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# WILDLIFE POISONING IN THE GREATER LIMPOPO TRANSFRONTIER PARK

## Provisional findings of baseline study

March 2018

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# ABBREVIATIONS AND ACRONYMS

AWPD: African Wildlife Poisoning Database
EWT: Endangered Wildlife Trust
GLC: Great Lembombo Conservancy
GLTP: Greater Limpopo Transfrontier Park
GLTFCA: Great Limpopo Transfrontier Conservation Area
GNP: Gonarezhou National Park
JMB: Joint Management Board
KNP: Kruger National Park
LNP: Limpopo National Park
SOP: Standard Operating Procedure

# 1. INTRODUCTION

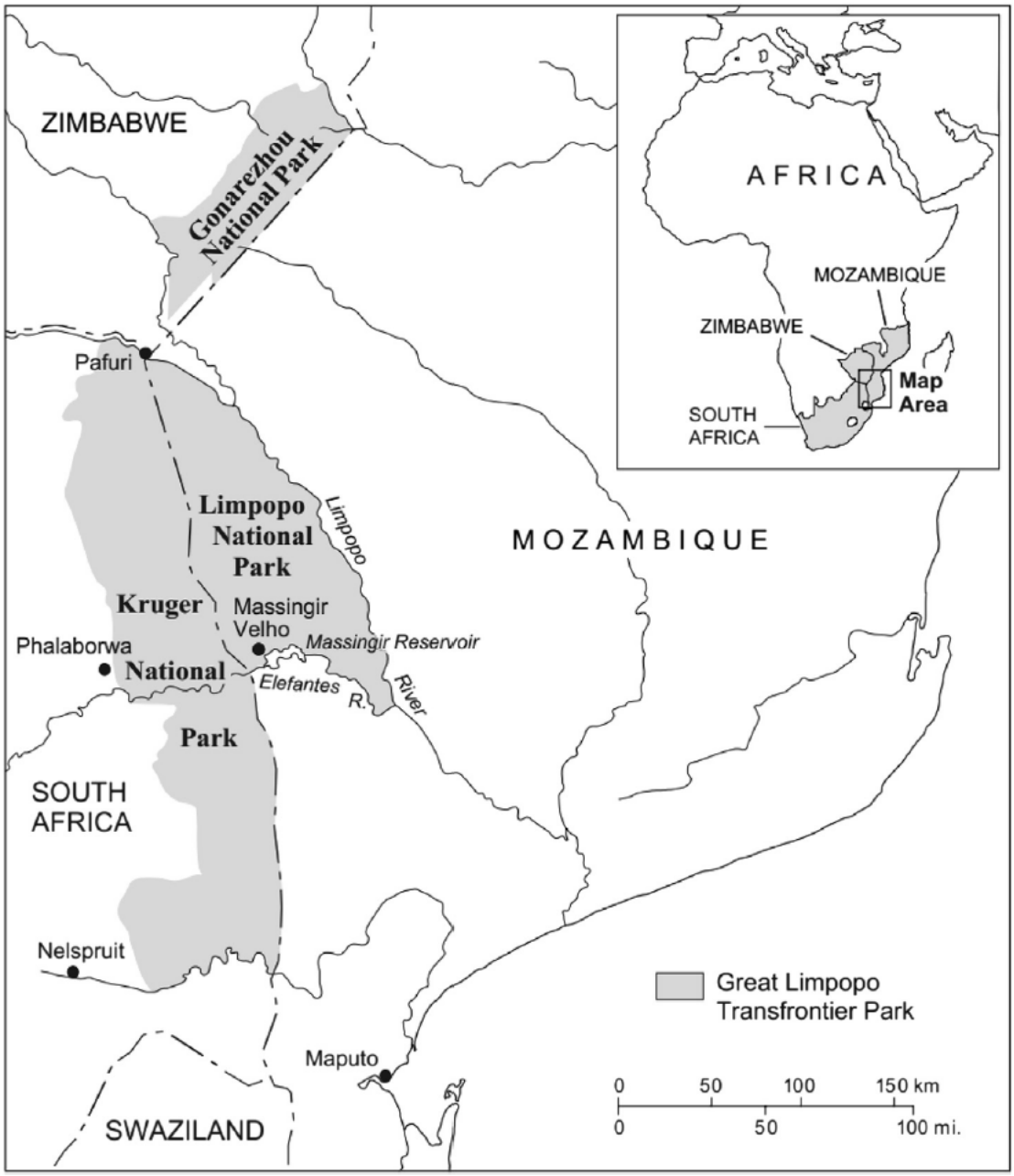
The Greater Limpopo Transfrontier Park has been the site of multiple incidents of wildlife poisoning over the past decade. Wildlife poisoning presents one of the greatest threats to wildlife, ecosystems and local communities worldwide. To the three GLTP member countries – Mozambique, South Africa and Zimbabwe – wildlife poisoning further augments the unnatural death tolls of elephants, rhinos and lions already under threat by poaching and human-wildlife conflict. Moreover, vultures, birds of prey and a barrage of smaller less charismatic animals and plants have fallen victim to poisoning incidents. Beyond affecting whole ecosystems and all the human beings, plants and animals in them, wildlife poisoning also impacts the food and water security of local communities living near poisoning sites. The long-term impacts of poisoning and the fall-out from secondary or tertiary poisoning are not well understood. The following report provides provisional findings of a scoping trip to the Kruger National Park and the Limpopo National Park. It also incorporates knowledge and data gathered through the analysis of academic and peer reviewed literature as well as gray literature and media reporting on the subject matter.

