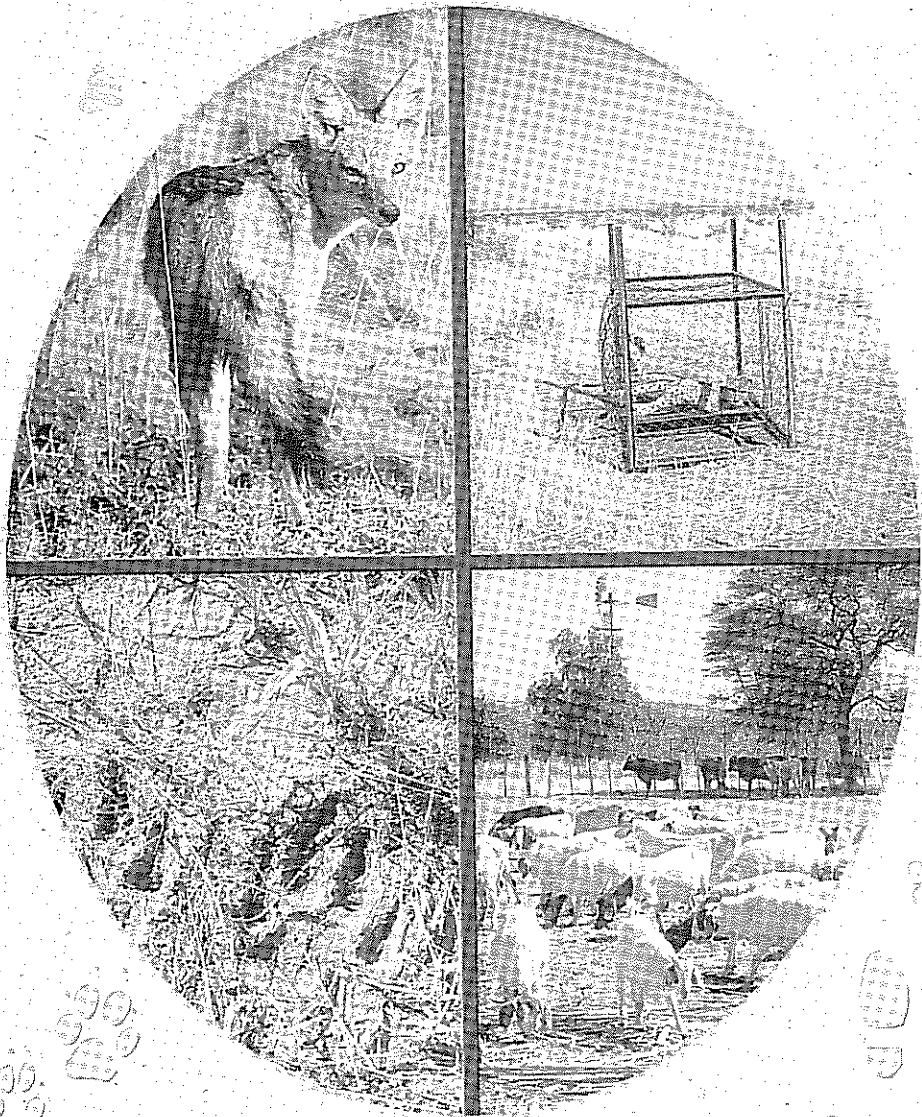


PREDATORS on LIVESTOCK FARMS



in **NAMIBIA**

The economic stability of a farm depends on the production output and the available market. The production output is influenced by many variables, one of which may be loss of livestock to predators. Effective predator management increases livestock production by removing predators that cause livestock losses and by allowing other predators and scavengers to control the many other pest species on the land.

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PREDATORS AND SCAVENGERS

Predators are mammals, birds, fish or insects that kill and eat plant-eating animals as well as other predators. Ranging from 250kg lions to less than one-gram spiders, they are the natural control for the population sizes of all wild animals. In areas where predators are non-selectively removed, increases in the population sizes of pest species may become uncontrollable.

Scavengers are mammals, birds, fish and insects that eat from dead animals or plant material. Many predators also scavenge. Within a single area a number of species of both predators and scavengers can live and share the resources. Scavengers clear the land of carcasses and reduce the spread of diseases and pests. Most predators and scavengers have exclusive territories that they control and protect from other individuals of their species.

Reliable data is needed from farmers to help with predator control

In Namibia, the number of livestock deaths caused by predators and the number of predators killed on farms are not reliably recorded. Without this information it is not possible for co-operation on the issue of predators to develop between the stakeholders. Stakeholders include relevant government ministries, non-government organisations, farming associations, conservancies and others.

Please help by reporting the following details to stock inspectors from the Ministry of Agriculture Water and Rural Development.

Livestock killed:

Date Month/Year	Livestock killed	Age of killed animal	Place on farm	Predator species	Definite predation or inconclusive
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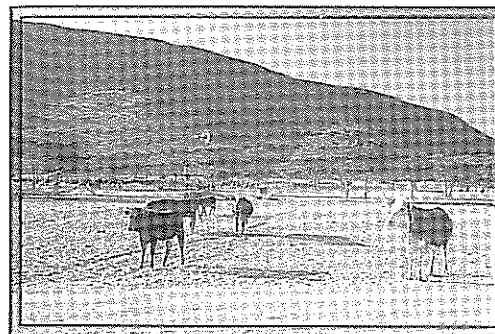
Predators removed:

Date Month/Year	Predator species removed	Place on farm	Method used	Problem reduced Yes / No
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FARM MANAGEMENT AFFECTS LIVESTOCK PREDATION



Veld management can improve production when a sustainable and healthy environment is maintained. A healthy environment provides good nutrition to livestock, improves resistance to parasites and diseases, increases fertility and provides a natural prey base to predators. The carrying capacity of the veld can only be improved over time when the seasonal stocking rates are appropriate and the livestock that is kept on the veld is in the correct relationship to the type of graze or browse available.

Overgrazing and other poor veld management techniques cause bush-encroachment and desertification and will reduce the natural prey items for predators thereby increasing the potential for problems between predators and livestock.

Livestock carcasses must be properly disposed of so that those predators that also scavenge do not acquire a taste for livestock. Farmers who leave carcasses in the veld for vultures and other scavenging birds, should place the carcasses in a fenced-off area of at least 1-hectare.

Herd/flock management improves production by considering breeds, breeding seasons, parasite control, disease prevention and livestock protection.

Livestock breeds and breed-lines can be selected for heritable characteristics: fertility, drought hardiness, high food conversion rates, disease resistance and strong mothering characteristics.

Breeding seasons can be controlled in order to:

- ~ Shorten the time when young livestock need extra protection.
- ~ Manage small numbers of young stock at any one time by dividing the calving or lambing season.
- ~ Match the breeding season to the time when there is plenty of wild prey available for predators. Young livestock are most at risk at the end of winter when the numbers of mice, rats, insects, reptiles and other wild prey are low.
- ~ Provide optimal grazing for pregnant livestock and growing lambs and calves.
- ~ Prevent livestock on one farm from becoming the food focus for predators by synchronising calving or lambing seasons with neighbouring farms.

Parasite control

Parasites weaken livestock and spread diseases. Veld and camp management and breeds and breeding seasons influence internal parasites (intestinal worms, coccidia and protozoa) and external parasites (ticks, mites, fleas and flies). Parasiticides are the products that control parasites in or on livestock.

Basic rules for handling these products are:

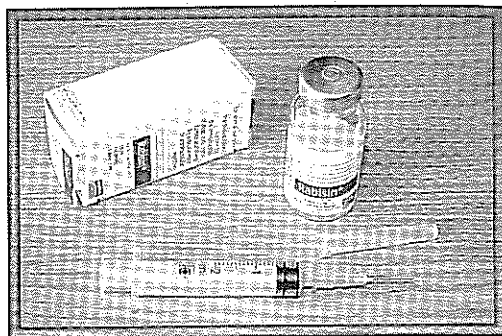
- ~ Separate parasiticides from animal feed and bedding during transport.
- ~ Store the products in a cool and dark place. Poisonous products must be locked away.
- ~ Check the date on the products to make sure that they have not expired.
- ~ The same product (check the chemical not the trade name) should not be used season after season, nor year after year.
- ~ Check the mixing, spraying and application requirements.
- ~ Check the dosage needed per kilogram of live weight.
- ~ Newly acquired animals must be treated for parasites before being introduced to the herd or flock.

