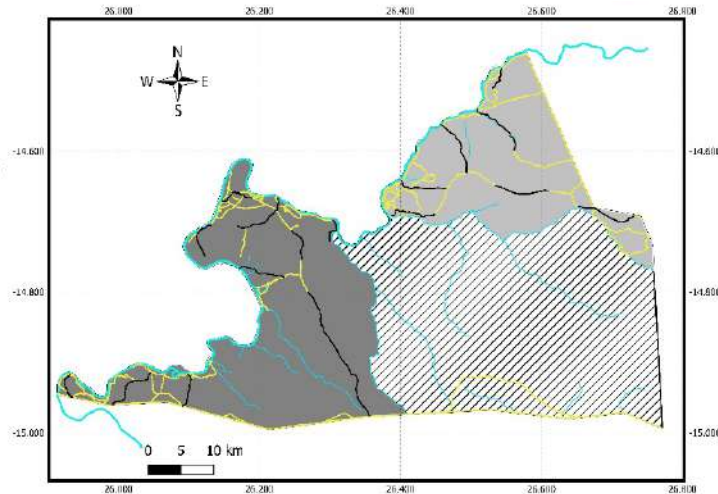
In 2021 lions were mainly detected in the north of the core area and along the Kafue River, with minimal detections away from the river. Leopards and Hyaenas were detected in relatively large numbers throughout the core area whilst African Wild Dog were detected all over, with detections coming from at least five different packs. Cheetah was the least sighted large carnivore, with most sightings coming from citizen science submissions; however, increased sightings tentatively indicate a growing population.

ML IPZ 5x5km Camera Trap Grid



CRS: WGS84 Decimal Degrees

ML IPZ Distance Sampling Transects Map Grayscale



CRS: WGS84 Decimal Degrees

Carnivore Highlights include:

- Fourteen intensively monitored lions that are >1 year old within the northern core area and a further 14 known Lions that live in the rest of the ML IPZ.
- The known African Wild Dog population across the whole ML IPZ has rebounded and increased from 14 known individuals in two packs at the end of 2019 to 60+ individuals across five packs at the end of 2021.
- 41 individual Leopards from the core area camera trap survey and at least 8 Leopards around the anti-poaching unit.
- 15 individual Hyaena caught on camera trap, with Hyaena recorded across the entire ML IPZ core area.
- Increased sightings of at least four adult Cheetah across the core area compared to previous years.



RESEARCH ACTIVITIES 2021



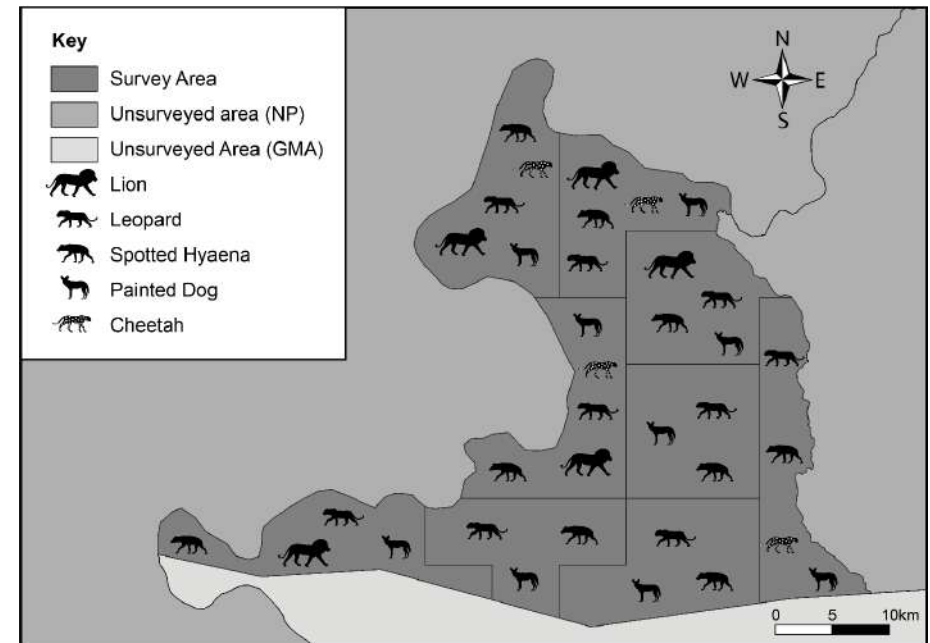
Towards the end of the season, our research team assisted with several collaring events performed by the Zambian Carnivore Programme and DNPW within the ML IPZ. Over five days, the ZCP and MC research teams successfully managed to recollar Lumbeya pack, collar Eden pack, and collar the SCZ pride, bringing the total number of collared groups to five (three African Wild Dog packs and two Lion prides). Both organisations will intensively monitor these animals throughout the next couple of years. The collar data provided by ZCP & DNPW will be used to respond to animal movements with anti-poaching patrols in both the green season and beyond.