# 2. BACKGROUND AND OBJECTIVES OF THE STUDY

### 3.1 STUDY AREA

The Great Limpopo Transfrontier Park (GLTP) is based on a joint agreement between Mozambique, South Africa and Zimbabwe to establish a 3 577 144 ha transfrontier park comprising of Gonarezhou National Park in Zimbabwe, the Kruger National Park (KNP) in South Africa and the Limpopo National Park (LNP) in Mozambique. Formerly known as Coutada 16, the Limpopo National Park was proclaimed in 2001. The KNP also includes the Makuleke region while the Manjini Pan Sanctuary and Malipati Safari Area form part of the Gonarezhou section of the transfrontier part. The agreement also provides for the establishment of the Great Limpopo Transfrontier Conservation Area (GLTFCA), which is defined, as "the area adjacent to the Transfrontier Park, comprising compatible conservation areas but not lending itself to formal integration". Flanking the western boundary of the Kruger Park and covering close to 2 000 square kilometers are private game reserves which are known under the umbrella term of Associated Private Nature Reserves. Another layer of private game reserves, a so-called 'buffer zone' is located along the eastern boundary of the KNP and south of the Limpopo National Park (LNP) in Mozambique. South African corporates, private individuals and shareholding companies lease these concessions from the Mozambican government. Known as the Great Lembombo Conservancy (GLC), the Mozambican government and its partners have been seeking to create an integrated buffer-zone by adjoining the private concessions, state and communal land south of the Massingir dam.

Figure 1: Map of the Great Limpopo Transfrontier Park




Source: Lunstrum (2013)

### 3.2 THE POISONING TASK TEAM

Based on a worrisome increase in the incidence of elephant, lion and vulture poisoning in the Greater Limpopo Transfrontier Conservation Area, the Joint Management Board of the GLTP set up

a wildlife poisoning task team on the 25 August 2016. The overall aim of the task team is to facilitate the development of an integrated wildlife poisoning strategy for the GLTFCA. Park officials were particularly concerned that poison poaching is emerging as a major threat to conservation efforts in the GLTFCA, which are already hampered by the dramatic increases of poaching of charismatic megafauna and other high-value species over the past decade. A great worry is furthermore that wildlife poisoning is not target-specific but typically affects a number of different species and multiple individuals thereof. The risk of secondary and tertiary poisoning as well as potential long-term impacts are not well understood. Generally speaking, poisons are relatively easily accessible and cheap in the subregion.

Beyond the development of an integrated wildlife poisoning strategy for the GLTFCA, the task team is also expected to deliver the following:

- A practical field manual for wildlife practitioners to use on a day-by-day basis to understand and combat poisoning which includes but is not limited to sample taking, relevant legislation, reporting guidelines;
- Facilitate the development of a comprehensive information management system of the current state of wildlife poisoning within the GLTFCA area and a system to capture new incidents;
- Identify and investigate the types and potential sources of wildlife poison to the project area;
- Identify and investigate potential socio-economic benefits accrued as the result of wildlife poisoning;
- Identify and investigate the potential negative socio-economic implications accrued as a result of wildlife poisoning;
- Develop a legal atlas detailing the relevant policy and legal frameworks (international, regional & national) which have an impact on wildlife poisoning within the GLTFCA;
- Identify the key shortcomings within the legal and prosecuting ability of each country;
- Identify and assess current programmes, strategies and initiatives developed within the project area in order to combat wildlife crime.

### 3.3 OBJECTIVES OF THE POISONING WILDLIFE STUDY

In November 2017, the poisoning task team appointed research consultant and criminologist Dr Annette Hübschle to conduct a baseline study on wildlife poisoning within the GLTP. The overall objectives of the baseline study are as follows:

1) Develop a comprehensive database of the current state of wildlife poisoning within the GLTFCA area;
2) Develop an understanding of current workable and appropriate methods to combat wildlife poisoning within the project area;
3) Identify and investigate potential sources of wildlife poison to the project area;
4) Identify and investigate potential socio-economic benefits accrued as the result of wildlife poisoning;
5) Identify and investigate the potential negative socio-economic implications accrued as a result of wildlife poisoning;
6) Identification and assessment of the various options for the development of a systems based data capture and reporting tool; and
7) Summarise the findings in a report

### 3.4 RESEARCH QUESTIONS

The baseline study is thus aimed at supporting the efforts of the wildlife poisoning task team. As such, the study seeks to answer the following questions.

