KAVANGO ZAMBEZI
TRANSFRONTIER CONSERVATION AREA (KAZA TFCA)

A MANUAL for REDUCING and MITIGATING HUMAN-SMALL PREDATOR CONFLICT (HSPC)

Black backed Jackal (*Canis mesomelas*)

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Abbreviations

HSPC	Human Small Predator Conflict
HWC	Human Wildlife Conflict
KAZA TFCA	Kavango Zambezi Trans-Frontier Conservation Area
PA	Protected Area

KAZA Mission

"To sustainably manage the Kavango Zambezi ecosystem, its heritage and cultural resources based on best conservation and tourism models for the socio-economic wellbeing of the communities and other stakeholders in and around the eco-region through harmonisation of policies, strategies and practices"

1. Introduction

Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA) is a transboundary collaborative initiative of five Partner States; Angola, Botswana, Namibia, Zambia and Zimbabwe, in the conservation of shared natural resources and the development of communities in and around the landscape. The TFCA is a mosaic of multiple land use composed of:

- Protected areas (PAs) in the form of national parks; game reserves;
- wildlife/game management areas; forest reserves; and conservancies/ community concessions areas; and
- Communal areas (settlement, pastoral, and arable farming).

There are about 3 million people settled across the KAZA landscape. The human population is mainly rural, largely dependent on subsistence pastoral and arable agriculture. The multiple land use status of the KAZA landscape present many development challenges and opportunities for the resident communities.

Small predators are carnivorous animals that primarily obtain food by killing and consuming other animals and are of small stature and weight, such as civet cat, jackal and caracal. Their feeding upon livestock is a matter of conservation concern. It represents a global problem that negatively impact on locals livelihoods as well as on their populations. This is mainly caused by the ever-increasing interface between people and small predators. As the human populations grow, expansion into wildlife habitats is inevitable resulting in land use transformation that has caused habitat loss, degradation and fragmentation for many wild animal species including small predators. Furthermore, small predators' extensive home ranges coupled with their protein dietary needs draw them into direct competition with humans resulting in human-small predators conflict (HSPC).

HSPC is a common form of human wildlife conflict in the KAZA TFCA. The black-backed jackal (*Canis mesomelas*) and the caracal (*Caracal caracala*) are two important small seized predator species among the KAZA region wildlife that have a negative impact on the livestock particularly on sheep and goats. Although these small predators are thought to contribute in performing a regulatory function in ecosystems by influencing prey and large carnivores behaviours and population abundances, they are a menace to the livestock anchored livelihoods of locals. Killing and predation of small livestock, transmission of diseases to domestic animals and risk to human safety cause unbearable economic and social losses to locals who end up in retaliatory killings of the small predators.

In order to reduce and mitigate the undesirable impacts of the HSPC, this manual is meant to contribute in the management of this conflict to promote harmonious co-existence of people and the small predators.

Figure 1: Caracal (Caracal caracal) is native to Africa, the Middle East, Central Asia and India.

1.1 Goal of the manual

The overall goal of this manual is to:

- Improve the understanding of conflict between people and small predators, and
- Assist the affected communities in applying available best management practice to reduce and mitigate the conflicts.

1.2 Objectives of the manual

The objective of this manual are to:

- Equip users of the manual with knowledge on human-small predators conflict; and
- Assist users of the manual to understand and apply best management practices in reducing and mitigating human small predators conflicts.

1.3 Targeted users of the manual

- Farmers (subsistence and commercial) experiencing and affected by human small predators conflicts;
- Wildlife managers and extension officers; and
- People interested in coexistence of people and large predators.

2. Human small-predator conflict

Due to their notoriety, HSPC caused by black-backed jackals and caracals is widely spread in most regions of Africa. There are many types and forms of human predator conflict, but the most notorious form is that of livestock depredation. Predation has been recognised as a management issue for livestock owners for centuries in southern Africa. When the Nguni-speaking people migrated into present day South Africa, notably the northern and east parts, predation of their cattle caused them to design kraals an enclosed area around the homestead that protects livestock from predation.

Over the centuries and in part due to the demise of large predators during subsequent centuries, black-backed jackals and caracals became the primary predators of livestock and wildlife in southern Africa. A number of tactics were developed and / or promoted to mitigate predation effects in the 19th and 20th century. Throughout the 19th century, black-backed jackals were minimally or note even discussed as a game animal, thus shooting was only used for wildlife damage management. Caracals were also considered an agriculture pest with farmers controlling them by shooting, trapping, dogs and toxicants.

