PREDATION MANAGEMENT MANUAL

The farmer's one-stop guide to identifying and managing predators

by

THE PREDATION MANAGEMENT FORUM

PMF
Predation management forum

in collaboration with

Western Cape Government
Agriculture
BETTER TOGETHER.

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Climate Change Challenge

The effect of climate change on agriculture in the Western Cape will be one of the major determinants of the sustainability of this sector and the competitiveness of its farmers. The Department will therefore not only focus its research efforts on high output low input production practises, but will also actively focus and pursue agricultural practices that will lead to adaptation and mitigation of climate change.

The service delivery agenda of the Department will therefore in future also include decision making support with relation to the choice of farming activity, the optimal use of natural resources, the promotion of conservation, agricultural practises and more efficient use of water, by both commercial and small holder farmers. This will be all in an effort to increase agricultural production in a sustainable and profitable way.

Importance of Research

Research and technology development is pivotal to the sustainability and profitability of the agricultural sector, especially since our farmers are producing in the global context with a new playing field and many new rules and regulations. Competitiveness is key to our agricultural successes, especially in the context of increased exports and foreign income. The Department of Agriculture Western Cape is committed to supporting our farmers with cutting edge technology, researched and developed by its group of experts in a wide range of disciplines. The research capacity of the Department also includes three research institutes and seven research farms.

Importance of Training

Adequately skilled people is critical for sustainable development. The multitude of challenges we face can only be resolved if people have an appropriate knowledge and skills base. Education and training also has a direct effect on economic development and societal well-being at large. Training also contributes significantly to employee satisfaction which in turn, contributes to increased profitability of the business.

Knowledge is power and opens doors to many opportunities.

Importance of Development

Agricultural Development is a non-negotiable imperative for spurring growth, overcoming poverty and enhancing Food Security. Furthermore, agricultural productivity growth is vital for stimulating growth in other parts of the economy. With rising production costs, water scarcity and the added pressure of a globalising world, the future of agriculture is tied to better stewardship of natural resources. Lastly, agricultural development is of enormous importance for local food production and livelihoods. (World Development Report: World Bank, 2008)

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PREFACE

Predation problems have been with us for many years and remain a challenge. Predators such as black-backed jackal and caracal cost South Africa in the region of R2 billion a year, leading to farmers moving away from livestock farming.

The livestock industries have established the Predation Management Forum (PMF) as a representative structure in organised agriculture's management of wildlife-human conflict. Through the forum the role players liaise and cooperate to develop solutions and preventive measures to manage predation effectively.

In seeking solutions, the PMF has always been committed to establishing sustainable long-term strategies for predation management, based on scientific facts rather than emotional conjecture.

Earlier this year, the funding contract for a scientific assessment on predation-related matters by the Nelson Mandela Metropolitan University was concluded. This study aims to conduct strategically determined research, taking into account the problems and needs of the livestock industry, the various environmental requirements and research needs. This will include the role of Sanparks and its impact on livestock farming.

The assessment is scheduled to be concluded in 2018 and the outcome of the assessment will provide sound, science-based guidelines to mitigate problems caused by predation, especially by black-backed jackal and caracal.

In order to have any chance of achieving success, farmers, farm managers, farm workers and neighbours need to make an effort to understand nature's processes and know the movements of predators on the farm. Government also needs to determine how they can support producers.

Integrated predation management, that includes preventive and remedial control methods, is important and one must take note of all legal methods to achieve success.

Results on the monitored farms of Niel Viljoen, where best-practice predation management is demonstrated, testify to the success of this approach. However, as maintenance of fences remains the most important issue, negotiation for subsidised fencing will remain a high priority. It is hoped the findings of the scientific assessment will help convince Government of its important role in this regard.

Since 2008 a total of 30 farms have been monitored, covering an area of 156 188 ha. Statistics and data obtained from the monitored farms show that integrated predation management results in a significant decrease in predation losses.

This manual is a culmination of the work done by the PMF, its expert advisers, Dr Gerhard Verdoorn and Niel Viljoen, and the secretariat. I also want to thank our predecessors for the vision and work to initiate this process. I trust that this manual will empower every livestock owner with the necessary knowledge to act responsibly by applying the best practices available in order to reduce losses and increase profitability.

Guillau du Toit
Chairman: Predation Management Forum

CONTENTS

ACKNOWLEDGEMENTS

This project is an initiative of the Predation Management Forum (PMF) and I wish to thank the chairman, Guillau du Toit, members of the PMF and its secretariat, as well as Leon de Beer of the National Wool Growers' Association for their support, assistance and advice during the compilation of this manual.

The contributions and editorial comments of my collaborators – Niel Viljoen and Dr Gerhard Verdoorn – are gratefully acknowledged. This manual is dedicated to them for their continuous work in the livestock industries towards integrated predation management.

I acknowledge the various specialists whose work and input have made this manual possible. I greatly appreciate the input from CapeNature who assisted me with relevant information from their resources.

Chris and Mathilde Stuart and Random House Struik generously provided all the spoor diagrams, without which this manual would not be complete.

Last but not least, I am indebted to the member organisations of the PMF – the National Wool Growers' Association, the Red Meat Producers' Organisation, the South African Mohair Growers' Association and Wildlife Ranching South Africa – and all the other sponsors for their generous contributions to the production of the manual.

Karen Grobler
Editor

INTRODUCTION

Agricultural communities have been trying to manage the animals causing damage to their game and livestock herds for centuries. Despite every attempt damage is still being caused regularly. In Southern Africa various species have long been classified as "problem animals". This has resulted in large numbers of animals being killed relentlessly.

Nowadays livestock producers have been thinking about predators in new ways. The idea is to manage predation instead of managing the predators. This is an excellent starting point because research has proven time and again that the non-selective killing of jackal and caracal mostly do not decrease predation. Instead, various methods need to be integrated with one another in order to fight predation.

The Predation Management Forum (PMF) is an initiative of the National Wool Growers' Association (NWGA), the Red Meat Producers' Organisation (RPO), the Mohair Growers' Association (Samga) and Wildlife Ranching South Africa (WRSA), whose aim is to assist producers with ecologically compatible predation management methods. This is why the PMF has, since its establishment, upheld the principle of integrated predation management. This means that every aspect of ecological management, herd management, prevention and remedial measures needs to be integrated with a view to bringing predator damage to an acceptable level.

In addition to its participation in the PMF the NWGA employs a predation specialist, Niel Viljoen, who provides training in integrated predation management. In the regions where he has trained small livestock producers there has been a drastic decrease in predation.

Integrated predation management not only focuses on the management of predators, but also on healthy livestock and game management, as well as the prevention of predation by putting up proper fencing and other defensive and deterrent techniques. A single technique alone cannot resolve the problem of predation, but integrated techniques can only benefit the farmer.

It makes no sense to try and fight predation if the situation has not been identified 100% correctly. If not, the control measures focus on the wrong animal. It is often very difficult for a producer to determine which animal has caused the damage. However, there are a number of indications to look out for such as bite marks, bone damage, feeding patterns, tracks, tufts of hair as well as locality, to mention just a few.

This manual is a one-stop guide to help producers identify the problem of predators on their farms, as well as the best method to manage human-wildlife conflict, within the framework of provincial and national legislation. The solution is to have a variety of methods available - a toolbox of management tools.

1 THE PREDATION MANAGEMENT FORUM

1.1 ABOUT THE PMF

The Predation Management Forum (PMF) was established in 2009 and represents livestock farmers and game ranchers. It coordinates the activities of the organised livestock and game-ranching sectors that strive to reduce losses from predation. The National Wool Growers' Association (NWGA) manages and coordinates the functions of the PMF.

To protect the biodiversity of South Africa, the PMF promotes ecologically and ethically acceptable methods of predation management. It aims to provide guidelines to manage predation in the most humane and environmentally sustainable manner. Producers want to manage wildlife rather than harm it.

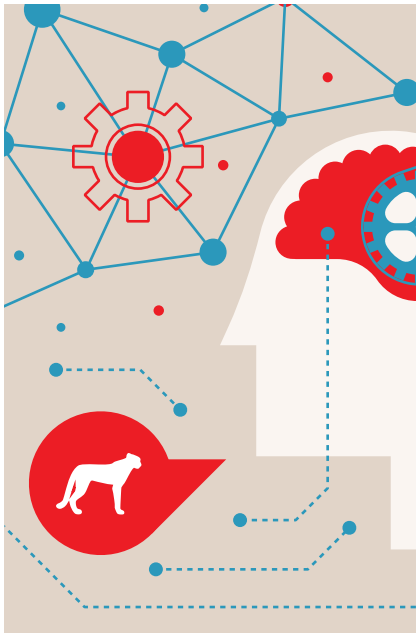
MEMBER ORGANISATIONS:

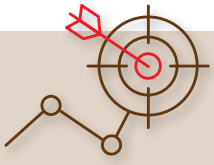
National Wool Growers' Association (NWGA)

Red Meat Producers' Association (RPO)

South African Mohair Growers' Association (Samga)

Wildlife Ranching South Africa (WRSA).





The PMF strives to:

- encourage sensible, production-friendly legislation for predation management;
- empower livestock producers and wildlife ranchers to deal with predation management effectively;
- share an understanding of the predation management challenge and the proposed coordinated approach with role players;
- inform consumers about predation management;
- coordinate predation management support services, partly funded by government, which oversees strategies and endorses the collective set of principles, concepts and knowledge about predation and its management; and
- protect the biodiversity of our environment.

The PMF has identified four strategic drivers to guide the organisation in the following years.

1. Expand the scientific knowledge base on predation management.

- Work closely with credible research partners to expand the knowledge base on predation management through research projects.
- Collate existing data/information that may be relevant.
- Establish a partnership with a credible organisation to host and maintain the institutional memory on predation management in South Africa.

2. Create an environment for producers to manage predation effectively and responsibly in support of economical livestock production.

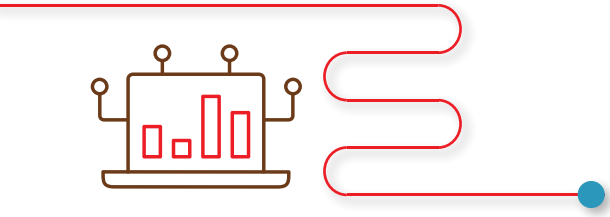
- Enhance accessibility to training.
- Identify, evaluate and list credible predation management agents.
- Ensure the annual update and publication of a predation management best practices manual.
- Actively promote the exclusive use of internationally approved predation management instruments in South Africa.

3. Establish a partnership with government aimed at implementing shared strategies in support of predation management.

- Gain access to and establish rapport with top-level government officials and politicians.
- Continue to influence legislation in support of sustainable, economic livestock production.
- Promote government presence at all meetings and forums of the PMF.
- Develop the competence of extension officers regarding predation management.

4. Implement a communication strategy in support of the mandate.
   - Produce a DVD about predation management in livestock farming and use it to promote responsible predation management.
   - Establish and maintain an active website with information on PMF activities and information.
   - Run annual campaigns to educate the public and consumers about predation management.
   - Promote the code of best practices for livestock production and ensure producer commitment to the code.
   - Continuously communicate with producers.

Use the website



The PMF launched a website designed to provide a wide spectrum of information relating to those predators that cause damage to livestock farmers. The website aims to guide producers to integrated predation management.

The visuals on the website are aimed at the correct diagnosis and therapy. This will enable producers to identify which species killed or maimed their livestock and apply humane, environmentally compatible remediation (therapy). A significant degree of negative effects from predation management emanates from the incorrect diagnosis of species.

EDUCATING CONSUMERS

The PMF also aims to educate consumers that livestock producers approach predation management in a responsible, scientific and sustainable manner.

Visit the PMF's website at **www.pmfsa.co.za** or scan this tag to access the website and subscribe to receive the PMF's monthly newsletter packed with relevant information and news.

1.2 CODE OF BEST PRACTICES

Livestock farmers have a constitutional right and responsibility to take care of their animals and to protect them from all potential threats such as extreme weather conditions, as well as theft and predators. For the best results, everything possible should be done to manage unwanted predators in a

- socially acceptable
- economically viable
- ecologically reconcilable, and
- legitimate manner.

It is essential to ensure clear identification of predators responsible for livestock losses

and knowledge of sensible predation management measures. Standards for management of measures are described in the *Best Practices for Managing Predation in South Africa*.

Scan this QR code for the complete *Best Practices for Managing Predation in South Africa*.

1.2.1 Preventive measures

Fencing

Jackal-proof mesh fence

- Use SABS-approved mesh fence with a maximum of 75 mm mesh.
- Erect netting at least 1 m high.
- Make use of stones to secure netting on the ground.
- Close all possible entrances at gates securely with netting.
- Use chains to create a few small openings for tortoises and riverine rabbits to prevent jackal from crawling through.
- Place rods underneath gates.
- Patrol fences regularly to secure any breaches.

Electric fencing

- Install the earth conductor 10 cm above the ground and the first live conductor 20 cm above the ground.
- Install the upper electric wire 15 cm above the ordinary fence.
- Equip fences with alarms that will be triggered if any animal becomes entangled. Free trapped animals immediately.
- Charges on fences should not apply a lethal shock.

Livestock enclosures

- Wire fencing should be at least 1,4 m high.
- A kraal made of stones should be at least 1,6 m high with barbed wire or electric wire on top.
- Hedges from branches should be at least 1,6 m high and should be trimmed on the inside to protect against injuries.

Deterrents

Sound deterrents

Use radios to create different sounds in different places in the enclosure, changing and moving them every night. Discontinue after six weeks and resume after one month. Ultrasonic sounds should be used for four to five weeks only, alternated with other sounds. Avoid the use of ultrasonic sounds near owls and bats.

Light deterrents

Use a combination of yellow, orange and white lights, placed strategically in enclosures. Use lights for six weeks (in combination with sound deterrents) and resume after one month.