ALWAYS READ THE LABEL ON THE PRODUCT!

Disease prevention

Veld and herd/flock management and parasite controls influence the resistance of livestock to diseases. Vaccines, developed to immunise livestock against outbreaks of some diseases, are only effective when:

- ~ Vaccines are transported and stored at the correct temperature.
- ~ Vaccination programmes are done on time.
- ~ Newly acquired animals are vaccinated before being introduced to the herd or flock.
- ~ Animals that show any sign of disease are isolated or culled.



The batch numbers of the vaccines and the dates of vaccination must be recorded.

IDENTIFYING THE ACTUAL LIVESTOCK KILLER IS IMPORTANT

- ~ A bird or mammal seen feeding on a carcass does not mean that that animal is the killer. Many predators also scavenge and there are always a number of bird and mammal species that predate and scavenge in the same area.
- ~ A livestock predator is not a species, it is one individual within a species.
- ~ Territorial animals of any species keep others of their species out of their territory.
- ~ Different predatory species that live together in one territory prey on one another and if one species is eliminated then other predator populations will increase.
- ~ Predators take a wide variety of prey and control the population sizes of insects, rodents and other plant eating pest species.
- ~ Predators target weak and sickly individuals and scavengers clear rotting carcasses. They both reduce the spread of diseases on the land.

Checking the site and the livestock remains:

- ~ Look at the tracks. Cat tracks have a double indentation, (the shape of a "W"), on the lower edge of the main pad. Cat tracks do not show claw marks except for Cheetah tracks. All cat species leave claw marks on a carcass. Dog, Fox, Jackal and Hyena tracks have a straight lower edge of the main pad which may be at an angle.
- ~ The prey size can help to determine the size of the predator species.
- ~ The killing bite and the bite width (the measurement between the canines) are best seen on the inside of the skin.
- ~ The parts that are eaten on the prey animal and the remains of the carcass are different for each predatory species.

Skin and check the prey animal to see if it was killed by a predator or only scavenged on:

- ~ Look for bruising by skinning the carcass. Little or no bruising means that the animal was dead or almost dead before the predator arrived.

- ~ Start the skinning on the neck, a hand-width behind the ear. Remove the skin around both sides of the throat and look for bruising and bite marks.
- ~ Skin the whole carcass to look for bruising and bite marks.
- ~ Open the windpipe to look for foam. Foam in the windpipe means that the animal was breathing before being strangled.

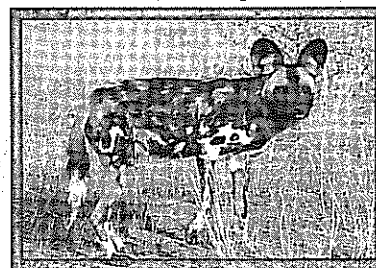
Check if a new-born was killed by a predator or was still-born and only scavenged on:

- ~ Check the hooves: unworn hoof membranes indicate that the animal was too weak to get up and walk, or was stillborn.
- ~ Check the lungs: a dark reddish colour indicates that the animal was still-born and did not breathe.
- ~ Check the gut: if there are no milk curds, the animal was not drinking.
- ~ Check the heart and kidneys: white fat around these organs indicates a healthy animal.

THE MOST COMMON MAMMALIAN PREDATORS OF LIVESTOCK IN NAMIBIA

African Wild Dog

Lycaon pictus



Shoulder height: up to 800mm

Adult weight: up to 30kg

Natural diet: They predate on small to medium-sized prey. They do not often scavenge.

Breeding: 2-10 pups are born in holes in the ground, mostly during the dry months. The survival rate of the pups is generally low.

Behaviour: They hunt in packs in open grassland during the early morning and the late afternoon. Wild Dogs do not have territories but do have very large home ranges.

Conflict with livestock is mostly limited to the Caprivi and to the northeastern areas of Namibia.

Check the site and the prey remains for signs of an African Wild Dog kill.

The tracks: The main pad is more or less triangular and the claw marks are blunt and thick. The front tracks are wider and slightly shorter than the back tracks. African Wild Dog tracks can easily be confused with the tracks of domestic dogs.

Prey size: Mostly medium-size up to 50kg, but they can take larger prey.

Killing bite: The bite marks may be all over the body but especially on the back legs, the soft under-parts and on the muzzle. Skin the whole carcass to check the bite marks.

Bite width measurement (canine puncture marks): From 28mm up to 35mm.

The parts that are eaten on the prey animal: Dogs are messy eaters. Most of the carcass including the stomach and stomach contents is eaten.

The bones that are chewed: The large long bones are chewed but are not swallowed.

The remains (before scavengers have eaten from the carcass): From medium and large-size prey, the head, hooves, some skin and the large bones (which may be chewed) remain. ~ In small prey there may be no remains. ~ The wool or hair of the prey animal is widely scattered about.

Claw marks on the skin of the prey animal: None.

Domestic dogs



pads are large and are close to the main pad. The toe-pads of the back tracks are longer than those of the front tracks. The claw marks are blunt and thick. The tracks are totally variable in size. The tracks of large dogs are easily confused with those of the African Wild Dog. The tracks of medium sized dogs are easily confused with those of the Jackal. The tracks of small dogs can be confused with those of the fox species.

Prey size: Small, medium or large but most often between 10 and 30kg.

Killing bite: Bite marks are all over the body.

Bite width measurement (canine puncture marks): As small as 23mm but commonly from 36mm to 56mm.

The parts that are eaten on the prey animal: The face of the prey animal is bitten and may be eaten (also see Jackal). ~ The ears are chewed (also see Jackal and Brown Hyena). ~ On medium and large prey the back legs and the hindquarters are bitten and chewed (also see Jackal and Brown Hyena). ~ The meat on the inner and outer thighs of the back legs is messily eaten. ~ The stomach and intestines are torn, partly eaten and thrown about.

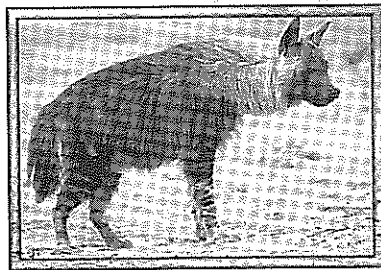
The bones that are chewed: The long bones are chewed. ~ The ribs are chewed.

The remains (before other scavengers have eaten from the carcass): Dogs are very messy feeders. ~ The stomach and intestines are torn, partly eaten and thrown about. ~ In small prey all that remains are the front legs, neck and the head. ~ The wool or hair lies widely scattered with bits of carcass (also see Brown Hyena).

Claw marks on the skin of the prey animal: None.

Killing of more than one prey animal: Dogs may kill more than they can eat.

Brown Hyena



Shoulder height: up to 810mm

Adult weight: 42-56kg

Natural diet: Mostly a scavenger but can predate on small to medium-size mammals and birds. They also eat insects, vegetable matter and eggs.

Breeding: 2-4 young are born at any time of the year.

Behaviour: Usually a solitary animal that is active from dusk to dawn. A number of animals, probably members of a "family unit", may share one territory.

Conflict with livestock is localised and limited to small stock.

Check the site and the prey remains for signs of a Brown Hyena kill.

The tracks: The main pad is large and the bottom edge is at an angle. The unevenly spaced toe-pads are very large and close to the main pad. The front tracks are much bigger than the back tracks, and the blunt claws leave clear imprints. Tracks that are on sand or silt leave imprints of the hair under the foot. The tracks are smaller but similar to those of the Spotted Hyena with

Canis domesticus

Shoulder height: up to 750mm

Adult weight: up to 45kg

Behaviour: Dogs hunt in packs during the day or at night. They are very messy killers and feeders.

Conflict with livestock is common and not always close to human habitation.

Check the site and the prey remains for signs of a Domestic dog kill.