**1. What is the status of wildlife poisoning in the GLTFCA?**

a. Details of events (general trends, commonalities and differences)
b. Species targeted and secondary poisonings
c. The geographic location of wildlife poisoning events
d. The frequency of events

**2. Offenders, drivers and motivations**

a. Profile of the offenders (geography, age)
b. Role in the supply chain (opportunistic or linked to organised crime)
c. Modus operandi
d. Drivers and root causes of wildlife poisoning
e. Offender motivation
f. Socio-economic benefits of wildlife poaching

**3. The poison supply chain**

a. Poison used
b. Possible source of the poison
c. Accessibility of poison
d. Is there a link to other supply chains (e.g. poaching and wildlife trafficking)

**4. Impact of poisoning on natural and social systems (including secondary and tertiary poisoning)**

a. Impact on ecosystems
b. Impact on local communities
c. Broader societal and governance impacts

**5. What is the status of current interventions on the ground to deal with wildlife poisoning**

a. List interventions (law enforcement, conservation, supply regulation)
b. Human resources
c. Financial resources
d. Thoughts on innovative methods to deal with the matter

### 3.5 PROJECT IMPLEMENTATION AND TIMELINES

The research project is divided into five distinct phases. This report covers the results of Phase 1 and 2.


#### 1. Phase 1: Literature review and scoping

Phase 1 comprises of a literature review and preparation for the pilot field trip. This involves a review of existing research on wildlife poisoning, including scholarly and gray literature as well as media reporting. In addition, the researcher prepared for the scoping field trip, which included identifying research informants and repositories of information and data.

#### 2. Phase 2: Scoping field trip and analysis of provisional findings

During the scoping field trip the researcher interviewed informants including conservation officials, law enforcers and rangers. In addition, local communities of interest (explained below) were identified for the purposes of data collection during the second field trip. Where possible, the researcher was going to seek approval or buy-in from local village, traditional and/or political authorities near research sites. Upon return from the pilot field trip, the researcher undertook an analysis of the provisional research findings. This serves the purpose of identifying further gaps and possible follow-up questions during the second trip.

#### 3. Phase 3: Field trip to interview local community members and tracking of poison supply chain

The second field trip serves the purpose of interviewing local community members that live near poisoning sites, law enforcement officials, conservation stakeholders and repositories of information that were not contacted during the pilot field trip. The objective is to gain an understanding of how poisoning might affect local communities and whether community members have any knowledge of the perpetrators and the supply chain. If possible, the researcher will seek to interview people with intimate knowledge of the poisoning supply chain including possible suppliers and offenders. The researcher will also seek to identify suppliers, sources and test public accessibility of poison.

### 4. Phase 4: Data analysis and report writing

This phase involves data analysis and the compilation of the final report.

### 5. Research dissemination

During the final stage of the project, the researcher will provide feedback on major findings and recommendations to the JMB and wildlife poisoning task team.

## 3.6 RESEARCH METHODS AND APPROACH

The research study relies heavily on qualitative research methods. Where relevant statistical data is made available, quantitative data analysis will be undertaken to discern causal relationships. Research methods include unstructured interviews, group discussions, focus groups, participation in meetings, and participant observation. The interviews will be open-ended and engage research respondents on their knowledge of wildlife poisoning. Due to the illegality of wildlife poisoning, the researcher is employing the standard academic ethics protocols of protecting anonymity and confidentiality of research participants. Data will be captured by way of field notes. Where consent is given, the researcher will record interviews and collect incident reports.

Figure 2: Research methods


Part of the research design is an extensive review of gray literature and academic articles, which aims to provide background information and identify research gaps.

The purpose of the scoping phase is to allow the researcher to scout the terrain and inform decisions on research sites, gaps and methods. The scoping field trip was supposed to take the researcher to all three parks to undertake initial interviews with park officials, rangers and other relevant officials (see next sub-section). Another objective was to determine research sites for immersed fieldwork in the first half of 2018, which included the identification of local communities that may be of interest for the study.

The second field trip centers around interviews with conservation officials (including rangers) and local community members who may have intimate insights as regards the offender profiles, motivations and impact of wildlife poisoning. The researcher will follow the supply chain of poison to establish possible suppliers and outlets. Based on feedback by members of the JMB, the researcher will also look at whether local and national muthi markets are part of the poisoning supply chain.

Due to issues of positionality and language proficiency of the researcher, the services of a research assistant/translator may be used for research in muthi markets and local communities.

