Response Protocol to Wildlife Poisoning Incidents in Kenya

FEBRUARY 2018
**LIST OF ABBREVIATIONS AND ACRONYMS**

- GPS: Geographic Positioning System
- KWS: Kenya Wildlife Service
- Labs: Laboratories
- NGOs: Non-Governmental Organizations
- OB: Occurrence Book
- SoC: Scene of Crime
- Vets: Veterinarians
- Vet: Veterinarian
- WCMA: Wildlife Conservation and Management Act
- JKUAT: Jomo Kenya University of Agriculture & Technology
Wildlife conservation is faced with various challenges including habitat loss and fragmentation, insecurity and human-wildlife conflicts among others. Increased human population has led to displacement of many wildlife species from their former natural habitats and it has led to the overharvesting of wildlife resources for animal-based proteins.

Currently large wildlife species are largely confined to a few protected areas and wildlife corridors. However, substantial populations of wildlife still occur outside of protected areas. This has led to frequent and constant human-wildlife-livestock interaction and competition for water and pasture across many ecosystems in Kenya. This has led to increased cases of human-wildlife conflict. Wildlife poisoning has emerged as one of the major threats affecting our wildlife populations in Kenya. Aggrieved persons have resorted to using poisonous chemicals in retaliation for human-wildlife conflict cases, poaching for trophies and game meat, or even accidental poisoning due to environmental pollution. For example, in December 2015 two lions from the famous Marsh Pride and 15 White-Backed Vultures were poisoned alongside other species in the Maasai Mara ecosystem as a result of retaliatory killing due to conflict.

Poisoning of birds, including migratory species, occurs year-round in Kenya’s rice schemes and in other water bodies. Fish are also harvested using poisons and both poisoned fish and birds make their way to local markets where they are often sold to unsuspecting customers with potentially grave impacts for human health.

The Wildlife Conservation and Management Act 2013, has identified wildlife poisoning as one of the major wildlife crimes that is punishable by law. Poisoning has had a profound negative effect on our carnivores: lions, hyenas, leopards, cheetahs, and wild dogs, and on birds of prey: vultures, eagles and other scavengers. Aquatic species including fish have also been affected due to water pollution with poisonous chemicals. There is need for concerted efforts among government agencies, conservation stakeholders and local communities to come up with clear strategies for control of wildlife poisoning cases and create awareness against wildlife poisoning.

This protocol will go a long way in sensitizing conservation partners, communities and government agencies on how to professionally deal with poisoning incidents in wildlife conservation areas across the country in order to minimize wildlife mortalities.

The KWS mission is to sustainably conserve, manage, and enhance Kenya’s wildlife, its habitats in collaboration with stakeholders. Rapid and effective response to poisoning incidences including education and awareness is key for addressing wildlife poisoning cases in Kenya and to pre-empt such cases before they occur. I call upon all stakeholders to adhere to the use of this protocol to enhance wildlife and environment conservation in Kenya.

Julius Kimani
Acting Director General
Kenya Wildlife Service
We would like to recognize and appreciate the contributions to the development process of this protocol on managing wildlife poisoning incidences. To the contributors, Alayne Cotterill (Lion Landscapes), Prof. Anthony Gachanja (JRUAT), Andre Botha (Endangered Wildlife Trust), Kariuki Ndang’ang’a (Birdlife International), Darcy Ogada (The Peregrine Fund), Domnic Mijele (KWS), Francis Gakuya (KWS), Joseph Sarara (KWS), Linus Kariuki (KWS), Masumi Gudka (Birdlife International), Moses Ochieng’ Odhiambo (KWS), Munir Virani (The Peregrine Fund), Nadia de Souza (Lion Guardians), Nic Elliot (Mara Lions), Paul Gacheru (Nature Kenya), Thumbi Mwangi (Washington State University), Titus Kaitho (KWS), Tobias Otieno (Ewaso Lions), Salisha Chandra (Lion Guardians), Shivani Bhalla (Ewaso Lions). We also appreciate our stakeholder partners whose comments, critique and ideas helped shape this protocol.

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Poisoning has been identified as one of the leading factors causing the decline of a wide range of wildlife species across Africa (Ogada 2014). It is a silent killer that indiscriminately kills large numbers of animals and is harmful to human and ecological health. A poison is any substance that can cause severe organ damage or death if ingested, breathed in or absorbed through the skin. Traditionally, plant and animal-based toxins have been used to kill wildlife, but more recently with the increased availability of synthetic agro-chemicals, they are becoming the poison of choice in Kenya and other parts of Africa. The use of poison to kill wildlife is silent, cheap and easy and has therefore become a common method used in the illegal control of damage-causing animals, harvesting fish and bush meat, harvesting animals for belief-based uses, poaching for wildlife products, and killing of wildlife sentinels.

1.1 Wildlife Poisoning and its Drivers
Poisoning of wildlife in Kenya is most often as a result of human-wildlife conflict, particularly problems of crop raiding by elephants and depredation of livestock by predators. Farmers and herder resort to illegal control of problem animals primarily through the use of poison baits where either fruit (elephant control) or livestock carcasses (predator/carnivore control) are laced with a toxic substance poisonous to wildlife if ingested. Carnivores, particularly hyenas and jackals but also lions and leopards are most frequently targeted by livestock farmers/herders (Ogada 2014). This type of indiscriminate poisoning has also resulted in tremendous impacts on unintended victims like avian scavengers e.g. vulture species. White-backed Vultures are usually the most numerous victims of any species at a poisoning incident. Furthermore, it has been documented that there is intentional poisoning of birds by some communities, particularly in rice cultivating areas (e.g. Bunyala and Mwea) for both subsistence and commercial human food consumption (Odino 2011).

1.2 Common Chemicals Used to Poison Wildlife in Kenya
There are a number of toxic chemicals such as agro-chemicals, plant-based extracts and heavy metals which have been used in the illegal poisoning of wildlife in Kenya. Over the last 8 years, the majority of poisoning incidents have been carried out using agro-chemicals which can be broadly classified as pesticides, herbicides, fungicides, acaricides. The most commonly used pesticides are organophosphates, pyrethroids and carbamates.

During the period between 2009 and 2017, some of the wildlife poisoning incidents and chemical compounds identified are summarized (Table 1).