The tracks: The main pad is more or less triangular, with a straight bottom edge and a pointed top edge. The toe-

Canis domesticus

less difference between the sizes of the front and back tracks.

Prey size: Usually less than 10kg but can be up to 30kg and sometimes bigger. They mostly scavenge.

Killing bite: In medium-size prey the bite marks are mostly on the hindquarters and back legs (also see domestic dog). If there are skull remains, bite marks may be seen on them.

Bite width measurement (canine puncture marks): From 47mm to 58mm.

The parts that are eaten on the prey animal: The skull is crushed and the brains are often eaten, or the whole head may be eaten or torn from the body. ~ The ears are often torn or chewed. (also see domestic dog and Black-backed Jackal). ~ The stomach and intestine are ripped open and partly eaten. ~ Bits of stomach and intestine are strewn about near the carcass (also see domestic dog). ~ In small prey most of the animal including the skin is eaten. ~ The prey animal is eaten from the hindquarter first and the inner and outer thighs are messily eaten (also see domestic dog).

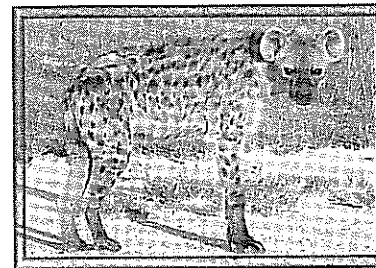
The bones that are chewed: The skull is crushed. ~ The long bones and the hipbones are chewed.

The remains (before other scavengers have eaten from the carcass): The carcass may be dragged under a bush or into a hole. ~ The remains are crushed bones, wool, hooves and the stomach content. ~ In small prey the front legs, head and neck can remain. ~ Bits of stomach and intestine are strewn about near the carcass (also see domestic dog). ~ Other carcass parts, the skin and wool or hair are widely scattered about (also see domestic dog).

Claw marks on the skin of the prey animal: None.

Killing of more than one prey animal: They very seldom kill more than one prey animal.

Spotted Hyena



Shoulder height: up to 850mm

Adult weight: 55-80kg

Natural diet: They predate on a variety of prey from insects to large wildlife. They readily scavenge and will chase other predators to steal prey.

Breeding: 1-4 cubs are born in summer in holes (dens) in the ground.

Behaviour: They are mostly nocturnal and although they are seen singly, in pairs or in family groups, Spotted Hyenas usually belong to bigger "clans". They hunt by sight and smell.

Conflict with large and small livestock is localised, but more common near the borders of national parks and wildlife areas.

Check the site and the prey remains for signs of a Spotted Hyena kill.

The tracks: The bottom edge of the large main pad is at an angle. The unevenly spaced toe-pads are very large and close to the main pad. The blunt claws leave clear imprints. The front tracks are slightly bigger than the back tracks. The tracks are bigger and show less size difference between front and back tracks than those of the Brown Hyena.

Prey size: From small to large-size prey animals.

Killing bite: On the soft parts of the body, the belly and the rump as well as on the side of the neck.

Bite width measurement (canine puncture marks): From 45mm to 60mm.

The parts that are eaten on the prey animal: The soft parts are usually eaten first. ~ The bones and hooves of small prey are eaten.

The bones that are chewed: Most of the skeletal bones are crushed and chewed. Even the large bones of large prey can be splintered.

The remains (before other scavengers have eaten from the carcass): In small and medium-

size prey there are no remains. ~ From large prey the horns and hooves are not eaten. ~ The stomach may be eaten but the rumen content and the lungs are generally not eaten.

Claw marks on the skin of the prey animal: None.

Killing of more than one prey animal: They sometimes kill more than one animal.

People



Shoulder height: up to 2000mm

Adult weight: up to 120kg

Natural diet: Meat and vegetable matter.

Behaviour: People are an opportunistic species. Theft of livestock is an increasing problem.

People also cause loss of livestock through mismanagement of:

The livestock: Including reviewing of the breeding seasons, internal and external parasite control, disease prevention and the livestock protection methods.

The veld: Including reviewing the carrying capacity of the veld, the stocking rates and the appropriateness of grazers and browsers to the available veld type.

The predators: Including selective removal of predators in order to maintain a balance between different predatory species and a balance between predator and natural prey species.

Homo sapiens

African Wild Cat

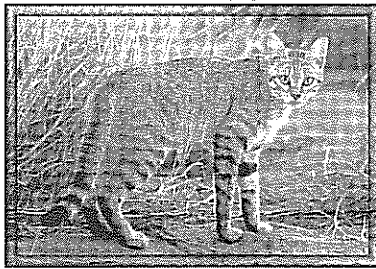


Photo: A. Frimman

Shoulder height: up to 350mm

Adult weight: up to 6kg

Natural diet: Mostly rats, mice and insects, also some small reptiles, birds, eggs, fruit and the very young of small antelope.

Breeding: 2-5 kittens are born in holes in the ground or in thick cover.

Behaviour: African Wild Cats are nocturnal and solitary. Males will move with females during the breeding season. They readily interbreed with domestic cats.

Conflict with livestock only affects the very young of small livestock.

Check the site and prey remains for signs of an African Wild Cat kill.

The tracks: Almost identical to but slightly larger than those of the domestic cat. There is a double indentation on the bottom of the main pad and the track shows no claw marks. The back tracks are narrower than the front tracks. The normal walking stride is about 30cm, the trotting stride is about 40cm.

Prey size: Usually less than 6kg.

Killing bite: Usually on the nape (back of the neck) where the spinal chord is severed.

Bite width measurement (canine puncture marks): From 12 to 15mm.

The parts that are eaten on the prey animal: The hindquarters are usually eaten first. ~ The animal feeds very neatly.

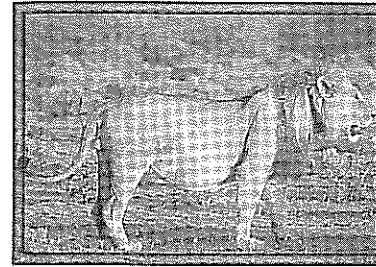
The remains (before scavengers have eaten from the carcass): The head is usually not damaged. ~ The stomach and intestines are not eaten. ~ The skin is generally not eaten. ~ The lower part of both the front and the back legs are not eaten. ~ Prey remains are covered with grass or other vegetation.

The bones that are chewed: The rib ends may be gnawed.

Claw marks on the skin of the prey animal: Short and in sets of four.

Felis lybica

Lion



Shoulder height: 900-1250mm

Adult weight: males up to 230kg
females up to 155kg

Natural diet: A wide variety of small and medium to large-size prey, from 10-300kg. Lions readily scavenge and also steal prey from other predators.

Breeding: 1-4 cubs are born at any time of the year.

Behaviour: Lions hunt in prides but single animals are encountered. Prides sometimes split up into smaller groups within a territory. They are generally nocturnal with their

greatest activity at dawn and dusk. They sometimes hunt during the day.

Conflict with livestock occurs on the borders of national parks, especially Etosha National Park, also in the Caprivi, the northeast areas bordering on Botswana, the southeast areas bordering on the Kalahari and occasionally in northwest Namibia.

Check the site and the prey remains for signs of a Lion kill.

The tracks: Tracks are very large and very rounded and have a double indentation at the bottom of the main pad. The hind track is narrower than the front track. Female's tracks are smaller and relatively narrower with more slender toes than the male's tracks. There are no claw marks.

Prey size: Mostly medium to large. Lions also scavenge.

Killing bite: On large prey the killing bite is usually on the throat.

Smaller mammals are usually bitten on the nape (back of neck). Some prey animals are grabbed on the muzzle (nose).

Bite width measurement (canine puncture marks): More than 60mm.

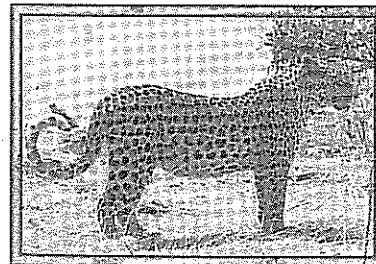
The parts that are eaten on the prey animal: The abdominal area of the animal is eaten including most body organs and skin. ~ The intestine is often eaten after the content (juice) is squeezed out. ~ The inner and outer thighs are eaten. ~ The shoulder and brisket is eaten.