### 3.7 LIMITATIONS AND RECOMMENDATIONS FOR RESEARCH PHASE 3

The scoping trip took place in early December 2017. The researcher traveled to Skukuza and Phalaborwa in the Kruger National Park and to the administrative offices of the Limpopo National Park, Massingir and the village of Cubo where a case of wildlife poisoning had taken place in 2017 during which two young lions had been poisoned. The Zimbabwean leg had to be postponed due to the prevailing political uncertainty surrounding "the coup that wasn't a coup". Due to the lateness of the trip (close to the holiday season and the annual office shut-down), some key informants could not be contacted. However, these informants will be included in the next round of interviews.

Moreover, Kruger officials and rangers have requested that the project be registered as an official project with Scientific Services at the KNP. Due to confidentiality clauses in the employment contracts of Kruger staff, rangers asked that senior park officials should provide them with clearance to share data with the researcher. The researcher was thus able to collect anecdotal accounts of wildlife poisoning in the KNP during group interviews but incident reports have not been made available as yet.

Confidentiality clauses are not the only stumbling block. In addition, different stakeholders within the Park store such information which has not been compiled into a centralized database as yet. Thus, wildlife veterinarians, rangers and the environmental crime investigations unit all appear to have different data sets which has not been cross-checked or verified. At the time of the trip, a Kruger official was in the process of compiling a log book of incidents which he will share with the researcher in due course. It became clear during meetings with rangers that they had come across a few more suspected cases of wildlife poisoning than what had been officially recorded. As an example, one of the rangers shared information on one case that had not been previously recorded. Moreover, rangers from the northern sections in the KNP reported a number of historic cases of suspected wildlife poisoning which could not confirmed at the time due geographic distances and/or lack of testing kits. In addition, a couple of incidents of accidental livestock poisoning in communal and farmland adjacent to the KNP were also mentioned.

Beyond meeting key stakeholders, the objective of the scoping trip was also to identify research sites and local communities to be visited during the main research phase in 2018. The criteria for local community selection were either communities that were impacted by wildlife poisoning, are located nearby poisoning sites or communities where wildlife poisoning offenders appear to originate. Based on ranger feedback, it was suggested that the researcher should visit Cork, Mhinga village and Giyani 14C along the western boundary.

A site of several weeks of community protests, **Cork village** is located outside the Paul Kruger Gate. Community members blockaded the gate and tore down sections of the Kruger fence after a young man from the village was shot dead inside the KNP in 2016. Park-community relations have been severely hampered. A case of vulture poisoning was reported near the village. **Mhinga village** and **Giyani 14C** are both located near northern sections of the KNP and close to poisoning sites. Rangers also mentioned that the two villages were considered transit villages for rhino poachers. The researcher had planned to the Hlanganani Park Community Forum to reach out to community leaders during the scoping trip. The forum was canceled at short notice. The researcher will have to seek research permission from the relevant communal authority ahead of the next research phase.

In terms of community selection in and around the Limpopo National Park, the community of **Cubo** located south of the Massingir Dam was identified as one community of interest as the village was the site of lion poisoning in 2017 (more details supplied in the next section). The researcher met with Isaac Ngomane the village leader of **Cubo** to seek permission to undertake research within the community, which was granted. More recently on 31 January 2018, the poisoned carcasses of two lions and two lionesses were found near Mavodze inside the LNP and another case of mass vulture poisoning was reported near Moamba in the GLC.

The area around **Crook's Corner** and the nearby village of **Dumela**, as well as the village of **Makanduzulo** which is located close to Kruger's Vlakteplaas section, are likewise considered hotspots for wildlife poisoning in the northern parts of the LNP. Due to geographic closeness of villages of interest in the northern Kruger area and Gonarezhou National Park due the north, a visit to the general area of Crook's Corner[1] is recommended for the fieldwork phase. The services of a research assistant who is fluent in Shangaan and Portuguese will be necessary for the follow-up research.

Determination of research sites in Gonarezhou National Park (GNP) will be undertaken in consultation with Hugo van der Westhuizen of the Frankfurt Zoological Society ahead of the next research phase. The community liaison officer of the GNP will work closely with the researcher.

An important aspect of the project is the analysis of the poisoning supply chain, including an investigation as to where poisons originate and what happens to the remains of poisoned animals. Based on interviews during the scoping phase, it is suggested that the researcher dedicate some time to exploring local and national muthi markets and she should speak to experts in the field of pest

[1] Crook's Corner refers to a curious 'no man's land' located in the border area between Mozambique, South Africa and Zimbabwe. The area gained notoriety during the early colonial period as a place where criminals would evade justice by simply crossing the border or moving the border beacons (Tavuyanago 2016).

control. In addition, members of the poisoning task team also suggested that the researcher should visit local hospitals and mortuaries to establish whether there had been any human casualties. In consultation with scientists and conservators, it is recommended that the poisoning task team should discuss the suggestion. A research assistant could be employed for a couple of weeks to explore this angle.