Black backed jackal, civet cat and caracal continued to be seen as hostile to livestock and are regularly killed in an attempt to reduce or prevent livestock losses. Despite the intense lethal control of these small predators, their numbers are still apparently large enough to remain an issue on farms and livestock losses are believed to be increasing. In addition to livestock predation, the small predators are well known to attack human beings especially children causing injuries. Furthermore, diseases such as rabies are transmitted to domestic animals like dogs which make it difficult to control them.

2.1 Behavioural traits of small predators

Attempts to understand the behavioural traits of damage causing small predators determine the most effective methods for reducing predation of livestock, human attacks and transmission of diseases to domestic animals. Furthermore, it enables practitioners to share effective ways of harmonious co-existence with small predators with local communities. Below are some of the important behavioural traits:

Black-backed jackal

- The present day black-backed jackal is a typical dog that is adapted to hunt in the night. The small predator is an omnivore that feed on a diet with a wide variety that include insects, rodents, hares, antelopes (primarily impala and springbok), carrion lizards, snake, eggs of birds and hoofed small livestock like goats and sheep. Furthermore, the species is also an opportunistic scavenger of carrion and vegetable matter.
- In general, black-backed jackal shows a preference for open habitats thus tending to avoid dense vegetation. They commonly use either the open grassland or wooded savannah.
- At some point in their lives, black-backed jackals may be introduced to predation on sheep, lambs and goats. These easier prey types may set a lifetime habit which cannot be changed or get rid of again easily.
- The black-backed jackal is monogamous; they form pairs and mate for life or until one mate of the breeding pair is killed. The pair forms the basic social unit that defends its territory through laying faeces and urine on range boundaries. It is a highly vocal species. Sounds made by the species include yelling, yelping, woofing, whining, growling and cackling.
- Young black-backed jackals disperse by finding their own mates by occupying new or vacant areas that meet their food and social requirements to breed and successfully raise pups.

Figure 2: Black-backed Jackals are among the most significant vectors of rabies in southern Africa.

Jackal

2.1 Behavioral traits and instance of attack by large predators

Caracal

- The caracal is a typical cat which is characterised by a robust build, long legs, a short face, long tufted ears and long canine teeth. It can leap higher than 4m and catch birds in mid-air. It stalks its prey until it is within 5m of it after which it runs it down and kills its prey with a bite to the throat or to the back of the neck.
- Typically nocturnal, the caracal is highly secretive and difficult to observe. It is highly territorial and lives mainly alone or in pairs. Male caracal's territory overlaps with the territories of several neighbouring females. Individual caracals of both sexes are rarely seen together except when mating or in the case of a female with larger kittens.
- In addition to patrolling and keeping individuals of the same sex out of their territories, caracals both sexes are also very familiar with natural food sources in their respective territories.
- Before they settle as young adults in territories of their own, the young caracals have to keep out of harm's way by avoiding resident territorial adult cats of both sexes. It is suspected that during this stressful period in their young lives, young cats may also predate on easy prey small livestock.
- Caracals are found mainly in dry savannah and woodland areas, scrubland and rugged terrain. Like other cats that are found in dry, or semi-arid locations, the caracal can survive for long periods without water by obtaining its requirement from its prey.
- Caracals are very successful hunters of small mammals and birds. They do not readily take carrion except when it may return to carcass of prey that it recently caught.

Figure 3: The lifespan of the caracal is up to 20 years in the wild and up to 30 years in captivity.

Caracal

2.2 Common problems caused by small predators

Predation on livestock

Predation on domestic animals by small predators is a persistent problem wherever they co-occur with small livestock. They occasionally hunt domestic animals including dogs, cats, pigs, goats, sheep and poultry with sheep the most targeted. Small predators rarely target cattle though cows giving birth may be attacked. Jackals may be a serious problem especially during the lambing season. Jackals usually kill sheep with a throat bite, and begin feeding by opening the flank and consuming the flesh and skin of the flank, heart, liver, some ribs, haunch of hind leg, and sometimes the stomach and its contents.

In the rural areas where livestock is one of the important sources of income, livestock losses due to predation affect local people's attitudes towards and acceptance of small predators. Livestock losses represent a cost to farmers as do the opportunity costs of actions that are used to prevent them. The profit of a small livestock farmer is a function of the number of lambs born and lamb losses between birth and weaning.

Attacks on humans

Jackals are opportunistic predators, feeding on small to medium animals. They weigh up to 14kg and can grow to 85cm in length. While they are not normally dangerous, they are still known to attack humans. Children are at risk as they are smaller. However, most attacks are not fatal. They usually attack in packs and work as a group with each dog taking one part of the body before stretching the victim out.