Nature Spy granted us 35 camera traps for the study; these were deployed across 41 locations between June and September. They were deployed for an accumulative 93 days and 1077 trap nights. During this period, the cameras took 152,923 photos. From this data, the team detected 46 different mammal species. The highlights included the large carnivores; Lion, Leopard, Cheetah, African Wild Dog, Spotted Hyaena, and rare species including Serval, Caracal, Pangolin, Buffalo, African Wild Cat, and Blue Duiker.

In October 2021, 19 transects were completed across 146km; this was split across two blocks; the core area and the north-eastern sector of the ML IPZ. Although the core area has a more significant anti-poaching presence than that of the north-eastern sector, this data will be considered when analysing the effectiveness of the law enforcement operations.

During these transects, 154 detections of 13 herbivore species were detected, with Impala and Puku being the most common. However, despite the number of detections, only two species were seen sufficiently enough (>50 sightings) to produce a density estimate (Impala and Puku). The data for these species will be analysed in the coming months, and results will be presented in the full research report.

Moving forward, we intend on increasing our camera trap effort across the core area and into the rest of the ML IPZ. We will conduct distance sampling transects twice a year, once in June and October. This enables us to have data from multiple points in the year and see how different seasonal factors affect our results. We will continue to intensively monitor the large carnivores within the ML IPZ, making sure that they continue to thrive in a safe environment and any threat of illegal activity is responded to immediately.



The distribution of large carnivores within the MC intensive research area, based on all data collected (camera trap photos, spoor, audio calls, visual sightings, and citizen science submissions).



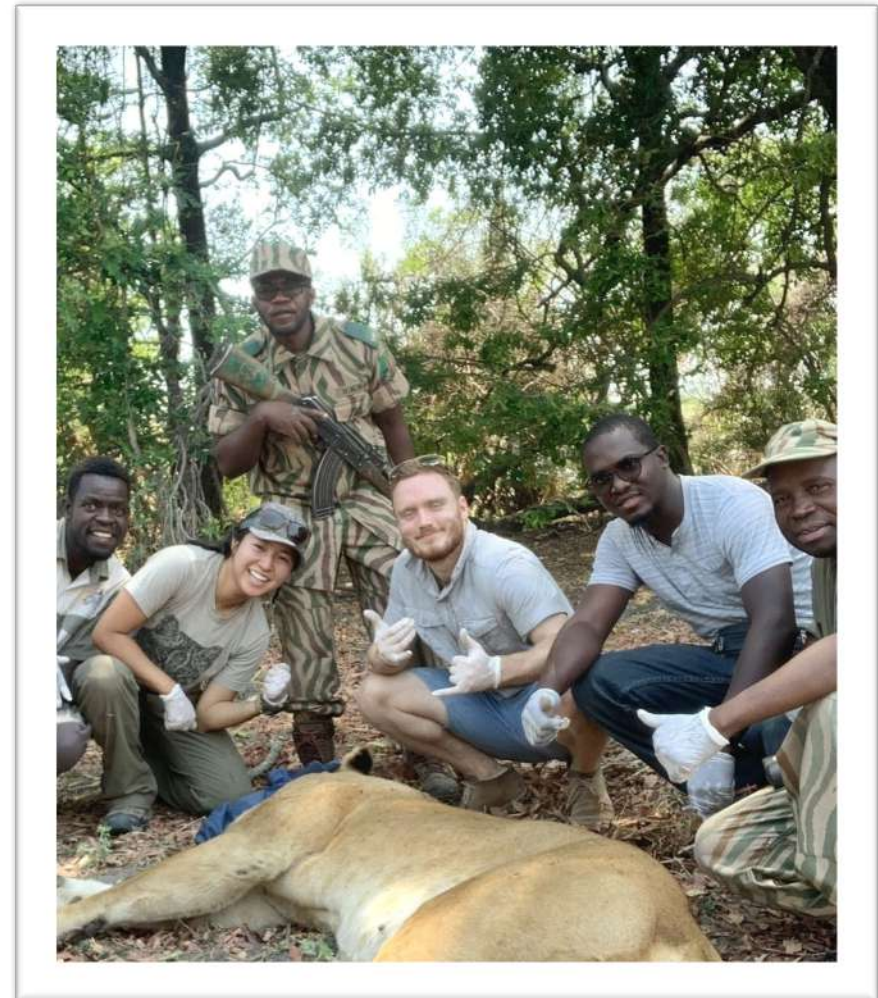
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WILDLIFE MANAGEMENT