# 3. RECORDS OF WILDLIFE POISONING

## 4.1 WILDLIFE POISONING INCIDENTS

The effects of wildlife poisoning have been particularly dire for several species of African vultures: four species had to be re-categorized as "critically endangered" and two as "endangered" on the International Union for Nature (IUCN) Red List.[2] According to Ogada and colleagues (2016), poachers have also been using poison to kill elephants or contaminate carcasses to poison vultures.

Possibly the most comprehensive data on the incidence of wildlife poisoning in the GLTFCA is captured in the newly-established African Wildlife Poisoning Database (AWPD). In partnership with the Vulture Specialist Group of the IUCN Species Survival Commission, the Endangered Wildlife Trust (EWT), the Peregrine Fund and the Gadfly Project established the African Wildlife Poisoning Database (AWPD) in August 2017.[3] This database provides the most comprehensive and historic record on wildlife poisoning incidents across the continent. What is particularly noteworthy about the online database is that it allows registered members of the public, conservationists and wildlife veterinarians to input information into the database through a mobile app.

At the time of writing, the database contained records of close to 300 poisoning incidents that had killed over 8,000 animals of 40 different species from 15 countries (African Wildlife Poisoning Database 2017). The EWT notes a rapid acceleration in the use of poisons to kill wildlife over the past decade across Africa. Due to the indiscriminate nature of the usually highly toxic pesticides used in such incidents, there have been unintentional consequences affecting a range of terrestrial and aquatic species as well as human beings. The creators of the new database are particularly concerned

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[2] The IUCN Red List is the world's most comprehensive inventory of the global conservation status of plant and animal species. It uses a set of criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and regions of the world. With its strong scientific base, the IUCN Red List of Threatened Species is recognized as the most authoritative guide to the status of biological diversity. The following categories of imperilment are relevant:

- "critically endangered": species face an extremely high risk of going extinct in the wild
- "endangered": species face a very high risk of going extinct in the wild
- "vulnerable": species face a high risk of going extinct in the wild

(IUCN Standards and Petitions Subcommittee 2010)

[3] The AWPD can be found here: http://www.tgpcloud.org/wildlife/

about the high death toll of vultures, which has led to diminished numbers of ten vulture species, including two species that migrate from Europe to Africa. Poisoning thus affects the survival chances of vultures particularly badly with four African vultures listed as critically endangered and three as endangered on the IUCN Red List of Threatened Species (African Wildlife Poisoning Database 2017).The AWPD contains poisoning incidents for the GLTP Park. The researcher has requested access to the detailed entries to cross-reference with cases provided by park authorities. Andre Botha (pers. Communication with author, 2018) mentioned that talks were afoot to link poisoning reporting tools of the three parks with the AWPD.

The following sub-sections deal with empirical data gleaned during the scoping period.

### 4.2 WILDLIFE POISONING IN THE LIMPOPO NATIONAL PARK[4]

**TABLE 1: WILDLIFE POISONING REGISTER, LIMPOPO NATIONAL PARK**

| DATE | LOCATION | SPECIES & NUMBERS | TYPE OF POISON | METHOD |
|---|---|---|---|---|
| 15/07/2008 | Machamba | 1elephant | Temik suspected | Poisoned corn cobs |
| 02/08/2014 | Massingir Velho | 3 lions, 8 vultures | Temik suspected | Poisoned buffalo leg |
| 2015 | Mbuzi | 1 elephant | Temik suspected | Laced oranges |
| 07/10/2016 | Machapane | 2 lions, 50 vultures, 1 GEO, 1YBK, 3 FE | Temik suspected | Laced udu leg |
| 18/06/2016 | Lilau | 4 vultures, 1 African wild cat, 1bushpig | Temik suspected | Nyala carcass and fruit laced |
| 03/07/2017 | Shingwedzi | 1 lion | Temik suspected | Details not provided |

[4] Data supplied by William Swanepoel, Limpopo National Park

| | | | | |
|---|---|---|---|---|
| 06/08/2017 | Ngwenya | 0 | Temik suspected | Laced impala carcass |
| 11/08/2017 | Cubo | 2 lions | Temik | Details not provided |
| 31/08/2017 | Gadzingwe | 45 vultures | Temik suspected | Details not provided |
| 07/10/2017 | Salane | unknown | Blue granules analysis pending | Details not provided |
| Not provided | Lilau | 40 vultures | Unknown | Laced giraffe carcass |
| 30/01/2018 | Mavodze | 2 lions, 2 lionesses | White powder analysis pending | Calf hind legs, head and torso poisoned |

Further analysis and cross-comparisons will be undertaken once the researcher has been provided with a full record of poisoning incidents in all three Parks.