The bones that are chewed: The ribs may be chewed. ~ Large bones are gnawed at but not eaten.

The remains (before other scavengers have eaten from the carcass): The prey animal may be eaten at the kill site but often it is dragged under the shade of a bush or tree to be eaten. ~ The stomach and the intestines are pulled out and buried or covered nearby with sticks or grass. ~ Lower parts of the limbs, the hooves, horns, skin and head are not eaten.

Claw marks on the skin of the prey animal: On the body large claw marks in groups of four are visible, especially on the rump and/or shoulders.

Leopard



Shoulder height: up to 700mm

Adult weight: up to 80kg

Natural diet: Mostly small and medium-size prey, but they can take anything from insects up to Kudu-size prey. Leopards also scavenge.

Breeding: 1-4 cubs are born at any time of the year.

Behaviour: Leopards are solitary except when females are on heat or when 1-3 young move with the mother. They are night hunters but occasionally will hunt in the day. They require cover in which to lie during the day and from which

to hunt at night. They often store their prey up a tree or hidden in a hole for later consumption.

Conflict with small livestock and the young of large livestock is locally common and often near areas where there are rocky outcrops or there is dense cover.

Panthera leo

Panthera pardus

Check the site and the prey remains for signs of a Leopard kill.

The tracks: The tracks are very rounded with a double indentation at the bottom of the main pad (similar to but smaller than Lion tracks). At a walking pace the back tracks may be placed on the front track. Female tracks are smaller and narrower and have longer toe-pads than male tracks. Leopards walk very lightly and tracks are difficult to find on hard ground.

Prey size: Mostly medium-size prey, but small and large prey can be taken.

Killing bite: Usually on the throat, sometimes on the nape (back of the neck), and very seldom on the side of the neck.

Bite width measurement (canine puncture marks): From 40mm to 46mm (see domestic dog).

The parts that are eaten on the prey animal: The inner and/or outer thighs of the back legs are neatly and cleanly eaten (also see Cheetah and Caracal). ~ The ribs are chewed in the chest region and the heart, liver and lungs are eaten (also see Caracal).

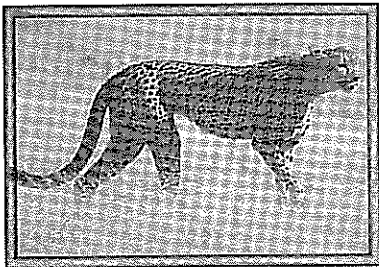
The bones that are chewed: The rib ends are chewed off especially in the thoracic (chest) region (also see Jackal and Cheetah). ~ The long bones are chewed (also see domestic dogs and Hyena species). ~ The hipbone is sometimes chewed on.

The remains (before other scavengers have eaten from the carcass): The carcass is dragged under cover of a bush, into a hole or up into a tree. ~ Prey remains may be covered with grass (also see Caracal) or may be buried. ~ The wool or hair is plucked from the carcass and scattered around (also see Caracal, Brown Hyena and domestic dogs). ~ The remains of small-size prey include only the skeleton, the skin and the stomach and intestines. ~ The stomach and the intestines are removed from the carcass but not ripped nor eaten (also see Caracal and Cheetah).

Claw marks on the skin of the prey animal: Claw marks are short and in groups of four.

Killing of more than one prey animal: Leopards that get into kraals may kill more than one prey animal.

Cheetah



Shoulder height: 600-850mm

Adult weight: 50-60kg

Natural diet: Small to medium-size mammals and birds including antelope, hares, guinea fowl, and bustards.

Breeding: 2-4 cubs are born. There is a high mortality of cubs.

Behaviour: Mostly active in the day especially around sunrise and sunset. They are sometimes nocturnal. Cheetahs may be solitary or occur in pairs or in family groups. One group's home range can be very large and may overlap with other groups.

Conflict with small livestock is localised, but mostly limited to open grasslands and lightly wooded areas.

Check the site and the prey remains for signs of a Cheetah kill.

The tracks: The track shows claw marks. The claw marks differentiate Cheetah tracks from Leopard or Lion tracks. The cat-like double indentation at the bottom of the main pad differentiates the Cheetah track from dog or Hyena tracks. Cheetah tracks are narrower and the spacing between the toes is more even than Hyena tracks. The tracks are also smaller, narrower and more elongated than Lion or Leopard tracks.

Prey size: Mostly medium-size prey, up to 60kg.

Killing bite: On the throat (also see Leopard and Caracal).

Bite width measurement (canine puncture marks): From 33mm, mostly 36mm to 39mm (also see domestic dog).

The parts that are eaten from the prey animal: The meat from the shoulder and forearm is eaten so that the ribcage is showing. ~ The inner and outer thighs of the back legs are cleanly

Acinonyx jubatus

eaten (also see Leopard). ~ The internal organs heart, liver, lungs are often eaten.

The bones that are chewed: The rib-ends are sometimes chewed (also see Caracal and Leopard). No other bones are chewed.

The remains (before scavengers have eaten from the carcass): The carcass is dragged under a bush or tree. ~ The head of the prey animal is not eaten, but it may be crushed. ~ The stomach and intestine are not opened, but are neatly removed from the carcass. ~ In small prey the remains include the head, the stomach and intestines, the skin and the lower parts of the limbs. ~ In medium to large-size prey the skin and the skeleton with the bones still attached to one another remain.

Claw marks on the skin of the prey animal: Single long scratch marks.

Killing of more than one prey animal: Cheetah very seldom kill in excess.

Caracal



Photo: P. Marten

Shoulder height: up to 450mm

Felis caracal

Adult weight: up to 17kg

Natural diet: Rats, mice and other small to medium-size mammals, birds and reptiles.

Breeding: 1-3 kittens are born at any time of the year but usually in the summer months.

Behaviour: Mostly nocturnal but occasionally they hunt by day, especially during cloudy weather. Individuals are solitary and territorial. Caracals do not scavenge and seldom return to leftover prey.

Conflict with livestock is limited to sheep and goats and is especially a problem where jackals have been non-selectively removed.

Check the site and the prey remains for signs of a Caracal kill.

The tracks: The very rounded track has a double indentation on the bottom of the main pad and there are no claw marks. The back track is narrower than the front track. The normal walking stride is 60-80cm and at a walk the back track is placed almost on the front track.

Prey size: Mostly small to medium-size, up to 25kg.

Killing bite: On the throat in medium-size prey (also see Leopard and Cheetah). Often on the nape (back of the neck) in small-size prey.

Bite width measurement (canine puncture marks): From 23mm, mostly 29mm to 32mm.

The parts that are eaten on the prey animal: The thighs (back legs) are usually eaten before the shoulders and brisket are eaten. ~ The meat from the shoulder and forearm of medium-size prey is eaten so that the ribcage is showing (also see Jackal). ~ The inner and outer thighs of the back legs are cleanly eaten (also see Jackal, Cheetah and Leopard). ~ The ribs are chewed away in the chest area and the heart, lungs and liver are eaten (also see Leopard).

The bones that are chewed: The rib ends are neatly chewed away (also see Leopard).

The remains (before other scavengers have eaten from the carcass): The prey remains are covered with grass or other bits of vegetation. ~ The prey remains are dragged under a bush or tree or into a hole (also see Leopard and Cheetah). ~ There is usually little damage on the heads of small and medium-size prey. ~ In small prey the head, the skin, the lower part of the legs, the stomach and the intestines are the only remains (also see Cheetah and Leopard). ~ The stomach and intestines are neatly removed from the carcass and not torn open (also see Cheetah and Leopard). ~ The wool or hair is plucked from the carcass (also see Leopard and domestic dog). ~ The carcass is neatly eaten.

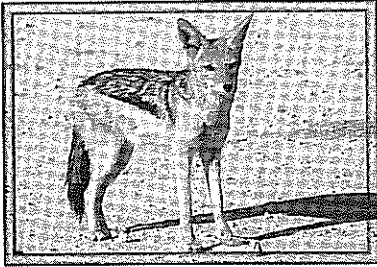
The bones that are chewed: The rib ends are neatly chewed away (also see Leopard).