Spatial and temporal information, using both historical and real-time data, is used extensively in our day-to-day management of wildlife. For example, data from patrols (SMART) and collared wildlife (DNPW, ZCP/EarthRanger) are used to analyse wildlife's movement and enable the placement and allocation of resources accordingly. This adaptive management technique is known as the 'halo effect'. Thus far, it has proven successful in ensuring key wildlife populations and the habitats they frequently utilize are kept free of illegal activities, particularly snares.

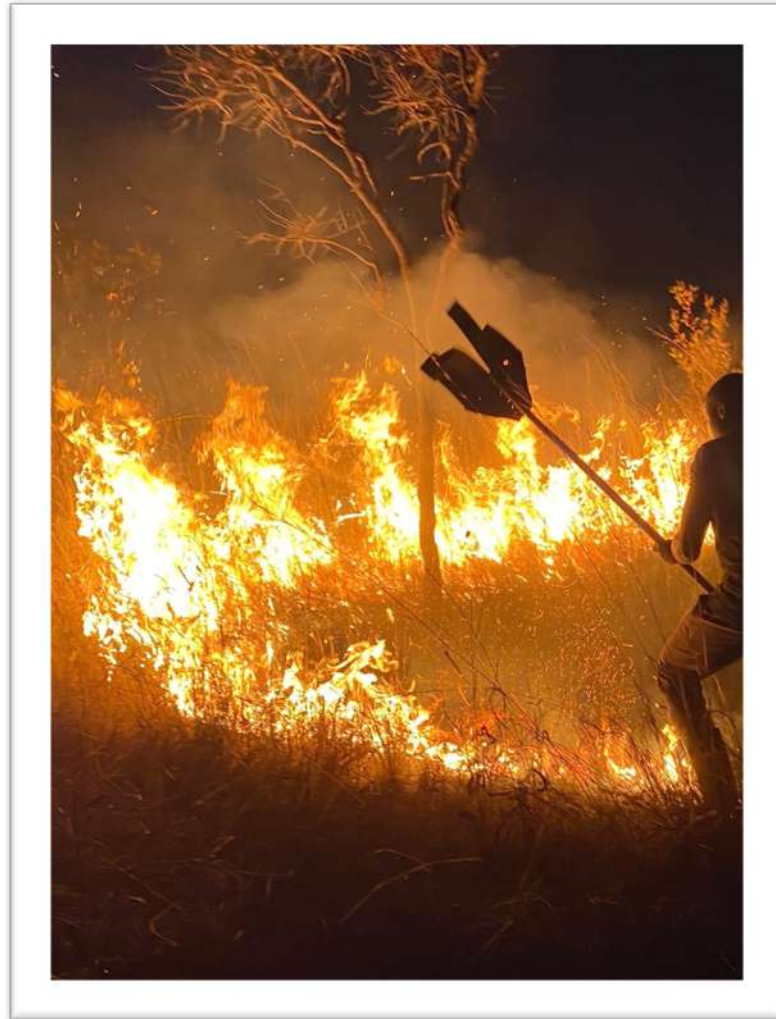
With the increase in illegal activities close to the encroached areas, it is envisaged that human-wildlife conflict (HWC) will increase in the year ahead. It will be imperative to mitigate the effects of this, including the transmission of disease from domestic animals and livestock to wildlife; the population of wild dogs across the ML IPZ, whilst increasing, will be particularly vulnerable.

In 2022 the research team would like to deploy more satellite collars on appropriate individuals and groups to enhance the effectiveness of this approach further, noting that our long-term goal is to provide enough security across the landscape to render satellite collars obsolete.





HABITAT MANAGEMENT



One of the greatest threats to the ecology of the area and the gKNP at large is the prolific and uncontained/uncontrolled burning that affects almost 90% of the entire Park on an annual basis. The ML IPZ is approximately 2,700 sq. km. - 60% of this area was affected by fire in 2021.