Scent deterrents

These devices should not be used for more than six weeks, alternating with sound and light deterrent devices.

Livestock protection collars

Protective collars should be made of firm, UV-protected plastics. They should be well fitted and should not choke the animal. Fit all

the sheep in the enclosure with collars, but remove immediately if the predator attacks an animal on any other place than its neck. Do not use for more than six weeks in one enclosure.

Deterrent collars such as bell collars, coloured collars and odoriferous collars should not be used for more than six weeks and should be alternated with other types of collars.

Shepherds
Shepherds can only be used effectively if the herd is kept in a small enclosure.

Guard animals
These animals, just like farm animals, should be managed with the necessary care and attention. They should have free access to food, water and shelter at all times. **Male ostriches, blesbuck rams, donkeys** and **alpacas** can be used with great success to keep predators away from livestock.

Anatolian dogs are very effective to protect livestock and game from almost all kinds of predators, including lion. Buy these dogs from reputable breeders who will rear them in a farming environment. Anatolian dogs should be kept away from other dogs on the farm. Other dogs, trained to herd cattle and sheep, can be used.

1.2.2 Remedial measures

Shooting

- Remove the damage-causing animal as soon as possible after the predation incident.
- Shooting should be focused on the area where predation took place.
- Only use experienced hunters trained to cull damage-causing animals.
- The hunter should identify the species before any action is taken.
- Only experienced hunters should make use of calling equipment.
- Only red searchlights should be used at night.
- Shooting from a helicopter or microlight aircraft should be done only by trained individuals with the necessary permits who can identify the predators from the air.

Soft traps

Only trained individuals may set legal traps, which should have **adjustable trigger plates**. The ideal trigger mass is 1,8 kg and the jaws of traps should have an opening of at least 5 mm to prevent fractures. Attach an anchor to the trap to prevent the captured animal from running away with it.

It should not be set in the normal animal footpaths, in roads next to perimeter fences or next to watering holes. Traps should be checked at least once a day.

Appropriate bait such as urine or droppings of the target animals should be used. Only obtain these samples from animals that are kept in a legitimate facility or problem animals killed lawfully. It is against the law to keep predators only for the collection of urine or dung.

Cage traps should be set in a way that the trap will be in the shade during the warmest part of the day and it should be checked at least once a day. There are different specifications for different species.

Refer to the complete *Best Practices for Managing Predation in South Africa* for the specifications by scanning the QR code on page 13.

Animals with long tails, such as cheetah and leopard, are sometimes injured when their tails get in the way of trapdoors. Cover the door with sponge or rubber to prevent these injuries. Unused traps should be kept in a safe place to prevent them from falling in poachers' hands.

When a **caracal** is caught, kill it as humanely as possible if you do not intend to release it. A single shot to the head with a medium calibre gun is the fastest and most effective way to kill the animal.

Whenever a **leopard** is caught, cover the animal with a thick canvas to keep it calm. A veterinarian should drug the animal before it is transported to prevent any injuries in the trap during transportation.

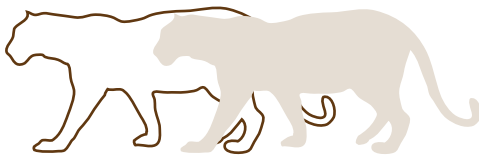
When a **cheetah** is trapped, cover the cage when transporting the animal. Cheetah may not be killed and must be relocated and set free elsewhere.

Brown hyenas caught in a cage trap should be relocated and may not be killed. Cover the cage to keep the animal calm. It is advisable to get a veterinarian to drug the animal before it is transported.

Captured **otters** should be relocated and may not be killed.

Landowners should obtain the necessary permits from the relevant provincial nature conservation authorities in advance before capturing **African wild cats** and **Cape foxes**.

If a lactating female of any species is caught, every effort should be made to find her young ones. They should be taken to a registered rehabilitation centre where they can be raised and eventually set free.



1.2.3 The use of poison

Poison as bait

No poison bait may be used in South Africa. Regulation No. R1716 of 26 July 1991 in terms of the Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947) prohibits the use of any pesticides for purposes other than those indicated on labels.

No pesticides are registered for killing predators and pesticides may not be used for this purpose.

Toxic collars

Toxic collars filled with sodium monofluoroacetate (compound 1080) may be used selectively to get rid of predators causing a lot of damage. No other pesticide may be used in these toxic collars. They may only be filled and provided by individuals with the necessary permits in terms of the Hazardous Substances Act (Act 15 of 1973).

Any predator killed with poison should be buried deep or be burned to prevent secondary poisoning.

1.2.4 Hunting with dogs

Only trained hunting dogs should be used to search and find predators. They should be kept on leashes until the target animal becomes visible. They should be well cared for to prevent them from hunting on their own when they are hungry.

Dogs can also be trained to track predators. The dogs should not be allowed to kill the predator.

2 INTEGRATED PREDATION MANAGEMENT

2.1 WHAT IS INTEGRATED PREDATION MANAGEMENT?

Conflict between livestock owners and predators is as old as livestock farming itself and will probably continue for a long time. This is why continuous and sustainable predation management, coupled with a well-considered herd management programme and grazing system, is so important.

Successful predation management can be divided into three steps:

- continuous management throughout the year
- management before lambing
- management during and after lambing

Continuous management

The presence of predators on the farm should be monitored continously. It is essential to have an excellent knowledge of the farm, as well as the areas where predators are generally found. This continuous monitoring usually focuses on the life cycles of the various predators. For example, in the case of the black-backed jackal, it is very important to detect their breeding holes and manage them professionally, especially in August. Another important time of the year is February, when young jackal from outside the farm's borders are looking for a new home. During these periods in particular the farmer should schedule his time well in order to control and manage predators; in other words, a structured predation management programme should be in place.

Management before lambing

Small livestock farmers do not always realise the value of precautionary measures when it comes to damage-causing animals. A lot of money and time is spent on managing production, for example the fertility of rams, the mating of ewes and the care of ewes dur-

ing lambing. Just as important as the preparation of livestock is the preparation of the relevant lambing camps where the pressure must be on the movement and numbers of predators.

Just as farmers have to ensure that there is enough food and water for the animals in lambing camps, they must ensure that the lambing and adjacent areas do not contain any of the two main predators, namely black-backed jackal and caracal. During lambing the air at night is filled with the smell of afterbirth and fresh blood. Predators cannot resist this and their instinct compels them to investigate. It is advisable to close these areas on the farm with jackal-proof fences and/or to electrify them. However, these two preventive measures are very expensive.

Lambing camps can be monitored by using so-called bush cameras. Six weeks before the ewes start to lamb, the cameras should be placed in strategic locations in the lambing camps (at least four cameras per 1 000 ha). The more cameras, the better. It is particularly important to monitor the water points as well. Put bait right in front of each camera and intensify the scent every third day. Download the photos regularly and determine which animals visit the bait points. Preparing lambing camps and taking proactive actions are the first steps in managing lamb losses successfully. Waiting until the first lamb has been caught, is already too late!

Management during and after lambing

If the farmer failed to act in the previous two management periods, this is usually when he realises with a shock that he has to do something. At this point the losses will be very visible. Farmers will start to panic, become discouraged and will often spare no expense to manage the predators. They expect immediate action with visible results and in most cases use lethal management methods. Do not lose perspective and try to poison the predators. This is not an option!

It is important to eliminate the animals that caused the damage. The call-and-shoot method is the most popular and effective.

Another option is the use of non-lethal methods such as deterrents using lights, sounds and scents. Do bear in mind that these management methods should be alternated as predators will otherwise soon learn how to bypass them. It is wise not to use these methods for more than three weeks consecutively at the same place. By changing the techniques, problem animals will remain somewhat unsure and avoid the area.

At this point more natural methods such as the use of lamas, alpacas, donkeys and sheepdogs can be used. They literally look after the livestock. These methods are quite effective, depending on the size and topography of the camps on the farm. These animals must be able to see both the predators and the animals they have to protect. Follow a proper management programme with these methods and monitor the animals continuously.

It is important for a livestock farmer to always be sure of his specific problem, to have a clear understanding of the animals that cause the damage, to know his farm's topography and to show sound judgement on how to deal with the difficult situation. The expenses incurred must also be acceptable.

Put a sound and ongoing predation management programme in place. Do not manage the predators only during and after lambing. Make a mind shift and become proactive as far as predation management is concerned.

2.2 PREVENTIVE MEASURES

Adopt preventive measures, but work cost-effectively and keep changing these measures because predators get used to them after about three or four weeks. It is also advisable to use more than one method.

2.2.1 Fences

Jackal-proof fencing

Jackal-proof mesh fences largely restrict the free movement of predators such as black-backed jackal and caracal and are indispensable for effective predation management. These fences are expensive to put up, but with good maintenance they can prevent predation successfully. Inspect them regularly to fix holes made by warthogs and pangolins. Use the correct type of jackal-proof fence with a height of 1,2 m and openings of 75 mm maximum.

Although these fences are not 100% effective for caracal as they can jump over them, they should keep them from trying. They have little effect on animals such as brown hyena because they bite through the fence, making a hole in it, and then pass through the hole.

These fences restrict the movement of other, smaller mammals such as small antelope, pangolins and tortoises.

Some farmers put tyres upright in the fence at every kilometre or so to enable small buck, pangolins and tortoises to pass through easily. Putting a chain in the tyre will temporarily deter jackal from using it as transit route.

Electric fencing

Electric camp fences

Putting up electric fences or a few electric wires (one close to the ground and one on top of the fence) has an excellent deterrent effect on predators.

Wires close to the ground prevent predators from digging burrows underneath the fences to gain access to farms or camps while the wires on top of the fence will discourage predators, such as caracal, from climbing over the fence.

Little capital investment is needed, maintenance costs are fairly low and intensive labour is not required.

The biggest argument against electric fences is that they also involve smaller animals. These animals are caught when they touch the fences, are shocked, and may starve to death.

Electric fences are valuable in game farming and in the management of nature reserves. They are effective against all types of predators.

Put two wires close to the ground not far from the electric conductor to keep animals such as tortoises away from the electric conductors.

Micro-camp system

In some livestock areas in the country where large numbers of animals can be kept in an enclosure, mobile micro-camp systems are used, where lamb ewes and young lambs in particular can graze in small enclosures with electrified fences.

- This grazing technique requires day-to-day management, is not capital intensive, but offers excellent preventive management against predation.
- It has very few negative effects on the natural environment.

This method will not work in extensive grazing areas with small livestock, because the grazing capacity is too low and camps will have to be too big to make it meaningful.

This cannot be used for game farming because of the nature of game.

Target-oriented electric fences

Sometimes otters act as predators at fish-breeding stations. The best way to keep otters out is to use a single electric wire around the dams set at a low voltage.

These fences are highly effective for keeping otters out and eliminate fish predation completely. The effect on non-targeted animals is minimal because there is only one electrified wire.

Kraals

The livestock kraal is regarded as an old-fashioned management method, but these days it is used more and more by large and small livestock farmers to protect animals against predator attacks at night.

- Animals can be managed well and kept safe from most predators.
- Jackal, caracal and other small predators have no or little access to livestock.
- Although leopard can easily climb over fences and kraal walls and cause enormous damage, sturdy kraals will keep them out.

- The veld surrounding kraals can no longer be grazed.
- Kraals lead to the rapid spread of communicable diseases such as coccidiosis, facilitate the transmission of parasites and can lead to fly and blowfly outbreaks.

Kraals can also be used for the intensive management of valuable game species, but the same negative effects as in the case of livestock can occur with game.

2.2.2 Deterrents

Sound deterrents

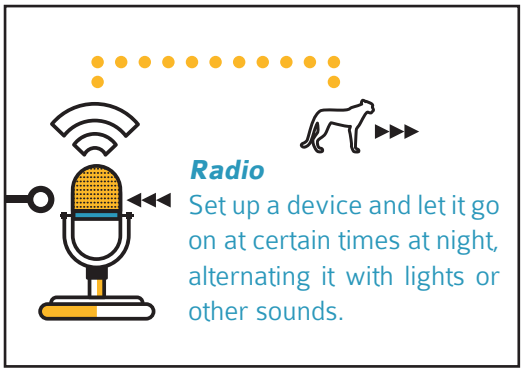
Use sound equipment that simulates the sound of human activities all through the night, especially in camps and kraals, as well as ultrasonic sounds to irritate the predator's hearing. The sound of human voices, music or even farm sounds cause uncertainty among predators and they will then try to avoid confrontation with humans at all costs.

Sound deterrents are effective for keeping away jackal, caracal and brown hyenas, but are less successful with leopard and spotted hyenas.

Change the sound every night and the location of the device regularly.

Ultrasonic sounds affect the hearing of predators and are apparently so disturbing that they will keep predators from areas where the sound is broadcast.

Ultrasonic sounds could have a negative effect on other animals such as owls and bats.



Radio

Set up a device and let it go on at certain times at night, alternating it with lights or other sounds.

Modern Shepherd

The Modern Shepherd works on the animals' senses by keeping predators away from livestock through sound and smell. Quite a lot of units are required, but if only two units are used, they should focus on the flock of lambs.

The Shepherd generates an ultra-high frequency sound every minute that is hardly audible, but that predators find extremely annoying. If predators come within the 1 km range of the Shepherd, the device causes discomfort and even pain.

Light deterrents

Light deterrents, whether constant or pulsating, can be used in the same way as sound deterrents. Coloured lights, especially yellow and orange lights, are apparently the most effective and creates the impression with predators that all is not well.

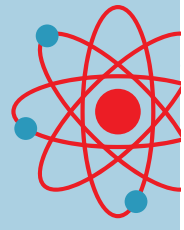
Preferably use light deterrents with sound deterrents and move them to a different spot every night to achieve and maintain the maximum effect.