Claw marks on the skin of the prey animal: Short claw marks in sets of 4 are found on the shoulder, belly or the rump. There may be many sets of claw marks on the carcass.

Killing of more than one prey animal: Caracal very seldom kill more than one animal.

Black-backed Jackal

Canis mesomelas



Shoulder height: up to 400mm

Adult weight: 7-13kg

Natural diet: Rodents and other small mammals including small antelope, also reptiles, insects, gamebirds, eggs, and vegetable matter. They often scavenge.

Breeding: 1-6 pups are born in July to November in holes (dens) in the ground. Usually only 2-3 pups survive.

Behaviour: Mostly nocturnal but sometimes they hunt in the day. Pairs are territorial. The size of a territory depends on the availability of food as well as competition with other

predators and scavengers. Individuals without territories may move hundreds of kilometres.

Conflict is mostly limited to small livestock.

Check the site and the prey remains for signs of a Black-backed Jackal kill.

The tracks: The main pad is large and triangular. The back track is smaller and narrower than the front track. On both tracks the two middle toes extend forward.

Prey size: Commonly under 10kg but can be up to 25kg.

Killing bite: On the side of the neck and cheek and then on the throat. In medium-size prey bite marks may be found on the back legs (also see domestic dog).

Bite width measurement (canine puncture marks): From 19mm to 21mm (also see domestic dog).

The parts that are eaten on the prey animal: The face and muzzle is bitten or eaten (also see domestic dog). ~ The ears are torn or chewed (also see domestic dog and Brown Hyena). ~ The lower jaw is often broken or bitten. ~ The meat of the prey animal is eaten from under the skin and a large skin flap remains. In medium-size prey the front legs are cleanly eaten and pulled away from the carcass so that the ribs are showing (also see Caracal). ~ In small prey most of the carcass is eaten including the head, the neck and the skin. ~ The rib ends are chewed and all the inner organs are eaten. ~ The meat of the back legs are eaten on the inner side and/or outer sides (also see Caracal, Leopard and Cheetah). ~ The back legs and hindquarters of medium to large prey are bitten (also see domestic dogs and Brown Hyena).

The bones that are chewed: The rib ends are chewed (also see Leopard and Cheetah).

The remains (before other scavengers have eaten from the carcass): In small prey only the front legs remain. ~ The stomach and intestine are torn open and partly eaten or thrown about near the carcass (also see domestic dogs and Brown Hyena). ~ In medium-size prey the front legs are pulled away from the carcass so that the ribs are showing (also see Caracal).

Claw marks on the skin of the prey animal: None.

Side Striped Jackal

Canis adustus



Shoulder height: up to 400mm

Adult weight: 7-12kg

Natural diet: They take a wide variety of food items, including rodents and other small mammals, reptiles, insects, termites, birds, eggs and wild fruit. They readily scavenge.

Breeding: 4 to 6 pups are born in summer in holes (dens) in the ground. Only 2-3 pups usually survive.

Behaviour: Mostly nocturnal but may be seen in the early mornings and late afternoons. They prefer thickets and woodland habitat, the Black-backed Jackal prefers open

savannah plains. They are usually solitary, but can be seen in pairs or family groups. Side Striped Jackal is only found in the Caprivi and the far northeastern areas of Namibia.

Check the site and the prey remains for signs of a Side Striped Jackal kill.

Conflict reports are of very young lambs being predated on. No actual predation has been recorded in Namibia.

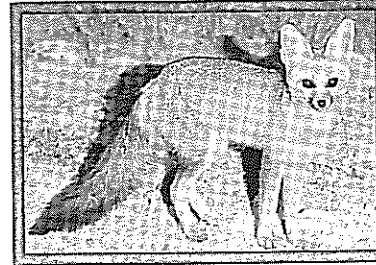
The tracks: Almost identical to Black-backed Jackal tracks and can be confused with small to medium-size domestic dogs.

Prey size: Newborn and very young lambs, though these may be only scavenged on.

Bite width measurement (canine puncture marks): From 19mm to 20mm.

Silver Fox (Cape Fox)

Vulpes chama



Shoulder height: up to 350mm

Adult weight: up to 3.5kg

Natural diet: Mostly insects, also rodents, small reptiles, eggs, carrion and small amounts of vegetable matter.

Breeding: 1-4 pups are born in spring in holes (dens) in the ground.

Behaviour: Mostly active at night and usually alone or in pairs. During the day they rest in holes in the ground or in dense thickets. They prefer open areas of short grassland, overgrazed veld and semi-arid areas.

Conflict is occasionally reported with newborn lambs.

Check the site and the prey remains for signs of a Silver Fox kill.

The tracks: Tracks have a pointed look. The middle toes extend forward and are very close together. There is a lot of hair growth between the pads, which can be seen on tracks that are in sandy or silt substrate. Fox tracks can be confused with Jackal tracks, but fox tracks are shorter and narrower.

Prey size: Newborn or very young lambs. (These may only be scavenged on).

Killing bite: The back of the neck or the lower part of the back.

Bite width measurement (canine puncture marks): From 14mm to 16mm.

The parts that are eaten on the prey animal: The abdominal area is opened first and all internal organs are eaten. ~ The meat from the upper thighs is eaten.

The remains (before other scavengers have eaten from the carcass): The skin, head and lower limbs remain, but the Silver Fox will return to the carcass site often.

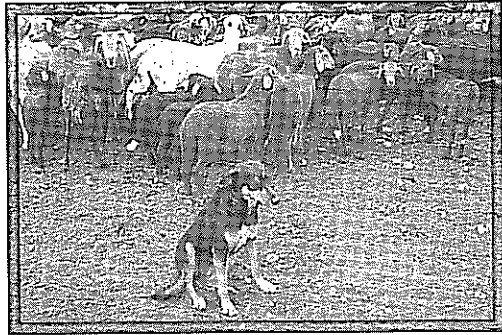
Claw marks on the skin of the prey animal: None.

<p>African Wild Dog</p> <p>(W) 56-65mm (L) 75-80mm</p> <p>RF RH</p>	<p>Domestic Dog</p> <p>Dog tracks are totally variable in size</p>	<p>Brown Hyena</p> <p>85mm (L)</p> <p>66mm (L)</p> <p>RF RH</p>	<p>Spotted Hyena</p> <p>(W) 89mm (L) 92-105mm</p> <p>Slightly narrower & longer than front</p> <p>RF RH</p>	<p>People</p>	<p>African Wild Cat</p> <p>(W) 30-35mm (L) 30-35mm</p> <p>RF RH</p>
<p>Lion</p> <p>(W) 110-130mm (L) 90-120mm</p> <p>Slightly narrower than front</p> <p>RF RH</p>	<p>Leopard</p> <p>(W) 65-90mm (L) 65-90mm</p> <p>(W) 60-80mm (L) 80-100mm</p> <p>RF RH</p>	<p>Cheetah</p> <p>(W) 75mm (L) 85mm</p> <p>Slightly narrower & longer than front</p> <p>RF RH</p>	<p>Caracal</p> <p>(W) 50-55mm (L) 50-55mm</p> <p>(W) 42-48mm (L) 45-50mm</p> <p>RF RH</p>	<p>Black-backed Jackal / Side Striped Jackal</p> <p>(W) 40mm (L) 54mm</p> <p>(W) 32mm (L) 43mm</p> <p>RF RH</p>	<p>Silver Fox</p> <p>(L) 38-40mm</p> <p>Slightly narrower than front</p> <p>RF RH</p>

INCREASING PROTECTION FOR LIVESTOCK

Guard dogs

Dogs can be used to guard small and large livestock as well as mixed herds. Worldwide there are over 40 breeds of livestock guard dogs. Large dogs can be effective against predators as large as cheetahs or hyenas. Medium-sized dogs are traditionally used in Africa. All dogs are most effective when they work together with a herder.

