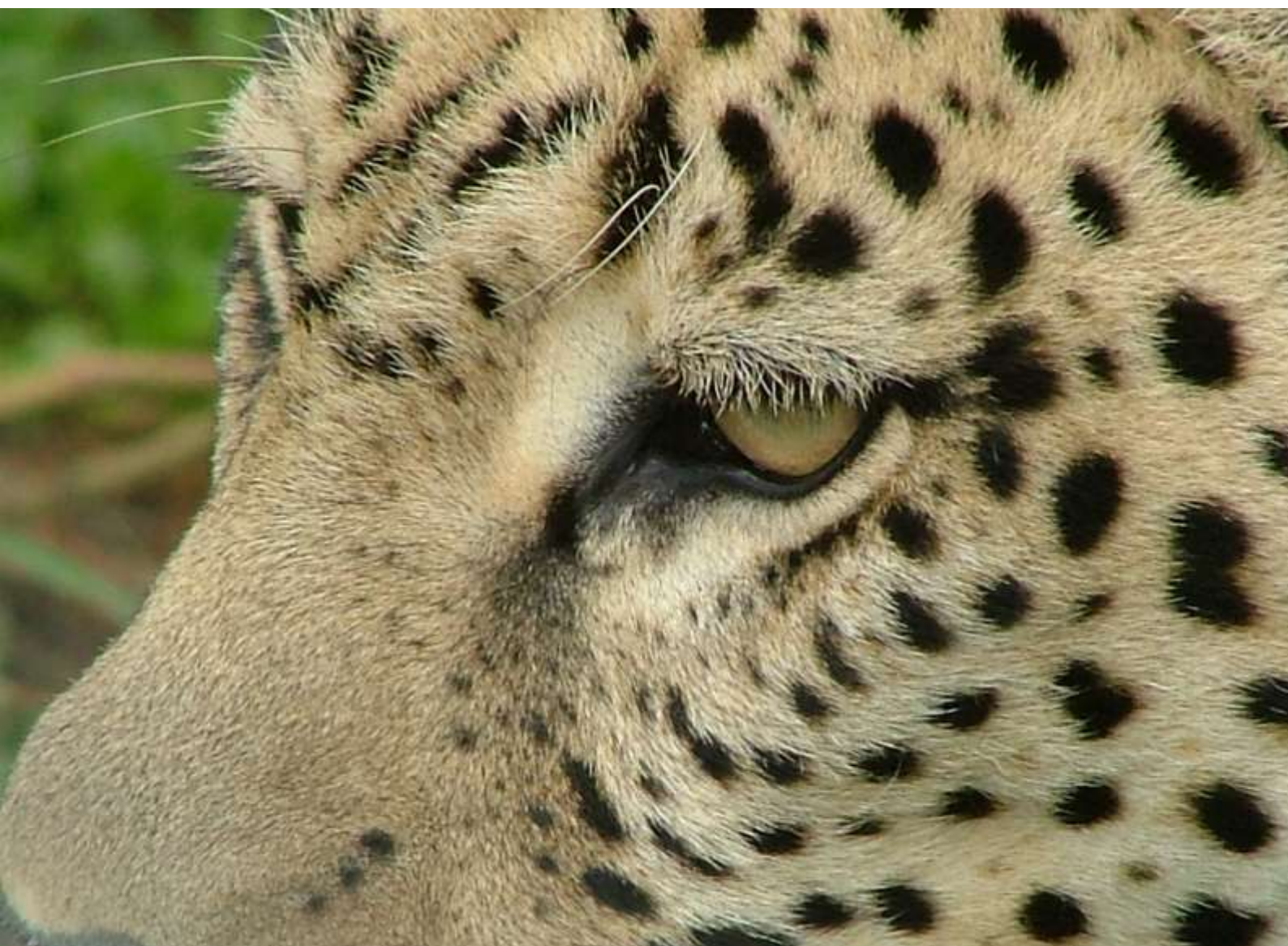




Predators on Livestock Farms

***A Practical Farmers' Manual for Non-lethal, Holistic,
Ecologically Acceptable and Ethical Management***

Compiled by Bool Smuts



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Foreword

I have spent most of my life involved with conservation and have seen many atrocities committed against our indigenous Fauna and Flora over the years. None more so than the continuous slaughter of natural predators trying to survive in a world which is in conflict with man's interests. Throughout the world people are finding ways to live in harmony with nature and it was with great interest that I received this manual which promotes practical and ethical ways to deal with predator problems facing our farming community.

Over many generations an extremely narrow minded "mindset" towards predators has been one of the most difficult challenges facing conservationists. Methods used to exterminate predators have been passed down from generation to generation and are often extremely cruel. Be this as it may, our farming community generally tries to co-exist in harmony with nature and it is hoped that this manual will provide insight into new methods which can be used very effectively to deal with predator problems.

Exposure to the extreme horror of predators attempting to escape from gin traps by chewing off their own paws or the indiscriminate use of lethal poisons emphasize the absolute necessity for such a manual in the industry.

The Landmark Foundation and its sponsors are to be commended for their efforts and I trust that this manual will have a positive impact on the involved communities and lead to a better understanding and tolerance of our predator species.

**John Adendorff
Conservationist
Addo Elephant National Park**



This manual has also been endorsed by:



Acknowledgements

The Woolworths Trust contributed the financial resources for the production of this document. This has been done in aid of the conservation of predators on commercial livestock farms as part of the Woolworths Good Business Journey.



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The Cheetah Conservation Fund (CCF, Namibia) is gratefully acknowledged for their contribution and access to the text, illustrations and images from their 2004 ***Integrated Livestock & Predator Management: A Farmer's Guide***. The CCF, based in Namibia, has generously permitted the utilisation of this material in aid of predator conservation in South Africa.

Cheetah Outreach, De Wildt Cheetah and Wildlife Trust, and CapeNature have provided inputs to this document. The latter through their ***Best Management Practices: Human-Wildlife Conflict Prevention and Management*** working document. These contributions are gratefully acknowledged.

The advice and guidance of other conservationists and farmers that have over the years helped to better the understanding on the topic is acknowledged.

The Landmark Foundation acknowledges the collaboration of partner organisations the NSPCA, CapeNature, Woolworths Trust, Royal Canin, Vodacom Foundation, Henry and Iris Englund Foundation, Pick 'n Pay, the Ackerman Family Foundation, Deutsche Bank, Polaris Capital, the Port Elizabeth Agricultural Society. The Eastern Cape Department of Economic Development and Environmental Affairs are acknowledged for their support in



the work of the Landmark Foundation. Tom McLaughlin of Woolworths is recognised for his pioneering work in conservation in the retail industry, and his patience and encouragement with the compilation of this document.

Special acknowledgement is given to the farmers of the Baviaanskloof Valley, Eastern Cape, who were the first farmers who tackled the predation problem in a comprehensive, holistic and area-wide manner, and successfully introduced a range of holistic, non-lethal control methods on their farms as a collective.

Jeannine McManus, Derek Clark, Rodger Smith, Jaco van Deventer, Annie Beckhelling, Deon Cilliers, Ian Forrester, Sally Kingwell, John Adendorff, Patrick Grehan, Roy and Jenny Heydenrych, Larry King, Eddie Steenkamp, and Debbie Douglas are thanked for their contributions to the text and editing.

June 2008

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Introduction

This manual is intended to be a practical guide to farmers who live with predators on their rangelands, and who are seeking **Non-lethal, Holistic, Ecologically Acceptable and Ethical Management Strategies** to deal with predator–livestock farming conflicts. The focus of the manual is on the production of meat and animal fibre products that are wildlife– and, particularly, predator–friendly, thus assisting in the conservation of predation as a biodiversity process. It does not address all issues around animal husbandry, nor damage – causing animals in other forms of agricultural production, nor does it focus on the game farming industry.

This publication will serve as the manual and guide to farmers of veld – reared meat and animal fibre products to qualify for certification to the wildlife– friendly brand of products that is being planned, and will allow the farmer to profit from conservation–friendly land uses.

The Landmark Foundation recognises that there is a bias in the views conveyed in this document to the areas in which it practically operates, namely the Fynbos, Valley Thicket, Nama and Succulent Karoo, Grassland and Forest biomes of the southern parts of South Africa. This manual may be an incomplete advisory to other areas in which predation and commercial agriculture are in conflict.

No single methodology promoted in this manual will be 100% effective in reducing and preventing livestock farming and predator conflicts, but in conjunction with alternating usage of the promoted strategies, there will be improvement and cost effective management. These strategies would provide improved production, and the development of the wildlife–friendly brand of meat and animal fibre products will provide better financial returns on products produced by the promoted means.