1.3 The Poisoning Response Protocol
Wildlife poisoning is a crime in Kenya and is punishable by law. However, despite legislation being in place, wildlife poisoning continues to be a serious problem to the long-term survival of wildlife in the country. Several factors are considered to be behind this;

i. Poisoning is often carried out in remote areas, typically outside of protected areas on communal or private land making it difficult to discover and respond to incidents on time;

ii. The majority of incidents are seldom reported to authorities compared to other wildlife crimes e.g. poaching;

iii. A standardized protocol for responding to wildlife poisoning incidents is not available in Kenya

iv. Resources and capacity of respondents are often limited to enable effective response.

v. Chemical substances like agro-chemicals which are highly toxic to wildlife are easily available and cheap to purchase across the country

The protocol aims to facilitate the implementation and enforcement of the Wildlife Conservation and Management Act 2013 and other relevant laws for effective and timely response to poisoning incidents by ensuring;

a. The chain of custody is respected to enable prosecution;

b. Samples are appropriately collected, stored and transported for analysis;

c. The poisoning site is adequately decontaminated to prevent further poisoning.

The protocol is applicable to a wide range of stakeholders including: Kenya Wildlife Service, Kenya Police, prosecutors, magistrates, County Governments, local community, conservancy managers, field scouts, conservation NGOs.
and other local conservation agencies working in collaboration to combat wildlife poisoning incidents in Kenya. This protocol will work in consistence with the current wildlife Management and conservation act 2013 and any other relevant law.

The main components of this poisoning response protocol are as follows:
1. Poisoning incident reporting
2. Treatment and diagnosis
3. Postmortem process
4. Sample collection and storage
5. Submission of samples for poison identification and analysis
6. Clean-up and decontamination of the poisoning scene
7. Chain of custody

### 1.4 Relevant National Legislation
Poisoning of animals has been classified by several pieces of legislation as a criminal offence. These include:

i. The Constitution of Kenya, 2010 Chapter 5, Part 2 Environment and Natural Resources, Section 69 Clause 1 & 2, Section 70 Enforcement of Environmental Rights

ii. Wildlife Conservation and Management Act 2013, Part xiii—Enforcement and Compliance Section 112 (7) which states that “Any person who, without authorization conveys into a wildlife conservation area, or being within the area thereof, is in possession of, any weapon, ammunition, explosive, trap or poison, commits an offence.”

iii. The Prevention of Cruelty to Animals Act Cap 360), Part II Section 5(b) states that “A person who knowingly puts or places, or causes or procures any person to put or place, or knowingly is a party to the putting or placing in or upon any land or building any poison, or any fluid or edible matter (not being sown seed or grain) which has been rendered poisonous, is guilty of an offence”

iv. Pharmacy and Poisons Act, Chapter 244 (rev.2012) “poison” means a poison included in the poisons list referred to in Section 25 Environmental Management and Co-ordination Act, Rev. ed. Cap 387 (2012) Section 72 (Part viii) states that for defilements in aquatic ecosystems but not in terrestrial ecosystems which are also known to significantly suffer from poisons such

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Species affected</th>
<th>Number affected</th>
<th>Chemical (Compound) Identified</th>
<th>Location</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>Apr</td>
<td>Lion</td>
<td>1</td>
<td>Carbamate</td>
<td>Maasai Mara</td>
<td>Narok</td>
</tr>
<tr>
<td>2009</td>
<td>Apr</td>
<td>Vultures</td>
<td>40</td>
<td>Carbamate</td>
<td>Maasai Mara</td>
<td>Narok</td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td>Vultures</td>
<td>20</td>
<td>Amitraz (Acaricide)</td>
<td>Maasai Mara</td>
<td>Narok</td>
</tr>
<tr>
<td>2011</td>
<td>Feb</td>
<td>Fish</td>
<td>Mass die off</td>
<td>Pyrethroid</td>
<td>Maasai Mara</td>
<td>Narok</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td>Elephant</td>
<td>1</td>
<td>Ouabain (Plant extract)</td>
<td>Siyapei</td>
<td>Narok</td>
</tr>
<tr>
<td>2014</td>
<td>July</td>
<td>Lions</td>
<td>5</td>
<td>Carbamate</td>
<td>Ngurumani</td>
<td>Kajiado</td>
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<tr>
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<td>Nov</td>
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<td>2</td>
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<tr>
<td>2015</td>
<td>Nov</td>
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<td>15</td>
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<td>2016</td>
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<tr>
<td>2016</td>
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<td>Taita Taveta</td>
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<tr>
<td>2017</td>
<td>May</td>
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<td>2</td>
<td>Pyrethroid</td>
<td>Ngurumani</td>
<td>Kajiado</td>
</tr>
</tbody>
</table>

Table 1; Summary of chemical compounds, wildlife species affected, location and year (KWS, 2017)
as is the case for poisoning of mega fauna including predators, scavengers and human beings, a person is liable for conviction.

v. Pest Control Products Act, Rev. ed. Chapter 346 (2012), Section 12 Prohibition: No person shall use a pest control product in a manner that is inconsistent with the directions or limitations respecting its use as shown on the label.

vi. Fisheries Act, Rev. ed. Chapter 378, (2012), Part V - Offences and Enforcement, section 15 [on] Prohibited methods of fishing: poisonous or noxious substances are outlawed and even more specifically, the subsidiary section 49 [emphasizes] prohibition on use of explosives and poison.

vii. Agriculture Act, Chapter 318
viii. Public Health Act, Chapter 242
ix. Veterinary Surgeons and Veterinary Para-professionals Act, Chapter 366
x. Water Act, Chapter 372

International framework and Obligations Kenya is signatory to;
• Convention of Migratory Species
• Convention on Biological Diversity

Any person, who violates the provisions of the legislations above, shall be liable for prosecution and subsequent penalties as prescribed by the law.
2. WILDLIFE POISONING RESPONSE PROTOCOL

2.1 Poisoning Incident Response Plan
Wildlife poisoning cases should be treated as an emergency that requires multi-disciplinary response to:

1. Prevent further poisoning and wildlife losses
2. Save the affected species by treatment or rescue
3. Minimize environmental contamination
4. Assist to systematically collate information to support prosecution where necessary

For all poisoning incidents it is vital to follow all proper crime investigation procedures to ensure; orderly, thorough and procedurally lawful collection, storage, handling, processing, analysis, investigation and collation of evidence in order to secure a conviction. In all possible cases crime scene processing and investigation should be conducted by, or in conjunction with, appropriately trained and mandated law enforcement officers.