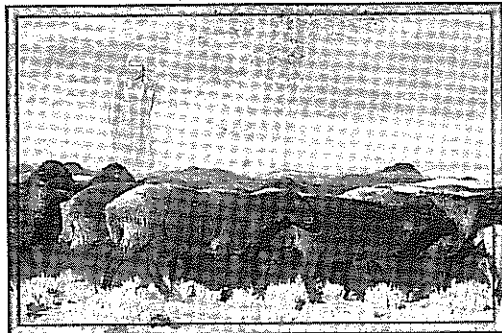


Advantages of guard dogs:

- ~ Many predators are chased away.
- ~ Dogs can work reasonably independently.
- ~ Very little formal training of the dog is needed because protective behavior is instinctive.
- ~ Dogs alert herders to predators as well as to other disturbances.

In Namibia the Anatolian Shepherd, a large Turkish guard dog, is bred by the Cheetah Conservation Fund (CCF). Farmers who use Anatolian guard dogs report up to a 76% reduction in conflicts between cheetahs and livestock. Contact CCF for information on the Anatolian Shepherd guard dogs as well as general information on using dogs for guarding livestock (see the contacts page).

The herder



Advantages of a herder:

- ~ A well-trained and motivated herder can recognise potential problems before they occur.
- ~ A herder increases the value of a guard dog because the dog is under supervision and has help when problems occur.
- ~ Offering employment opportunities improves socio/economic development in Namibia.

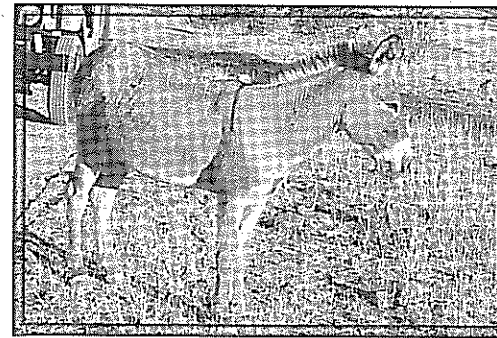
Disadvantages of a herder:

- ~ Salary and housing expenses.
- ~ Employees need training and motivation.

Disadvantages of guard dogs:

- ~ No matter what the breed, not all dogs will become good guard dogs.
- ~ A few months may be needed to bond the dog to its herd.
- ~ Guard dogs should be raised with the livestock from the age of 8-12 weeks.
- ~ More than one dog will be needed if the camps are large and the livestock is scattered.
- ~ Working dogs need good nutrition and must be fed every day. Large dogs are expensive to feed.
- ~ Dogs need external parasite control for ticks, and internal parasite control for roundworm, hookworm and tapeworm.
- ~ Vaccinations for distemper, parvo-virus and rabies need to be kept up to date.
- ~ Dogs should be checked daily for any injuries.
- ~ Dogs cannot always deter predators.
- ~ Some dogs become predators of the livestock and of game animals.

Guard donkeys



Donkey stallions, geldings or mares have proved themselves as livestock guards. A donkey mare with a foal is the most protective, a stallion may become too aggressive. No more than two donkeys should be used per herd in a camp. For small stock it is best to raise the donkey from a young age with the livestock. Adult donkeys can be put with large livestock and will bond to their herd in 1-2 months.

Disadvantages of guard donkeys:

- ~ Not every donkey is good for guarding.
- ~ A few months are needed to bond an adult donkey with the herd.
- ~ Donkeys sometimes become aggressive toward young stock animals.
- ~ Donkeys need treatment for internal and external parasites. (Deworming products used for cattle and sheep or goats should not be used for donkeys).

Advantages of guard donkeys:

- ~ Many predators, including large predators, are chased away.
- ~ These animals can work independently.
- ~ Donkeys graze with the herd or flock and do not need extra feeding.
- ~ Donkey herds that are kept in camps bordering on the livestock camps form a buffer.

Two farmers who successfully use guard donkeys can be contacted for more information. Mr. Derick van Wyk is a large stock farmer in the Otjozondjupa region, and Mr. Gunther Friederich is a large and small stock farmer in the Oshikoto region (see contacts page).

Frightening devices using sounds, smells and lights

Any unusual sounds, smells or light will frighten predators away.

Advantages of lights, smells and sounds:

- ~ Lights and noises will frighten wild predators and are useful for short-term around calf and lamb camps at night.
- ~ Farmers can be creative in designing sound, smell or light devices.

Disadvantages of lights, smells and sounds:

- ~ The patterns of lights and sounds need to be changed frequently or predators will get used to them.
- ~ Lights and noise may not work against domestic dogs.
- ~ Batteries, lights, radios and other movable equipment are expensive and can attract human thieves.

Stockholm Tar - smell

Stockholm Tar has a strong smell that mammalian predators will avoid. It can be painted around the neck of sheep or goats in a 20-25cm band.

Advantages of Stockholm Tar:

- ~ Stockholm Tar is readily available and reasonably priced.

Disadvantages of Stockholm Tar:

- ~ The smell only lasts for about 10 days.
- ~ Painting the tar onto the livestock is labour intensive.
- ~ There will be some staining of the wool or hair.

Scent blocks - smell

Most predators have a highly developed sense of smell. A strange smell around livestock will frighten predators away. Scent blocks are commercially available.

Advantages of Scent blocks:

- ~ The Scent block lasts for at least two months.
- ~ The blocks are reasonably priced.

Disadvantages of Scent blocks:

- ~ The block must be attached to a collar.

Bell collars - sound

Bell collars are marketed in Namibia under the brand name PAL (Protect A Lamb). They come in two sizes on a non-adjustable collar. Other bells without collars are commercially available or bell collars can be made at home using small tins.



Photo: L. Komien

Advantages of Bell collars:

- ~ Only a few animals in the flock need the bell collar.
- ~ They are reusable from season to season.
- ~ They can be fitted in less than one minute per animal.
- ~ Bell collars do not interfere with suckling and grazing.
- ~ Little skill is required in fitting the collars.
- ~ The collars are reasonably priced.

Disadvantages of Bell collars:

- ~ Bells are a short-term deterrent as the predators soon get used to the sound.
- ~ Predators may learn to use the sound of the bell to find the livestock.

Protection collars for small livestock - goats and sheep

The *King Collar* is a re-usable, plastic protection collar for small livestock. Farmers who use protection collars report a 90%-100% success against Jackal attacks and 65% success against Caracal attacks. The collar covers the nerves in the cheeks (the jackals paralysing bite) and protects the throat and the trachea (windpipe) from being closed off. Over 17 000 collars are in use in South Africa. *Contact the "King Collar" company for more details (see contacts page).*

Advantages of protection collars:

- ~ They have a lifespan of at least 5 years and are re-usable from season to season.
- ~ They can be fitted in less than 1 minute per animal.
- ~ They come in two sizes, an adult collar and an adjustable lamb collar.
- ~ They are non-irritant, allow moisture to be released and do not damage wool or hair.
- ~ They do not interfere with suckling and grazing.
- ~ Little skill is required in fitting the collars.
- ~ The collars are reasonably priced.

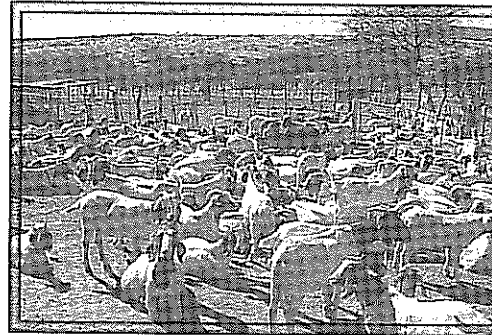


Photo: King Collar

Disadvantages of protection collars:

- ~ Collars are labour intensive; young lambs need the collars checked at about 3 week intervals and weaned lambs need the collars checked about every 3 months.
- ~ Collars can cause unusual killing patterns by determined predators.

Fencing



Advantages of fences and kraals:

- ~ Fences are effective in keeping most predators away from livestock.
- ~ Fences must be checked and this improves management by forcing continuous movement and observation around the farm.

Predator-proof fences are effective protection for livestock. The majority of livestock deaths caused by predators occur when cattle or sheep are under three months of age. Fencing of young livestock, especially at night, will prevent many problems with predators. Many types of fences, from traditional brush to electric fences, are available.