Persecution of small predators

Predation of livestock triggers revenge killing of the small predators by the affected communities. Negative attitudes drive locals to eliminate small predators which eventually cause the decline of populations of the involved wild animal species which if not checked may lead to local extinction.

Transmission of diseases and parasites

Black-backed jackals can carry diseases such as rabies, canine distemper just to mention a few. They are a major rabies vector. They are able to maintain rabies independently of other species. They transmit diseases to stray dogs making it difficult to control diseases. They also carry parasites namely trematodes, fleas, nematodes, ticks and mites.

3 Methods of reducing and mitigating human-small predator conflict

A range of methods can be used to mitigate HSPC. No one method of mitigation can ever be the ultimate solution for HSPC but every measure is a good starting point. These methods can be divided into lethal and non-lethal methods. Lethal methods kill the predator and include hunting at night with rifles, shooting by day, hunting with dogs, snares, trapping and poisoning.

Non-lethal methods reduce predation without killing and include kraaling of small livestock, indoor housing, sheep / goat herders, lights, guard dogs and king collars. In addition, farmers can apply various herd management methods that can reduce predation. For sheep, these are seasonal lamping, indoor lamping and bedding sheep near camp. These will be briefly explained below.

3.1 Guard dogs

Livestock guarding animals detect approaching predators and interrupt attacks and can be used to reduce and mitigate human small predator conflict. Dogs protect livestock against small predators whereas donkeys act as deterrents. Domestic dogs reduce the risk of attack of a herd when they accompany a herd. The dogs should be raised with the sheep or cattle living with the herd or flock respectively. They detect the small predators and raise an alarm which enables the herders to chase away the predators. Donkeys reduce the risk of attack of cattle by small predators. Donkeys in a herd of cattle can guard against small predators because they have a more developed instinct for defence than cattle. They are also more aware of predators and are not afraid of them. They chase them away, biting and kicking and are formidable opponents.

3.2 Hunting

This is one of the traditional and most effective ways to mitigate HSPC. Hunting with rifles is most often done at night with the aid of a spotlight and calling equipment. Shooting at night can be very selective and solve problems within a short timeframe and with little ecological effects.

Hunting with dogs is another effective method of controlling problematic small predators. Dogs have to operate in groups (packs) for the method to be effective. Well managed packs of dogs enhance the effectiveness of the method. The method is a quick and effective way of targeting specific problem animal. However, when hunting dogs are used, it is not recommended to use poisons and leg hold traps. The only limiting factor is that the upkeep of these animals is expensive and it is time consuming.

3.3 Poisoning

This is another lethal method used to mitigate HSPC. It is often used worldwide to control populations of the small predators in small livestock dependent communities and large scale small livestock ranches. Ground level baits impregnated with poison are commonly used. Method is cheap and very effective. Only drawback is that non-targeted animals might also be killed and is highly discouraged unless recommended by National management authorities.

3.4 Trapping

Trapping is a commonly used method in mitigating HSPC in many farms. However, the method has the potential to cause some injury or distress to the target and non-target animas without killing it and thereby causing suffering and pain to these animals. Steel jawed gin traps, cage-traps and jaw-traps slagysters may be effective provided that they are correctly sited and set. Cage traps are the mostly preferred since non-target animals can be released easily. Trapping is not the most effective way of mitigating HSPC for black-backed jackal while cage traps

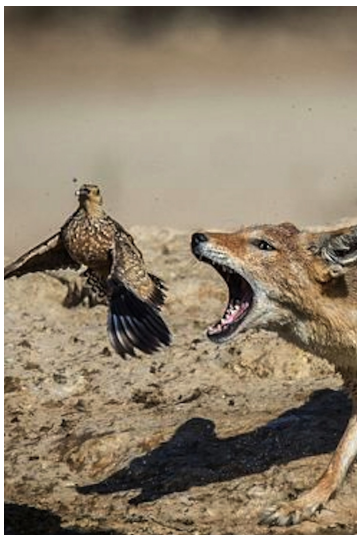

Figure 4: Jackals are omnivorous, eating almost anything that is available.

3.5 Coyote getters

These are mechanical devices which function similarly to the trigger mechanism of a gun. The device consists of a ground peg which holds the device in position. The trigger portion clips into the ground peg and its bait head, which contains a special cartridge loaded with a poison (sodium cyanide) screws onto the trigger portion. When bitten and pulled by the target problem animal, the cartridge fires and poison is propelled into the animal's mouth. The devices are very dangerous and need a lot of experience to operate.