All suspected cases of wildlife poisoning should be handled by well-trained, experienced and equipped personnel to prevent exposure to potentially lethal substances. Every effort must be made to prevent further poisoning to other wildlife at the scene and environmental contamination.

2.2. Poisoning Incident Reporting

A. First responders
First responders are anyone or group (patrol teams or civilians) who first encounter either a sick and dying animal (wildlife or domestic) displaying a peculiar behaviour or one or more carcasses of either wild or domestic animals (the domestic animal may be the poison bait), this scene is what is subsequently considered to be the suspected poisoning incident/crime scene. The nature of the investigation will depend on the history given by first respondents. History can provide the following information:

- Date of incident
- Location (Use a GPS or describe the location in detail)
- Species involved
- Number of animals affected, and were they found alive and/or dead
- Reasons for poisoning (e.g. retaliation, human-wildlife conflict, cultural, accidental, hunting for food, etc.)

- Suspected chemical used
- Suspected source of the chemical used
- Any suspected culprit

B. Report Scene – The first responders to report detailed observations of the suspected poisoning incident to relevant authorities (KWS, Police, County/Local Administration, and Conservancy Managers). Provide a detailed report of observations without contaminating the scene. Therefore, do not walk/drive into, around or over the area where the poisoned carcass/es or bait is located. Based on the report of observations provided to relevant authorities, the response team will be determined. (Image 2).

Image 2: Suspected poisoning scene in Laikipia County. PHOTO J. WAHOME

C. Secure Area – The relevant authorities to invite the response team and secure the scene until they arrive.

2.3. Response Team
Once the reported incident has been identified by the investigative team as a poisoning crime scene, post-mortems, sample collection, and treatment of injured animals should only be undertaken by authorized personnel and registered experts such as KWS, government or private registered veterinarians - registered by Kenya Veterinary Board and authorized by KWS. Lead investigator should either be from the Kenya Police or KWS in consultation with Police and any other co-opted expert in consultation with KWS.
Step 1: Secure Scene - Exclude all unauthorized personnel from scene, so that the area is not overcrowded. Exclude all animals from the scene, however in aquatic environment, professional diligence shall apply.

Step 2: Determine Case - Identify if the scene is a poisoning and report as a crime scene. Investigators should examine the scene to establish if a crime has been committed or not. For crime scene investigation identify the following; what happened, where, when, by who, why and how (5W 1H)

a. Establish whether a crime has been committed (what crime)
b. Where the crime was committed
c. When was it committed
d. Who are the perpetrators
e. Why - Establish if the crime is deliberate or not
f. How was it committed? (for this case, suspected poisoning)

Step 3: Evidence collection and recording - Marking signs and objects that could be used or collected as evidence (Image 3). Photograph
overall scene and individual pieces of evidence, and record all details of evidence and scene. Annex 1 gives a check list of wildlife crime scene equipment and Annex 2 gives a check list wildlife crime scene procedures.

**Step 4: Conduct postmortem and collect biological samples** – Post mortem examination and sample collection to be done by duly registered veterinarian authorized by KWS. The purpose of any postmortem examination is to establish as precisely as possible the causes and circumstances of animal mortality. The necropsy should therefore be orderly, systematic and exhaustive. It must be conducted by a trained and registered veterinarian with updated knowledge of the fundamental aspects of legal necropsy.

Some of the basic post mortem equipment and materials required for responding to wildlife poisoning incidents include the following:

i. Personal protective equipment: latex gloves and face masks

ii. Disinfectants and detergents for self and equipment disinfection

iii. Post-mortem kits

iv. Matches and fuel for burning contaminated carcasses

v. Transport and machinery for disposal of large animal carcasses

vi. Digital camera, take photos at every stage

(Annex 1 provides a Comprehensive list of equipment)

**Step 5: Record investigation in crime scene procedure checklist (Annex 2)**

**Step 6: Clean-up and Decontamination of the Poisoning Scene**

**Step 7: Diagnosis and treatment of affected animals** (Annex 3 gives an outline of some clinical signs to look out for in a poisoned animal. Annex 4 provides guideline procedures to be followed if treatment of poisoned animal is to be carried out)

**Step 8: Submission of Samples for Poison Identification and Analysis**

![Image 3: Evidence to be photographed and collected. PHOTO: ENDANGERED WILDLIFE TRUST](image-url)
3. POSTMORTEM PROCESS

The purpose of any necropsy/postmortem examination is to establish as precisely as possible the causes and circumstances of animal mortality. The necropsy should therefore be orderly, systematic and exhaustive. It must be conducted by a trained and registered veterinarian with updated knowledge of the fundamental aspects of legal necropsy.

3.1 General Observation

The veterinarian conducting the postmortem should make thorough observations on the surrounding environment and take note of the following:
1. Any containers, packaging materials for poisonous chemicals
2. Signs of struggle
3. Vomitus on the animal or ground
4. Signs of diarrhoea
5. Color of fecal droppings
6. Left-over foods or decomposed materials in the surroundings
7. Any color changes on the surrounding vegetation
8. Soil color
9. Any unusual observation on water bodies nearby

3.2 External Examination of the Carcass

This involves making an observation of the carcass without cutting it open, it may involve turning the carcass to observe any important finding that can lead to diagnosis (Image 4 and 5). Some of the information to be collected includes the following:
- Species affected,
- Age of animals,
- Sex of animals,
- If pregnant, what stage of gestation
- Whether lactating or not
- Body condition
- Color changes of the mucous membranes
- Signs of diarrhea (e.g. matting of the perineum)
- Signs of physical injuries on the body
- Unusual smell of chemicals
- Signs of fractures or dislocation
- Burns on the skin or oral cavity
- Signs of ante-mortem hemorrhages
- Presence of ecto-parasites

3.3 Internal Examination of the Carcass

Perform systematic organ-to-organ postmortem examination of the carcass. If possible the carcass can be placed in supine position and dissected in the manner to suit the particular animal species and at the discretion of the veterinarian. All the internal organs have to be observed in-situ and ex-situ to note any gross pathological signs or lesions.