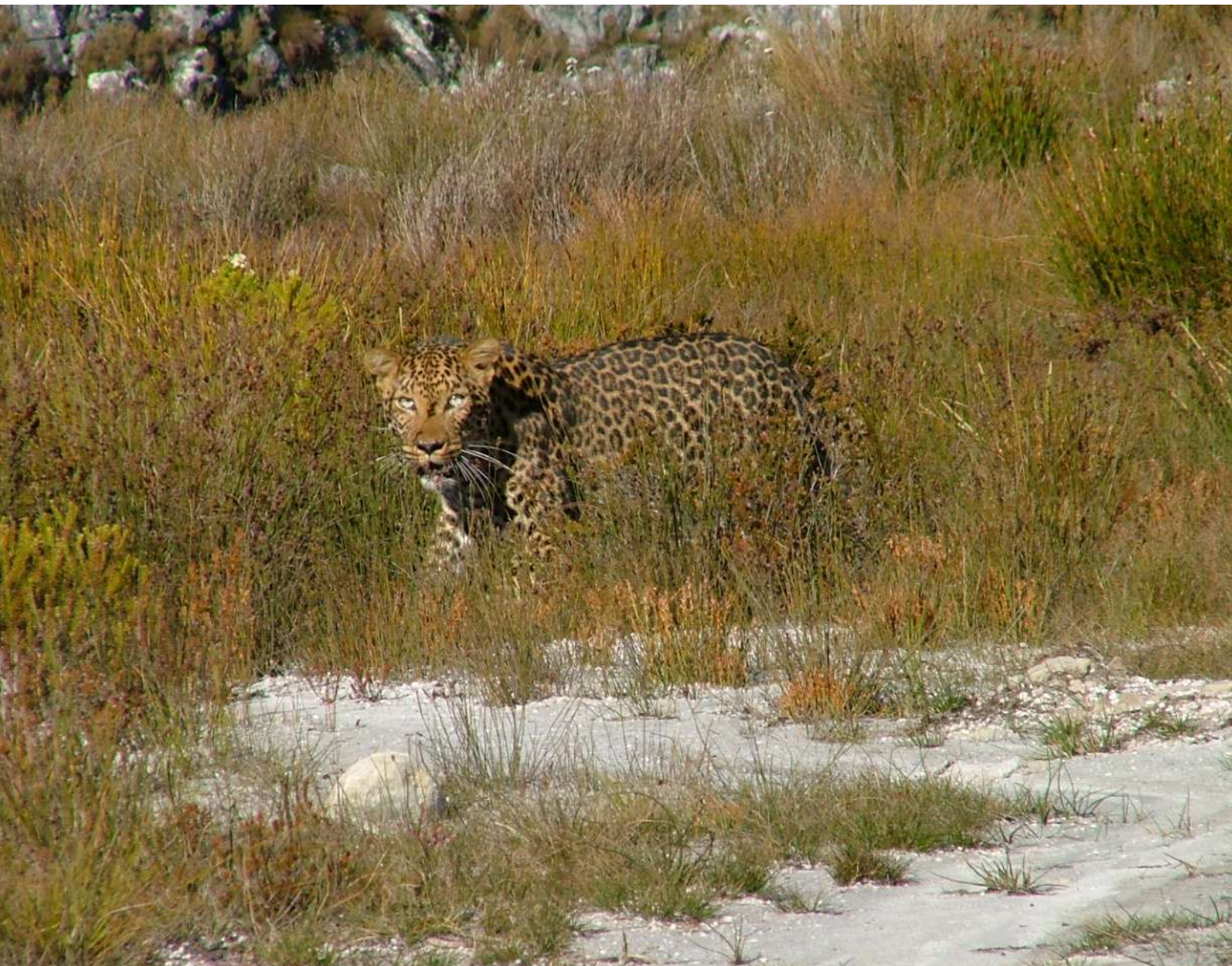


Photographic Credits

The following people and organisations have made images and graphics available over the last few years in aid of predator conservation:

Bool Smuts, Brown Hyena Research Project, CapeNature, Cheetah Conservation Fund, Eddie Steenkamp, Guy Stubbs, Ingrid Wiesel, Jaco van Deventer, Jeannine McManus, John Adendorff, Landmark Foundation, Larry King, Liesl Strauss, Marion Holmes, Mircea Pfleiderer, Nama Karoo Foundation, Philip Lotter, Rodger Smith, Ruth Kansky, Thys de Wet, and Vernon Gibbs

Their contributions are gratefully acknowledged.



The Foundation of the Approach

This manual is founded on values that guide its content and recommendations:

- The conservation of the biodiversity process of predation has inherent value to conservation, i.e. as a natural process it has value in itself as well as its role in natural eco-systems.
- In interaction with animals it requires humans to act ethically, and as such, to treat all animals humanely.
- The economic imperatives of farmers managing their risks, inclusive of the economic risks resulting from the conflict between predation and livestock production, needs to be effectively and acceptably managed.

In the face of these values, which at times are conflicting or seemingly conflicting, this manual will recommend ways in which the conflict between predation and rangeland livestock farming could be effectively managed.

This manual is founded on the belief that ecologically acceptable, ethical, effective, selective, efficient, and cost effective methods of non-lethal predator management on livestock rangelands are available that accord with the values above, and are profitable to the farmer.

Biodiversity Value of Predation

There is an inherent value in having the species that perform the critical biodiversity process of predation functioning well in the ecosystem. This role is important in healthy dynamic functioning ecosystems. Predators function at the top of the food pyramid, and are critical to the health and dynamic balance of the ecosystems.



The natural balance of the food pyramid has been dramatically altered by agriculture, and thus, as a group of species, predators have become

susceptible to these alterations. The result is that many predators are significantly affected and some are severely endangered by total extinction or regional extinctions and/or depletions due to the impact of agriculture.

Predators provide an important function ecologically by managing prey populations, and as such, play a key role in veld conditioning by controlling over-populations and excessive impact on vegetation and soils. Many predators are also scavengers, which play an important function in the food and nutrient cycles, and also the control of diseases.

Most predators are **territorial** and rely on **dominance** in securing their own survival. The inter-relationships amongst predators are important to recognise, and imbalances created through targeting of certain species could have adverse effects on the predator species mixes, which could result in overpopulations of other species, creating worse problems. Thus removing an animal like a leopard from an area could result in secondary predators like caracal and jackal increasing dramatically in a region. Also, removing a dominant animal could see juvenile or aged outcasts occupying smaller territories in its place, resulting in more competition for prey resources, and possibly increased livestock predation.

With increasing human fragmentation of the natural areas, and resultant decreased the prey base, it is natural for predators to impact on livestock in their natural habitats. It is thus important to protect the natural prey-base on farms, especially around lambing season.

Value of Ethical Care of Animals

As citizens of a civilized and progressive nation there is a responsibility to care for all living creatures in ethical ways. This applies to all citizens, whether it is to serve the conservation-, agricultural- or the retail sector.



The Landmark Foundation has thus taken a strong and public stand against the use of inhumane means of predator controls in livestock production, which is still so commonplace in South Africa. This includes the use of gin traps and

snares (and other leg-hold devices), in particular, but also indiscriminate poison traps and hunting dog packs.

There is no moral defense of these production practices. They are cruel and cause indefensible suffering to animals, many of which are not even intended targets. Leg-hold traps have been banned in 90 countries, and yet is still promoted and permitted by academics, agricultural institutions, government departments and even some conservation agencies in South Africa. It needs to be outlawed in South Africa, and prohibited as a production practice by the retail industry!



The effects of gin traps: Jackal Buzzard without a leg, leopard injuries and a monkey hand!

These are indiscriminate and cruel means of production. Gin traps result in vascular occlusion to limbs and ultimately gangrene (in less than 4 hours after vascular occlusion). Many animals fracture their limbs in these traps, and predators often chew their own legs off to free themselves. Gin traps are indiscriminate killers. It is part of a silent mass killing of wildlife that has been ignored for centuries in this country.

This manual is part of a campaign to develop a “green-labeled” wildlife friendly product that provides consumers the choice and economic power to change these practices, and responsible producers with the incentive to profit from their holistic and ecologically acceptable practices. There is currently no way in South Africa that consumers can purchase meats or animal fibers (e.g. wool and mohair garments or fabrics) that are guaranteed free of such production practices. This manual is part of the process to promote the efforts to financially reward producers, processors and retailers for the production of ethical products.

Economic Value of Livestock and Wildlife

Farmers have a right to earn a living and to manage their financial risks. This right however, does not extend to cruel practices and indiscriminate and whole-scale extermination of predator species, whether killing or maiming culprit individual animals or not. This manual will highlight acceptable means with which farmers can manage this risk.

This manual proposes that relentless persecution of predators is not the best way to deal with the problem and to manage the financial risk in farming with predation. It will demonstrate that the in-field risk can better be managed through ecologically acceptable management options as detailed herein, and that better returns can be attained through value-adding through the development of certified wildlife-friendly products.

Holistic and non-lethal management practices are far more efficient, cost effective and acceptable. Centuries of dedicated persecution have failed to resolve the problem for farmers, and some would readily admit that the situation worsened in recent years. This calls for a radical new way of dealing with the problem.

Having healthy and balanced ecosystems, inclusive of predation, provides for a far better co-existence between predators and livestock farming. Thus the alternative control mechanisms promoted by this manual: collars, live traps, Anatolian guarding dogs, Alpacas etc provide opportunities to maximize profits and minimize losses. This, together with the green-labeling and consumer involvement, would help this process. The infield mitigations mentioned in this manual have been piloted and implemented in various areas and have proved resoundingly successful. There are examples of failures, as with all dynamic systems, but many of these failures have been the result poor application and not the method.

The consumer demands will increasingly insist on the implementation of these holistic, ethical and ecologically acceptable practices.

The consumer must get involved in dealing with this economic problem, therefore the endeavour to develop a wildlife-friendly meat and - animal fibre brand that protects predators and other wildlife. This makes economic sense; the farmer earns extra at the market place for environmentally and ethically sound production, which offsets the losses to predation in the field of production. Further, if the consumer demands products that are environmentally and ethically sound, the producer will commercially be forced to produce it, as will the supplier be forced to supply it.

Predators have a great appeal and commercial value in tourism. The fact that Addo National Park has its first leopard in 50 years in its main game area reintroduced through the Landmark Foundation leopard conservation project in 2004, cannot be under-estimated. It made the park a Big 5 destination and thus has helped to contribute to make it a major economic generator for the region. Addo has received 7 leopards since 2004 from the Landmark Foundation conservation initiative in the Eastern Cape.

The economic value of leopards and other predators must not only be seen by agricultural producers as being a negative one, as the traditional agricultural approach to it has been. Predators must be seen for the opportunities they provide in “green” branding, and its value to tourism. Many farmers have begun to benefit from agricultural tourism. Furthermore, wise and judicious holistic management practices of predator control and promotion of natural prey bases has repeatedly demonstrated benefits in other areas.

The Approach

The values detailed above are the foundation of the promoted strategies, namely:

- **Targeting of individual problem animals** that have caused livestock losses, as opposed to the targeting of entire species, and the “by-catch” damage that occur through the use of indiscriminate methods.
- **Non-lethal** control measures to avoid livestock losses to predation. Lethal controls should only be considered after non-lethal measures have been fully exhausted and appropriately implemented.
- **Effective** strategies in targeting the damage-causing individual, instead of the wholesale targeting of predator species that have proved ineffective over generations.
- **Selectively** target problem individuals and not indiscriminately affect other individuals or species.
- Consider the **welfare of animals** and apply measures that are **humane and ethical**, and that will cause minimal or no suffering to the victim when applied as directed.
- **Ecologically acceptable** and have minimal detrimental effects on species and the environment in general; and
- Apply measures that are **cost effective**.



*Leopard caught In Snare Trap and killed by Asphyxiation after winding itself around the fence.
Effective, cost effective – YES. Non-lethal, selective, ecologically acceptable, humane and ethical – NO.*

The Guiding Principles – The Code of Practice –

Agricultural producers are asked to subscribe to a Code of Practice that guides their management of predators on their land. Initially, this Code of Practice will be self-regulatory but will form the basis of an independently audited accreditation scheme to establish a wildlife-friendly animal meat and fibre brand.

Wildlife-Friendly Farming Code of Practice

It is recognised that in the production of domestic livestock, farmers have to manage their economic risks effectively. In striving for agricultural production efficiency, farmers might impact on the biodiversity of their farmed areas. It is recognised that such risks need to be managed in a manner that is financially, socially and environmentally sustainable.

Predators are critical in the ecosystem as they serve an important role in maintaining the dynamic ecological balance as well as the genetic fitness of prey species and their natural selection.

This Code of Practice is in the interest of both the agricultural industry and the environment, as this will result in ecologically acceptable agricultural practises. Those subscribing to, and registering with, the Code of Practice will be entitled to use a recognisable device on the packaging of their products, subject to a certification process. In order to offset the cost of maintaining these practices and the certification costs, a premium will be charged on the products.