Lights
Small solar lights can be set up on wires to slightly change the environment.

Widespread odoriferous deterrents
Equipment that secrete odours that may seem dangerous to predators over a large area can also counteract predator attacks. The effectiveness of this still has to be proven, but the principle is theoretically acceptable.

There is a slight possibility that this can chase away small, harmless predators, which can result in an imbalance in the local ecology.

Modern Shepherd
The Modern Shepherd also works on the animals' senses by keeping predators away from the livestock through sound and smell. The built-in computer programme controls the release of specially formulated, pungent ingredients that irritate the senses of smell and taste and drive predators away. At night it continuously releases a fine spray. The odour is therefore constantly present in the camp. The bottle containing the scent should be replaced monthly.



2.2.3 Collars

Protective collars
This definitely has a positive effect on the prevention of predation. All small livestock must be fitted with the collars in order for them to work effectively against predators. As with other collars and bells, predators get used to this method. They may, for example change their catching and killing methods away from the neck area to the buttocks. Collars should be adjusted continuously as the animal grows.

Protective collars do not have any negative effect on the environment.

Alternate protective collars with deterrent collars to confuse predators. Never use different types of collars simultaneously on the same farm.

1. King collar
A neck collar for every lamb in the herd is recommended. Costs can be cut by using a King collar for only a certain percentage of lambs in the herd.

2. Dead-stop neck collar
The collar is made of iron and therefore it has a long lifespan. Different sizes are available for large and small sheep.

3. Owner's choice collar
The blue collar is made of PVC and is available in three different sizes.

> USE DIFFERENT METHODS ALTERNATELY IN ORDER TO RETAIN THE NOVELTY FACTOR FOR THE PREDATOR.

Deterrent collars

Deterrent collars include collars that can make a sound, are exceptionally bright (colour) and can secrete specific odours.

Bell collars

These collars are equipped with small tins and stones that ring like bells when the animal wearing it moves around. As they create the impression that all is not well, the predator will avoid the animal as prey.

They do not have any negative effect on the environment.

Alternate regularly with other deterrent techniques to prevent the predators from getting used to it.

Protect-a-lamb
A bell collar is recommended for every lamb in the herd. As with other collar methods, one could also put bell collars on only a certain percentage of the lambs.

Coloured collars

Coloured collars are made of fluorescent material that shines only at night. They will make the predator uneasy because of the nature of the colours.

They do not have any negative effect on the environment.

Yellow and orange reflective stickers that are used on trailers work well.

Odoriferous collars

These collars are made of simple material such as cotton and are drenched with different odours to ensure that strange smells are present in the herd. They confuse predators, create fear and discourage them from catching small livestock.

They do not have any negative effect on the environment.

Use odoriferous collars with different odours so that they do not all smell the same. Change the odour regularly and alternate with other deterrent techniques.

Collars that make alarm

1. Celmax collars

One collar per herd is required. As soon as the herd acts in an abnormal way, as in the case of stock theft or a predator attack, the Celmax alarm makes a warning call to the farmer's cell phone. The collar has a warranty of 12 months and the battery will last for more or less eight weeks. It also has a charger.

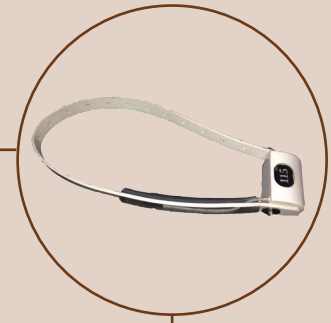
It is often not effective against caracal, because caracal often attack sheep before they start running around. Cell phone reception is essential for this system.

2. E-Shepherd collars

One collar is required for every 10 sheep. Batteries last between nine and 12 months. The E-Shepherd device is kept in place by a collar. The electronic device is activated as soon as a sheep is attacked. The attack activates the sound alarm that is broadcast by the device. The device also has two lights having a stroboscopic effect as soon as the system is activated.

3. Agri-Alert

A collar with a combination of GPS and activity censors is worn. The collar sends an SMS to a cell phone whenever there is a disturbance. Collars are replaced every second year free of charge.



4. Hotgroup

The system has several functions such as behavioural monitoring, pasture utilisation and predation management. The alarms are based on the science of mimicry and raise the alarm as soon as the animals fail to show normal behaviour.

> IT TAKES A PREDATOR FOUR TO SIX WEEKS TO GET USED TO A CERTAIN METHOD.

2.2.4 Shepherds

Shepherds are still being used, but it is a management option that is usually no longer affordable. There is no doubt that the physical presence of a shepherd with a herd will discourage all predators (except lions) from attacking livestock. When a dog accompanies the shepherd, it is even more effective.

- Shepherds can only be used in daytime, while predation mostly takes place at night.
- Shepherds can only be used if livestock are managed in herds kept in small enclosures.
- It is difficult to use them in extensive livestock farming.

2.2.5 Guard animals

Various kinds of animals are used to counteract predators such as black-backed jackal, caracal, spotted and brown hyena, leopard and cheetah in the livestock and even game industries.

Male ostriches

These birds can be used to some extent, and in daytime only, to keep black-backed jackal away from lamb flocks in particular.

Ostriches are only effective against black-backed jackal.

Use wild ostriches that come from reserves and not birds that have been incubated from eggs.

Blesbuck rams

Blesbuck are very effective to chase black-backed jackal out of camps by day and by night.

They are not effective against caracal and larger predators.

Tame blesbuck are far more aggressive than wild blesbuck. Be careful around tame blesbuck, as they can become very aggressive towards people as well.

Donkeys

Donkeys are very aggressive toward black-backed jackal and caracal and will chase these predators out of the camps.

Donkeys work well in camps holding adult livestock and game.

If they are used with sheep or boer goats, they will have to be removed during lambing as they tend to kick lambs at drinking troughs, injuring and killing them.

Alpacas

Just like donkeys, these animals are excellent deterrents against predators.

Alpacas can adapt to arid and dry areas because they originated in the dry mountain deserts of South America. Because they are herbivores, they require little maintenance.

Alpacas are probably a better option for livestock farmers farming extensively on large stretches of land.

Anatolian shepherd dogs

Anatolian shepherd dogs are used to protect both large and small livestock and even game against most predators, including lions. The large body size of the breed, coupled with their loud barking, discourages most predators from moving around and attacking livestock and game when they are near.

These dogs require firm management as they can, unfortunately, also become predators of livestock and small game species themselves.

Poorly managed Anatolian shepherd dogs can have a significantly negative effect on small game. There is also a tendency among Anatolian shepherd dogs to attack and kill small, harmless predators.

Buy a dog from a breeder who has trained the puppies from an early age on a farm in the direct vicinity of small and large livestock.

Herding dogs

Before Anatolian shepherd dogs became popular, many Kalahari farmers had been using herding dogs (*bokhonde*) for many years. These dogs can be of any species but were raised with a goat or sheep ewe in a herd. They are very effective in keeping black-backed jackal and caracal away from livestock herds. Like all dogs, they need a lot of attention and management to prevent them from becoming livestock or game poachers themselves.

2.3 REMEDIAL MEASURES

Remedial measures are needed to remove specific individuals that keep causing havoc. In their case preventive measures merely chase the problem animals to neighbouring farms. It is essential to use the methods responsibly so as to uphold the good name of the agricultural industry.

2.3.1 Shooting individual predators

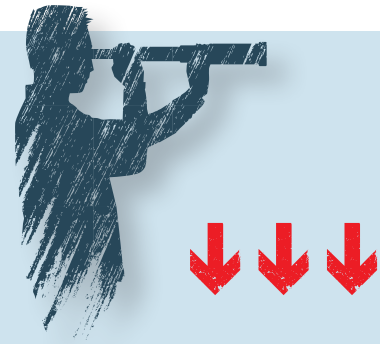
From an ecological point of view, shooting damage-causing predators is one of the most selective management methods if the hunter is experienced and knowledgeable. This method can be highly controversial depending on how it is approached.

Night hunting is very effective to eliminate damage-causing animals. It is species-specific and one can act immediately if there is a problem.

- Use experienced hunters that are able to call predators effectively and shoot only black-backed jackal and caracal that cause the most economic damage.
- Do not shoot bat-eared foxes, aardwolves and African wild cats.
- Use a light with a red filter and fit a silencer on the gun to slightly mute the sound of the shot.

Hunting from a helicopter can be very expensive, especially if there are few predators present. This method is useful when the area is difficult to reach by foot or by vehicle. Consult the relevant authorities regarding the necessary permits.

The time of the day is important as it is more effective to fly for three hours early in the morning and for one or two hours at sunset.



Hunting individual predators takes more than just shooting skills to be effective and to be environmentally compatible. The following principles are of the utmost importance:

Immediate action: It is essential to launch the action to hunt the damage-causing individual immediately after predation took place. In the case of black-backed jackal and caracal action should be taken within one day after the livestock or game has been killed. If one waits too long, the culprit will get away and other predators, not necessarily the guilty ones, can be killed.

Specific environment: The best is to launch the hunting action in the area where predation took place. Predators are usually present where prey is abundant.

Precision: Only good hunters should do the shooting in order not to injure or miss the

predator. Poor shooting only worsens the problem because wounded animals or the ones that were shot at but missed will become wary and unmanageable.

Correct species identification: It is crucial for the species to be correctly identified to prevent valuable animals such as aardwolves and bat-eared foxes from being killed. As virtually all predators will respond to calling devices it is the responsibility of the hunter to correctly identify the animal before it is shot.

Judicious use of calling devices: Various calling devices are available and anyone can buy one. However, it takes specialist expertise to correctly use devices like these to prevent predators from distrusting the calls. Landowners should use the services of experts or learn to use these devices themselves to ensure that animals are hunted selectively. Inexperienced hunters of predators will do more harm than good.

Use infrared searchlights at night: Only use infrared or even ordinary searchlights because white lights will make the animals wary and evasive.

Hunting with dogs is used extensively for tracking predators. Dogs may not kill or have any physical contact with the predator. It can either be highly effective and selective or harmful to the natural environment and small mammals if dogs are not managed firmly.

Search and find

After following the tracks of the predator, the dogs find it. The predator is then eliminated. Use dogs that are trained as tracking dogs.

In terms of the Animal Protection Act (**Act 71 of 1962**) dogs may not be used to kill the predator.

- Preferably keep the dogs on leashes until the target animal is visible, then release the dogs to chase the prey.
- Care for the dogs properly so they do not follow and hunt the game because they are hungry.

Their effect on the natural environment is usually very small because they are not allowed to attack and kill the predators.

Tracking the predator on horseback

Horsemen with trained dogs follow the predator's tracks and chase it into shelters such an aardvark hole.

This is a very effective and selective method because the dogs do not have any negative effect on other elements of nature.

It especially works well in the sandy areas of the Kalahari.

2.3.2 Soft traps

The use of traps is controversial and widely condemned – with good reason. In the hands of the inexperienced and irresponsible, traps are basically murder weapons that trap and mutilate all kinds of animals.

It takes someone with an excellent knowledge of predators and years of experience to set a trap in such a way that only black-backed jackal and caracal are caught in it without being injured.

The trap must have an adjustable trigger plate set in such a way that animals that are smaller than black-backed jackal and caracal are not able to trigger it.

Only persons who have been trained to use traps, should set the equipment.

- Do not set traps in the areas where animals usually move about or under fences, but rather where the target animals can trigger the trap when they enter the area where predation usually takes place.
- Calibrate the traps regularly. The adjustment on the trigger plate should be 2 kg – use a 2 ℓ cooldrink bottle, filled with water, as a measuring instrument.
- Use an anchor to pin down the trap so that the animal that is caught will not be able to walk away with it.
- A spring on the anchor will ensure that the animal does not get hurt when it tries to get away.
- Add one or more swivels in the chain so that the animal does not wind up the chain and cause unnecessary injury to its limbs.
- Check traps every day early in the mornings so that the animal will not be trapped for more than a few hours.
- Use traps with rubber jaws. It will still hold the animal firmly, but will not cause broken skin, a broken leg or pain. It also makes it possible to free non-targeted animals that could trigger a trap more easily, without suffering any injuries. Use appropriate bait. For example, if the problem is predation on small livestock, it makes no sense to use venison as bait.

2.3.3 Cage traps

Walk-in cage traps are very effective for capturing caracal, cheetah, leopard, brown hyena, otters, Cape foxes and African wild cats. All these species can be caught and relocated without having to be killed. Cage traps should be placed in the shade and should be checked daily.

Note that black-backed jackal cannot be captured with walk-in cage traps. Different species require specific setting techniques and bait to ensure success.

Caracal

- Put the cage next to the caracal's walkway and cover the sides with branches.
- Put live animals such as a white chicken or a boer goat lamb in a separate section at the back of the cage (taking good care of these animals is very important) and hang a ball of aluminium foil in the capturing section of the cage. This will attract the caracal's attention and the live prey will attract it into the cage.
- Spray the urine of a caracal as a scented incentive to attract it into the cage.

When a caracal is captured, it should be put down humanely if it is not to be released.

Leopard

- The cage should be very strong and sturdy.
- Put the cage close to the leopard's scratching tree and do not cover it with any type of material.
- Throw pieces of rotten bait into the cage trap and fasten it with wire.
- Make blood tracks with the bait from different directions (approximately 100 m) towards the cage.
- Anchor the cage to the ground with poles.
- When a leopard is caught, cover the cage with a thick canvas so that the animal can remain calm.
- Leopards are extremely dangerous, even in the cage traps, and handlers should take great care not to get injured.
- A veterinarian should sedate the animal before it is transported to prevent the leopard from getting injured in the cage.
- When a leopard is released, everybody should remain in the safety of their vehicles to ensure that the angry animal does not attack them.

Contact the relevant nature conservation authorities to relocate the leopard.