An exhaustive examination will then be made of each organ/system and samples taken. Take as many digital photos of the observed lesions. Special attention should be paid to the presence of hemorrhage, congestion of visceras, exudates, color of the ingesta, type of ingesta and edema, the state of gastrointestinal mucous membrane and presence of gastro-intestinal parasites (Image 6 and 7).
Image 6: Internal examination of a lion carcass suspected to have been poisoned. PHOTO: KWS

Image 7: Internal organs of a suspected poisoned lion. PHOTO: ENDANGERED WILDLIFE TRUST
4. SAMPLE COLLECTION AND STORAGE

Take samples from as many animals as possible, including from the source of the poison. The type of samples to collect will always depend on the suspected type of poisoning. Remember, poisons are usually ingested via the mouth and then travel through the digestive system. Therefore, when only a few samples can be collected, or the carcass is not fresh, concentrate sample collection on the organs mostly likely to have come in direct contact with the poisons. These include the tongue, teeth, stomach, crop for birds, esophagus, and secondarily the claws or paws for carnivores.

Samples collected from old and degraded carcasses can also be valuable for detecting poisonous residues. Samples to collect are teeth, beaks and claws. Depending on the poison and local environmental factors, residues may be able to be detected up to two weeks after a poisoning incident has taken place.

It is important to check every poisoned individual for tracking (collars) devices or in the case of birds, rings. Tracking devices should be removed and returned to the owner. There will be a contact number somewhere on the unit. These tracking units contain valuable monitoring data, which can be used. Note the ring numbers, or remove them if possible and return them to the rightful owner where possible.

4.1. Types of Samples to Collect

i. Ingesta/stomach contents/crop contents – this is the single most valuable sample for ingestion of poisonous substances

ii. Vomitus- vomit content

iii. Tissue samples including the liver, kidneys, spleen, heart muscles, lungs, brain tissue, and other parts of the body in-contact with the suspected chemical including the skin should be collected in leak proof screw-capped containers and sealed in well labeled zip-lock plastic bags free from environmental contamination

iv. Blood

v. Urine samples – for chemicals excreted through urine

vi. Skin, hair and feather samples e.g. for topical acaricide chemicals

vii. Bones can be collected and put in sealed zip-lock bags and may determine toxins such as lead accumulation, but not recent single event effects.

viii. Contaminated bait or samples from the bait should be collected

ix. Collect dead insects lying around the carcass or bait

x. Collect any container, packaging material, other suspected material used to deliver the poisonous chemical and any other foreign material found at the scene that can aid in investigation.

Image 8: Use of permanent marker pen for labeling specimen. PHOTO: D. OGADA
4.2. Baits and Poisons
- Conservation personnel should be acutely aware of fruits, vegetables, carcasses and other baits which are out of place and positioned along game paths or near to water or feeding points.
- All baits and poisons must be photographed, identified, counted, marked & geo referenced (in relation to the crime scene), labelled and sampled for laboratory analysis.
- The nature of the bait must be recorded as it gives an indication of intended or target species e.g. vegetable bait for elephant vs. meat baits for predators which might support indictment for intent to poison a given target species.

4.3. Dead and Moribund animals
- All dead and moribund animals must be photographed, identified, counted, marked and geo referenced (in relation to the crime scene), labelled and sampled.
- All dead and moribund animals must be correctly identified. Small animals particularly fish, birds or mammals approximately ≤50kg can be sampled “whole” with appropriate tagging/labelling.
- In the case of animal that are still alive, a decision on whether to attempt treatment or to euthanize and sample should be made on a case-by-case basis and will be influenced by a number of considerations ranging from the conservation status of the species concerned, prognosis, availability of veterinary care and medications as well as on animal welfare.

4.4. Labeling of Samples, Specimens and Exhibits
- The collected specimens should be properly labelled using tamper-proof labels and indelible permanent markers. Labeling should include sample number, type of specimen, species if known, location/GPS, date and time, and name of collector (Image 8).
- Use masking tape to seal the ziploc bag and the collector must sign the seal to ensure it is tamper-proof.
- Where stickers are used for labeling they should be securely attached to the sample bag or container.
- If possible collect all the samples in triplicate or duplicate to facilitate multiple tests in different laboratories and for archiving.
- Tissue samples from different animals should be kept separate to avoid cross contamination.
- Non-tissue specimen should be collected in separate bags or containers.
- All sampling collection bags and containers should be sterile.
- Numbered marker flags to be used systematically to indicate specimen or exhibit numbers (Image 9).
5. SAMPLES SUBMISSION FOR LABORATORY ANALYSIS

To attain reliable and credible results, toxicological samples must be collected in adequate quantities and preserved in recommended containers and methods. They should also be accompanied by laboratory test request form and other relevant documentation.

5.1. Preservation and Transporting of Samples

Biological samples meant for toxicological analysis should be stored at -4°C and presented to the laboratory as soon as possible. When samples are being transported they should be placed in a cool box with ice packs or dry ice (preferable) to maintain them at low temperatures to prevent further decomposition of the tissue.

NB: Samples meant for toxicological analysis should NOT be preserved in alcohol or ethanol.

5.2. Recommended Laboratory Tests and Laboratories

Unless it is obvious, there is a need to test for poisonous substances and or disease causing pathogen(s) in the samples collected. A toxicological lab report is mandatory for suspected wildlife poison(s). It is a good practice to do toxicological tests and tests for pathogens. Histopathology or histo-chemical analysis or report may at times be necessary. Any fractures or heavy metal poisoning should be confirmed through radiology.

All wildlife poisoning samples intended for analysis and evidence collection for prosecution purposes shall be submitted to Government Chemist.

Other accredited laboratories (local and foreign) to be considered for second opinion on a need basis as approved by KWS, for example; Jomo Kenyatta University of Agriculture and Technology:- Analytical Science Laboratory Department of Chemistry, University of Nairobi:- Department of Public Health, Pharmacology & Toxicology, Department of Veterinary Pathology, Microbiology & Parasitology among others.
After completion of poisoning scene analysis and investigation it is important to clean up and decontaminate the scene to avoid further wildlife poisoning incidents. It is important that the scene be cleared of residual baits, poisons, contaminated carcasses and materials.