Signatories to this Code of Practice recognise that predators are territorial animals, and naturally occur on farms. They recognise the role and importance of predators and scavengers in healthy ecosystems and wish to promote their sustainable co-existence with livestock.

The indiscriminate lethal targeting of these species is counter-productive to effective predator control and their valuable role in the environment. The removal of innocent predators causes disruption to the predator populations, and often exacerbates the problem.

A full explanation of the methodology of the above practises is found in Landmark Foundation's ***Predators on Livestock Farms*** manual, which forms an integral part of the Code of Practice and is available on request.

Statement of Intent

As a responsible farmer I subscribe to this Code of Practice, which ensures the ethical and sustainable management of naturally occurring wild predators on my land. I believe that this is something that consumers of my produce expect, and that the retailers of my products demand.



In the production of livestock products I therefore commit to the following:-

- **Non-lethal controls.** Lethal controls will be appropriately implemented and only after non-lethal measures have been fully exhausted.
- **Effective methods.** The measures will be effective in targeting the damage-causing individual predator, instead of the wholesale targeting of predator species;
- **Humane and ethical practices.** The measures will cause little or no suffering to the victim when applied as directed;
- **Ecologically acceptable measures.** The measures will have minimal detrimental effects on the environment;

I undertake to ensure that on my land I will:

- **Not break any laws or regulations** relating to problem causing animals, their management or conservation. No control method will be used in such a way that any animal, including any domestic animal, is subjected to unnecessary pain and suffering or any other activity which could be regarded as cruel or which constitutes an offence in terms of the Animal Protection Act of 1962.
- **Promote and conserve** the indigenous **predator-prey relationships** and other ecological processes on my land, and thus protect all species involved in this relationship. Where applicable apply appropriate veld management practices (e.g. burning, grazing rotations and stock densities). Indiscriminate hunting of these indigenous species will be avoided, and where practicable I will work with conservation agencies to practise ecologically sustainable harvesting of natural prey, should it be necessary.
- **Practice and promote** non-lethal holistic predator management methodologies that **prevent livestock losses** to predation, inclusive of:
 - Herding techniques: electronic, human and animal – Cellular & GPS monitors, Human herdsman, Anatolian Shepherd dogs, donkeys, Alpacas, Llamas etc. and lambing season management), and
 - Deterrent techniques: barriers (electrical fences and collars), smells, noises (gas cannons, bells and radios), and visual deterrents (flashing lights).
- **Identify the cause** of livestock losses properly, and identify problem animals accurately so as to target only the problem causing individuals. When appropriate, to encourage investigations through carcass and site inspections, and consultations with conservation authorities and / or delegated experts to support any investigation.
- **Work with** conservation organisations to implement these holistic techniques, and the **selective removal of problem-causing individual animals** through acceptable means when this becomes necessary (e.g. live traps).
- **Not to use leg-hold traps / devices (e.g. gin traps), indiscriminate poison traps or indiscriminate hunting with dogs** on my land, as these are inhumane, indiscriminate and ecologically damaging practices.

- **Co-operate fully with the inspection and certification process permitting me to label and sell my products as Wildlife-Friendly.**
- Where practical participate in rescue, research and incentive schemes to support the **holistic approach** to predator management and damage-causing individuals across the agricultural sector in South Africa.
- **Commit to reporting** any undesirable practices to the relevant authorities.
- To undergo **training, and train my staff** to be competent in the management and implementation of holistic, non lethal, ethical and ecologically acceptable predator management strategies.

Signed:

Date:

Farm:

Name and Contact Details:

Understanding Predators and their Impact

Conservationists promote the conservation of landscape-wide biodiversity patterns and processes.

Biodiversity Patterns

To protect predators it is important to promote the conservation of a natural prey base in an area. A dynamic ecological balance between the different predator and prey species supports the structure of the food pyramid. Changes to this balance results in altered behaviour of the individuals and the patterns in which species and classes of animals are represented. Over the last 300 years dramatic changes have occurred in the predatory patterns and their relationships to other species in almost all corners of our country, and beyond.

These changes have been caused by several human interventions, inclusive of diminishing natural prey species, predator persecutions, and large-scale habitat and animal distribution changes as a result of things like excessive hunting, migratory changes enforced by fencing, year-round grazing regimes, and artificial watering systems resulting in changed faunal distributions.



Rembrandt sketch of a Cape Lion

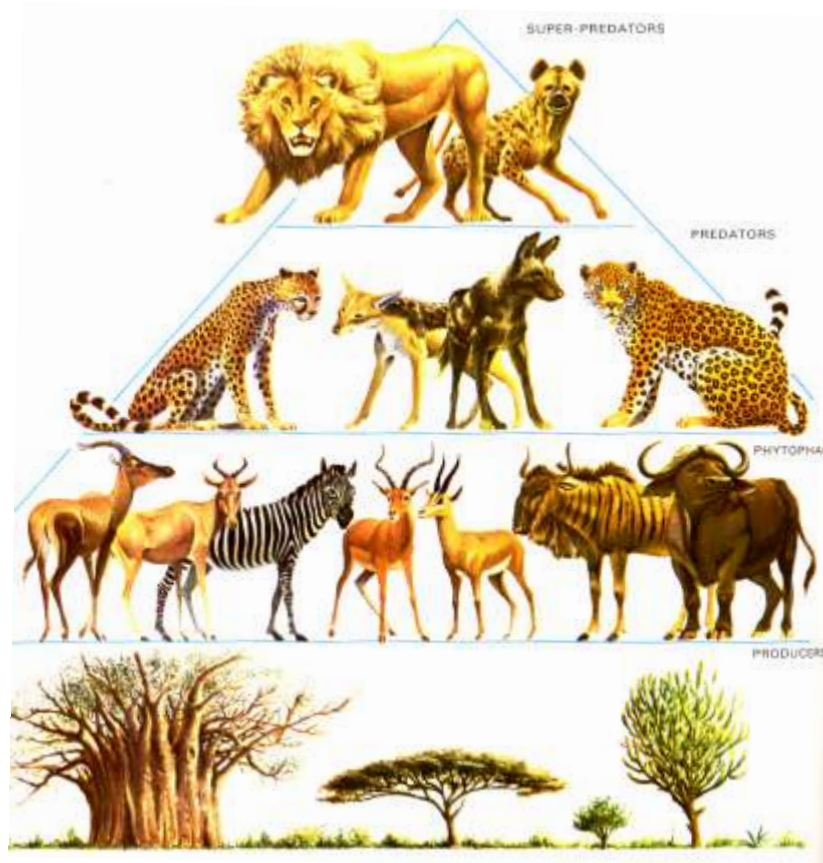
The Cape Lion has been extinct since about 1858 as a direct result of the rabid sports hunting of the time and conflict with agriculturalists. It is indeed a sad legacy in the region. This had an impact on the remaining predator patterns as the remaining predators adjusted to the void created by the dominant top predator's extinction. While it is too late to turn back the clock on this extinction, it is important to ensure that subsequent generation don't have to

tell of this generation's toll on the environment in pursuit of financial profits, and further ruination of species and biodiversity patterns.

It is important that predators are protected as individual species, and also their relationships to other predators and species. While species conservation efforts in themselves are important and critical interventions, conservation actions also need to take cognisance of the ecological processes that these predators provide.

Biodiversity Process

At the top of the food chain, predators ensure balance on the prey species below it, as predators ensure ecological fitness of the subordinate species. It also plays a biological role in the recycling of food nutrients. Some predators also act as scavengers.



The Natural Food Pyramid (Source: CapeNature)

In agricultural areas, dramatic changes have occurred in this natural food pyramid, as the herbivorous layer has almost completely been replaced with livestock, and major changes have occurred with respect to other prey species, the veld and soil cover. Without question that has had a dramatic impact on the top of this food pyramid, the predators.

This manual promotes interventions that support the conservation of and, in certain instances, a re-establishment of the natural balance within this food pyramid. This is ecologically desirable but also the most efficient, cost effective and ecologically acceptable way of managing natural predator patterns and processes, and is most financially beneficial to farmers.

The top predators, as the apex of the food chain, have their survival inextricably linked to impacts on the lower levels and strata of the food pyramid. While the Cape Lion became extinct due to direct competition from another top predator, namely the human being, species like the African Wild Dog has had its survival threatened due the removal of its prey base, and its conflict with farmers.

Predator populations are limited through competition for food sources, and through competition amongst their own species and other predator species. The survival of the fittest is the yardstick for success. Predators play an important role in controlling rodent numbers, and scavengers clear the veld of carcasses and disease vectors.

The natural herbivorous stratum of the food chain has largely been replaced by livestock. Many predators rely on herbivores as their food source. A reduction of this natural prey base has necessitated predators preying on livestock as a means of survival. Thus the conservation of natural prey species is an integral part of ecologically acceptable production practices.

Due to the replacement of the natural herbivorous layer with livestock and the removal of predators' natural prey base, it becomes necessary for farmers to protect their livestock against predators. This requires acceptable methodologies as detailed in this manual.

Aesthetic Qualities

The aesthetic- and intrinsic value of predators and their relation to other features in the landscape are more difficult to quantify in objective terms. The strength of emotion and passion that the general public feel towards these animals is testimony to the value people have in them.



Honey Badger

Cost – Benefit

It is true that farmers bear the costs of predation on their livestock. Those costs have to be equated with the costs that are being incurred in the management of the problem, as compared with the benefits of the methodologies being used. It has repeatedly been demonstrated that holistic and non-lethal predator-controls are more cost effective than indiscriminate controls. The benefits of the evolving wildlife-friendly brand and the intended incentives linked to this scheme will also be a critical part of creating incentives to shift practices to the promoted methodologies.

Practical Implications of Ecological Processes

Predators can be better managed through ecological, humane and effective means if the simple fact that predators are all **territorial** and that they exert **dominance** in their own terrain is understood and integrated in management strategies.

Dominance is exerted as solitary or social creatures, and the predators will defend their territory to any insubordinate predators or outsiders, and even challenge for territory to challenge the dominance of other individuals. This dominance is usually territorially based. Some predators, like leopard, could have territory as large as 100 000 ha for a single dominant male.

Livestock farmers should exploit the dominance and territorial behaviour of predators to help manage their predatory losses. By working “with” their resident predators they are far more likely to achieve the economic success they are after. “It is far better the devil you know than the one you don’t.” It is not trite to say that a dominant and territorially established top predator that does not cause stock losses would in fact be such a farmer’s best livestock guardian. Such dominant predators would not tolerate any challenges to its dominance and / or territory by individuals of the same species, or any subordinate predator species. It is thus important to promote a stable and resident population of predators on a farm, and only target management at the individual that may result in persistent and repeated livestock losses.

Voids are created if dominant predators are removed. This results in juvenile and inexperienced predators, or discarded older individuals, or where top predators are removed, lesser predators moving in. Such new incomers are often inexperienced or are aging outcasts from other areas. They have smaller territories (and thus are more concentrated), and are far more likely to be livestock “thieves”. Their increased density also results in increased predation per unit area.