Cheetah

- Cheetah are easily caught by building a kraal with branches of approximately 20 m in diameter and providing a walk-in cage trap as the only entrance into the kraal.
- Build trap kraals at places where the animals are most active, for example at trees they like to frequent.
- The walk-in cage trap should be open at the back (other than all the other cages that should be closed) and covered with

thick thorn bushes on top. There must be two trap gates in the cage that close simultaneously when the animal triggers the plate.
- The best bait is a live boer goat lamb or even an adult boer goat.
- When a cheetah is caught, cover the cage to transport the animal easily.
- Cheetah are not as aggressive as leopard and are therefore not such a challenge to handle.

Cheetah may not be killed and need to be relocated.

Brown hyena
- Use leopard cage traps for brown hyena because these animals are exceptionally strong and they will break less sturdy cages.
- Put the cage close to the site where predation takes place. Do not cover the cage.
- The best bait is lamb carcasses or even dead chickens.
- Scent tracks can also be made towards the cage to lure hyena.
- They are not very aggressive in the cages, but should still be covered to keep them calm.
- A veterinarian should sedate them before they are transported.

When brown hyena are caught, they need to be relocated.

Otters
- Otters are easily caught with caracal cage traps and a separate section with live prey such as tame geese or ducks works very well.
- Set cage traps next to fish dams and anchor them firmly so the animal's movement cannot cause the cage to fall into the water.

When otters are caught, they need to be relocated as they may not be put down.

Cape foxes and African wild cats

Cape foxes and African wild cats will definitely hunt lambs that are a few days old. However, it makes no sense to put these small predators down as their impact is minimal and they make a positive contribution to a balanced ecology.

- Ordinary caracal cage traps with lamb remainders will do well as bait for both types of animals.

Additional measures

The long tails of animals such as leopard and cheetah are sometimes seriously injured when the trap gates fall on them. Cover the bottom of the trap gate with thick sponge to prevent these kinds of injuries. Rubber buffers can even be put underneath the gates to ensure that the trap gates fall on them, thereby preventing the gates hitting the floor when they fall.

These measures make the use of cage traps more humane, especially when valuable animals need to be captured.

2.3.4 Sedate and transport

This technique applies almost only to lion and, to a lesser extent, to leopard. Large pieces of bait such as full carcasses are treated with tranquilisers and the carcasses are placed in the area where the predators occur.

When the predators eat the carcass, they are sedated and they can be loaded and transported for purposes of relocation.

It is important that a veterinarian does this because the entire process must be monitored continuously to ensure that the animals are sufficiently sedated and that their normal body functions are working.

2.3.5 Use of poison

Right from the start – forget about poison! It is illegal, not selective and destructive. Only poisonous collars may be used to control predators.

Toxic bait

No toxic bait may be used in South Africa. Regulation No. R1716 of 26 July 1991 of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947) bans the use of any pesticides for purposes other than those indicated on the labels.

Toxic bait is almost never target-specific and causes large-scale poisoning of non-targeted species such as raptors and vultures.

No pesticides have been registered for the killing of predators and therefore no pesticides may be used for this reason.

Toxic collars

Toxic collars that are filled with sodium monofluoroacetate (1080), may be used to selectively eliminate black-backed jackal and caracal.

No other toxins may be used in toxic collars. These collars may also only be filled and provided by individuals that have the required permits in terms of the Hazardous Substances Act (Act 15 of 1973).

They are solely used in the small livestock industry to control black-backed jackal and caracal when other techniques do not have the desired effect. In an enclosure where predation takes place, a number of young lambs with toxic collars can be placed with adult sheep.

Only those predators that catch sheep and goats will be killed by the toxic collars.

It is a very selective method for controlling black-backed jackal and caracal that cause damage.

Coyote getters

Coyote getters make use of a revolver calibre casing that is filled with sodium cyanide which is discharged into the mouth

of the target animal when the device is triggered. However, this is problematic because the device is planted in the ground, which makes it accessible to all small predators.

Although coyote getters are not recommended for general use, it is one of the most successful methods to put down stray dogs that hunt in packs to catch livestock and game.

They are not selective and may poison many non-targeted predators and even small antelope species that are attracted by the bait.

The provincial conservation department should preferably do the setting up of coyote getters to comply with all requirements and ethics.

2.4 VELD, SMALL-GAME AND LIVESTOCK MANAGEMENT

2.4.1. Veld management

Veld or grazing management is crucial for any livestock farmer. It is not desirable to graze veld with the optimum amount of animals per unit as this will put the veld under too much pressure and animals will fail to reach optimum growth under stressful conditions. For optimal growth, fewer animals than usual should be kept on the veld to ensure that the breeding stock is ready for the market and can be marketed much sooner. A management system like this lowers the incidence of predation, particularly among sheep and goats.

2.4.2 Small-game management

Small game such as hunting birds, small antelope, hyraxes, rabbits and springhare are in fact mostly caught by jackal and caracal. If small game becomes scarce, predators will focus even more on small livestock. It is therefore advisable to protect small game at all costs and not to hunt them because they form a buffer against livestock predation.

2.4.3 Livestock management

It is rightly claimed that the practice of hav-

ing ewes lamb throughout the year is a catalyst for predation by black-backed jackal and caracal because lambs are available all the time. Producers who limit lambing periods to a maximum of a few weeks find that there are more incidents of predation in lambing periods and that this can therefore be managed far better. This is, of course, only applicable to the predation of lambs and not of adult animals. A short lambing period creates a lot of work, but the focus is then mostly on the successful delivery of lambs and the combating of predation on lambs.

2.5 SUMMARY

The comprehensive range of methods for managing predators gives livestock and game farmers enough options to manage predation problems effectively. It is important to consider all options and also to use a number of these methods simultaneously.

Preventive measures are usually less expensive than remedial measures and also protect the farmer's livestock and game against attacks by predators. Furthermore, farmers should all work together because predators move in large areas. One single animal can cause a lot of damage on several farms.

It is not feasible to eliminate predators, but predation can be managed better with good planning and the ecologically sensitive use of management measures.

3 IDENTIFICATION OF PREDATORS

3.1 INTRODUCTION

For effective predation management, the farmer's toolbox, with all the methods of control and management, is a good starting point. In addition, knowledge of the predator's killing and feeding behaviour, habitat and killing method is essential.

It is often difficult to identify the culprit from a single clue because feeding patterns may vary or overlap and more than one species may co-exist in an area and feed on one another's kills (secondary predation). The important thing is that all aspects of the kill must be looked at and considered. It is not easy to make a quick, correct decision just based on a kill without looking for tracks and other signs in the area.

There are a number of clues that one should look for such as bite marks, bone damage, feeding patterns, tracks and pieces of hair and locality, just to name a few. The intercanine tooth distance differs from species to species and is a useful guideline to follow. Some animals bite their prey at the back of the neck, others, for example dogs, are messy killers that often drag their kill around.

It is essential that the damage-causing animal is correctly identified from the killing and feeding signs to avoid wasting a lot of time, effort and money by trying inappropriate methods to deter the stock killer. Follow-up measures should vary according to the predator species. The solution is to have a variety of methods available – a toolbox of management equipment.

3.2 DISCUSSION OF SPECIES

Family *Canidae*:

BLACK-BACKED JACKAL (*CANIS MESOMELAS*)

Conflict category: high conflict potential

Conservation status: least concern

Total length: 95 - 115 cm, tail: 27 - 30 cm, shoulder height: 40 cm, mass: 7 - 10 kg.

Identification pointers:

- dog-like appearance
- dark white flecked saddle on back
- black tail
- fairly large, pointed, reddish-backed ears

Spoor: Jackal tracks are dog-like and show nail marks. Their track profile is oval, with a longer length than width.

Behaviour: Predominantly a nocturnal animal but may occasionally appear during daytime. By day they usually rest in the shade in high-lying areas where human activity is limited.

The jackal is very timid and will avoid confrontation with humans at all costs. Depending on the season, they will appear singly or in pairs, or at certain times of the year, even as a family. Litters are usually born around August and consist of four to six pups. They are born in dark, underground dens and the male, the female and a helper, an offspring from the previous year's litter, will all care for the pups.

The male and the female will mark their territory, the size of which depends on the availability of food and competition with other dominant pairs.

Killing or catching pattern

- Normally catch animal on side of its head, as they chase their prey and bite as they run alongside it.
- Prey's ears are often torn in the process.
- Clear tooth marks between the ear and eye of the animal.
- Bite marks can also occur on the back of the legs and on the udder.
- They tend to take one animal per kill.
- Jackal not only catch smaller and weaker stock, such as lambs, but will also kill larger sheep.
- Jackal will attack cows that are lying down to calve and will start feeding on the calf as it emerges or at the cow's udder and inside flanks of the hind legs.
- Live calves up to one week old can also fall prey to jackal.

Feeding pattern

- Start eating at the groin of the stomach, leaving a flap of skin that has been hollowed out underneath.
- Remove intestines and stomach from the body.
- Eat softer inner parts like the heart, liver and kidneys.
- Tips of the rib bones are chewed off.
- Will not move the carcass from the killing site.

Management methods: Black-backed jackal are adaptable and their reproductive capacity so high that it is usually futile to attempt to completely eradicate them from an area. If possible, management should be aimed at the individuals that are causing the damage.

Preventive

- jackal-proof fencing
- electric fencing
- kraaling
- deterrents – noise, light and scent
- shepherds
- collars
- guard animals, e.g. Anatolian dogs

Remedial

- dogs
- night hunting

Anyone interested in employing these management measures should apply to the local nature conservation department.

CAPE FOX (*VULPES CHAMA*)

Conflict category: low conflict potential

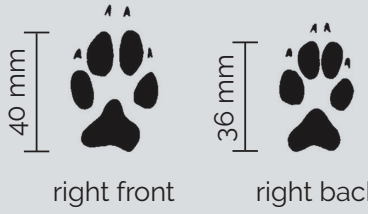
Conservation status: least concern

Total length: 86 - 97 cm; tail: 29 - 39 cm; shoulder height: 30 cm; mass: 2,5 - 4 kg.

Identification pointers:

- fox-like appearance
- long, bushy tail
- greyish-grizzled back and sides
- light coloured legs
- muzzle generally light in colour
- ears "normal" in size

Spoor:



Behaviour: Mainly nocturnal, but more active in cooler daylight hours. Usually alone or in pairs but hunting is a solitary activity. By day they lie in holes or dense thickets but will readily sun bask at the mouth of the den.

Hunting ranges extend up to 5 km^2. In some areas they reach quite high population

densities despite heavy persecution in some small livestock farming regions. Numbers tend to be lower in those areas where black-backed jackal are abundant.

On the rare occasions that these animals do cause stock losses, they usually attack new-born lambs up to lambs of four days old.

Killing or catching pattern

- One kill per event.
- Throat or head bitten.
- Very small tooth marks can be distinguished on the neck, shoulder or rump.
- Carcass is not dragged.
- No claw marks visible on carcass.

Feeding pattern

- A small opening is made in the flank.
- Only heart, abomasum (milk stomach), soft hind leg or a combination of these are eaten.
- On rare occasions when a group of foxes feed on a carcass, the buttocks will be eaten.
- Will return to a kill.
- In some cases the tips of ribs are eaten, but no bones are eaten.

Management methods: The Cape fox does not cause major damage to livestock. Cage traps for caracal with bait works well.

Preventive

- jackal-proof fencing
- electric fencing
- kraaling
- deterrents – noise, light and scent
- shepherds
- guard animals, e.g. Anatolian dogs

Remedial

- cage traps

DOMESTIC DOG (*CANIS FAMILIARIS*)

Conflict category: high conflict potential

Conservation status: not applicable

Shoulder height: 300 - 750+ mm; mass: 5 - 20 kg

Identification features:

Occur in a variety of breeds, shapes and sizes but usually unmistakable.

Spoor: Dog tracks are often confused with those of cheetah. However, the rear part of the footpad lacks the W-shaped grooves typical of the cat family.

Behaviour: The damage caused by domestic dogs is often blamed on other predators. Many feral and even pet dogs are responsible for stock losses. Livestock killing is not confined to stray dogs; very often the well-fed family pet will venture on a killing spree into pastures at night. Dogs often increase their destruction by operating in packs.

Even relatively small dogs will hunt livestock and could badly injure them in some cases, even though they are unable to kill them. Stray dogs kill and feed on sheep and

goats; they will also attack and kill poultry.

Dogs bite and tear their prey randomly, with no fixed pattern. They cause extensive damage and often injure several animals without killing them.

✚ Killing or catching pattern

- Lots of spoor as they like to chase and bite their prey while running alongside them.
- Very small lambs are often bitten on the chest, back or head.
- Large lambs or sheep are bitten anywhere on the body.
- Bites may be seen on the hamstrings, head, ears, neck or flanks.
- The kill is generally untidy. It is seldom a clean, neat kill like that of natural predators.
- The carcass may be dragged to and fro.
- Usually more than one sheep is killed or maimed, and occasionally only one.

◆ Feeding pattern

- The amount of meat eaten varies, from nothing to large amounts, which is usually more than that eaten by jackal or caracal.
- Feeding is often from the rear end, but large pieces may be ripped from the carcass.
- Large bones are chewed or eaten.
- Chunks of wool may be scattered everywhere (not neat plucking like the caracal).
- Large bones are chewed or eaten.
- Large pieces of skin torn from the prey.

◘ **Management methods:** It is best to involve the SAPS and SPCA to manage a problem with stray dogs. Dogs can be caught in cage traps. Farm dogs should be enclosed at night and not allowed to wander. They should be supervised and correctly fed to prevent them from becoming a problem. However, electric fencing is also very effective to prevent damage.

✱ Preventive

- control and management
- electric fencing

● Remedial

- cage traps

Family *Felidae*:

AFRICAN WILD CAT (*FELIS SILVESTRIS LYBICA*)

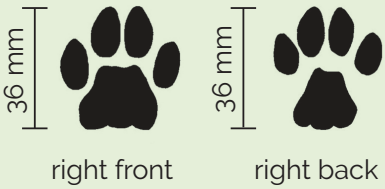
Conflict category: low conflict potential, however in some areas it can be high.