6.1. Clean-up of Baits and Small Carcasses
Collect, record and remove all baits, poisons, contaminated carcasses and materials from the scene. Those items in excess of evidence/sample/analysis requirements should be removed and either:
1. Completely incinerated by burning (Image 11) and/or
2. Buried deeply (beyond reach of scavengers) with a strong solution of sodium hydroxide or quick lime (CaO) to promote breakdown of toxins and baits.

6.2. Disposal of Contaminated Large Animal Carcasses
- Large animal carcasses should be adequately disposed by deep burial or burning or both to ensure the scene is properly decontaminated.
- In case of a large carcass, such as an elephant laced with poison and cannot be easily burnt or buried, logical steps should be taken to reduce further environmental contamination. The following can be considered to facilitate full disposal:
  i. Cut out and remove all parts of the carcass which are visibly contaminated or laced with high concentrations of poison and dispose off the portions by burning or burying.
  ii. Drench the carcass and contaminated soil with recommended concentrations of Sodium Hydroxide, (NaOH) or

Image 11: Ensure complete burning of carcasses for decontamination purposes. PHOTO: ENDANGERED WILDLIFE TRUST
quicklime (CaO) to create a moist alkaline environment which increases the rate of breakdown for carbamates such as Aldicarb and Carbofuran.

iii. Camouflage the carcass from any scavengers by wrapping in plastic, shade-cloth or similar.

iv. Drench the carcass and surrounds with diesel, citronella oil or similar strong-smelling / unpleasant-tasting substance which might discourage scavengers from ingesting contaminated material.

v. The use of “bird aversion tape” - commercially available for the deterring/scaring of pigeons, crop-raiding birds, seagulls and other birds - might well work for vultures and, although there is no documentation as to efficacy in deterring scavenging birds or raptors, this “scare-crow” method should be trialled to deter vultures and raptors from scavenging contaminated carcasses.

vi. The carcass should be physically guarded if necessary to deter scavengers.

6.3. Dealing with a Contaminated Water Source

In the case of a water source being poisoned this should be regarded as being an emergency of utmost importance as there is real potential to poison many non-target animals including humans. Due to the non-targeted nature of water poisoning and the far-reaching ecological and pollution implications these cases should be prosecuted using appropriate legal framework. The emphasis should remain on reducing contamination, safe disposal of contaminated material and prevention of ingestion by other animals and people. Fortunately, most pesticides, including carbamates, are much more labile and break down more rapidly in the aquatic environment.

When dealing with a contaminated/poisoned water source one might consider:

a. Remove any visible material or substance suspected to be the cause of poisoning

b. In case of a small water pan fed by artificial water source, consider covering the contaminated waterhole with soil and diverting pipes to establish an alternative water-pan.

c. Consider physically preventing animals from accessing the contaminated water through use of barriers and/or manual patrols until such time when the contaminant is sufficiently broken-down or diluted.

d. Degradation of carbamates, which happens faster in water than in dry soil, may be enhanced by addition of alkalis such as Calcium Oxide (quicklime) to the water followed by dilution/flushing.

e. In case of springs and rivers which have dynamic water inflow and outflow, poisons are ultimately diluted and flushed out but may take some considerable time depending on the hydrodynamics of the contaminated pool/stream/spring or river.

Caution: Even though the water source might seem to have been flushed, it is important to bear in mind that contaminants may have formed sediment which could be stirred up later.
Clinical symptoms of poisoning vary widely depending on the type of poison involved, amount ingested, and animal species (Annex 3). Generally clinical symptoms of wildlife poisoning are similar to other diseases and symptoms cannot be used as standalone diagnosis of poisoning.

All wildlife poisoning cases requiring wildlife treatment should be handled by qualified veterinarians registered by Kenya Veterinary Board and authorised by Kenya Wildlife Service. The veterinarian should humanely capture and perform clinical examination to the affected animal to enable an understanding of whether or not poison was used, and if so, which poison involved. Then make a professional decision as to whether the animal can be treated or not and take an appropriate action (Annex 4). For further case management, the animal should be taken to an authorized wildlife rehabilitation centres in Kenya (Annex 5).


PHOTO: A. BOTHA
8. CHAIN OF CUSTODY

Chain of custody is guided by detectives/investigators and the veterinarians to support the prosecution processes. Chain of custody forms (Annex 6) must be filled by both expert teams (Crime scene detectives & veterinarians).

8.1. Scenarios in Chain of Custody Process

a. When suspect is arrested
   • The incident will be reported and booked in both KWS and Police Occurrence Book (OB) also find a police exhibit memo (Annex 7)
   • The suspect will be charged in court with the relevant offence as per the WCMA 2013 and other related legislation
   • The prosecution will give direction on what to do with the evidence collected from the scene (e.g. laboratory analysis)

b. Court procedures to take the due process, various experts e.g laboratory personnel, veterinarians and investigation officers may be involved where necessary. If there is no arrest
   • The incident will be reported and booked in both KWS and Police Occurrence Book (OB)
   • Investigations will proceed to identify and apprehend the culprits
   • Processing of findings from scene of crime will continue (both from the investigators and the veterinarians ) and a report shall be provided (Annex 7)