In the case of the Black Backed Jackal, for instance, the killing of the dominant female results in the pack’s hormonal changes that induce the lesser females going into oestrous. This results in a dramatic increase in pack fertility, and population numbers. Sustained persecution of jackal therefore results in younger females going into oestrous and an increase in litter sizes. This may be the reason that the more these species seem to be persecuted, the greater

the increases in populations, and the greater the conflict becomes. Changes in the predator balances and relationships could easily result in certain species increasing dramatically.
































































Injudicious interference with natural processes and the food pyramid balance is a cause of many of the predator problems across the landscape. While expertise in the various methods of control is clearly an important skill to be developed for the farmer, it is equally important that at least a working knowledge of predator ecology is gained. Even very “effective” means of control can result in disastrous ecological impacts and consequences, and increased predation problems as well as financial losses to the farmer.

Hatred towards predators in the agricultural sector has led to predators being termed “vermin” in the agricultural discourse and even in legislation. This has led to an all-pervasive approach of indiscriminate targeting of entire species of predators for extermination, and resultant dire impacts on species that are innocently caught as by-catch in the process. Inhumane practices such as gin-and other leg-hold traps, indiscriminate poison traps and hunting by dogs have been permitted by legislation.

This manual thus promotes the holistic approach to predator management, whereby non-lethal methods are employed that work with the ecology, and where management activity is targeted at problem causing individual predators rather than entire species of predators.




Different Predators

This manual does not intend to be an exhaustive guide on the individual predators, but will highlight the important species in the conflict between predators and rangeland livestock farmers. Further literature should be consulted for authoritative guides on the species. The guide below is intended as an overview to inform the farmer to enable management changes towards non-lethal controls.

Risk Level		Tracks		Prey Location		Prey Size	Claw Marks	Stomach	Fang Location		Bite Width	Parts Eaten		Bones	Other Evidence	
	10+			anywhere	0-400 kg	none	none	partly eaten	All over--random bites	36-58mm 3 fingers			long bones chewed		Wool, fur, skin, and remains scattered. No marks on throat.	
																
	10+			In grass, bush, or hole	10-25 kg	4 short	none	intact	Mostly throat, or back of neck	29-32mm thumb length			rib ends chewed off		Wool, fur pulled out and scattered. Does not eat skin or guts. Red hair on prey skin.	
																
	10+			anywhere	0-50 kg	none	none	partly eaten	Side of neck and lower jaw. Hindquarters of larger prey	19-21mm thumb width			rib ends chewed off		Face and ears chewed or torn. Forearms of larger prey may be separated from carcass. Meat taken leaving skin flap.	
																
	3			under bush, or in grass	over 10 kg	1 long	intact, separate from carcass	intact	Throat	36-38mm 3 fingers			rib ends chewed off		Does not eat skin or guts.	
																
	3			in tree, grass, or hole	over 10 kg	4 short	intact	intact	Back of neck, throat	40-46mm 4 fingers			rib ends chewed off		Fur, wool pulled out and scattered. Does not eat skin or guts.	
																
	3			in bush or hole	0-50 kg	none	partly eaten	partly eaten	Huge fang bites in back of skull. Hindquarters of larger prey, stomach	47-58mm 4 fingers			skull crushed		Wool, fur, skin, and remains scattered. Blies on rump. Only crushed bones, wool, hooves, blood and guts remain.	
																
	3			at kill site, in grass	0-400 kg	none	partly eaten	partly eaten	first flanks, then udder and back	4 fingers			all bones crushed		Messy carcass remains. With a large pack, no evidence remains.	
																
	2			anywhere, all sizes	all sizes	clear marks on belly	fully eaten	fully eaten	Throat	75 mm			large bones intact		massive tissue damage	
																
	2			no remains	0-400 kg	none	fully eaten	fully eaten	All over	thumb length			no remains		no evidence remains	
																

Vulture - Risk Level: 0

Although you may see vultures soaring above your dead livestock or eating it, they are probably not responsible for killing it. Extremely rarely will a very hungry vulture kill a weak, newborn lamb or kid. They are usually on a carcass because they have chased away the original predator.

Bat-Eared Fox  **Aardwolf**  **Honey Badger** 

Risk Level: 0

These small predators are sometimes thought to be a threat to stock, but they feed only on small rodents and are too weak and small to attack livestock.

Black-backed Jackal



The black-backed jackal: Indiscriminate removal and continued attempts to eradicate this carnivore have failed to solve conflict with livestock farmers.



Jackal track in wet sand. Jackal tracks will often have visible nail marks and no W-shape at the back of the footpad.

Distinctive Characteristics

The black-backed jackal is one of the most persecuted of all the predators and scavengers in the conflict with livestock farmers. As its name suggests, it has a distinctive black back. Jackal tracks are dog-like and show nail marks in their paw prints, like all dog species. Their track profile is oval, with a longer length than width.

The Jackal Kill

- Jackals live in pairs and occupy defined territories. At times of abundant food, such as a large carcass, several individuals may congregate at the site of the carcass, later returning to their own territories.
- Jackals chase their prey and bite as they run alongside it. This often results in bite marks on the jaw and on the side of the neck. Often the prey's ears are torn in the process.
- Bite marks can also occur on the back of the legs and on the udder.
- Jackals tend to prey on lambs and kids, as opposed to mature animals. They may also rarely take adult sheep and goats. Cows lying down to give birth may be attacked, frequently resulting in lethal injuries to both the cow and calf.
- They would also tend to take one animal per kill, unlike the tendency amongst some of the cat species for surplus killings.

Feeding Behaviour

- Jackals typically eat the anal area and the thigh area, leaving a flap of skin that has been hollowed out underneath.

- They will also eat the shoulder and may remove the front legs of smaller prey.
- Rib ends are often chewed.
- The chest cavity may be hollowed out and the contents eaten.
- Intestines are often eaten and strewn around.
- The carcass is seldom moved from site of the kill.
- Jackals may bury what they cannot eat.

Although jackals primarily scavenge, they can hunt very effectively, taking rodents, insects, reptiles, frogs, birds, and at times livestock. They even eat plant material such as berries.

Importance of Jackal

Jackals are secondary predators and scavengers, and help keep the veld clean by eating carrion. They also play an important role when it comes to vultures, as their presence at a carcass indicates to vultures that it is safe to feed.

In some areas where jackals have been removed, caracals have increased in number and become a problem. Jackals are therefore part of an intricate balance in predation on rangelands.

Jackal is one of the species most problematic to livestock farmers. It is important to stress that centuries of determined persecution of these animals have neither lessened their numbers, nor their impact on agriculture. On the contrary, it is argued that this persecution is partly the cause of the population increases of jackal. This being the result of:

- Removal of competitive top predators in their habitats;
- Proven increase of litter sizes with increased persecution;
- Proven increase in fertility with increased persecution; and
- Proven increase in oestrus of non-dominant females with the death of a dominant female.

The importance of promoting a stable population of predators in an area, and the targeting and removal of only the problem individual jackal, is thus emphasised. It is a fact that indiscriminate, lethal and non-target controls contribute to the problems that some jackal cause for livestock farmers.

Recommended Control Methods

- Guardians: Anatolian Shepherd Dogs, Alpacas & Donkeys, Human, (also Llama, Ostrich)
- Protective Collars: King and Dead Stop
- Fences: Jackal Proof & Electrified
- Noises: Bells
- Management: Kraaling, Lambing Season, Lambing near homestead

- Lethal hunting is only recommended when professionals are used that target problem individuals, and such hunters should not be paid per head of jackal killed, as this incentivises the killing of non-problem animals.
- Poison controls are NOT recommended.
- Live traps have not been successful with jackal.
- Hunting dog packs should NOT be used, as they are neither selective, nor humane control methods.
- Leg-hold devices / gin traps should NOT be used.



Photo: Larry King



Persecuted?!

Caracals



Distinctive Characteristics

Caracals are widely distributed. They are solitary and are found in pairs only during the short breeding period. Their diet typically consists of small to medium sized prey, including hares, vervet monkeys, dassies, birds, reptiles and the young of antelope, such as springbuck lambs.

Caracals are also capable of taking prey up to the size of adult springbuck. Individual caracal can develop the habit of taking livestock.

The Caracal Kill

Caracals hunt alone. They stalk their prey. The prey is usually killed with a throat bite, but caracals will sometimes bite at the back of the neck. The bite marks typically show as two puncture wounds on either side of the throat or on either side of the spine. Claw marks are often visible, either on the shoulder, belly or hindquarters. Prey may be dragged over short distances. Caracals usually prey only on a single animal, but multiple kills are not uncommon, especially when the kittens leave the den.



Caracal Kill

Feeding Behaviour

Caracal typically feed on the meat between the back legs or on the inside of a hind leg, leaving a typical pattern where the hindquarters are eaten away. Caracal also feed on the shoulder and chest, sometimes chewing on rib tips, but the large bones are never eaten. The intestines are not touched and left intact. Caracal will partially cover the remains of a kill, scraping grass and dirt over it. Fur or feathers may be plucked from the carcass and be evident in the area around the kill site. Several individuals from a family may eat together.



Typical pulling out of wool tufts

Importance of Caracal

Caracals play a valuable role in the ecology of the veld by helping to control hare, dassie and rodent numbers. As a secondary predator in the food chain, they play an important role in the ecological balance. Their numbers are influenced by the status of other predators like jackal and the top predators such as leopard, lion and cheetah. Imbalances or disturbance of any of these have an impact on caracal numbers. These attractive cats are also a favourite among tourists during night game drives.

Having resident and dominant cats that are not stock “thieves” are the best way to control caracal. They become dominant in an area and will keep other caracal and predators out. It is thus advisable not to indiscriminately remove caracal (or for that matter any predator), as stable populations that do not result in livestock losses are the best controls.

Recommended Control Methods

- Guardians: Anatolian Shepherds & Donkeys, Alpacas, Human, (also Llama, Ostrich) – very effective
- Protective Collars: King and Dead Stop – very effective
- Fences: Jackal Proof & Electrified
- Noises: Bells
- Management: Kraaling, Lambing Season, Lambing near homestead

- Removal in live-traps of caracal is proven to be very effective and successful.
- Lethal hunting is only recommended when professionals are used that target problem individuals, and hunters should not be paid per head of caracal killed, as this incentivises the killing of non-problem animals.
- Poison controls are NOT recommended.
- Hunting dog packs are NOT recommended, as it is neither selective nor humane.
- Log-hold devices/gin traps should NOT be used.
- Local indigenous prey species should be encouraged. For example stocking springbuck as a buffer species to livestock is very effective as caracal generally prefer feeding on indigenous prey species.
- Avoid utilising marginal areas, where possible, like remote mountain areas for livestock grazing as these areas tend to have more exposure to predators.