Conservation status: least concern. In terms of *SA Red Data Book for Mammals*, this species is listed as vulnerable. It is subjected to hybridisation with domestic cats and pure strains are not found in settlements where there are domestic cats.

Total length: 85 - 100 cm; tail 25 - 37 cm; shoulder height: 35 cm; mass: 2,5 - 6 kg.

Identification pointers:

- very similar in appearance to domestic cat
- much longer legs than the domestic cat, enabling it to sit almost vertically upright
- rich reddish-brown colour on back of ears, over the belly and on back of hind legs
- vertical body stripes range from very distinct to very faint



Spoor: Similar to the caracal, only smaller in size.

Behaviour: Solitary, except when mating or when female is tending to kittens. Droppings are usually buried in the same way as by the domestic cat but they also make small latrines where droppings accumulate. They use a variety of dens in rocky outcrops, holes dug by other mammals, dense vegetation and will also lie in trees, in areas such as in the Kalahari. They create marked territories, primarily using urine and possibly tree scratchings, which are defended by both sexes.

In some areas they are considered to be major predators of small lambs.

Killing or catching pattern

- Cannot attack lambs older than three or four days.
- Usually bitten around the throat.
- Only kill one lamb at a time.
- Prey is dragged away and sometimes covered.
- Clear claw marks visible under the skin.
- Sometimes lambs are not killed; only a swollen neck and drooping head is observed.
- A gurgling sound from tracheal puncture may also be heard.

Feeding pattern

- Normally chest meat and inner thighs are eaten.
- Intestines are not eaten.

Management methods: The African wild cat does not cause major damage to livestock. Cage traps for caracal with bait work well.

Preventive

- jackal-proof fencing
- electric fencing
- kraaling
- deterrents – noise, light and scent
- shepherds
- guard animals, e.g. Anatolian dogs

Remedial

- cage traps – consult the relevant authorities regarding a permit

CARACAL (*CARACAL CARACAL*)

Conflict category: high conflict potential

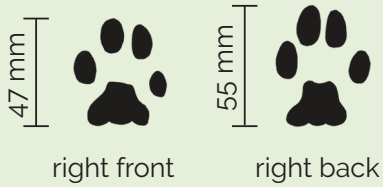
Conservation status: least concern

Total length: 75 - 120 cm, tail: 15 - 35 cm, shoulder height: 45 cm, mass: 8 - 18 kg.

Identification pointers

- hindquarters are slightly higher than shoulders
- general reddish-fawn colour
- short tail
- pointed ears with tuft of black hair at the tip and black at the back with white hair in between

Spoor:



Behaviour: Mainly nocturnal, but partly diurnal activity if undisturbed. Solitary, except when mating or when females are accompanied by kittens.

The male is territorial with a home range that may overlap with that of two or more females. Home ranges of females overlap, but they probably avoid contact by olfactory signals, such as urine, droppings and tree scratchings. Depending on food abundance, home ranges can be as small as 400 ha to as large as 10 000 ha or more.

Killing or catching pattern

- They stalk their prey at close range and rely on a direct pounce or short, fast run.
- Catch prey at the underside of the throat and smother it.
- Bite marks typically have two puncture wounds on either side of the throat or on either side of the windpipe.
- Claw marks are often visible, either on the shoulder, belly or hindquarters.
- Often kill more than one animal during a hunt, but feed on only one.
- Lambs or sheep may be killed.

Feeding pattern

- At point of entry the skin is chewed off and no loose flap remains as in the case of jackal.
- Normally eat the back and inside of the hind leg of prey, but brisket and shoulder may also be taken.
- Wool or hair plucked out before eating.
- Stomach is not eaten and may be pushed aside undamaged.

- Do not break or chew large bones.
- Prey may be partly covered with vegetation debris or soil.

Management methods: Caracal can develop a taste for stock, but this can be avoided if the correct preventive methods to protect stock, such as fencing and kraaling, have been implemented. Caracal readily enter cage traps. Traps may be set at a kill, particularly one which has not been disturbed, or set on the routes used by caracal.

Caracal can be excluded from an area by using a wire-netting fence with stones packed along the base to prevent animals from crawling underneath. This, in combination with an electric wire or two running along the fence, can be very effective.

Preventive

- jackal-proof fencing
- electric fencing
- kraaling
- deterrents – noise, light and scent
- shepherds
- collars
- guard animals, e.g. Anatolian dogs

Remedial

- dogs – no contact between the dogs and caracal allowed
- night hunting
- traps with adjustable triggers
- cage traps

CHEETAH (*ACINONYX JUBATUS*)

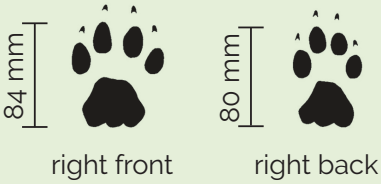
Conflict category: low conflict potential

Conservation status: vulnerable

Total length: 1,8 - 2,2 m; tail: 60 - 80 cm; shoulder height: 80 cm; mass: 40 - 60 kg.

Identification pointers:

- large size
- slender, greyhound-like build
- long, spotted white-tipped tail, black-ringed towards tip
- spotted coat – single, rounded, black spots
- rounded face with a black line from inner corner of the eye to the corner of the mouth (tear mark)
- only cat that does not have fully retractile claws and the impressions of the claws can be seen in their tracks



Spoor:

Behaviour: They are principally diurnal, but tend to hunt in the cooler hours. When hunting, cheetah stalk within a short distance of their intended prey and then sprint in to kill.

Normally cheetah hunt medium-sized mammals up to a mass of ±60 kg, although

if two or more cheetahs hunt together, larger prey may be overpowered. Antelope are the principal prey items.

✚ Killing or catching pattern

- Cheetah hunt by day, usually early in the morning and late in the afternoon.
- After chasing down and catching the prey, cheetah suffocate larger animals with a bite to the jugular and hold it for as long as 15 to 25 minutes.
- Smaller animals are killed with a quick bite to the head, usually killing them instantly.
- After resting, cheetah will quickly eat as they cannot defend their food from other predators.
- When attacking livestock in a kraal, cheetah will often kill more than one animal, chasing and killing without eating all the prey.

◆ Feeding pattern

- Rib ends chewed off.
- Cheetah do not return to their kill nor do they eat carrion.
- Leave the skin, bones and entrails of their prey.

Management methods: A kraal built with branches with a live boer goat tied up inside is the best way to trap a cheetah. Place the cage trap at the entrance of the kraal giving the cheetah room to move in an attempt to get to the boer goat. When caught, contact the nature conservation authorities to relocate the cheetah.

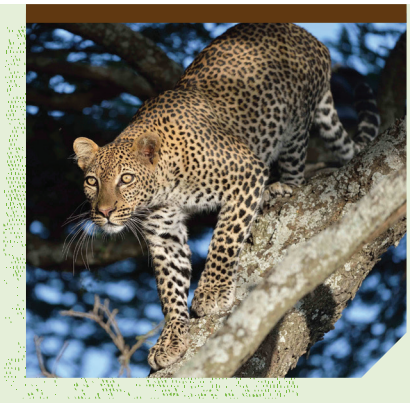
✱ Preventive

- jackal-proof fencing
- electric fencing
- kraaling
- deterrents – noise, light and scent
- shepherds
- guard animals, e.g. Anatolian dogs

● Remedial

- cage traps
- tranquilise and relocate

LEOPARD (*PANTHERA PARDUS*)



Conflict category: depending on the region – in mountainous areas of the Western and Eastern Cape a high conflict potential.

Conservation status: listed as near threatened in the *IUCN Red List of Threatened Species*.

Total length: 1,6 - 2,1 m; tail 68 - 110 cm;
shoulder height: 70 - 80 cm;
mass: (M) 20 - 90 kg, (F) 17 - 60 kg.

Identification pointers:

- large size
- rosette spots on body, solid black spots on legs, head, sides and hindquarters
- lack the black facial lines of cheetah and are more heavily spotted

Spoor:

right front right back

Behaviour: Although they are mainly active at night, in areas where they are not disturbed, they can be seen during the cooler daylight hours. Leopard stalk and pounce on their prey and do not rely on running at high speed like the cheetah.

Compete with caracal, may prey on jackal and other smaller predators. Where natural populations remain, caracal and jackal numbers are significantly lower.

May prey on livestock in areas with low densities of natural prey. They will on occasion kill more than one animal.

Will only feed on one carcass and return to carcasses they have fed on.

Killing or catching pattern

- Usually stalk their prey, then pounce or rush and knock it over.
- Kill by a bite on the nape of the neck or sometimes the back of the neck or throat.
- They are known to kill more than they need.
- Drag marks where prey has been dragged off will be visible.
- Claw marks seen on rump or shoulders of larger domestic stock and bite marks on neck of prey animals.
- In smaller prey the neck is broken.
- Kills may be dragged under dense bush, among rocks, or in some areas, into trees out of reach of other predators.

Feeding pattern

- A great deal of hair is often plucked.
- Normally eat the inside of the hind legs first and consume 1 kg to 2 kg of meat.
- Seldom remove the intestines.

Management methods: Use trail cameras to monitor the presence of leopard. Anatolian shepherd dogs and donkeys are very effective.

Cage traps can be used to trap leopard. In the Western Cape, landowners may not set a cage trap for leopard and permits are not issued to landowners. Only nature conservation officials may set a cage trap for leopard.

Camouflage the cage with shrubs on top and on the sides of the cage. Live bait should be used to attract the leopard into the trap. When caught, contact nature conservation authorities to relocate the leopard.

Preventive

- jackal-proof fencing
- electric fencing
- kraaling
- deterrents – noise, light and scent
- shepherds
- guard animals e.g. Anatolian dogs

Remedial

- cage traps
- tranquilise and relocate

Family *Hyaenidae*:

BROWN HYENA (*HYENA BRUNNEA*)

Conflict category: low conflict potential

Conservation status: near threatened. Also listed as "rare" in terms of the *SA Red Data Book for Mammals*.

Total length: 130 - 160 cm; tail 17 - 30 cm; shoulder height: 80 cm; mass: (M) 47 kg, (F) 42 kg; 35 - 58 kg range.

Identification pointers:

- large size with shoulders higher than the rump
- long, dark brown hair, lighter in colour on neck and shoulders
- large head with long pointed ears
- long-haired tail

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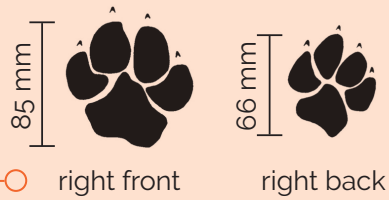

Behaviour: Brown hyena are mainly nocturnal and solitary, usually seen singly. Brown hyena are mainly scavengers but they eat a wide variety of small vertebrates, insects and fruits. Hunting and killing of large prey is rare, although on occasion they have been recorded as killing sheep and goats in farming areas. Surplus food may be hidden in holes or under vegetation.

Individuals may on occasion become stock killers. They are efficient scavengers and are particularly susceptible to poisoning.

Catching or killing pattern

- Prey is caught from behind, brought down, and then killed by crushing the head with their powerful jaws.
- Also kill by biting the prey on the side of the neck, with one tooth close to the eye and the other at the base of the throat.
- Bite at the back of skull, which may be crushed and opened to reach brains.

Feeding pattern

- Young animals are completely devoured, leaving only indications of a struggle and that something was eaten.
- With bigger animals only a part of the rib-cage is left behind, sometimes the head.
- Intestines are seldom eaten.
- Skull or large bones of the prey animal have been crushed.

Management methods: Cage traps are used with some measure of success. Use a leopard cage trap with a lamb carcass as bait. Consult the relevant authorities about the necessary permits.

Preventive

- electric fencing
- kraaling
- deterrents – noise, light and scent
- shepherds
- guard animals, e.g. Anatolian dogs

Remedial

- tranquilise and relocate

SPOTTED HYENA (*CROCUTA CROCUTA*)

Conflict category: low conflict potential

Conservation status: least concern (IUCN). Near threatened according to *SA Red Data Book for Mammals*.

Total length: 120 - 180 cm; tail: 25 cm; shoulder height: 85 cm; mass: 60 - 80 kg.

Identification pointers

- large size
- shoulder higher than rump
- short-haired
- fawn-yellow to dirty grey coat with numerous dark brown spots or blotches
- lack the long hair and pointed ears of the brown hyena
- characteristic repertoire of whooping, giggling and cackling calls

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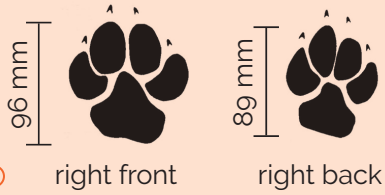

Behaviour: Mainly nocturnal, but frequently seen during the day. In the past regarded as a cowardly scavenger, now known to be an efficient and regular hunter. Hunt singly in small groups or packs, depending on the type of prey. Diet ranges from insects to large game such as zebra, wildebeest and giraffe. Scavenge and will chase other predators from their killings.

May kill livestock, but distribution is generally confined to conservation areas.

Killing or catching pattern

- When targeting livestock, spotted hyena primarily prey on cattle, sheep and goats.
- Hyena observed scavenging on a carcass may be mistaken for having killed the animal.

Feeding pattern

- When feeding on an intact carcass, spotted hyena will first consume the meat around the loins and anal region, then open the abdominal cavity and pull out the soft organs.
- Once the stomach, its wall and contents have been consumed, the hyena will eat the lungs, abdominal and leg muscles.
- Once the muscles have been eaten, the carcass is disassembled and the hyena carry off pieces to eat in peace.