Disadvantages of fences and kraals:

- ~ Material, installation and maintenance costs of fences are high.
- ~ Animal husbandry costs increase with intensive farming methods.
- ~ Electric fences can kill small non-target animals.
- ~ Predators that get into small fenced areas may respond by surplus killing (killing more than one animal).

Whom to contact if you have trapped a large predator

Organisations that work with large predators are aware of the economic losses incurred on livestock farms because of predators. They have knowledge of and experience with predators and they can often help farmers with advice on predator management. (See the contacts page for a list of organisations working with large predators.)

Whom to contact if you have trapped or poisoned a bird of prey

Vultures are specialist scavengers, but many other birds of prey also scavenge. Birds hunt for food from the air and any traps set with bait or any poisoned bait that can be seen from above will attract scavenging birds. Cage traps, gin-traps and poison bait must be set out of sight of birds. Contact NARREC for help with any trapped or poisoned birds. (See the contacts page).



Whom to contact if you are losing livestock to a snake

Pythons are the only reptile species that can predate on small livestock. Contact your local Ministry of Environment and Tourism office for assistance with removing a python that is causing livestock losses.



PREDATOR MANAGEMENT AND REMOVAL METHODS

A cost analysis for predator management

Selective predator management targets and removes the individual predator that is killing livestock.

It is effective because predator management is measured by a reduction in livestock loss to predators and not by the numbers of predators killed.

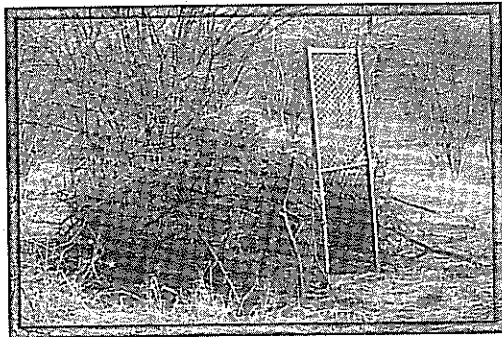
Avoid non-selective and ecologically destructive methods of predator removal

Leg-hold traps, poison use and uncontrolled hunting with dogs are methods that often kill non-target animals. They are non-selective and must be used with great care.

Credit	Debit
<ul style="list-style-type: none">~ Livestock killer is selected and removed.~ No damage to the ecology.~ A predator/natural prey balance is maintained.~ A predator/predator species balance is maintained.~ Increase in livestock production.	<ul style="list-style-type: none">~ Time, labour and materials.~ Ecological damage - non-target animals are killed.~ Increase in prey animals that are pests.~ Increase in available territories for predators.~ Livestock deaths continue.

PREDATOR REMOVAL METHODS

Cage traps



- ~ Traps must be set on or next to the path that is used by the predator, or alongside places that the predator uses for marking its territory.
- ~ Do not leave human scents in the area.
- ~ Cover the cage with cut bush so that the entrance to the trap is the obvious route to the bait and the trap remains shaded.
- ~ Set the trap securely on the ground so that it does not rock or move.
- ~ Cover the steel trigger plate with a light layer of soil.
- ~ Drag a scent lure (see page 20) from different directions, 25 metres to and from the trap.

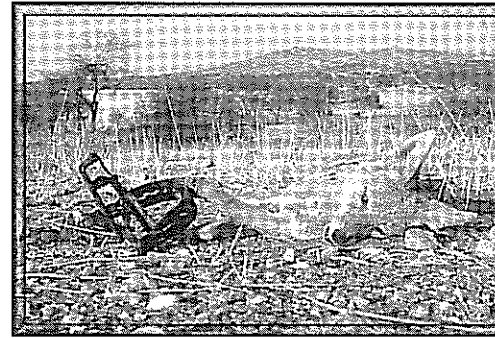
Advantages of cage traps:

- ~ Cage traps do not usually damage the animal that is trapped.
- ~ After trapping an animal, a decision can be taken to humanely kill or to release the animal.

Disadvantages of cage traps:

- ~ Cage traps are expensive and require maintenance.
- ~ Trapping requires knowledge of predators and skills in trap-setting.
- ~ Scent lures are useful for cage trapping and must be prepared.
- ~ Traps must be checked often.
- ~ Non-target species including birds of prey are often trapped.
- ~ **Cage traps are not successful for Jackal species.**

Leg-hold traps, jaw-traps, gin-traps, *slagysters*



This method very often traps non-target animals that have nothing to do with livestock losses.

Traps should only be set immediately after a livestock animal is predated on and only at the site of the predation.

Leg-hold traps do not kill an animal directly but the damage done to the trapped animal usually results in the animal having to be killed.

Padding the "jaws" of a leg-hold trap can prevent some of the injury caused by leg-hold traps.

Disadvantages of leg-hold traps:

- ~ Leg-hold traps inflict terrible pain on the trapped animal.
- ~ Leg-hold traps are often non-selective and many non-target animals are caught.

- ~ Leg-hold traps require knowledge and skill to set correctly.
- ~ The traps must be removed from a site if they have not trapped the target animal within 24 hours.

Poison collars

Poison collars are manufactured for small livestock and are predator specific. The collar has three pouches that are filled with enough poison to kill a medium-size mammal. The "old" collars caused many non-target deaths of scavengers. The *National Wool Growers Association* and the *Poison Working Group* are currently testing "new" poison collars in South Africa.

Advantages of poison collars:

- ~ Poison collars are specific for a predator that is killing livestock with a neck bite.
- ~ Only a few animals in the flock need to be collared.

Disadvantages of poison collars:

- ~ Poison collars are reasonably expensive.
- ~ The management of livestock needs to become more intensive.
- ~ The livestock camp must be carefully checked to retrieve the dead predator.

Denning



The den of an individual predator is located and the young ones are removed and killed.

Advantage of denning:

- ~ Denning allows the territorial adults of a species to remain in the area but limits an increase in that predator's population size.

Disadvantages of denning:

- ~ Denning can be ecologically unsound if the farmer does not have sufficient knowledge of the ecological balance of the land.
- ~ Denning is time consuming and is an unpleasant experience.

Shooting/hunting

Shooting is often an opportunistic event - the hunter needs to be there at the right time. Observation and knowledge of predators can improve the chances of selective predator removal by shooting. In order to be selective, baiting for predators is best done as soon as possible and close to the site where the livestock was killed.

Advantages of hunting:

- ~ A single and specific animal is selected and tracked.
- ~ Shooting is cheap and humane.
- ~ Hunting can generate income. Contact NAPHA (see contacts page).

Disadvantages of hunting:

- ~ Hunting is time consuming.
- ~ Knowledge and skill is needed to select the right predator.
- ~ In order to be income generating, hunting and game products from hunts require permits. Contact the Ministry of Environment and Tourism (see contacts page)

Hunting with dogs



Advantages of hunting with dogs:

- ~ Dogs are good trackers.

Disadvantages of hunting with dogs:

- ~ Hunting dogs are sometimes not selective and hunt non-target species and individuals.
- ~ Hunting dogs can become problem animals if they are not kept under strict control.
- ~ Dog packs are expensive to maintain.

Poison

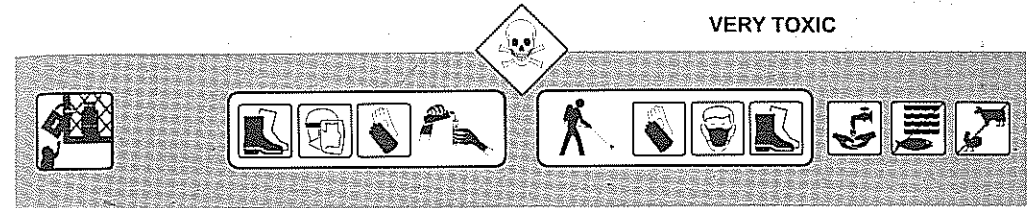
The preparation and safe use of poison is described on page 19.