## 4. OFFENDERS, DRIVERS AND MOTIVATIONS

The reasons and motivations for the poisoning of wildlife are varied and complex, rendered more difficult by the pervasive social legitimacy of highly toxic pesticide and herbicide use in rural farming communities and agro-industries located close to the GLTP. Historically a range of poisons and pesticides have been used by both the state and farming communities to deal with predators and birds of prey. Motivations for wildlife poisoning may include:

1. Retaliatory poisoning

Retaliatory poisoning occurs in response to predators that are perceived as dangerous and harmful to rural dwellers. Leopards and lions, as an example, are perceived as posing a grave danger to peoples' lives and livestock. Elephants and monkeys are known for crop-raiding which can have catastrophic impacts. So-called human-wildlife conflict is happening across many parts of the GLTP including the buffer-zones and the LNP where local people and their livestock live

inside the boundaries of the park. While this form of poisoning tends to target wildlife due to perceived levels of danger to people, livestock and crops, there have also been anecdotal reports of poisoning incidents as an expression of anger or resentment. In this instance, someone will use poison to express his or her anger or resentment of policies or practices associated with private reserves or concessions, commercial farmers or park authorities.

2. Means of hunting or capturing wildlife for subsistence, illegal wildlife trade and muthi markets

Also known as "pesticide fishing", poisons may be used to hunt or capture wildlife. A particularly damaging method is associated with the sprinkling of poisons or pesticides into water holes, dams, rivers or springs. In its most rudimentary form, local people may use poisons to capture wildlife for subsistence purposes. Poachers who have not ready access to hunting rifles and other hunting equipment are believed to be using pesticides to kill high-value wildlife. Several incidents of elephant, rhino and lion poaching have been associated with cyanide or aldicarb poisoning. According to Richards and colleagues (Richards et al. 2018), more than 100 elephant deaths in Zimbabwe are due to the poisoning of water holes and salt licks. The tusks had been removed from the poisoned carcasses. Another development has been the poisoning of lions, leopards, crocodiles and vultures on the basis of belief-based witchcraft and traditional medicine. The poisoned carcasses or body parts are believed to be sold in local muthi markets. A recent development is the poisoning of lions for their bones. Lion bones are believed to be trafficked to Asian markets, where they serve as a replacement for tiger bone in Asian Traditional Medicines markets.

3. Ignorance

In some instances, the wider impact of pesticides is not known to users. Pesticides may be used to deal with localized rodent problems but the pesticides are easily spread through affected birds of prey, micro-organisms and flowing water.

4. Killing wildlife sentinels

A further factor to consider is the poisoning of birds of prey, specifically vultures – the so-called 'bush police'. The overhead circling of vultures has long been used to locate dead wildlife. Vultures have been pointing rangers to poached animals, sometimes alerting them to a poaching incident while still in progress. With their keen eyesight and distinctive vantage point, vultures can locate an elephant carcass within 30 minutes of the animal's death. It can take 45 to 70 minutes for the most skilled poachers to remove two elephant tusks (rhino horns can be removed in less than 5 minutes if the poacher is skilled).

## 5. METHODS

A variety of methods are used to poison wildlife, all of which are indiscriminate and not target-specific towards a species. Baited carcasses are worldwide the most common means of killing scavengers and predators (Ogada 2014). Preliminary data from this study echo global trends: offenders sprinkle an opened carcass or pieces of meat with pesticide. Bushmeat has also been laced with poison. Mangoes, cabbage and other fruit and vegetable may be used as bait. Salt licks, grains, mielies, grains and termites have been soaked or laced with poisons. A systematic breakdown of

methods will be given in the final report once the wildlife poisoning data from the GLTP has been collated.

## 6. THE POISON SUPPLY CHAIN

Carbofuran is believed to be the most abused pesticide in Africa. Strychnine, aldicarb, diazinon and monocrotophos are other commonly abused pesticides across Africa. Aldicarb and its various variants appear to be the most commonly abused pesticides in southern Africa, including in the GLTP member states. Asian variants of Aldicarb are widely available in Mozambique and parts of South Africa. Curiously, the United States, Canada and the European Union have banned or severely restricted the use of the above-mentioned pesticides. Law enforcement sources mentioned that the cross-border trafficking of pesticides and agricultural fertilizers had become an issue in the sub-region. Due to the economic downturn in Zimbabwe over the past decade, pesticides appear to be headed from South Africa to Zimbabwe. The primary use appears to be in aid of pesticide control in rural and communal areas. The incidence and magnitude of smuggled pesticides originating in South Africa in the perpetration of poisoning incidents will be determined during the next research phase.