Management methods: Cage traps are used with some measure of success. Use a leopard cage trap with a lamb carcass as bait. Consult the relevant authorities regarding necessary permits.

Preventive

- electric fencing
- kraaling
- deterrents – noise, light and scent
- shepherds
- guard animals, e.g. Anatolian dogs

Remedial

- cage traps
- tranquilise and relocate

Family *Mustelidae*:

HONEY BADGER (*MELLIVORA CAPENSIS*)

Conflict category: low conflict with stock farmers

Conservation status: near threatened

Total length: 90 - 100 cm; tail: 18 - 25 cm; shoulder height: 30cm; mass: 8 - 14 kg.

Identification pointers:

- stocky build and short legs
- silver-grey upperparts, including top of head
- black underparts and legs
- short, bushy black tail – often held erect when walking

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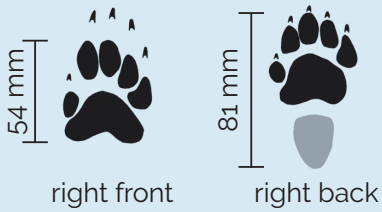

Behaviour: Nocturnal in areas with high human populations but where not disturbed will be active early in the morning and in the late afternoon; as an adaptation to temperature extremes, become mainly nocturnal in summer and diurnal in winter.

Rogue individuals may take to killing poultry, sheep and goats, and can easily tear through wire netting with strong, knife-like front claws.

Catching or killing pattern

- Seldom kill the prey before they eat.
- Large holes are eaten from the prey while still alive.
- Sometimes limbs are torn off while still alive.
- Eat meat off the face of sheep.

Feeding pattern

- Only small quantities of flesh are actually taken.
- Cheek muscles and tongue are often all that are taken.
- Prey is usually ripped open from below.
- A large hole is made in the chest cavity.
- Often the nose and soft meat beneath the jaw, including the tongue, are eaten.

Management methods: Honey badgers are also listed as near threatened in the *SA Red Data Book for Mammals*. In the Western, Eastern and Northern Cape badgers are protected wild animals. A permit is required to kill or move honey badgers.

Preventive

- kraaling
- deterrents – noise, light and scent
- shepherds
- guard animals e.g. Anatolian dogs

Remedial

- cage traps

CAPE CLAWLESS OTTER (*AONYX CAPENSIS*)

Conflict category: low conflict potential
Conservation status: least concern
Total length: 110 - 160 cm; tail: 50 cm;
shoulder height: 35 cm; mass: 10 - 21 kg (max 25 kg).
Identification pointers:

- quite large size
- dark brown coat (appears black when wet) with white lips, chin, throat and upper chest
- finger-like digits
- on land, ambles along with back arched
- may be found away from permanent water

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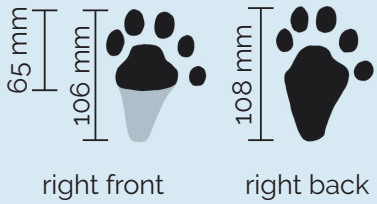

Behaviour: Clawless otters are the more common otter in South Africa and occur in all the major river systems, as well as along many minor watercourses. Active in the early morning and late afternoon but may hunt at any time of the day or night.

Can become a nuisance by hunting poultry and will often kill more than they require. May cause problems on fish farms or with captive wild fowl, but damage is usually minimal and easily resolved by electric fence strand exclusion.

Mostly active at dawn and dusk.

Killing or catching pattern

- Lambs are bitten on the nose and suffocated.

Feeding pattern

- Will eat lips, nose and ears.
- Sometimes feed on the chest, but do not eat carcasses.

Management methods: Exclude otters from farms by using wire netting to a height of 1 m, as well as electric fencing placed about 45 cm from the ground.

Preventive

- electric fencing
- kraaling
- deterrents – noise, light and scent
- shepherds
- guard animals, e.g. Anatolian dogs

Remedial

- cage traps – consult the relevant authorities regarding necessary permits

When setting cage traps for otters, place a tennis ball in the cage, since otters are very inquisitive and playful, and the ball prevents injury to them in the trap by keeping them occupied.

Family Suidae:

BUSH PIG (*POTAMOCHOERUS LARVATUS*)

Conflict category: high conflict potential

Conservation status: least concern

Total length: 1,3 - 1,7 m; shoulder height: 55 - 88 cm; tail: 38 cm; mass: 60 kg (46 - 115 kg).

Identification pointers:

- pig-like appearance
- well-haired body
- tufts of hair on ear tips
- long head
- tail held down when running
- facial hair much lighter in colour than rest of body

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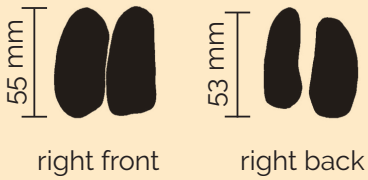

Behaviour: Mainly nocturnal but in areas where they are not disturbed, they may be seen during the day.

Bush pig use their hard snouts to root for rhizomes, bulbs and tubers. In some areas they do considerable damage to crops. Animal matter may feature quite prominently in their diet and may include insects, other invertebrates, frogs and carrion; rarely sheep and goats. Bush pig can detect the presence of carrion by scent from a distance of several kilometres.

Killing and catching pattern

- Bush pig will attack adult sheep and lambs much in the same way as baboons, with no typical way of killing their prey.

Feeding pattern

- Rip prey open with tusks and devour almost the whole carcass.
- Eat in a messy way.

Management methods: Damage should be prevented by a well-constructed fence, incorporating at least two electrified strands.

Collapsible walk-in traps are recommended for the capture of bush pig. Pre-baiting should be practised as this allows the bush pig to become used to the traps and leads to multiple captures.

Preventive

- electric fencing
- kraaling
- deterrents – noise, light and scent
- shepherds
- guard animals, e.g. Anatolian dogs

Remedial

- dogs – consult the relevant authorities regarding necessary permits
- night hunting
- cage traps

BABOON (*PAPIO URSUNIS*)

Conflict category: high conflict potential

Conservation status: least concern

Male: length: 120 - 160 cm; tail: 60 - 86 cm; mass: 25 - 45 kg (average 32 kg).

Female: length: 100 - 120 cm; tail: 50 - 60 cm; mass: 12 - 20 kg (average 16 kg).

Identification pointers:

- fairly large size
- long, dog-like snout in adults
- uniform grey to grey-brown colour
- males considerably larger than females
- nearly always in troops, very rarely solitary males

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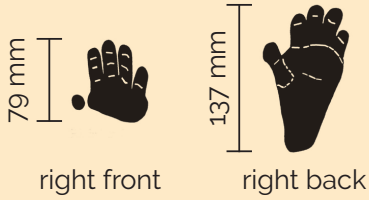

Behaviour: These are highly gregarious and social species that live in troops of 15 to sometimes 100 or more. Baboons are considered to be strictly diurnal, retreating to tree or cliff roosts before sunset.

Baboons are omnivorous, but will eat young antelope, hares, mice and birds if encountered. Hunting is an almost exclusively male activity. Baboons are occasionally responsible for stock losses.

Killing or catching pattern

- No specific way of killing prey, but the prey animals usually die of multiple wounds.
- Larger sheep are usually thrown over and bitten on the chest.

Feeding pattern

- Lambs are ripped open.
- Feeding starts at the milk stomach.
- Access is obtained by tearing the flank.
- Eat in a messy way.
- Intestines are removed and the skin is torn in such a way to provide access to the rump.
- The animal is skinned towards the neck and head area.
- Ribs, kidneys, liver, lungs and heart are also eaten.

Management methods: In general, experimentation has shown that baboon population management is particularly difficult compared to that of other species. For one thing, baboons are highly intelligent, agile animals and they are adept at circumventing non-lethal barriers, including minders, fencing, and light and noise deterrents that aim to frighten them.

Preventive

- control and management
- electric fencing
- sound and light deterrents

Remedial

Consult the relevant authorities about the necessary permits.

- cage traps
- trapping
- shooting

Baboons are a protected species in the Western Cape, in terms of the CapeNature Conservation Laws Amendment Act, 2000, Ordinance 19 of 1974. According to CapeNature's hunting notice, a farmer may only shoot two baboons a day on his land. A farmer needs a permit if he wants to shoot more than the daily bag limit, or use a trap to manage baboons. If caught in a cage trap, the animal should be euthanised in a humane manner.

BIRDS

PIED CROW (*CORVUS ALBUS*)

Conflict category: low conflict potential

Conservation status: not threatened

Length: 46 - 52 cm, wingspan: 85 - 98 cm, weight: 0,5 kg

Identification pointers:

- glossy black head and neck are interrupted by a large area of white feathering from the shoulders down to the lower breast
- tail, bill and wings are black
- eyes of a fully matured bird are dark brown

Behaviour: Pied crows will occasionally feed on small domestic livestock, especially young lambs and they have also been reported to peck at the eyes of ewes that are lambing. Crows cannot eat anything more substantial because their beaks are not sharp enough to puncture flesh.

Both the pied crow and white-necked raven (*Corvus albicollis*) can cause extensive livestock losses, especially during times of drought.

Killing or catching pattern

- Crows will descend moments after birth, surgically jabbing at lambs that are still wet and unable to stand.
- Peck at the eyes of adult sheep, leaving them blind.

Feeding pattern

- Crows only peck at the soft body parts.
- If you find a carcass that has been opened at the eyes, mouth, umbilicus or anus, then it is more than likely that one of the crow families has been feeding.
- Only if these wounds are surrounded by blood or bruising does it indicate that the crow actually killed the lamb.

Management methods: Crows are notoriously difficult to kill, and most of the current available methods of controlling their numbers are labour intensive, expensive and notoriously unsuccessful. An optimal, holistic approach to crow control should include steps such as:

- Reducing the availability of artificial food sources (e.g. better waste containment and removal in informal settlements,

better waste management at dumps and abattoirs, control of prickly pears in the Karoo, limiting the availability of offal and bones at vulture restaurants – rather use whole carcasses).
- Better management and protection of livestock to limit losses to crows.
- Crow's nests on telephone poles and electricity pylons should be trimmed or perhaps moved to a platform away from the cross-arm. Removal simply encourages the crows to build new nests.
- Eggs and nestlings can be removed from nests and killed, but as the crows will probably lay more eggs, it may be better to kill the embryos in the eggs and return them to the nest.
- Increased awareness, within both rural and urban communities, of the beneficial ecological role played by crows, of the various management options available, and of the potential consequences of unselective control methods for non-target animals.

Cape crows and pied crows are not protected in most provinces in South Africa. In the Northern Cape, for example, it is permissible for a landowner to hunt them all year round without a restriction on the "bag limit". The landowner can also give someone permission to hunt the crows on his/her property. The weapons that can be used include .22 rifles and shotguns, but not air rifles.

They may be hunted during the day and at night. They may not be hunted from a public road or in a municipal area. It is illegal to use poison to kill crows.

EAGLES

Eagles and other birds of prey are also protected animals that can cause stock loss problems. Martial and Verreaux's (black) eagles are large enough to pose a threat to small stock. In rare cases rogue individuals of these species have been known to prey on young lambs or goat kids up to an age of about three weeks. Cattle farmers have nothing to fear from eagles; even a newborn calf is far too big for the largest eagle to tackle.

Eagles stand accused of killing lambs and other small stock. But seeing an eagle or other bird of prey at a lamb carcass is not sufficient evidence to pass judgment on the bird. Eagles are by nature scavengers and unlike the stealthy caracal or jackal, they will stand on a dead lamb in full view of people, a fact that sometimes wrongly leads to prosecution.

Eagles often scavenge on the afterbirth of ewes during the lambing season and sit and wait for her to finish lambing. If a lamb carcass is relatively fresh, then the cause of death can usually be determined by a simple post-mortem examination in the veld.

VERREAUX'S OR BLACK EAGLE (*AQUILA VERREAUXII*)

Conflict category: low conflict potential

Conservation status: not threatened

Length: 78 - 90 cm, wingspan: 181 - 219 cm, weight: 3 - 4,15 kg (M), 3,1 - 5,8 kg (F).

Identification pointers:

- jet-black plumage
- white V on the back and white rump, which is exposed when the bird flies
- yellow feet
- bill is sharp and hooked

Behaviour: Verreaux's or black eagles are found along mountain ranges and rocky outcrops throughout Africa. Nests are built on cliff ledges or boulders and one pair may use the same nest for many years.

The rock *dassie* (hyrax) comprises 90% of their diet, but they will occasionally predate on small stock lambs and kids. They will also readily eat carrion. A pair of Verreaux's eagles are territorial and will usually keep any rogue eagles out of the area.

Rogues are usually young, newly dispersing birds and may have a greater impact on livestock than the resident pair, possibly due to inexperience in hunting and desperation for food.

MARTIAL EAGLE (*POLEMAETUS BELLICOSUS*)

Conflict category: low conflict potential

Conservation status: vulnerable

Length: 78 - 96 cm, wingspan: 188 - 260 cm, weight: 3,1 - 6,2 kg

Identification pointers:

- largest eagle in Africa
- adults have brown upperparts and a short dark crest
- underparts are white with brown to black spots that extend to feathered legs
- bill is strongly hooked and black
- toes are bluish grey with large curved talons

Behaviour: Martial eagles are mostly found in open country and bushveld. Nests are large stick structures, built under the canopy of a tall tree. One pair may use the same nest for many years.

Hares, rock *dassies* (hyraxes), leguaan

and game birds are the main prey, but will occasionally predate small lambs and kids.

Martial eagles occupy large territories, ensuring that rogue eagles do not enter the area. Rogues may have a greater impact on livestock than the resident pair.

Identifying eagle as a predator:

If an eagle is suspected of killing stock, a farmer should establish beyond any doubt that the eagle is guilty before taking any action. All large eagles will readily take carrion and their presence at a carcass does not mean that they killed the animal. Such a carcass should be carefully examined to determine the cause of death.