One of MC's objectives is to reduce the areas affected by fire and each year undertake to create and maintain many kilometres of firebreaks; 2021 was no exception and we successfully managed to protect 20% of the core area of the ML IPZ from fire.

Development of infrastructure such as roads and firebreaks are key to reducing the impacts of unplanned fires, as is investment in appropriate fire-fighting equipment such as water carrying and dispersal devices. It will be necessary to reinforce the fire-fighting team with additional equipment in 2022. Successful fire-fighting and prevention relies also on close collaboration with camps and lodges.

MC has integrated NASA FIRMS data with the EarthRanger platform, which provides near-real time alerts of fire and is an important early warning system that can also assist in pinpointing illegal activities.




MAP DISPLAYING BURNT AND UNBURNT AREA



KEY

ML IPZ

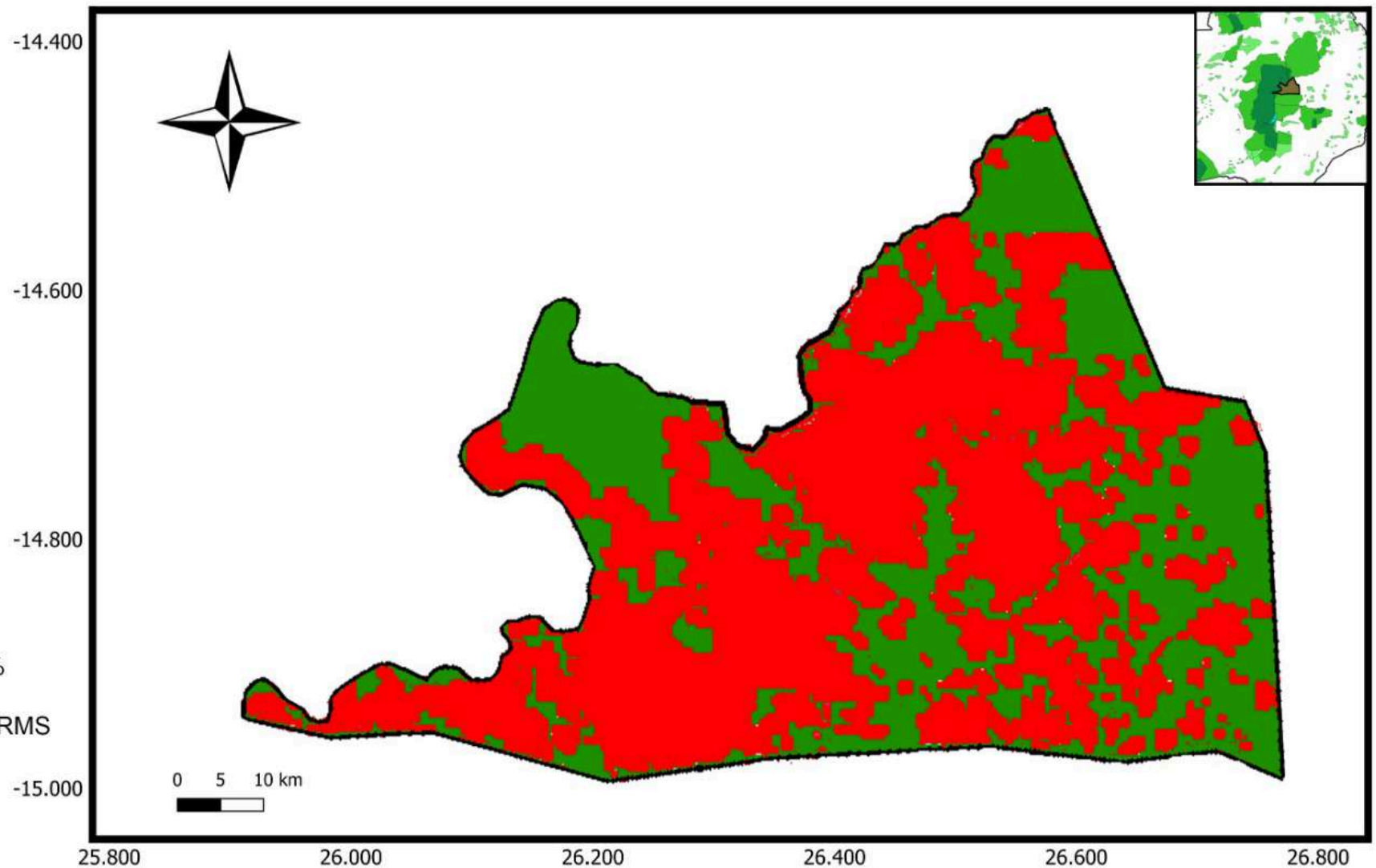
 Burnt Area

 Unburnt Area

Area Burnt: 1700km²

Percentage Burnt: 63%

Data Source: NASA FIRMS





ENVIRONMENTAL IMPACTS



ENCROACHMENT

The first half of 2021 saw an upsurge in encroachment as poor governance and accountability paved the way for illegal settlements outside the limits of acceptable use as prescribed in the land use plans of the Game Management Areas. Destruction of forests has happened at a frightening rate with charcoal burning and plunder of hardwoods (mukula trade) being the main factors. In the long run this will have devastating effects on ecosystem services and water security; intense burning of grasslands and the destruction of forests will increase the likelihoods of both drought and floods and compromise carbon capture.

Illegal encroachment has also brought with it a host of other challenges including human-wildlife conflict and disease transmission from livestock and domestic animals to wildlife, with the most serious threats being foot and mouth disease, rabies & canine distemper.

The impacts of the above is evident by the large amount of illegal activity at and near to the Park boundary adjacent to the encroached areas, detected by both ground patrol teams and aerial surveillance.

Musekese Conservation recognizes the needs of a growing human population and is committed to finding solutions that promote sustainable livelihoods alongside protected areas



HUMAN WILDLIFE CONFLICT

Human-Wildlife Conflict (HWC) is globally one of the biggest threats to wildlife today. HWC is when struggle arises between peoples and animals when they come into close contact, which often results in animals being killed in self-defence as a pre-emptive or retaliatory killing. This conflict can drive species into extinction. The KNP poses a higher risk of HWC, with the M9 road dissecting the park in two and the Eastern boundary of the National Park not having a Game Management Area (GMA) as a buffer zone. Over the past year, we have received higher reports of Human-Wildlife Conflict, which emanate along that Eastern Boundary.