Much of the "poison" supply chain derives from legal pesticides that are used in farming, mining or standard rodent control in southern Africa. Pesticides are easy to source and comparatively cheap. According to anecdotal reports (to be tested during the next research phase), some highly-toxic pesticides are provided as a form of development aid to emerging and small-scale farmers free of charge. Dumping of controlled pesticides that are no longer allowed for private or commercial use in industrialized nations, including the European Union and North America, has led to a proliferation of highly-toxic pesticides not only in agricultural outlets but also on local markets in all three countries. Local dumping of pesticides also occurs, especially with regards to Aldicarb also known as "temik" or "two step". The use of Temik is widespread amongst farming communities in the region. The name "two step" is derived from its putative toxicity – after ingesting Temik (one step), you die (two step). A Kruger ranger reported that traders were trading small packets filled with blue powder (possibly Temik) at taxi ranks and bus terminals along the western boundary of the Kruger National Park. An important element of the fieldwork phase will be an investigation as to what type of pesticide control is available to local communities and commercial farmers around the GLTP. The researcher will also investigate whether indigenous, local and less toxic pesticides are available. South African law enforcement has reported several incidents where burglars used temik to poison domestic dogs at their victims' houses or on small-holdings. In some instances, old, unknown or superfluous stocks of pesticides are stored incorrectly and without safety precautions thus allowing easy access. So-called "poison loading" happens when people dispose pesticides and poisons by simply dumping them in landfills.

Beyond the use of pesticides, offenders have also been using brake fluid, tobacco and snuff to poison wildlife (Ogada 2014). Antifreeze, a liquid to cool down car engines has also been used in several incidents (pers. Communication with Danny Govender). Ethylene glycol, methanol and propylene glycol are considered highly toxic ingredients contained in the engine coolant.

The next research phase will focus on specific outlets and nodes of the poisoning supply chain. Noteworthy is the request by conservation officials in all three countries to explore local and national muthi markets as well as interviewing traditional healers (sangomas) to investigate whether poisoned wildlife carcasses find their way into localized and traditional healthcare systems. Rangers

also mentioned that rhino and elephant poachers were carrying packets with granules or powder on their person. The rangers implied that these packets might not contain muthi but granules of Temik and other pesticides. It was suggested that unexplained powders found in the possession of trespassers in the GLTP should be tested.

**TABLE 2: LIST OF MOST ABUSED PESTIDICES IN AFRICA**

| CLASSIFICATION | NAME | COUNTRY |
|---|---|---|
| Acaricide | Amitraz | Kenya |
| Alkaloid | Strychnine | Botswana, Namibia, Niger, South Africa, Tanzania |
| Carbamate | Aldicarb | Botswana, Malawi, Namibia, South Africa, Zambia |
| Carbamate | Carbofuran | Botswana, Ghana, Kenya, Namibia, South Africa, Uganda |
| Carbamate | Carbosulfan | Kenya |
| Mitchondrial toxin | Cyanide | South Africa, Zimbabwe |
| Organochlorine | Dieldrin | South Africa |
| Organochlorine | Endosulfan | South Africa |
| Organochlorine | Lindane (Gamma BHC) | Cameroon, South Africa |
| Organofluorine | Compound 1080 | South Africa |
| Organophosphate | Chlorpirifos | South Africa |
| Organophosphate | Diasinon | South Africa |
| Organophospahe | Dichlorvos | South Africa |
| Organophosphate | Dicrotophos | South Africa |
| Organophosphate | Dimethoate | South Africa |
| Organophosphate | Fenamiphos | South Africa |
| Organophosphate | Fenthion | South Africa |
| Organophosphate | Isazophos | South Africa |
| Organophosphate | Malathion | South Africa |
| Organophosphate | Methamidophos | South Africa |
| Organophosphate | Monocrotophos | South Africa |
| Organophosphate | Parathion | South Africa |
| Organophosphate | Profenofos | South Africa |
| Pyrethoid | Cyhalothrin | Kenya |
| Pyrethoid | Cypermethrin | South Africa |

Source: Adapted from Ogada (2014)

## 7. IMPACT OF POISONING ON NATURAL AND SOCIAL SYSTEMS

Beyond the catastrophic impact of poisons on loss of species and biodiversity, the long-term impacts of contamination of ecosystems are not known and not directly visible to the naked eye. Moreover, the impacts on nearby communities and water and food security have not been studied. However, the displacement of poisons from the original poisoning site is highly likely when vultures and other birds of prey have been poisoned. Moreover, rangers and anyone other people who attend to the after-care of poisoning incidents need to be aware of the potential deadly impact of not adhering to poison protocols and standard operating procedures of decontamination.

The researcher will undertake interviews with pesticide experts and chemists to gain a better understanding of what is known. She will also contact the agro-industries and chemical factories that manufacture or have manufactured highly-toxic pesticides.

## 8. WHAT IS THE STATUS OF CURRENT INTERVENTIONS ON THE GROUND TO DEAL WITH WILDLIFE POISONING

1. Pesticide and herbicide protocols

The KNP has developed protocols for the use of herbicides and pesticides inside the Park. The LNP also has a protocol in place.