✚ Catching or killing pattern

- Prey size is small, usually animals younger than four days old and weighing less than 5 kg.
- Eagles kill with their talons. Lambs can either be killed by a strike to the head or, more usually, by the crushing grip of the talons on the neck and upper back.
- If these areas are skinned, you will find irregularly spaced punctures to the skin and maybe the skull.
- Punctures will be surrounded by massive bruising under the skin, which is caused by the immense grip of the talons.

◆ Feeding pattern

- Physical evidence like feathers or droppings around the carcass.
- Eagles pluck out large quantities of fur or wool.
- Mostly begin feeding on the carcass from just behind the front limbs, working their way towards the head.
- Eat the lungs, heart and other organs through the cavity and sometimes pull the intestines through the cavity.
- With their beaks, birds of prey neatly peck out the meat from between the bones, leaving the carcass well cleaned.
- Only the ends of the ribs may be clipped off.
- Eagles never tear the stomach wall.

These signs show that an eagle may have fed on the lamb, but they do not indicate or prove that the eagle killed the lamb.

◘ Management methods: Sound stock-farming practices should be employed to ensure that eagles are not tempted to switch from their natural prey to small stock young:

- have a minimum number of lambing seasons a year to allow for better and easier care of lambs;
- do not situate lambing herds in the immediate vicinity of an active eagle's nest site but instead near to the homestead or a place of human activity;
- if there is no alternative to grazing lambing herds in remote areas, ensure that they are accompanied by a shepherd whose presence will deter any attack by the eagles;
- ewes that abandon newly born young should be culled from the flock;
- poultry should, where possible, be kept in closed runs or enclosures.

If it can be proven that an eagle was responsible for killing stock, the farmer must contact the nearest office of the relevant nature conservation authority without any delay. The conservation officer will provide advice or assistance or seek expert assistance for removing the rogue individual.

SEAGULL (*LARUS VETULA*)

Conflict category: low conflict potential

Conservation status: least concern

Length: 54 - 65 cm, wingspan: 128 - 142 cm, weight: 0,6 - 1,3 kg

Identification pointers:

- black upperparts
- white underparts, head, neck and tail
- wings black on top with white spots on tip of primaries
- wings white below with black near ends
- yellow bill with red spot
- dark eye

Behaviour: The Cape gull is largely sedentary and large colonies tend to stick to a favoured beach or coastal area. They frequently converge at popular feeding sites and have been known to attack prey en masse. This is the case when they peck out the eyes of seal pups and then attack the blinded pups in a group, leaving little chance of escape.

Gulls are, in general, flexible diners; happy to take whatever is available. Naturally, they tend to favour fish, worms, molluscs, smaller birds and even small mammals and vermin. They will prey on young and sick animals (including beached whales and dolphins or even cattle), or those small enough to grasp and kill.

Feeding pattern

- Similar to crows.

Management methods:

- Reduce the availability of artificial food sources, e.g. better waste management.
- Manage lambing seasons to allow for better and easier care.
- Situate lambing herds near the homestead or a place of human activity.
- Scarecrows can help to scare away seagulls.

Seagulls are protected birds and a permit is required to manage them.

3.3 POST-PREDATION: IDENTIFYING THE CAUSE OF DEATH

A farmer needs to understand that it is not only impossible to eliminate all predators from farms, but that these predators are in fact beneficial to his farming enterprise. His aim in predation management must be to minimise stock losses and create a new balance in which he preserves an ecosystem and not a species. The only possible way that a farmer can effectively reduce his losses due to predators cost-effectively is to control those predators responsible for stock losses in the most selective manner possible.

To effectively reduce stock losses it is therefore vitally important to identify the culprit responsible for stock losses correctly. It does not help setting cage traps for caracal if the losses were caused by jackal. Regular stock checks enable a farmer to find the carcass as soon as possible after the attack.

Clues to the identification of the culprit:

1. The type of prey animal.
2. Signs left by the predator at the kill.
3. The method used by the predator to kill the animal.
4. The way in which the animal was utilised by the predator, i.e. feeding patterns.

All these signs must be seen in combination. There is no single characteristic which alone can identify the culprit. The farmer should begin by familiarising himself with the predators in the area and then start attempting to identify his own damage-causing animals.

Damage assessment

Inspect the site and the remains of the livestock:

1. Look at the tracks
   - Animals belonging to the cat family 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, which do not retract their claws).
   - All cat species leave claw marks on the carcass.
   - The tracks of animals belonging to the dog family, e.g. domestic dog, Cape fox, black-backed jackal and hyena, have a straight lower edge of the main pad which may be at an angle.

2. Prey size
   - Predators show a clear preference for the specific size of the prey animal they will target. The size of the animal killed can help to determine the predator species.

3. Killing pattern
   - The location of the killing bite inflicted by the predator, as well as the bite width (measurement between the canines), is best seen on the inside of the skin.

4. Feeding pattern
   - The body parts that have been eaten on the prey animal and the remains of the carcass are clear indications of the predator species involved and differ for each predatory species.
   - The amount of flesh eaten in one feeding is also an important clue to identifying the predator.

PREY ANIMAL	POSSIBLE PREDATORS	UNLIKELY PREDATORS
Lambs up to two weeks	Black-backed jackal Cape fox Baboon Caracal	African wild cat Martial eagle Black eagle
Older lambs	Black-backed jackal Caracal Domestic dog	Honey badger Baboon Brown hyena
Sheep or calves	Caracal Domestic dog Cheetah Leopard	Black-backed jackal Honey badger Spotted hyena Baboon
Cows	Leopard	Cheetah Domestic dog Spotted hyena

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

1. Bruising
   - Look for bruising by skinning the carcass. If there is little or no bruising, it means that the animal was dead before the predator arrived.

2. Bruising and bite marks
   - Start skinning on the neck, a handwidth 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.

3. Claw marks
   - Look for claw marks on both sides on the rump of the prey animal. If claw marks are visible, the predator is one of the cat species.

4. Windpipe
   - Open the windpipe (trachea) to look for foam. If there is foam in the windpipe, it indicates that the animal was breathing before being strangled and suffocated.

Check if a newborn was killed or was stillborn and only scavenged on.

1. Hooves – unworn hoof membranes indicate that the animal was too weak to get up and walk, or was stillborn.

2. Lungs – a dark, reddish colour indicates that the animal was stillborn and did not breathe.

3. Gut – if there are no milk curds, the animal was not fed by the mother.

4. Heart and kidneys – white fat around these organs indicates a healthy animal.

PREDATOR IDENTIFICATION TABLE

BRUISES ON THROAT AND/OR NECK

Species	Spoor	Size of prey	Killing pattern
Black-backed jackal 	Oval with claw marks in loose soil. 	Newborn to 50 kg, sometimes larger. 0 - 50 kg	Bite on side of neck, under eye and windpipe. Hindquarters of larger prey.
Caracal 	Rounded with no claw marks. Three lobes on back pad. 	Up to adult ewe. Rhebok and even impala. 10 - 50 kg	Mostly under the throat. Claw marks on shoulder and back of body.
Cape fox 	Small, like black-backed jackal 	Lambs three to four days old	Bite under throat.
Leopard 	Large round three lobes on back of pad. 	Large calves	Bite under throat or back of neck.
Cheetah 	Oval with claw marks. Pad lobes long. 	Impala	Bite under throat. Dewclaw marks on rump.

Tooth marks	Carcass movement	Feeding pattern
21 - 30 mm, average 29 mm	If moved, only one direction.	Open loin. Eat entrails and soft meat, cartilage and thin bone.
26 - 32 mm, average 30 mm	Eat where caught. Might cover carcass with vegetation.	Pull out tufts of wool. Stomach remains closed. Eat between back legs, shoulder. Red hair on wool.
±15 mm	Eat where caught.	Soft meat and entrails. Milk stomach of small lambs.
40 - 50 mm	Dragged, covered or hung in tree.	Between back legs. Shoulder. Thick bones.
35 - 42 mm	Eat where caught	Skinned out. Full skin still attached to legs and neck.

NO BRUISING ON THROAT/ NECK BUT BRUISES ON BODY

Species	Track	Size of prey	Killing pattern
Domestic dog 	Roundish, large, claw marks.	In packs – sheep and calves.	All over – random bites. Prey torn apart.
Brown hyena 	Pad asymmetric, front paw larger than back paw. 	Young lambs and sick larger animals.	Skull crushed from top bite.
Spotted hyena 	Pad asymmetric, front paw larger than back paw. 	Adult cow.	Tear chunks out of flank and stomach. Bite nose and tail.
Cape clawless otter 	Five toes. 	Infant lambs.	Bitten all over.
Baboon 	Hand and foot marks. Five toes. Thumb on both prints. 	Small lambs.	Bite behind shoulders. Cut marks rather than punctures.

Tooth marks	Carcass movement	Feeding pattern
35 - 60 mm	Wool and pieces of carcass strewn over large area.	Eat anywhere.
± 50 mm	Carry off large pieces or whole lambs and bury or hide under plants.	Everything – even break back leg of large calf.
± 55 mm	Eat where caught but spread bones over wide area.	Everything.
20 - 30 mm	Eat where caught.	Chest, lips, nose, eyes, tongue.
±45 mm	Carry pieces all over. Calves bitten and not killed. Massive infections.	Tear apart and eat stomach and soft meat of lambs.

4 THE REGULATORY FRAMEWORK

INTRODUCTION

Producers should familiarise themselves with the various sets of South African legislation (national and provincial laws, as well as ordinances) to ensure healthy ecosystems and prevent prosecution. This legislation mainly falls under the Department of Agriculture, Forestry and Fisheries, the Department of Environmental Affairs, the Department of Health and the provincial nature conservation authorities (mainly the nature conservation departments).

The applicable national and provincial legislation is available on the website of the PMF at **www.pmfsa.co.za/home/knowledge-library/legislation** or scan the QR code for access to this information.

The National Environmental Management Biodiversity Act (Act 10 of 2004) ensures that South African species and ecosystems are protected and used sustainably and that the benefits of biodiversity are shared fairly. The Act defines poisoning, the capturing and hunting of animals as restricted activities, and prohibits the hunting of damage-causing animals (DCAs) by using hunting dogs.

The killing and hunting of listed (threatened) species by using poison, snares, traps, dogs and different types of firearms are prohibited unless the animal is specifically regarded as a DCA by the authorities. Only then can a permit be issued for these kinds of activities.

Section 97 covers the regulations for threatened and protected species (**Tops regulations**) and provides guidelines for the issuing of permits.

The producer should note various aspects of the laws governing predation management, including the use of poison, capturing devices and dogs, and hunting with a firearm.

4.1 USE OF POISON

4.1.1 Pesticides and animal health remedies

All pesticides (insecticides, fungicides, herbicides, additives and adjuvants which are all collectively defined as agricultural products) and animal health remedies (dips, vaccines and anthelmintics which are all collectively defined as livestock remedies) are regulated by the **Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947)**. The Act is supported by regulations that provide specific guidelines for the import, procurement, alienation, transport, use, advertising and disposal of agricultural products.

In terms of **Regulation No. R1716 of 26 July 1991 of Act 36 of 1947**, it is an offence to obtain, sell, use or alienate any agricultural remedies or livestock remedies for any other purpose than indicated on the label. Alienate in this case means any action that may cause a person, other than the person who has it in his/her possession, to access the agricultural or livestock remedy.

No agricultural or livestock remedies are registered to poison predators and therefore this Act prohibits such action. Consequently it is an offence if a person poisons a predator with an agricultural or livestock remedy. Even obtaining such agricultural or livestock remedies, giving it

away, selling or buying it for the purpose of poisoning predators are serious offences.

Predators may not be poisoned with any remedy that is registered in terms of Act 36 of 1947. The use of these remedies as bait, of any kind whatsoever, is prohibited.

The Act even prohibits, in terms of **Regulation No. R181 of 7 February 2003**, the procurement, sale, use or alienation of agricultural or livestock remedies in any container other than the original container displaying the original label. It is an offence if a person purchases an agricultural or livestock remedy, steals it (like poachers do), gives it away, sells or uses it if it is not in the original container with the original label.

Agricultural and livestock remedies may not be in the possession of any person in containers other than the original containers displaying the original labels, as the possession of the remedy will be regarded as consideration for use, regardless of what the intended use of it might be.

4.1.2 Hazardous substances

The **Hazardous Substances Act (Act 15 of 1973)** regulates a wide range of hazardous substances such as some poisonous and extremely poisonous agricultural remedies, sodium monofluoroacetate, strychnine, cyanide and related remedies. These remedies are all classified as Schedule I (A or B) hazardous substances. There is confusion, even among government officials, about the interpretation and enforcement of the legislation and its related regulations.

Firstly the Act determines that any person trading in Schedule I hazardous substances must be licensed. The licence can only be issued by the health department of a provincial or local municipal authority and only by a competent official. This competent official is usually someone who is registered with the Health Professions Council. The law does not make provision for the possession of hazardous substances like these.

It is very important to note that the use of sodium monofluoroacetate (1080) is authorised by the Act, but for toxic collars only and for no other method. Persons who manufacture and sell toxic collars must be licensed to do so. Anyone selling 1080, in any form, must be licensed.

Nowadays strychnine is unobtainable and permits for importing it will never be

granted. Veterinarians may not issue prescriptions for the use of strychnine. If they do so they are liable for any consequence following its use.

Cyanide which is used in the so-called coyote getters is also subject to the provisions of the Act and a person must be licensed to sell it.

Bear in mind that the use of any poison, even if it is regulated as a hazardous substance in terms of Act 15 of 1973, is still subject to the ordinances or legislation of the province in which it will be used. This means that if a person wants to buy and use toxic collars, they can only be supplied by someone who is licensed to do so.