We are working on initiatives to educate communities on living close to the animals and alternative management strategies to avoid conflict.





THE FUTURE AND THANKS



We'd like to acknowledge and express our sincere gratitude to the many friends, colleagues, co-partners and donors who have supported us over the past 5 years in delivering our conservation, research and management services for the environmental and socio-economic benefits of the KNP and its ecosystem services that are of regional and global significance.

As we move into 2022 and a new era of good Governance and Protected Area partnerships in Zambia, we are optimistic about the future and the opportunities created by the enabling environments we are contributing to through our co-operating partners, particularly the DNPW and Government of the Republic of Zambia.

We also look forward eagerly to developing African Park's KNP Priority Support Plan into a full-scale project in 2022. Like many other stakeholders, Musekese Conservation is ready to participate in this initiative as appropriate to further the DNPW and Government's Vision and Objectives for the wildlife sector and KNP in particular.

2022 will be an exciting phase in the KNP's 100-year history as one of Africa's largest Protected Areas and a Zambian pioneer in the development of some of the most significant wildlife management techniques and tools still in use today throughout the world. It also prompts us to recognise some fundamental principles of sustainable wildlife management that we ignore at our peril, including:

- Stakeholder and community participation;
- Identification and mitigation of conflicting and inappropriate land-uses and associated encroachments;
- Development of a sustainable and climate-change resilient wildlife-based economy centred on the KNP and surrounding areas;
- Harnessing of historical wildlife research, management and development excellence while establishing modernised, fit-for-purpose, and sustainable wildlife management approaches and partnerships (including public, private and community sectors);

We remain committed to our goals of empowering DNPW, building capacity and improving existing operations and do not doubt that we shall be able to do so for many years to come and whilst it is necessary.

2022 GOALS INCLUDE

- The training and equipping of an additional two antipoaching teams at a new site;
 - Establish a secondary antipoaching outpost;
 - Equip the teams with an additional patrol vehicle;
- Establish a rapid response team and accommodation/catering facilities at the airstrip to work in close coordination with the aerial support unit;
 - Establish a framework and strategy for effective community engagement;
 - Continue with and expand upon the research and monitoring work;

We cannot thank our supporters enough for all the support and do hope that when travel restrictions lift, we can welcome you to the Kafue!

Please do get in touch with any questions or pledges to info@musekeseconservation.com.





IN COLLABORATION WITH



OUR SUPPORTERS



Lion Recovery Fund



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