Image 13: A Kenyan court room. PHOTO: COURTESY
REFERENCES

## ANNEXES

### Annex 1: Basic Wildlife Crime Scene Equipment Checklist

**WILDLIFE CRIME SCENE EQUIPMENT CHECKLIST**

<table>
<thead>
<tr>
<th>ITEM</th>
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<th>ITEM</th>
<th>ITEM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RECORDING EQUIPMENT</strong></td>
<td><strong>CAMERA</strong></td>
<td><strong>PROCEDURE AIDE ME MOIRE</strong></td>
<td><strong>SMOKE GRENADES</strong></td>
</tr>
<tr>
<td>CAMERA 35 mm x 2</td>
<td>LOUD</td>
<td><strong>CRIME SCENE KIT</strong></td>
<td><strong>BOW SAW &amp; SPARE BLADES</strong></td>
</tr>
<tr>
<td>VIDEO CAMERA</td>
<td>METAL DETECTOR BATTERIES</td>
<td><strong>CLIPBOARD</strong></td>
<td><strong>SCALPEL KIT</strong></td>
</tr>
<tr>
<td>GPS</td>
<td>GPS BATTERIES</td>
<td><strong>MARKING</strong></td>
<td><strong>PLIERS</strong></td>
</tr>
<tr>
<td><strong>DIGITAL CAMERA</strong></td>
<td><strong>FLASH BATTERIES</strong></td>
<td><strong>STICKY LABELS</strong></td>
<td><strong>SAPDE</strong></td>
</tr>
<tr>
<td><strong>LONG TAPE MEASURE</strong></td>
<td><strong>FOOTPRINT LIFTING KIT</strong></td>
<td><strong>NUMBERED SEALS</strong></td>
<td><strong>TROWEL</strong></td>
</tr>
<tr>
<td><strong>MICROCHIP SCANNER</strong></td>
<td><strong>NON STICK COOKING SPRAY</strong></td>
<td><strong>MASKING TAPE</strong></td>
<td><strong>TARPAULIN x 3</strong></td>
</tr>
<tr>
<td><strong>RANGE FINDER</strong></td>
<td><strong>POWDER</strong></td>
<td><strong>PLASTIC DISCS ON</strong></td>
<td><strong>TWEEZERS</strong></td>
</tr>
<tr>
<td>NUMBERED CARDS 1-</td>
<td><strong>1 GAL ZIP LOCK</strong></td>
<td><strong>CRIME SCENE TAPE</strong></td>
<td><strong>UMBRELLAS</strong></td>
</tr>
<tr>
<td>RULER</td>
<td><strong>TALCUM POWDER</strong></td>
<td><strong>BRAISING RODS</strong></td>
<td><strong>WHISTLES</strong></td>
</tr>
<tr>
<td>DICTAPHONE</td>
<td><strong>A4 SIZE MIRROR</strong></td>
<td><strong>STRING (300 METERS)</strong></td>
<td><strong>25 L WATER X 2</strong></td>
</tr>
<tr>
<td><strong>EVIDENCE</strong></td>
<td><strong>4 X NUMBER</strong></td>
<td><strong>TAGS</strong></td>
<td><strong>SOAP</strong></td>
</tr>
<tr>
<td><strong>ENVELOPES (SMALL)</strong></td>
<td><strong>10 kg DENTAL</strong></td>
<td><strong>GENERAL</strong></td>
<td><strong>HAMMER</strong></td>
</tr>
<tr>
<td><strong>ENVELOPES (LARGE)</strong></td>
<td><strong>SPOON</strong></td>
<td><strong>SOLAR PANEL</strong></td>
<td><strong>GRASS SLASHERS</strong></td>
</tr>
<tr>
<td><strong>PLASTIC BAGS</strong></td>
<td><strong>4 X SPOOR BOXES</strong></td>
<td><strong>CELL PHONE CAR</strong></td>
<td><strong>TOOTHBRUSH</strong></td>
</tr>
<tr>
<td><strong>FILM CANISTERS</strong></td>
<td><strong>HAIRSPRAY</strong></td>
<td><strong>SUN SCREEN LOTION</strong></td>
<td><strong>MATCHES</strong></td>
</tr>
<tr>
<td>COOL BOX</td>
<td><strong>STATIONARY</strong></td>
<td><strong>FACEMASK</strong></td>
<td><strong>LIGHTER</strong></td>
</tr>
<tr>
<td><strong>BUBBLE WRAP SHEET</strong></td>
<td><strong>SCISSORS</strong></td>
<td><strong>CAMPING EQUIPMENT</strong></td>
<td><strong>TICK REPELLENT</strong></td>
</tr>
<tr>
<td><strong>TEST TUBES</strong></td>
<td><strong>CONTACT TELEPHONE NUMBER LIST</strong></td>
<td><strong>SPOTLIGHTS</strong></td>
<td><strong>METAL DETECTOR</strong></td>
</tr>
<tr>
<td><strong>TOILET PAPER</strong></td>
<td><strong>MAPS</strong></td>
<td><strong>SKINNING KNIVES</strong></td>
<td><strong>DENTAL FLOSS X 500M</strong></td>
</tr>
<tr>
<td><strong>ROLL BROWN PAPER</strong></td>
<td><strong>SPARE NOTEBOOKS</strong></td>
<td><strong>BUSH KNIVES</strong></td>
<td><strong>RAGS</strong></td>
</tr>
<tr>
<td><strong>WHITE PACKAGING</strong></td>
<td><strong>PENCIL</strong></td>
<td><strong>FILE</strong></td>
<td><strong>NO ENTRY SIGN</strong></td>
</tr>
<tr>
<td><strong>EVIDENCE PRESERVATIVE</strong></td>
<td><strong>ERASER</strong></td>
<td><strong>AXE</strong></td>
<td><strong>LOUD HAILER</strong></td>
</tr>
<tr>
<td><strong>FORMALIN</strong></td>
<td><strong>SCENE REPORT SHEETS</strong></td>
<td><strong>MAGNIFYING GLASS</strong></td>
<td><strong>ICEPACKS</strong></td>
</tr>
<tr>
<td><strong>SATURATED SALT SOLUTION</strong></td>
<td><strong>CHAIN OF CUSTODY SHEETS</strong></td>
<td><strong>CRIME SCENE</strong></td>
<td><strong>CONTROLER JACKET</strong></td>
</tr>
<tr>
<td><strong>70% ETHANOL</strong></td>
<td><strong>BLACK MARKER</strong></td>
<td><strong>SEALABLE EVIDENCE BOXES</strong></td>
<td><strong>RATION PACKS</strong></td>
</tr>
<tr>
<td><strong>SPARES BATTERIES</strong></td>
<td><strong>FOLIO PAPER</strong></td>
<td><strong>BINOCULARS</strong></td>
<td><strong>SPARE FILM</strong></td>
</tr>
<tr>
<td><strong>TORCH BATTERIES</strong></td>
<td><strong>RULER</strong></td>
<td><strong>WHETSTONE</strong></td>
<td><strong>12V INVERTER</strong></td>
</tr>
<tr>
<td><strong>MICROCHIP SCANNER</strong></td>
<td><strong>NUMBERED STAKES</strong></td>
<td><strong>RAKE</strong></td>
<td><strong>FIRST AID KIT</strong></td>
</tr>
<tr>
<td><strong>BATTERIES</strong></td>
<td><strong>NUMBERED CONES</strong></td>
<td><strong>COMPASS</strong></td>
<td><strong>RhODIS FORENSIC KITS</strong></td>
</tr>
</tbody>
</table>
### Annex 2: Crime Scene Procedure Checklist