The Domestic and Stray Dogs

The damage caused by domestic dogs is often blamed on other predators. It has often been suspected that stray dogs and human stock theft are the cause of most stock losses.

Dog tracks are often confused with those of cheetahs and jackals. However, the rear part of the footpad lacks the W-shaped grooves typical of the cat family.

Many feral and even pet dogs are responsible for livestock losses. Even relatively small dogs will hunt livestock, badly injuring them in some cases, even though they are unable to kill them. It is rare for single dogs to cause damage as this behaviour is generally related to pack activity.

Dogs can take on large sheep, unlike the tendency amongst jackal and caracal. They often kill more than one animal at a time. Variable amounts of the animal also tend to be eaten, and at times nothing may be eaten.



Multiple Kill by Stray Dog

Dog Kills

Domestic dogs bite and tear at their prey randomly, with no fixed pattern. They cause extensive damage and often injure several livestock animals without killing all or any of them. The kills are usually not eaten, but where this does occur, feeding is random. Wool, fur, skin and intestines are scattered all over. This is a very messy kill.

Recommended Control Methods

- Guarders: Anatolian Shepherd Dogs, Alpacas & Donkeys, Human, (also Llama, Ostrich);
- Fences: Jackal Proof & Electrified;
- Management: Kraaling, Lambing Season, Lambing near homestead;
- Removal in live-traps of dogs can be used, through baiting them;
- Lethal hunting is recommended;
- Poison controls are NOT recommended;
- Log-hold devices should NOT be used; and
- All dogs on farms should be sterilised, and contained at night.

The Leopard



Leopards will often sleep in trees. They are very strong and will even carry their prey up trees to keep them out of reach of scavengers.

Distinctive Characteristics

Unlike the cheetah, which has spots, leopards have a rosette-patterned coat. The profile of a leopard is much heavier and stronger looking than that of a cheetah, except in the Cape Fold Mountains where this cat is a small predator. Leopard tracks usually do not show any nail marks. The profile of the track is round and the width is equal to the length. The Cape Mountain leopard is much smaller than its northern relatives, with females typically weighing between 20 and 25 kg, and males between 28 and 40 kg.



Leopard Kill

The Leopard Kill

- Leopards typically hunt alone, except when a mother is accompanied by her young. It may kill several livestock at a time (sheep and goats), but seldom more than 1 calf. (This is termed surplus killings)

- Leopards have strong jaws and long canines. They typically kill by biting the back of the neck (often crushing vertebrae) but may also bite down on the throat, similar to the cheetah.
- As all their nails are sharp and retractable, multiple scratch marks may be seen, indicating where the front feet grabbed the prey to hold it down.
- Leopards may drag their prey considerable distances and have been recorded dragging calf kills up to 3 kilometres from the kill site. Leopards typically hide their kills either under a bush, in a thicket, down a hole or up a tree.



Surplus killings by Leopard



Carcass Inspection: neck bites and massive bleeding, eating from behind and breaking femur



Leopards usually kill their prey with a bite to the back of the neck

Feeding Behaviour

- The haunches, shoulder and internal organs are eaten.
- The intestines are not eaten and are removed and left intact.
- Plucking of hair may also be evident.
- Rib ends may be chewed. In smaller prey the long bones, such as the femur (thigh bone), may also be eaten, leaving virtually no remains.
- Typically a sheep's femur may be fractured as the powerful leopard pushed it forward while feasting on the hindquarters.
- Leopards frequently return to their kills, but other leopards can steal their kills.
- In areas where there is high competition, especially with hyena, leopards may carry their kill up a tree.



Importance of Leopard

Leopards are stealthy, powerful hunters and will prey on a variety of game species. They typically ambush prey and hunt at night. Therefore, like cheetah and other predators, leopards keep prey species alert and ecologically fit. As one of the high-profile large cat species, they are also a much sought after tourist attraction.

The leopard is an apex predator, and as such play a critical role in the ecological balance and food chain. The leopard competes directly with caracal, and in areas where leopard populations are stable the caracal numbers are

reduced. Leopards also prey directly on jackal. However if leopards are removed the latter two predators' numbers increase. Leopards prefer to prey on indigenous and traditional prey species, but where the natural prey has been reduced, they could begin to prey on livestock.

Of all the cat species, the leopard is arguably the animal that evokes the strongest emotion and passion with ecologically minded activists. As such it, and the cheetah, has played a central role in the debate around developing ecologically sound, holistic and non-lethal control methods for predators.

Recommended Control Methods

- Guardians: Anatolian Shepherds & Donkeys, Human, (also Llama, Ostrich) – very effective
- Protective Collars: King and Dead Stop – very effective
- Management: Kraaling, Lambing Season, Lambing near homestead
- Removal in live-traps of leopard is proven to very effective and successful.
- Compensation schemes in conjunction with GPS collars.
- Poison controls are NOT recommended.
- Hunting dog packs are NOT recommended, as it is neither selective nor humane.
- Log-hold devices / gin traps should NOT be used.



Gin Trap Injuries

The Cheetah



Cheetahs usually suffocate their prey with a bite to the throat.

Distinctive Characteristics

The cheetah is the only cat with a black tear line running down from its eyes. It has a spotted coat. Its profile is slender, with a small head in proportion to its body size.

Cheetah tracks are characterised by the W-shape along the rear part of the footpad and the presence of nail marks. (Note: these may not always be seen on hard ground.) The toe pads are pointed in front and not rounded. Front tracks are larger than back tracks and the overall shape of the track is rectangular.

Cheetah numbers are in decline. It is farmers that have become the most important agents to protecting these animals on rangelands.

The Cheetah Kill

- Cheetahs typically hunt alone, although brothers in a coalition will hunt together. A female teaching her young will hunt in a group, too, with the youngsters initially shadowing her and later participating in the hunt.
- As cheetahs have relatively weak jaws and small canines, they typically kill by suffocating their prey with a bite to the throat. Young or inexperienced cheetahs may bite elsewhere before biting the throat.
- Cheetah nails are usually blunt, except for the dewclaw, which is used to trip prey and hold onto it. Single scratch lines caused by the dewclaw may therefore be visible.
- The cheetah will usually eat its prey where it was killed, although sometimes it may drag its kill for a short distance to the nearest shade or cover.

Feeding Behaviour

- Cheetahs eat as much as possible as quickly as possible, so they usually eat the meat on the hindquarters and shoulder first. They are often

disturbed by other predators and scavengers while eating, and may be chased from their prey.

- The intestines are removed and often left quite close to the kill, but are not eaten.
- The internal organs such as the liver and heart are often eaten.
- Rib ends may be chewed; however, bones are not crushed, even in smaller prey such as steenbok or duikers.
- Cheetahs virtually never return to their kill after they have eaten. Although extremely rare, cheetahs have been seen to scavenge.
- If disturbed, or in areas of higher competition, a different feeding behaviour may occur.



Importance of Cheetah

Only the fastest, most alert and fittest game animals will evade a chase by a cheetah. Cheetahs therefore help maintain the ecological fitness of game species. Cheetah, along with other predators, help maintain game numbers.

Cheetah are much sought after by tourists and where chance sightings are possible, they may serve as a tourist attraction. The cheetah is the fastest land mammal on earth. Its top speed is 120 km/hour. It will hunt guinea fowl, rabbits, smaller antelope species such as duiker and steenbok, the young of larger antelope and young warthog.



Recommended Control Methods

- Guardians: Anatolian Shepherd Dogs & Donkeys, Human, (also Llama, Ostrich) – very effective
- Protective Collars: King and Dead Stop – very effective
- Management: Kraaling, Lambing Season, Lambing near homestead
- Removal using live-traps with farmer compensation has proven to be very effective and successful.
- Poison controls are NOT recommended.
- Hunting dog packs are NOT recommended, as it is neither selective nor humane.
- Leg-hold devises should NOT be used.



Live Trapping and Releases



Lethal Controls – Not Recommended

Birds of Prey – Especially Verreaux's (Black) & Martial Eagles

These eagles have been known to prey on small lambs and kids. It is however recognised that this is only a habit of certain rogue individuals, and not a general characteristic of the species. Such rogue individuals are generally young and inexperienced birds. It is important that resident adult birds are not targeted as they invariably protect their territories against opportunistic and young birds moving into their terrain.

Distinctive Characteristics

The Martial eagle is the largest African Eagle. They mate for life and a pair could cover a terrain between 10 000 – 200 000 hectares, and larger areas. They are territorial and defend their terrain.

The Verreaux's (Black) Eagle like mountainous terrain, they also mate for life and protect their terrain against intruders.

The Eagle Kill

Eagles prefer natural prey species, thus such natural prey should be protected and encouraged on farms. The birds are often blamed for killing lambs that died of other causes, on which they then prey.

Eagles kill using their talons. Irregularly spaced talon marks with excessive bleeding would indicate that the eagle killed the lamb or kid.

The Feeding Habits

Eagles often prey on carrion. It must be established as to whether the eagle killed the lamb or kid. This must be done by careful inspection of the carcass. Signs of causes of death other than the eagle:

- Hooves have membranes on – still birth;
- No clotting on umbilicus – still birth;
- Dark un-aerated lungs – still birth;
- Meconium staining – still birth or early death;
- Fat around heart metabolised – sick or stressed lamb;
- Absence of chyle in intestinal lymph vessels – starvation; and
- Lack of bleeding is a sign that the animal died prior to the eagle reaching the carcass.

Eagles may pluck feathers, wool or hair. They feed mostly from behind the front limbs. They may feed on the internal organs, and the intestines (although they may disembowel the carcass). Meat may be removed through a hole in the skin or from between the ribs. These signs only prove that the bird ate from the carcass, but does not prove that it necessarily killed it.

The Importance of Eagles

Eagles are top predators and as such play a critical role in the ecosystem. They are also important in maintaining balanced predator populations, and the scavenger function in cleaning the veld of dead lambs and kids.

Recommended Control Methods

- Establish beyond any doubt that the Eagle is to blame;
- Guardians: Human – very effective;
- Management: Kraaling, Lambing Season, Lambing near homestead;
- Removal in live-traps has proven to be very effective and successful. It is recommended that a trapped eagle be re – released at the site of its trapping as they seldom thereafter prey on livestock again. This also does not create vacant territories;
- Poison controls are NOT recommended;
- Hunting dog packs are NOT recommended, as it is neither selective nor humane; and
- Leg-hold devices / gin traps should NOT be used.



The Lion



Lions are social animals and live in family units with the females doing most of the hunting.

Distinctive Characteristics

Lions are one of the most popular eco-tourist attractions. Due to their large size, however, they are difficult to deter from attacking livestock. In years gone by, when many herders were nomadic and followed the rains for grazing, thorn branch kraals and fires burning at night were used to deter lions.