3.6 King Collars

The collars are simple and relative inexpensive devices that can be very effective for black-backed jackal control but not so effective for caracals. They are wide adjustable PVC collars which are fitted to the entire flock of sheep. The device makes it difficult for small predators to kill small livestock by biting on the neck. Due to the presence of the device on the necks of small livestock, the black-backed jackal over time learns to attack the sheep from the back and thereby does not kill as effectively as they normally do.

Figure 5: King collar on a sheep's neck.

3.7 Fencing

Predator-proof enclosure protects livestock all the time. Jackal proof and electrical fencing is quite an expensive capital investment. When the fences have to be medium to small sized predator proof, the labour costs are usually more than double. This is due to the process of having to attend to and blocking all possible entry spots for the small predators. For such fences to be effective maintenance is critical as animals like porcupines and warthog can easily dig under such fences thereby cause the fence to be ineffective. This means the fences must be checked frequently, thus making fencing as a HSPC method very expensive and time consuming.

Figure 6: Traditional simple fencing can provide some security to livestock if well constructed and maintained.

3.8 Livestock guarding animals

Animals that include donkeys, dogs, zebras and ostriches are able to serve as livestock guarding animals against small predators. Predator problems are usually associated with lambs that are still suckling and guard dogs can provide great relief. Unfortunately, the cost of guard animals is high and the method might reduce losses but may not prevent them entirely.

3.9 Bell and scent collars

Bell and scent collars can confuse small predators and discourage them because of the unnatural noise they make and the human associated scent they exude respectively. These need to be used consistently in conjunction with other methods for enhanced effectiveness. These should be used intermittently at times when the risk of predation is at its highest particularly at lambing times otherwise predators may become used to them hence becoming less effective.

Figure 7: Cow bells tied on livestock allow farmers to locate their stray livestock.

3.10 Lanterns and radios

Lanterns may be used to light up night enclosures while radios are being played. However, these should be used with discretion as they may attract thieves.

3.11 Season of lambing

Small predators are often more likely to kill livestock at specific times of the year than at others. Killing of lambs, calves and goat kids often coincides with the need for provision for their offspring. This specific season sometimes coincides with that which most farmers use to lamb their small livestock. Black-backed jackals are generally known to kill livestock during their social periods and when the puppies are born in January-April and September October respectively. If small livestock are bred earlier in the season, they may have time grow and may be less vulnerable to small predators. Caracals are not seasonal and can reproduce year round; this means that farmers must practice year round caracal control in order to mitigate HSCP.

3.12 Avoiding conflict hotspots

HSPC can be mitigated by simply avoiding problem areas within a range. There can be areas that predators prefer to others. These hotspots of predation must be avoided to reduce predation of small livestock.

3.13 Kraaling at night

A traditional method of mitigating HSPC across the world which implies that small livestock is kraaled every night. Animals graze during the day time and return to the kraal at night time. The method is highly effective but is not always possible for large herds of small livestock in farms as it is labour intensive.

Figure 8 & 9: Farmers can use locally available material to construct stone wall and wooden fences respectively.

4 Training

Training should be a continuous process for all stakeholders. Various programs of training targeting farmers and extension officers should be executed periodically to improve the technical capacity of the various stakeholders that are responsible for responding to HWC. The understanding of animal behavior and wildlife management, as well as the general awareness programs should be part and parcel of the authorities responsible for wildlife management.

5 Conclusion

It is essential to have accurate spatial and temporal geo-referenced information about when and where the conflict is occurring. This understanding, together with implementation of appropriate mitigation measures, should lead to a better focus on target areas and the most relevant species. Wildlife management and conservation authorities need to understand the HWC hotspots in their respective components and design robust programs for support to the communities against wildlife damages. The support programs should be accompanied by effective support on implementation of mitigation measures including Monitoring and Evaluation tools. In order to achieve positive results in dealing with HWC all stakeholders are requested to ensure that:

- The above interventions are constantly implemented and supported, and not just as occasional campaigns;
- There is greater active participation in the strategic activities by the various parties responsible HWC mitigation;
- There are opportunities to introduce other innovative mechanisms and approaches on dealing with any type of HWC; and
- Adequate capacity in terms of equipment, skills set, technology and financial resources are in place to effectively support HWC mitigation.

Figure 10: Jackals are opportunistic predators, feeding on almost any small to medium sized animals.

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