2. Testing kits and protocol

Rangers mentioned that a testing kit should be included as standard gear in the ranger's toolbox. It was also recommended that rangers should carry a short protocol with them, which explains what to do when coming across a suspicious site on patrol. Chap Masterson has developed a comprehensive poisoning protocol entitled "Practical case management for malicious wildlife poisoning in Zimbabwe". The protocol was tailor-made for Zimbabwe. It is recommended that a short manual (a maximum of 2 pages) is developed for the GLTP. While there may be small differences as regards laws, regulatory provisions and where to send samples, the overall approach to sample collection and storage, cleaning up the poisoning site and the emergency treatment of animals could be standardized across the GLTP.

The testing of samples from poisoned carcasses has been a slow and expensive process. Park officials mentioned that samples are not always taken from poisoning sites and the processing of samples takes long (more than 6 months in some cases) due to massive backlogs in the system. While all three countries have facilities to undertake basic testing, the tests are expensive to carry out. The GLTP may want to consider developing in-house capacity.

3. Standard Operating Procedures (SOPs) at poisoning sites

Two private consultants from South Africa have been providing training to rangers and conservation officials in the three parks. There were some concerns about whether the training was in line with the objectives of the Wildlife Poisoning Task Team. Private-public partnerships are deemed mutually beneficial to the GLTP and a range of other stakeholders including conservation officials, private concession holders, commercial farmers and local communities. Beyond training rangers and conservation officials, the above-mentioned stakeholders should be included in awareness raising and capacity building initiatives. Any type of awareness raising campaign and/or possible regulatory changes will have to be carefully conceived and negotiated against the background that the livelihood of small-scale farmers can be severely affected and diminished through rodents, predators and other wildlife. As initial research results seem to indicate that "legal" pesticides are the most commonly abused substances to poison wildlife, ecosystems and waterholes in the GLTP, these findings should be disseminated to the producers of pesticides including development agencies, multi-national corporations and chemicals companies that seem to be "dumping" a range of pesticides in southern Africa. Meanwhile, the use of many of these pesticides are highly regulated or banned in their countries of origin.

4. Smartphone applications

The Peace Parks Foundation has developed an application for smartphones to start integrating and aligning the reporting of poisoning incidents in the three Parks. The idea is that the data so gathered would feed into the three respective park management systems and a central database.

5. Integration of reporting tools and databases

The GLTP and AFWPD have been in discussions about the possible linking of the on-line poisoning reporting functions of the GLTP with the African Wildlife Poisoning Database – the idea would be that any new event is automatically updated on participating databases.

## 9. CONCLUSION

The objective of this report was to provide an overview of the provisional findings from the scoping fieldwork study and the literature review. The researcher was unable to secure poisoning incidence data from the KNP in time for inclusion in this report. However, a full analysis of offender profiles, drivers, poisons used and geography and frequency of incidents will be undertaken in the final report. Based on initial insights, poisoning incidents are difficult to predict. However, awareness raising in rural farming and local communities may assist in alerting these constituencies to the long-
term harmful effects of using poisons to kill wildlife. As the next research phase focuses on local communities, local and national purveyors of pesticides and muthi markets, the researcher will make recommendations on how to frame awareness raising campaigns and capacity building initiatives.

# 10. ANNEXURE 1

**TABLE 2: RESEARCH PARTICIPANTS AND INFORMANTS**

| NAME | FUNCTION | LOCATION |
|---|---|---|
| [Name Removed] | [Function removed] | Cape Town |
| [Name Removed] | [Function removed] | Cape Town |
| [Name Removed] | [Function removed] | Kruger National Park |
| [Name Removed] | [Function removed] | Kruger National Park |
| [Name Removed] | [Function removed] | Kruger National Park |
| [Name Removed] | [Function removed] | Pretoria |
| [Name Removed] | [Function removed] | Kruger National Park |
| [Name Removed] | [Function removed] | Kruger National Park |
| [Name Removed] | [Function removed] | Kruger National Park |
| [Name Removed] | [Function removed] | Kruger National Park |

| | | |
|---|---|---|
| [Name Removed] | [Function removed] | Kruger National Park |
| [Name Removed] | [Function removed] | Kruger National Park |
| [Name Removed] | [Function removed] | Kruger National Park |
| [Name Removed] | [Function removed] | Kruger National Park |
| [Name Removed] | [Function removed] | Bushbuckridge & Hoedspruit |
| [Name Removed] | [Function removed] | Hoedspruit |
| [Name Removed] | [Function removed] | University of Witwatersrand, Johannesburg |
| [Name Removed] | [Function removed] | Moholoholo Sanctuary |
| [Name Removed] | [Function removed] | Johannesburg |
| [Name Removed] | [Function removed] | Cubo |
| [Name Removed] | [Function removed] | Cubo |
| [Name Removed] | [Function removed] | Limpopo National Park |
| [Name Removed] | [Function removed] | Limpopo National Park |

| | | |
|---|---|---|
| Peter Leitner | PPF | Limpopo National Park |
| [Name Removed] | [Function removed] | Limpopo National Park |
| [Name Removed] | [Function removed] | Limpopo National Park |
| [Name Removed] | [Function removed] | Limpopo National Park |

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