In Kenya, the use of donkeys has proven quite successful in protecting livestock. Trials done with different types of kraal construction showed that lions did not like to climb into kraals they could not see into. Solid walls are therefore more effective in keeping lions out than fencing. It also appeared that lions were reluctant to jump on walls if loose stones were packed on them, or cacti grew on it. If lions are known to be in an area, special precautions such as kraaling the livestock and herding them in alternative grazing areas are essential.

Lions are social and live in groups, with the females doing most of the hunting. The males defend the territory against intruders. Lions are rarely found outside fenced game reserves in South Africa, and are thus not a major threat to livestock farmers. Their presence is generally incompatible with livestock farming, thus the reason for their localised extinction from farming habitats.



The W-shaped grooves at back of footpad are not distinctive in mud, however, the large size indicates lion.



Lion track in sand next to human hand print. The distinctive grooves at the back of the footpad indicate cat family. The large size of the track again indicates that it is a lion.



Adult lion paw. Front paws may be up to 11 cm in width.

African Wild Dog



The African wild dog is also known as the painted hunting dog, or painted wolf (because of its striking coat).

The African wild dog is one of Africa's most endangered large mammals.

They used to occur throughout 39 sub-Saharan countries. Today they are extinct in 24 of these countries and they number only between 3 000 – 5 000 worldwide. Of their range, only 5% is within protected areas. Their survival therefore lies in the hands of the landowners and farmers.

African wild dogs are usually not tolerated on farmlands. A pack can pull down and consume their prey within minutes. Because they kill by disembowelment, they have a reputation for being merciless killers. In reality, this is not the case as they use very specialised and successful hunting techniques. As with most predators, African wild dogs hunt only when hungry.

They have complex social structures because they function as an extended family unit, sharing the responsibility of caring for injured pack members, even at risk to their own safety. The entire pack participates in feeding puppies. Food is brought back in the adults' stomachs and regurgitated at the den site. When the pups are older and following the pack, they are allowed to feed first at kills while the adults stand guard.

African wild dogs are unique to Africa. Any country that still has any of these predators left should view them as a national asset and prioritise their protection. Because there are so few packs left in the wild, these dogs are now one of the most sought after animals for tourists and wildlife watchers. If the dogs are not harassed and persecuted, they may establish den sites in the area. With careful management, the dogs may stay in the area for up to three months while raising the puppies. This allows the opportunity for developing tourism utilising these endangered animals.

The Importance of African Wild Dogs

African wild dogs do pose some threat to livestock. However, where in-depth studies have been conducted, results have shown that the damage is often

exaggerated. A study, conducted in 2002/2003 in the four emerging conservancy areas in Okakarara district, Namibia, showed that for every one small livestock animal killed by African Wild Dogs, 250 livestock animals died from eating poisonous plants, and domestic dogs killed 11. For every large livestock animal lost to African Wild Dogs, 30 were stolen. Therefore, in Namibia where this investigation was done, poisonous plants and theft are far greater threats to productivity and livelihoods than the African Wild Dog, yet the African Wild Dog receives huge amounts of negative publicity and calls for action to eliminate them.

Sightings in farming areas are even reported on the radio and losses in the area are immediately blamed on the dogs, even when this has not been proven. The dogs are extremely mobile covering huge distances. A pack may be reported in three different places, many kilometres apart. The same pack may therefore be reported as three different packs.

Simple steps, such as shepherding / kraaling livestock at dawn and dusk when the dogs are most active has proved extremely successful at reducing livestock losses to African Wild Dogs. The effectiveness of livestock guarding dogs and donkeys to protect livestock against African Wild Dogs has not been extensively documented, so it is important for farmers to try these methods.

Where African Wild Dogs and other predators have been removed from farmlands, an increase in jackal and caracal populations is often seen, which can have an even bigger impact on small stock farming. In managing the Wild Dogs in an area, it is very important that the farmers work with the conservation authorities and conservation agencies that would naturally like to assist in protecting these animals. The animals can be darted and moved if need be. Lethal controls should be avoided.

It is also important to understand that a pack of African Wild Dogs functions like a large family, with elders educating and teaching the young how to hunt natural prey such as steenbok, duiker, kudu and eland calves. Under circumstances where the packs are constantly chased and harassed, it is almost impossible to capture or kill the entire pack. If some of the adults are killed before the young have the education they need, they may start targeting livestock.

If the value of these dogs as a tourist attraction is developed and factored in, and their natural prey base is encouraged back into the farming areas, the dogs' value should outweigh any damage they may do. For example, the cost of one impala a day to feed a pack of 12 dogs is a far smaller amount of money than that which eco-tourism could generate in a denning season of 12 weeks.



Spotted Hyena

These predators can cause damage if they start taking livestock and can attack adult cattle. Hyenas can hunt very effectively alone, but they typically hunt in a group. Random bites may sometimes be an indication of them.



Hyenas naturally eat a variety of prey species and carrion. They are nocturnal and social animals, but are mostly confined to nature reserves and game parks. Kills are typically very messy with carcasses torn apart, and skin and intestines strewn about or eaten. Large bones are crushed or eaten. Very little of the kill remains, particularly if more than one hyena is involved. They play an important role as scavengers that clear the veld of dead carcasses.

It is important that farmers on the borders of conservation areas where these animals still occur develop a working relationship with the reserve managers; these animals can be darted and moved where needed. Lethal controls should be avoided. Kraaling is also an important control method that should be employed.

African Wild Cat, Black-Footed Cat and Serval

African Wild Cats may occasionally take very small kids or lambs but this is rare, as they are a small predator. Livestock can be protected with the use of any small to medium sized livestock guarding animal, cage traps or collars.

They have been known to eat rodents, birds, reptiles, insects, frogs, scorpions, hares and even fruit. The Black-footed Cat is a small nocturnal cat that is no threat to livestock farmers, and it lives mostly of rodents.

The public can assist in preventing domestic cats that genetically mix with the African Wild Cat, from becoming feral. Feral cats should be removed from natural areas with cage traps, and through being shot out where damage is being done to indigenous natural species. Domestic cats should be sterilised.



Black-Footed Cat and Serval

Photos: Mircea Pfeleiderer

Brown Hyena

The brown hyena, also known as a *strandwolf*, is a shy, nocturnal animal that is seldom seen and needs concerted actions to save it from extinction. As they are scavengers for the most part, they seldom come into conflict with livestock farmers. Although rare, there have been instances where they have become stock “thieves”, where significant damage was caused. Being scavengers, they are very susceptible to poisons, which have been blamed for their decreasing numbers.

These animals have immensely strong jaws and often crush even large bones of their prey. Small prey species are consumed entirely. They bite at the back of the head, and have been known to kill more than they can consume.

The plight of this specie is testimony to the toll taken on the environment through centuries of concerted indiscriminate lethal predator control methods. Live traps have been partially successful in its control.



Brown Hyena

Photo: Ingrid Wiesel



Aardwolf



Aardvark

Other Lesser Predators and Scavengers

Lesser predators to livestock are often targeted, yet they pose little or no threat to livestock farmers. Farmers need to familiarise themselves with these species that may inhabit their farms, and may cause specific problems in certain areas.

Aardvark (not a predator, but targeted for burrowing under predator fences)

Aardwolf

African Civet

Baboon

Cape Clawless Otter

Cape Fox & Bat-eared Fox

Genet (Small Spotted and Large Spotted)

Honey Badger

Mongoose (Slender, White Tailed, Large Grey)

Python

Serval

Side striped Jackal

Vulture



Interpreting Predatory Losses

The key to addressing any problem is to make a full and informed assessment of the problem first and foremost. This involves a full assessment of the predatory activities in a region. It necessitates the farmer making this assessment by himself or by using an expert in the field.

Such an assessment should include a full history of the events that have surrounded and preceded the current events. It requires a full investigation of the site and carcasses. Only once this is done and investigations are complete, can the diagnosis of the problem be made, and the correct or best practicable solution be implemented.

This rigour of approach is critical if the dangers of reacting to emotions and mistaken preconceptions are to be removed from the practices of predator management. Such emotions have killed many innocent predators and innocent species, and at times resulted in an aggravation of the problem. A good diagnosis of the problem, and diligence in making that diagnosis, will result in effective, appropriate, goal-directed and judicious responses that are in keeping with the recommendations of this manual.

The presence of predators in an area, together with their droppings, tracks, and even feathers and hairs, as well as the presence of a carcass, may not necessarily mean such a predator is to blame for a particular loss, as many predators scavenge on carcasses too. Several species may feed from a single carcass. It thus becomes very important to not only assess the area, but the immediate vicinity of a kill, and most importantly, the carcass itself as it may give the farmer many clues as to the cause of his / her losses. Even then, it may be impossible to make an accurate assessment of the cause of the loss. This exercise is however critically important if targeted and appropriate action is to be taken against damage causing individuals.

It is critical to do the assessment soon after the stock loss has occurred. This gives the very best opportunity to make an accurate assessment, and to institute successful corrective action.

The examination should be focused on the following aspects:

- Examination of the location or farm;
- Examination of the site of the kill; and
- Examination of the carcass.

While examining the site and carcass, it should be remembered that all potential causes of death, or missing livestock, should be considered. These could include:

- Theft
- Infective deaths: viral, bacterial, parasitic, fungal

- Other diseases
- Pregnancy related
- Traumatic – predation, accidental, lightening, metal- and wire ingestion
- Nutritional – too little food or feed imbalances, as well as “bloats”
- Poison – natural plants, snakes or chemicals

It remains easy to blame a hated predator, but if the problem is to be effectively addressed, it is very important that the correct assessments are made. Missing a management cause other than predators, as well as the wrongful targeting of innocent predators, could result in further and worsening losses.

Investigating a Reported Loss: Starting Out

What should you take along to the investigation?

- Notebook and pen
- Predator ID sheets
- (Digital) camera

What is the history of losses?

A history of losses should always be obtained from the farmer:

- What were the locations of previous losses? (e.g., inside the kraal, near a hilly area, randomly in the veld, close to the house);
- What were the suspected causes of previous losses?
- How were the suspected causes of previous losses identified?
- What were the sizes / ages of the animals lost previously and what is the size and age of the current loss?
- Were they healthy or sick, newborn or old?
- What predators are known to occur in the area?



Kraal Losses

Examination of the Location

A history of past livestock losses helps to identify and understand the problem. It is important to look at the bigger picture; this will help when considering solutions. For example:

- If losses keep occurring in the kraal, the kraal fencing may need improving. It may be easier and more effective to fix the kraal than trying to catch the predator.
- If losses keep occurring near a particular hilly area, then the owner needs to keep the livestock away from that area, or else provide temporary protection in the form of a herder or an effective livestock-guarding dog.

If the lost animal was a calf, lamb or kid born in the veld and the mother returned without it, why was the mother not under supervision around the house or in the kraal? Could the newborn have been stillborn or abandoned by the mother?