The user must first obtain the required permit from the nature conservation authority in the province before toxic collars may be used. The provincial nature conservation authority will set specific conditions for issuing a permit which the permit holder should follow to the letter.

If someone plans to use coyote getters, a permit must be obtained from the province's nature conservation authority in advance. As in the case of the issuing of a permit for toxic collars, the authorities will also set conditions such as a demand that the person should first be trained and certified.

The Firearms Control Act (Act 60 of 2000) outlawed previous models of coyote getters used since the early 60s because of the use of ammunition. Meanwhile two other models – an American product and a new South African device that does not use ammunition – were developed and are therefore not regarded as firearms.

Toxic collars filled with 1080 and coyote getters loaded with cyanide may be used if the provincial authority has issued a permit. Using 1080 and cyanide as bait is prohibited.

Note that any poison, for example in the toxic collar and coyote getter, may only be used on the owner's property. It may not be used on the property of any other person or institution.

4.2 USE OF CAPTURING DEVICES

In the hands of the inexperienced and irresponsible, traps are basically murder weapons that trap and mutilate all kinds of animals.

The capturing of predators with soft traps and cage traps or any other devices is subject to the provisions of nature conservation ordinances or the legislation of the respective provinces. It is not generally known that the capturing of predators, regardless of the species, is considered a prohibited or illegal hunting method unless the ordinance recognises it as a legal method. Note that a prohibited hunting method can be used if the conservation authority has issued a permit.

It is in the interest of the producer to contact the provincial conservation authorities to find out whether the authorities issue permits for the use of capturing devices (see Chapter 5 for contact details).

Most provinces have prohibited the use of capturing devices such as traps and cage traps as hunting methods, but farm

owners in most provinces are absolved from this legislation. In some provinces the use of traps is permitted for caracal and black-backed jackal, provided the soft trap has an adjustable trigger plate with a screw that can be set in such a way that non-targeted species are not caught.

The same rules basically apply for the use of cage traps. The farm owner may use them only for animals such as black-backed jackal and caracal, but it is prohibited the moment the species has protected status. However, the provincial authority may issue a permit for the use of a cage trap to catch a protected species after an application has been received from the farm owner.

If a person who is not the farm owner is contracted to catch caracal and black-backed jackal, he/she must have a permit in his/her possession to capture damage-causing animals. Most provinces will provide training to such a person before the permit is issued. A farm owner may not use capturing devices on a neighbour's farm without a permit.

4.3 USE OF DOGS

Hunting with dogs is a prohibited hunting method and may only be used if the required permit is obtained. Permit conditions can be stringent and the handler should familiarise himself with the relevant conditions.

The owner or handler of the dogs must have written authorisation from the land owner to hunt with dogs on his property. Provinces usually have a restriction on the number of dogs that may be used, as well as the way in which the dogs may be handled. In terms of the **Animal Protection Act (Act 71 of 1962)** dogs may not have physical contact with or kill the predator. Neither may dogs be released on any farm if the landowner has not given written permission.

4.4 HUNTING WITH A FIREARM

In most provinces the landowner has the right to hunt caracal and black-backed jackal with any firearm. The landowner may also hunt with a spotlight at night on his own farm without a permit except in the Western Cape where a permit is required. When it comes to protected species, the landowner in all the provinces must have a permit before these animals may be hunted.

Hunters that offer services to hunt DCAs are subject to all the provisions of the ordinances and legislation. For example, some provinces require that they should first receive training and be certified before they can apply for a permit.

If the permit is issued, the hunters may hunt with spotlights and calling devices at night. The province may grant a permit condition for such a person to hunt with a semi-automatic rifle – under normal circumstances this is an illegal hunting firearm.

It is the responsibility of the hunter to consult with the provincial authorities. Persons like these may hunt from a vehicle although most ordinances prohibit it. Hunting from a helicopter, fixed-wing aircraft or microlight may be granted to a hunter who has the required permit. However, the hunting of protected species such as leopard and hyena is excluded from these privileges, unless the province authorises it with a permit.

A hunter who has a permit to hunt the predators mentioned, must have written permission from the landowner to carry out the hunt. He is not allowed to hunt where the landowner has not given him written permission to do so.

Hunting of predators such as black-backed jackal and caracal is totally prohibited in a park or any formally proclaimed protected area. It includes any national park under the management of Sanparks or a provincial nature reserve. Only officials of Sanparks may hunt in national parks and exclusively for the purpose of ecological management.

The Acts were applicable at the time of publication, and may be amended. Always consult with the relevant authorities for the correct procedures.

CONTACT DETAILS 5

PMF STEERING COMMITTEE

Secretariat	041 365 5030
NWGA	041 365 5030
Samga	049 8360140
RPO	012 349 1102
WRSA	012 335 6994
Department of Agriculture, Forestry and Fisheries	012 319 7631
Department of Environmental Affairs	012 310 3534 / 012 310 3225
Griffon Poison Information Centre Dr Gerhard Verdoorn	082 446 8946 / nesher@tiscali.co.za

Department of Environmental Affairs (DEA)

Department of Environmental Affairs – **www.environment.gov.za**
Environmental House, 473 Steve Biko Street, Arcadia, PRETORIA
Private Bag X447 PRETORIA 0001
Magdel Boshoff
Directorate: Tops and Cites
012 310 3534 / 083 952 2334
mboshoff@environment.gov.za

Provincial departments and permit-issuing authorities

Eastern Cape

Department of Economic Development, Environmental Affairs and Tourism (DEDEA) – **www.dedea.gov.za**
Beacon Hill, cnr of Hargreaves Street and Hockley Close
KING WILLIAM'S TOWN 5600
Private Bag X0054 BHISHO 5605
043 605 7300
For contact details of the six regions visit **www.dedea.gov.za/Lists/District%20Contacts/AllItems.aspx**

Eastern Cape Parks and Tourism Agency (ECPTA) – **www.ecparks.co.za**
6 St Marks Road, Southernwood, EAST LONDON 5200
P.O. Box 11235, Southernwood, EAST LONDON 5201
043 705 4400 or 086 111 3320
info@ecparks.co.za

Free State

Department of Economic, Small Business Development, Tourism and Environmental Affairs – **www.edtea.fs.gov.za**
Agricultural Building, 98 Zastron Street, BLOEMFONTEIN 9300
Private Bag X20801 BLOEMFONTEIN 9300
086 110 2185 / 051 404 9600 / 051 400 9542

Gauteng

Department of Agriculture and Rural Development (GDARD) – **www.gdard.gpg.gov.za**
11 Diagonal Street, Diamond Building, Newtown, JOHANNESBURG 2000
P.O. Box 8769, JOHANNESBURG 2000
011 240 2500
gdard@gauteng.gov.za
For contact details of the regional offices visit **www.gdard.gpg.gov.za/Contacts/Pages/default_.aspx**

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KwaZulu-Natal

Department of Agriculture and Rural Development – **www.kzndae.gov.za**
No.1 Cedara, Executive Building, Cedara College, PIETERMARITZBURG 3201
Private Bag X9059 PIETERMARITZBURG 3200
033 355 9100
For contact details of the district offices visit **www.kzndae.gov.za/Portals/0/CONTACT%20DETAILS/2016/DISTRICT%20CONTACT%20DETAILS.pdf**

KZN Nature Conservation Board t/a Ezemvelo KZN Wildlife – **www.kznwildlife.com**
Queen Elizabeth Park, 1 Peter Brown Drive, Montrose, PIETERMARTIZBURG
P.O. Box 13053 CASCADES 3202
033 845 1968
permits@kznwildlife.com

Limpopo

Department of Economic Development, Environment and Tourism (LEDET) – **www.ledet.gov.za**
20 Hans van Rensburg Street / 19 Biccard Street, POLOKWANE 0700
Private Bag X9484 POLOKWANE 0700
015 290 7000
info@ledet.gov.za / permits@ledet.gov.za
For contact details of the district offices visit **www.ledet.gov.za/?page_id=728**

Mpumalanga

Department of Economic Development and Tourism – **www.mpumalanga.gov.za/dedt/**
Riverside Government Complex Building, 4 Government Boulevard, MBOMBELA 1200
Private Bag X11215 MBOMBELA 1200
013 766 4004

Mpumalanga Tourism and Parks Agency – **www.mpumalanga.com**
Hall's Gateway on N4, Mataffin, MBOMBELA
Private Bag X11338 NELSPRUIT 1200
013 759 5300/1
info@mpta.co.za

Northern Cape

Department of Environment and Nature Conservation (DENC) – **www.northern-cape.gov.za**
Sasko Building, 90 Long Street, KIMBERLEY 8301
Private Bag X6102 KIMBERLEY 8301
053 807 7416/7300

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For contact details of the regional offices **denc.ncpg.gov.za/index.php/contact-us/regional-offices**

North West

Department of Rural, Environment and Agricultural Development (READ) – **www.nwpg.gov.za**
Department House (NWDC Building), cnr Provident Street and University Drive, MMABATHO 2735
Private Bag X2039 MMABATHO 2735
018 387 7700

Western Cape

Department of Environmental Affairs and Development Planning – **www.westerncape.gov.za/eadp/**
Utilitas Building, 1 Dorp Street, CAPE TOWN 8001
Private Bag X9086 CAPE TOWN 8000
021 483 4091
@ enquiries.eadp@westerncape.gov.za

CapeNature – **www.capenature.co.za**
PGWC Shared Services Centre, c/o Bosduif and Volstruis Streets, BRIDGETOWN 7766
Private Bag X29 GATESVILLE 7766
021 483 0000 / 483 0118 20/21
@ permits.fax@capenature.co.za
For contact information of the regional offices visit **www.capenature.co.za/contact-us/offices/**

SUPPLIERS

COLLARS		
Agri-Alert	Jan-Adriaan Cordier	018 293 1291 / info@agrialert.co.za **www.agri-alert.co.za**
Celmax	Philip Lötter	028 212 3346 / philip@elpek.co.za **www.celmax.co.za**
E-Shepherd	Jaco Delport	082 376 0768 / **www.eshepherd.biz**
Hotgroup	Cornay Botma	083 447 6148 0861 1468225 **www.hotgroup.co.za**
Probuzz	Desmund Schmidt	082414 3242 / pro_buzz@mweb.co.za **www.probuzz.co.za**

Protect-a-Lamb	Eddie Steenkamp	082 778 7775
Dead Stop collar	Klaas Louw	072 424 7752
King collar	Nick King	072 379 8067
COURSES		
	Peter Schneekluth	084 803 2399 (Prince Albert) jackalcontrol@absamail.co.za
	Max van der Merwe	073 207 0834 (Ermelo)
	Niel Viljoen	082 381 8227 (Loxton), NWGA consultant
	Robert Wilken and Lourens Goosen	084 362 8631 (Bloemfontein) 051 442 7082
DETERRENTS		
Sound and light	André Theron	083 338 2025 / 02062 (ask for 1604 Merweville) asco@mtnloaded.co.za
Skaapwagter	Ernst van Zyl	082 450 6988 / ernst@skaapwagter.com **www.skaapwagters.co.za**
ELECTRIC FENCING		
Stafix	Adriaan van Rensburg	082 373 2393 (Bloemfontein)
	Maurice Williamson	082 557 2780 (KwaZulu-Natal)
Meps	Chris Marais	082 459 3743 (Gauteng)
GUARD ANIMALS		
Alpacas	Sally Kingwill	049 840 0354 /084 251 0426 (Eastern Cape)
Anatolian shepherd dog breeders	Fouché Jordaan	082 557 5660 (Brandfort)
	Roux de Waal	082 927 9493 (Bothaville)
	Marieta Pieterse	083 656 0994 (Carolina)
	Ramsem	051 441 7913 (Bloemfontein)
	Gerrie Scholtz	083 633 6006 (Hopetown)
	Cyril Stannard	082 927 2729 (Cheetah Foundation)
	Jan van Biljon	056 343 1093 / 082 781 5210 (Viljoenskroon)
Black wildebeest	Blits van Heerden	082 777 0747 (Edenburg)

Donkeys/ostriches/alpaca	Jandré Boshoff	082 579 1718 (Fouriesburg)
Jack Russells	Henk Coetsee	082 772 9114 (Mooirivier)
JACKAL CONTROL		
	Steve Blakey	072 591 1788 (Robertson)
	Heinrich Funk	051 773 7042/082 494 4060 (Philippolis)
	Lourens Goosen	082 718 9125 (Bloemfontein)
	Rion Horn	072 124 9626 (Welkom)
	John Mohaud	083 501 1848 (dogs, Kokstad)
	Hilton Saunders	072 372 9065 (Greytown)
	PJ Schoeman	082 953 7740 (Mooirivier)
	Marius Steyl	083 447 4855 (Bloemfontein)
	Johan Strydom	082 378 4460 (Warden)
	Meyburgh Theron	083 271 8898 (Winburg)
		Doornpoort@vodamail.co.za
	Tewis van Oudtshoorn	083 630 9419 (Ladismith, Western Cape)
	Francois Raubenheimer	073 420 4438 (Rouxville)
	Nick van Zyl	072 311 4556 (Bethlehem)
HUNTING		
Free State Hunters' Association		051 447 8529 (Office)
Licensed jackal hunter	Francois Ferreira	084 513 8159 / 042 283 0325 (Grahamstown)
LEOPARDS		
Cape Leopard Trust	Helen Turnbull	076 522 1201
POISON EXPERT		
	Dr Gerhard Verdoorn	082 446 8946 / nesher@tiscali.co.za
PREDATOR EXPERTS		
	Niel Viljoen	082 381 8227 (Loxton)
	Thys de Wet	076 129 0889
	Tim Snow	082 802 6223
	Robert Wilken	084 362 8631 (Bloemfontein)
TRAPS AND CAGE TRAPS		
Leg-holding devices/ cage traps	Johan Strydom	082 378 4460 (Warden)
Tophok	Anton Roets	083 320 2083

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INDEX