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.  Before leaving for the scene, you should:</strong></td>
</tr>
<tr>
<td>1.1 inform the Vet</td>
</tr>
<tr>
<td>1.2 inform the Police / Investigators</td>
</tr>
<tr>
<td>1.3 inform the Police Crime Scene Investigators / Dog Unit</td>
</tr>
<tr>
<td>1.4 inform the Defense Force / Army</td>
</tr>
<tr>
<td>1.5 inform the Park Warden / NGO for that area</td>
</tr>
<tr>
<td>1.6 inform your Supervisor / Rhino Coordinator</td>
</tr>
<tr>
<td>1.7 inform your local intelligence network</td>
</tr>
<tr>
<td>1.8 collect your crime scene equipment</td>
</tr>
<tr>
<td><strong>2. Approach to the scene:</strong></td>
</tr>
<tr>
<td>2.1 stop correct distance from scene</td>
</tr>
<tr>
<td>2.2 identify and cordon off holding area</td>
</tr>
<tr>
<td>2.3 appraise scene from a distance</td>
</tr>
<tr>
<td>2.4 debrief person pointing out scene</td>
</tr>
<tr>
<td>2.5 look at large objects</td>
</tr>
<tr>
<td>2.6 begin note taking</td>
</tr>
<tr>
<td>2.7 photograph</td>
</tr>
<tr>
<td>2.8 confirm it is safe to work at the scene (poison, traps)</td>
</tr>
<tr>
<td><strong>3. Cordon:</strong></td>
</tr>
<tr>
<td>3.1 select holding area</td>
</tr>
<tr>
<td>3.2 search holding area and place cordon</td>
</tr>
<tr>
<td>3.3 appoint guard / holding area controller and give specific instructions</td>
</tr>
<tr>
<td>3.4 enquire if 1st person on scene did 360deg patrol</td>
</tr>
<tr>
<td>3.5 follow same route as in 3.3 above or if he did not, then select route</td>
</tr>
<tr>
<td>3.6 place “no entry” sign on crime scene cordon</td>
</tr>
<tr>
<td><strong>4. Entry on to the scene:</strong></td>
</tr>
<tr>
<td>4.1 investigator and assistant only onto the scene</td>
</tr>
<tr>
<td>4.2 mark route</td>
</tr>
<tr>
<td>4.3 single file straight line</td>
</tr>
<tr>
<td>4.4 look for small objects en route</td>
</tr>
<tr>
<td>5.</td>
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<tr>
<td>5.1</td>
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<td>5.2</td>
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<td>5.3</td>
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<td>5.4</td>
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<td>5.5</td>
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<td>5.21</td>
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<tr>
<td>5.22</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>6.</th>
<th><strong>Searching methods:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>decide on a searching method</td>
</tr>
<tr>
<td>6.2</td>
<td>invite assistants onto scene and instruct specifically</td>
</tr>
<tr>
<td>6.3</td>
<td>hands and knees</td>
</tr>
<tr>
<td>6.4</td>
<td>plan alternatives searching methods – grid / spiral / segments</td>
</tr>
<tr>
<td>6.5</td>
<td>bush clearing</td>
</tr>
<tr>
<td>6.6</td>
<td>metal detector</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7.</th>
<th><strong>Evidence collection:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>mark</td>
</tr>
<tr>
<td>7.2</td>
<td>photograph</td>
</tr>
<tr>
<td>7.3</td>
<td>take notes</td>
</tr>
<tr>
<td>7.4</td>
<td>spoor box</td>
</tr>
<tr>
<td>7.5</td>
<td>photograph all exhibits points in relation to each other</td>
</tr>
<tr>
<td>7.6</td>
<td>collect all exhibits</td>
</tr>
</tbody>
</table>
8. **Skull recovery**

<p>| | |</p>
<table>
<thead>
<tr>
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<th></th>
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</thead>
<tbody>
<tr>
<td>8.1</td>
<td>after cleaning, reinsert correct bruising rods into wound channels</td>
</tr>
<tr>
<td>8.2</td>
<td>photograph / note</td>
</tr>
<tr>
<td>8.3</td>
<td>re-check skull with metal detector / X-ray</td>
</tr>
<tr>
<td>8.4</td>
<td>cut open skull with bow saw if further bullet head/s located</td>
</tr>
<tr>
<td>8.5</td>
<td>recover bullet heads / photograph / note</td>
</tr>
</tbody>
</table>

9. **Plans and departure**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>9.1</td>
<td>compile sketch plan and key</td>
</tr>
<tr>
<td>9.2</td>
<td>take GPS reading at centre of scene</td>
</tr>
<tr>
<td>9.3</td>
<td>Take necessary measurements for plan</td>
</tr>
<tr>
<td>9.4</td>
<td>clean up scene</td>
</tr>
<tr>
<td>9.5</td>
<td>take last photo of scene</td>
</tr>
</tbody>
</table>

**Notes**

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Annex 3: Some of the Clinical Symptoms to look for in Suspected Poisoned Animal

Clinical symptoms of poisoning vary widely depending on the following:

1. Type of poison involved and the amount ingested: In general, the poisonous chemicals used are highly toxic, and the onset of signs is usually immediate and followed by mortalities. However, live animals are often found at poisoning crime scenes because some individuals may not consume adequate lethal dose. These animals are often lethargic and may try to vomit and/or drink water.

2. Animal Species: Clinical signs of poisoning also depend on the animal species affected. Mass die-offs of wildlife typically indicate either a poisoning incident or an outbreak of a highly infectious disease, particularly in waterborne species. The species involved can be a good indicator as to whether poisons or disease is the culprit when vultures or other carnivorous birds are present, suspect poisoning. When herbivorous species are involved, it is most likely to be a disease outbreak, but remember there are always exceptions, particularly in the case of elephants, which are common targets of poisoning.

NB: The clinical symptoms enumerated below are also exhibited by infectious diseases thus should not be considered as pathognomonic signs for poisoning.