In Field Losses

Herd behaviour is an important clue to the cause of any herd distress. In a setting where herdsmen still work closely with their livestock, this information would be readily available and accurate. Such herdsmen would intuitively know the behaviour of their herd and would know when the herd has been under threat from predators. With increasingly extensive farming methods, this detailed stockmen's knowledge of herd behaviour has become less common. Threatened sheep and cattle would actively and noisily search for their young at the time of a threat. The herd may also appear more frightened, alert and defensive.

Missing stock could be the result of theft or predation, and also disease. The history and subsequent inspections are critical to undertake to ensure that knee jerk blame and action are not directed to predators incorrectly. Proper evaluations are more likely to lead to appropriate actions.

Human habitation in the region could suggest stock theft in the region, especially with a known history of this. The same applies to the presence of roaming domestic or stray dogs. Indigenous predators have often been blamed for stray dog impacts and kills.

The type of territory is important to survey, as certain predators prefer certain terrains, e.g. leopard and Black Eagles prefer hillsides, whereas jackal and Martial Eagles prefer flatter terrain. Caracals operate in both.

Historical aspects of past stock losses can give clues to current losses, but yet may not be identical, and caution should be exercised in assuming that the same problem has recurred.



Leopard Claw Marks

Examination of the Site of the Kill

It is very important to look at the site of the kill in its greater context. The finding of the carcass is a very important aspect of making this assessment and evaluation.

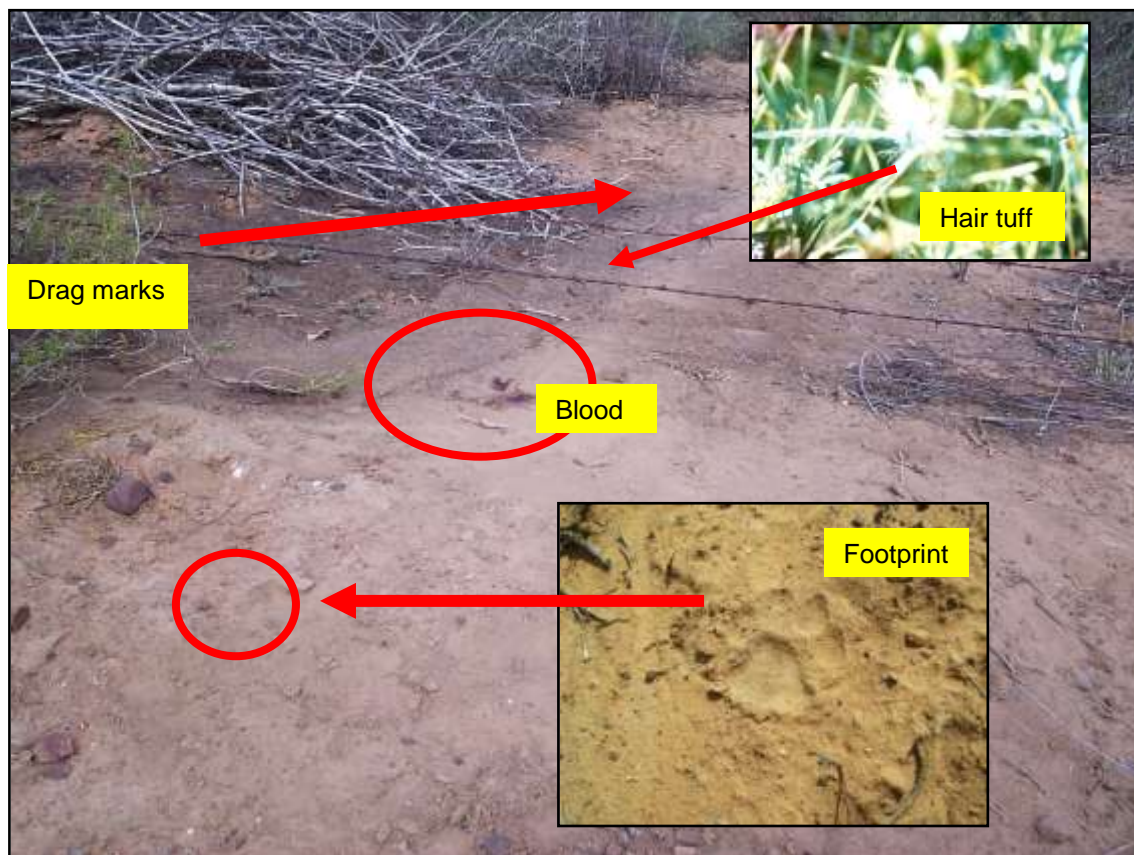
How to Approach the Site of the Kill

Finding the carcass is a priority, as the carcass and the site around it will provide clues as to the cause of death.

- Keep all onlookers in a group to one side, until the carcass and any tracks around it have been located.
- Mark the site of the tracks using stones or sticks, so that they can be found again, if necessary, and to prevent onlookers from trampling them.

- Try to identify the tracks, if found, and make notes on what the identification of the possible predator is based on.
- Record all information in the report book and take (digital) pictures.

Bleeding only occurs during life or its immediate aftermath. If the death occurred for other reasons prior to an animal feeding from it, no bleeding would be evident on the ground at the site of the kill / death, from wounds and the subcutaneous tissues. This is a very important determinant of whether the animal feeding from the carcass has caused its death or is just an opportunist feeder.



Site is full of clues as to who the culprit was: a Leopard kill site.

Scan the area for clues like drag marks of the carcass, hairs and feathers, and other remains such as droppings and scat which can give clues to the culprit of the livestock losses. For example the presence of leopard hairs in the fence could indicate that such a predator was present (although not necessarily the cause of the death). A caracal may leave traces such as pulling wool from the carcass, which is typical of the species. Dogs, in turn, leave a very messy kill site with wool and pieces of the carcass strewn all over the site.

Movement of the carcass or body parts is typical of the leopard, and the carcass may be dragged over long distances. Hyenas may also take pieces of the carcass back to its den. The cheetah does not drag its prey, and usually

eats it at the site of the kill. Jackals carry ingested meat back to their dens where it is regurgitated for the young.

The site of the kill may present some of the most important clues in identifying the cause of the livestock losses, that is, the identification of animal tracks.

It is equally important to remember that several species may utilise the carcass, and that even some predators that are not prone to scavenging, may at times do so. Animal tracks, like all other signs, are just one of a series of “tools” used to assess the stock loss problem, and should therefore not be used in isolation to the others.



Leopard Tracks and Foot

How to Approach Track Identification

- Scan the whole area for tracks.
- Make sure all tracks are examined, not just the first one found, to prevent making incorrect assumptions. Scavengers may result in multiple tracks being found around the carcass.
- Remember that front and back tracks can differ in size and shape. For example, cheetahs and brown hyenas have considerably larger front tracks.



Dog's paw: Note the rounded front edge of the toe pads.



Dog tracks are easily confused with cheetah tracks. Note the straight rear line created by the footpad. This helps distinguish the dog track from the cheetah track.



Cheetah paws. Note the pointed toe pads and W-shaped rear edge of the footpad.



Cheetah track. Note the nail marks and pointed front edge of the toe pads, the distance between the nail and toe pad and the grooves along the rear edge of the footpad.



Leopard paw. Note the retracted nails, paw size and the W-shaped rear edge of the footpad.



Leopard track. Note the lack of nail marks and rounded profile.

Tack Identification Guidelines

Dogs versus Cats:

- Dog species, such as domestic dogs and jackals, usually show nails in their tracks.
- Cat species, such as leopards and caracals, usually do not show nails.
- Cheetahs are an exception among cats, as their nails show in their tracks.
- Cats have a distinct W-shape at the back end of their footpad. This distinguishes cheetah and other cat tracks from dog tracks, which are generally shaped straight at the back end of their footpad.

Cheetah versus Leopard:

Cheetah tracks usually show nail marks; leopards usually do not. Leopard tracks have a round profile, cheetah have a rectangular profile.

As a general guide, leopard tracks are almost the same width and length. Cheetah tracks are longer than they are wide.

Encountering a Carcass

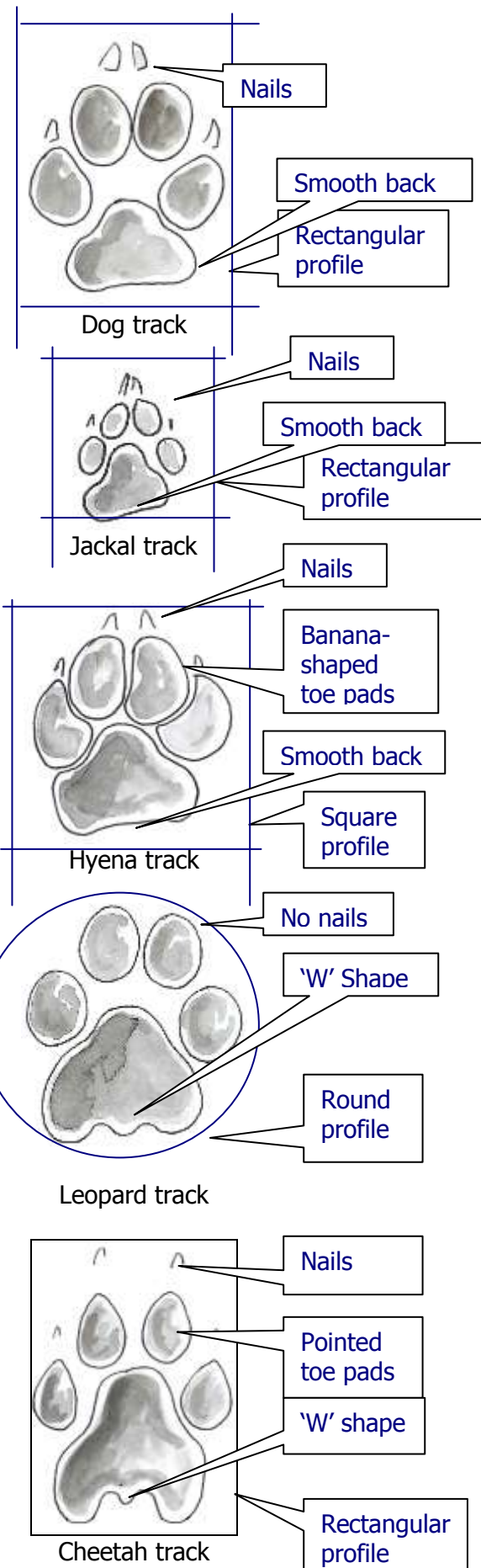
If a carcass is found, the next factors to consider are:

Was the animal killed, or only scavenged?

To determine this, find the bite marks and carefully skin this area. If bruising and bleeding occurred, the animal was alive at the time of the attack, as the heart was still beating. If no evidence of bruising or bleeding can be found, the animal was in all likelihood already dead when preyed on.

How large was the livestock lost?