BASIC ETHICS for predator removal

- ~ Check all predator removal sites and equipment every day.
- ~ Keep a record of the predators removed from your farm, the removal dates and the methods.
- ~ Remove any uneaten poison that is put in the veld. (Baits can be carefully wrapped and stored in a very safe and cool place).
- ~ Poisoned carcasses if not handed to a scientific institution should be burned or buried under lime in a hole 1 metre deep.
- ~ As science evolves, scientists are re-looking at things in our world. Even when an animal is dead it can provide useful information for science. Any dead birds of prey should be given to the national bio-diversity collection at the State Museum of Namibia. Please report dead birds (especially birds of prey) to your local Ministry of Environment and Tourism or contact NARREC.

POISON

*Poisons are chemicals that can easily be used as "Weapons of Mass Destruction".
Be Prepared - Be Responsible - Read the label*



VERY TOXIC

National co-operation for responsible poison use

- ~ Never use poison on a whole carcass or on large slabs of meat.
- ~ Never put poison along neighbours fence lines or in holes under fences.
- ~ Never put poison out at random in the veld.
- ~ Never put poison at watering places because many non-target species use the area.
- ~ Never put poison near kraals or homesteads.
- ~ Never use a poison that is not registered for predator control.
- ~ Never put poison baits out at a time of day when your target animal is not hunting.
- ~ Never leave poison baits in the veld without checking daily.

Poison spreads through the food chain. Depending on the type and amount of poison in the animal that eats the poison - the primary victim, secondary and even tertiary poisoning of scavenging birds and mammals can occur. Contact the Poison Working Group for more information (see contacts page).

Before using poison for predator removal:

- ~ Look at the "tool-kit" of veld, livestock and predator management.
- ~ Know how to prepare a Single Lethal Dose (SLD).
- ~ Know your target animal and how and where to place bait for that animal.

Safe and responsible use of poisons minimises the danger to people and to the environment.

Storage: All poisons/chemicals must be locked away.

Chemical storage containers must be clearly labelled with a name, the registered use, the expiry date and the dosage.

Handling: Use protective clothing when handling poison.

Wash your hands and all equipment after handling poisons.

Application: Only use poison for predators as a **SINGLE LETHAL DOSE**.

Checks and Retrieval: Poison bait sites must be checked daily. Any uneaten bait or any animal that has died from eating poison-bait must be taken out of the veld as soon as possible.

Record keeping: Keep a record of all poison use.

Date	Type of Poison	Amount per Bait	Number of Baits	Placement of Baits	Animals Killed
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The policy and the law on poison use

Farmers, other professional groups and government agencies continue to look at the policy and legislation concerning poison for predators.

Strychnine is currently the only legal poison for lethal predator management.

Farmers are responsible for the safe, selective and effective use of the product.

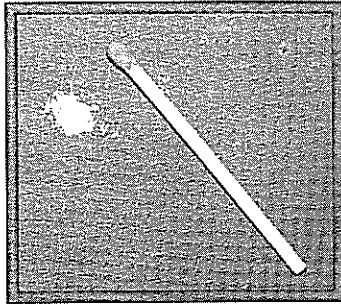
Never use a poison for a job that it is not registered for.

The Single Lethal Dose (SLD) is one measured dose of poison that kills only one animal.

Farmers are asked to co-operate by using only the legal substance (strychnine) and by using that substance in the least harmful way, as a SINGLE LETHAL DOSE.

Making the Single Lethal Dose (SLD)

Strychnine is the only legal poison for predator control. Strychnine is very bitter and needs to be hidden in fat that is then rolled into the bait.



Medium-size predators such as Jackal or Caracal will be killed by 45mg of strychnine.

45mg = 1 Single Lethal Dose (SLD). A half a match head of strychnine powder, or the cap of a BB gun filled, or the tip of the blade of a sharp knife can roughly measure 45mg.

Large predators are killed by 140-180mg of strychnine powder.

Put the measured dose into a piece of fat. Then roll the fat into a teaspoon size amount of bait.

Making the scent lure and the bait for a Single Lethal Dose:

The scent lure and the bait are made with the same basic ingredients: high smelling rotten minced meat or body organs, blood, fat and fishmeal. **The scent lure has no poison in it.**

Sheep or cattle manure can also be used as a scent lure to lure the predator to the bait.

The lure and the bait must be predator specific. The basic rule is sheep meat for sheep killers and beef for cattle killers. The scent lure must be dragged 25 metres to and from the bait site in all directions.

Using a Single Lethal Dose (SLD)

- ~ Identify the specific individual livestock killer.
- ~ Identify the bait site by knowing about the selected predator and its movements. Predators that also scavenge often return to the site where the kill was made.
- ~ Drag a scent lure to the poison bait site.
- ~ Use no more than two poison baits for a predator.
- ~ Hide the poison bait under a stone or under soil to avoid birds from picking up the bait from the ground, or
- ~ Hang the bait from a pole out of reach of small non-target mammals that find food by smell.
- ~ Always alert neighbouring farmers when poison is used.
- ~ Pick up unused poison bait and any poisoned predators from the veld as soon as possible.

Advantages of Single Lethal Dose:

- ~ Care is taken to identify and kill a specific livestock predator.
- ~ There is less chance of secondary poisoning of wildlife.

Disadvantages of Single Lethal Dose:

- ~ Correctly weighing milligrams of a substance is not easy.
- ~ SLDs are not currently commercially available and must be prepared by the farmer.
- ~ SLDs can cause secondary poisoning. Even with a SLD, the carcass of the poisoned animal needs to be removed from the veld before it causes further poisonings.
- ~ Non-target animals: the wrong animal or even the wrong species can pick up SLDs.

CONTACTS

NARREC (Namibia Animal Rehabilitation Research and Education Centre) for further information on the contents of this booklet

Liz Komen
Tel: (061) 264409 or (061) 264256
Cell: (081) 129 0565
E-mail: liz@narrec.schoolnet.na

PWG (Poison Working Group) and PWG Namibia (see NARREC) for information on poison use
Dr Gerhard Verdoorn
Tel: (0027 11) 4861157

E-mail: pwg@ewt.org.za

CCF (Cheetah Conservation Fund) for information on Anatolian Shephard guard dogs and on any cheetah related queries

Mandy Schumann
Tel: (067) 306225
Bonnie Schumann
E-mail: cheeta@iafrica.com.na

King Collar for information on the purchase and use of protection collars for small livestock

Larry King
Tel: (0027 45) 846 9155

Gray King
Tel: (0027 46) 685 0645

E-mail: larryking@cybertrade.co.za or sking@eastcape.net

Mr Günther Friederich for information on guard donkeys

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Mr Derick van Wyk for information on guard donkeys

Farm Paradys
Tel: (067) 232302

EEL (Etosha Ecological Institute) for information and reports on predators and predator problems on the Etosha boundaries

Shane Kötting
Tel: (067) 229854

Birgit Kötting
E-mail: eei.staff@mweb.com.na

Africat for information on leopard and cheetah

Carla Conradie
Tel: (067) 304566

Dave Houghton
E-mail: africat@natron.net

Afrileo for information on lions on the Etosha boundaries

Tammy Hoth
Tel: (067) 330221

E-mail: afrileo@iway.na

Harnas for information on wild dogs and other predators

Marlice van Vuuren
Tel: (061) 237304

E-mail: harnas@mweb.com.na

Okatumba Wildlife Research for information on hyena, leopard and cheetah

Harald & Birgit Förster
Cell: (081) 124 0103

E-mail: okatumba@namibnet.com

Predator Conservation Trust for information on large predators

Dr Flip Stander
Cell: (081) 129 0501

Lise Hanssen
Cell: (081) 129 4060

E-mail: info@predatortrust.org

Rest (Rare and Endangered Species Trust) for information on vultures and poison-use

Maria Diekmann
Tel: (067) 306226

E-mail: awt@iafrica.com.na

Napha (Namibia Professional Hunters Association) for information on hunting of predators

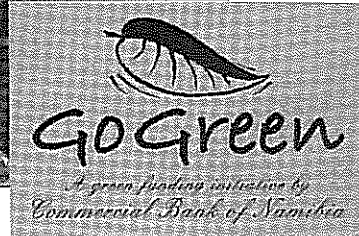
Tel: (061) 234455

E-mail: napha@mweb.com.na

MET (Ministry of Environment and Tourism) for information on all permit requirements

The permit office

Tel: (061) 263131



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