Clinical symptoms of poisoned animals
Generally, animals display similar symptoms of poisoning depending on their taxa. Poisoned mammals may exhibit one or more of the following symptoms:
- Loss of appetite
- Vomiting
- Diarrhoea
- Severe dehydration
- Drooling of saliva/hyper-salivation

Poisoned bird species may exhibit one or more of the following symptoms:
- Unable to fly
- Paralysis
- Convulsions
- Drooping wings
- Blood in the droppings
- Skin irritation
- Dropping dead
- Mass-die-offs of birds

Clinical symptoms of animals killed by poisons
- Posture of the animals will look like a struggle ensued prior to death
- In the case of birds, wings will often be outstretched
- Body position and limbs will be contorted
- In mammals, teeth may be showing as in a grimace
- Vomit maybe found nearby
- Birds may fly away only to die in trees, sometimes nearby

In case of aquatic poisonings, fish and other aquatic species are likely to be seen as a mass-die-off and floating in a river, lake or swampy areas.
Annex 4: Treatment and Management of Wildlife Poisoning Cases

a. Identify symptoms of animals to enable an understanding of whether or not poison was used, and if so, which poison.
b. Make a decision as to whether the animal can be treated or not.
c. All wildlife poisoning cases requiring treatment should be handled by qualified veterinarians registered by Kenya Veterinary Board and authorised by Kenya Wildlife Service.
d. Safety first – always be in protective gear and only handle wildlife poisoning cases if trained to do so.
e. Capture (physical or chemical restraint) and secure affected live animals if possible then administer treatment.
f. Method of treatment is poison dependent, but the veterinarian may consider stocks of Atropine sulphate or Vitamin K and activated charcoal as possible antidotes.
g. Secure the sick animal in a cool dark area.
h. Don’t force feed or make poisoned animals to drink.
i. Induce vomiting or remove crop contents.
j. If possible flush the crop of a poisoned bird.
k. Contact and consider transport to nearest approved rehabilitation centre, where necessary.

Annex 5: Contact Details of Animal Rehabilitation Centers in Kenya

Poisoning cases that require rehabilitation are to be referred to KWS Nairobi Animal Orphanage or KWS approved orphanages some of which are listed below among others;

**Nairobi Animal Orphanage**
Kenya Wildlife Service,
P.O. Box 40241 - 00100,
Nairobi Kenya
Tel: 020 2379407 , 020 6002345,
020-2379408 , 020-2379409,
020-2379410, 020-2379411,
020-2379412,020 020-2379413,
020-2379414
Call Center:0800 597 000 or 0800 221 5566

**David Sheldrick Wildlife Trust**
P.O. Box 15555
Mbagathi, 00503
Nairobi, Kenya
Telephone: 0202 301396, 0733 891996
Email: info@sheldrickwildlifetrust.org

**Reteti Elephant Sanctuary**
info@retetielephants.org
Namunyak Wildlife Conservancy, Samburu, Kenya
www.retetielephants.org

**Raptor Rehabilitation Centre Karen, Nairobi**
P.O Box 15377-00509, Nairobi, Kenya
Tel: +254721969640/0723829529
Email: raptorrehabkenya@gmail.com
http://raptorrehabkenya.org/

Poisoning cases that require rehabilitation are to be referred to KWS Nairobi Animal Orphanage or KWS approved orphanages some of which are listed below among others;
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION OF EVIDENCE/PROPERTY</th>
<th>RELASING FROM</th>
<th>RELASING VIA</th>
<th>RELASING DATE</th>
<th>SIGNATURE</th>
<th>FILE NO.</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

**Annex 6: Sample Chain of Custody Form**
Annex 7: Sample of Kenya Police Exhibit Memo

THE KENYA POLICE

EXHIBIT MEMO FORM

Station ........................................ Division ........................................ Charge Register No. ........................................

To:- Hollerith Code No. ........................................

I forward herewith ........................................

*by registered mail

*under escort of

........................................ exhibits enumerated below for favour of examination.

(*Strike out whichever is applicable)

Exhibits and identification markings ........................................

........................................

Precis of offence:-

It is desired to ascertain:-

Name of complainant ........................................

Name of accused (if known) ........................................

Offence and Section ........................................

Time, date and place committed ........................................

........................................

Taken possession of by ........................................

Date ........................................... Signed ........................................

Exhibit enumerated above received: Signed ........................................... Date ........................................

Note:- This form to be completed in triplicate. Three copies to accompany exhibit, second copy to be returned as report, third copy to be returned as receipt.

P.L.O
## Annex 8: Wildlife Poisoning Response Protocol Development Note

<table>
<thead>
<tr>
<th>Action</th>
<th>Responsible</th>
<th>Timeline</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constitute a technical team to develop a draft protocol</td>
<td>Nature Kenya- Paul; KWS- H-SCM</td>
<td>July 2017</td>
<td>Completed</td>
</tr>
<tr>
<td>Review and validation of the protocol by a core group</td>
<td>Global and National partners</td>
<td>July 2017</td>
<td>Completed</td>
</tr>
<tr>
<td>Finalize the protocol</td>
<td>Nature Kenya – Paul; and KWS drafting Team</td>
<td>mid-end August 2017</td>
<td>Completed</td>
</tr>
<tr>
<td>COP- Oct. Organize Side event to demonstrate how it works</td>
<td>KWS-Dr. Njogu, BirdLife-Masumi</td>
<td>October 2017</td>
<td>COP conference held. No Side event convened</td>
</tr>
<tr>
<td>Workshop to validate the protocol</td>
<td>Nature Kenya- Paul and KWS- H-SCM and HVS</td>
<td>November 2017</td>
<td>Completed</td>
</tr>
<tr>
<td>Incorporation of comments from validation workshop</td>
<td>Drafting Team</td>
<td>December 2017</td>
<td>Completed</td>
</tr>
<tr>
<td>Protocol adoption and endorsement</td>
<td>KWS DG through Dr. Kasiki</td>
<td>December 2017/ January 2018</td>
<td>Completed</td>
</tr>
<tr>
<td>Design, Printing and Distribution</td>
<td>KWS, KWCA and Partners</td>
<td>January 2018</td>
<td>Planning ongoing</td>
</tr>
<tr>
<td>Develop a simplified version for field practice</td>
<td>Drafting team</td>
<td>January 2018</td>
<td>Planning ongoing</td>
</tr>
<tr>
<td>Implementation - Purchase of Field kits; Workshop to train different stakeholders and Pilot testing of the protocol</td>
<td>Nature Kenya Paul and KWS- H-SCM</td>
<td>February 2018</td>
<td>Planning ongoing</td>
</tr>
</tbody>
</table>