Smaller predators are limited by the size of prey they can attack. The larger the livestock lost, generally the larger the predator. Therefore, always consider the size of the livestock lost, for example: if the loss was an adult cow (not giving birth) and



only jackal tracks were found surrounding it, then it probably died and was not predated.

Examination of the Carcass

Examination of a fresh carcass will give the best possible result in making an accurate assessment of the cause of death. It is thus important that every effort be made to find the fresh carcass. The information gained from the effort will result in a better diagnosis of the problem as well as better and more accurate management decisions.



Unusual Caracal Predation: Blood at Site of Kill, Fed with Young

External Examination: The general condition of the animal that was killed needs to be ascertained. The condition of the animal's coat will give an indication of the animal's underlying health prior to death. This is clearly breed-dependent, and the farmer is likely to have very good knowledge of this. Shiny coats and soft flexible skins are indicative of good health. Sheep have a wide-ranging appearance due to different breeds and climatic conditions.

The general state of health of the killed animal can give ample clues as to the cause of death – the state of nutrition, hydration and the age of the victim animal are important to ascertain. Predators are generally known to target the weak, the young and isolated individuals. These deaths may have been the cause of something other than predation, or may have occurred anyway.

Predators are more likely to target the very young and the immature animals. Young animals that are weak and immature are more prone to predation, as well as to illness and exposure.

Look out for faeces from the killed animal, and of the predator in the vicinity of the carcass – dry and concentrated dung is the norm for sheep and goats, and diarrhoea would indicate disease processes. Young kids and lambs may have the appearance of diarrhoea with their milk intake. This may also be the result of fresh green fodder.



Sheep's Ear Marking in Leopard Scat

The carcass should be examined for all types of injuries (predator related or not), pus and bite- or talon marks. Teeth marks or talons give distinctive injuries, and snakebites may display excessive swelling at the site of a bite (that may be difficult or even impossible to identify). Again it should be stressed that it is natural for predators to target weak and isolated animals that may have died in any event.



Pufadder

Blood is spilled from the wounds if the animal is killed by a predator, as bleeding happens when there is still cardiac output. An animal that died from causes other than trauma usually does not show bleeding or subcutaneous bleeding (as described above).

Bloated abdomen – “bloat” – occurs when excessive amounts of grain (or some green feeds) are ingested. This results in the over-distension of the rumen and then death. If the animal dies of “bloat” it could be misinterpreted as bowel distension occurring with decomposition after death.

Internal Examination: Body fat is present in healthy animals and is typically found in the omentum lining the internal organs, particularly the heart, kidneys and intestines. Sick animals, particularly those that have been sick over a long period would have a decreased or absence of these fat deposits.

Bone damage is evident in some species. The leopard often fractures the femur while it feeds from the soft gluteus muscles. Hyenas typically eat the bones and leave little of the carcass untouched. The leopard is also known to fracture the cervical vertebrae during the kill. Inspection of the skull is important as bite marks often indicate the type of predator.



Fractured Femur with Leopard Kill

Dark and firm lungs, as in the case of pneumonia, suggest respiratory illnesses. Healthy lungs should be aerated and pink. Newborns without aerated lungs indicate stillbirths.

The stomach and intestinal contents is a third to half full in well-nourished ruminating livestock. The “4th stomach” in calves, lambs and kids should contain milk. The large intestine will have better formed faeces than the small intestines.

If poisons (plant or chemical) are suspected as the cause of death, it may be opportune to send it for toxicology analysis.

The carcass of the newborn and very young: Newborn deaths require special attention, as many of the losses in livestock areas are amongst the

newborn or very young livestock. Often the death of a newborn is not at the hands of the predator, yet it is often blamed. It is critical not to target the predator at such times, as cleaning the veld of carcasses is actually a beneficial ecological function performed by predators that often scavenge too. It would be incorrect to target predators eating from such carcasses, as they are not the cause of the stock loss, and the wrong management intervention would be employed. Removing resident and dominant predators, could worsen problems.

If no blood clot on the umbilicus is evident, it may indicate a stillbirth. Predators feeding on the carcass do therefore not indicate a problem predator or scavenger, but rather an opportunist feeder. A live birth would typically result in a clot at the end of the umbilicus where it separates from the afterbirth. Other signs of a stillbirth include dark and dense non-aerated lungs and membranes over the hooves. The presence of a yellowish material over the body of the dead newborn (meconium) is evidence of labour problems and death from a traumatic birth. The presence of the afterbirth and entanglement with the foetal membranes also suggest a stillbirth.

Fat around the heart and kidneys indicate preceding good health of the newborn. Such signs indicate that death was an abrupt event. Older and healthy lambs develop fat deposits around their stomachs and intestine as they grow and thrive. The absence of these fat deposits in older lambs may indicate disease and stress prior to death.

Another sign to examine in the young is the presence of milk in the stomach. Thriving and cared for lambs will feed from their mothers, yet rejected and isolated lambs will not demonstrate milk in the stomach. Even if predation was the cause of death in such cases, the management intervention should not be targeted at the predators but at intensive stock management interventions and lambing care. Chyle in the intestinal lymphatics indicates a feeding and thriving newborn.

Location of the bite marks: The appearance, nature and location of bite marks remain some of the best methods to identify the cause of death and the culprit.



Typical Bloodied Bite of a Leopard

Cats mostly bite on the neck, e.g. leopards and caracals. Cheetahs suffocate their prey, honey badgers often bite the face, mongooses and civits bite the back of the head to crush the skull. Jackals can bite all over the body, especially on the flank, but most commonly they bite on the neck as well. The jackal's upper canines typically cut in between the eye and the ear, and the lower canines penetrate the trachea. Hyenas and wild dogs bite from behind and kill by disembowelment.



Honey Badger Kill

Eagles use talons to kill, which is often evident on the spine of the carcass, but on the back of the skull in lambs. The size of the talons are good indicators of the prey sizes the animals will kill or feed on. Birds of prey often leave white faecal droppings on their prey or at the site of the kill. Wool or hair may be seen plucked in a circle around the carcass.

Vultures only rarely attack weak and small lambs and kids and utilise their powerful beaks for feeding. Vultures and eagles are all opportunistic feeders and would in all likelihood only target weak and isolated individual prey specimens.



Leopard Bite Wound Inspection – typically much more bruising would be evident

Wound Examination: The examination of the wound could be the best indicator of the offending predator. By skinning the carcass one can get a good idea of the bite of the predator.

As mentioned, bruising is evident if the animal was killed by a bite. Feeding after death does not cause bleeding as the cardiovascular system is no longer functional. Dogs may cause injuries to livestock without killing them, but this can also be seen in jackals, foxes and African Wild Dogs.

Eagles have distinctive 3-puncture marks from the talons and typically cause extensive bleeding as the talons penetrate deeply into the carcass. Claw and scratch marks are also evident with cat kills.

Bite Marks

- Locate any visible bite marks on the carcass and carefully skin the area. Skin the animal on the side of the neck, slightly behind the ear, cutting inwards below the jaw line. Then cut caudally in line with the spine distal to the lower wound, and then interiorly to the midline. Flap the skin forward.
- Look for bruising and bite marks. Also inspect the throat and jaw. Also look for wounds elsewhere and consider skinning the animal altogether. The distance between the upper canines can be measured on the inside of the skin, as this is where they show clearly.
- This measurement helps narrow the possibilities of which predator caused the loss, as predators have distinctly different widths between their canines.
- Compare the location of the bite marks, e.g. side of neck, back of neck, base of head or throat, or randomly all over the carcass, as this may also help to indicate which predator made the kill.
- Try to distinguish between upper and lower canines, as these widths vary. The width between the upper canines is slightly wider than the width between the lower canines.



Bite marks are often difficult to see on the outside of the carcass.



Bite marks are more easily measured and assessed on the inside of the skin. Carefully skin the area and lift up the skin.



Canine width measurements:

- Cheetah 36-39mm (about two finger widths)
- Leopard 40-46mm (about 3 finger widths)
- Jackal 19-21mm (about 1 finger width)
- Caracal 29-32mm (about 1 1/2 finger widths)
- Spotted Hyena 47-58mm (about 3 finger widths)
- Brown Hyena 47-58mm (about 3 finger widths)
- Domestic dog 36-58mm (about 3 finger widths)

Comparing Dentition



Cheetahs have relatively weak jaws and small teeth in relation to their size. Their molars have sharp cutting edges allowing meat to be eaten quickly.



Leopards have extremely strong jaws and long canines, allowing them to kill their prey with a strong neck bite.



Cheetah skull (left) and leopard skull, showing the size difference between the skulls and canine length.



Lions have strong jaws and long canines, typical of the large powerful carnivores.



Bat-eared foxes are harmless to livestock. Their small molars are not adapted for eating meat.



Brown hyenas are scavengers. Note the strong molars capable of crushing even large bones.

Comparing Kills

Black Backed Jackal: The jackal bites on a wider array of sites, including the jaw, neck, flank and hindquarters. Bites occur mainly on the throat area, often penetrating the trachea with the lower canines, and the upper canines incising between the ear and eye. Prey size is known to be as large as 50 kg. Typically chew marks will be seen on the face and ears. Skin flaps are left with the meat eaten from below it. The stomach is often eaten, as is the intestines. Ribs may also be chewed.



Wool Plucking at a Caracal Kill

Caracal: A caracal kill is a typical cat kill, which is on the neck. Claw marks may be evident. Prey size is normally less than 25 kg. The animal is eaten from the rear, with the skin being left intact, as is the stomach and the intestines. The caracal may distinctively pluck wool from a sheep. More than a single animal may be killed at a time.



Leopard: The leopard is a clinical killer. The bite is usually on the neck, and rarely on the top of the skull and neck. The feeding typically starts on the hindquarters, often with the breaking of the femur as the cat pushes forward on the limb to get at the gluteus muscles. The prey can be dragged considerable distances. The intestines and skin are not eaten. The cat may chew at the rib ends.

Cheetah: The cheetah chases its prey and suffocates it by biting and occluding the trachea. The stomach and intestines are not eaten, but are separated from the carcass. The lungs, liver and heart are eaten. The carcass is not dragged far, and is consumed at or near the site of the kill immediately.

Wild Dogs: Wild Dogs are ruthless killers and hunt in a pack. They bite anywhere on the body and the entire carcass is consumed, leaving no trace of it except spilled blood and tracks.

Hyenas: The spotted hyena attacks the flanks, from underneath as well as from behind. The kill site is messy and most of the carcass is consumed. The brown hyena bites on the back of the skull, hindquarters and underneath. The hyena will carry parts of the carcass back to its den, typically leaving wool, hair, skin and intestines scattered at the site.

Stray Dogs: Stray dogs can cause extensive damage. They are messy killers and often bite small lambs and kids on the head, back or chest. Large prey can be bitten all over. The carcass is often dragged around, leaving the kill site messy. Several animals can be killed at the same time. The dog consumes variable amounts of the carcass, at times nothing, typically feeding from the rear. Bones may be chewed and even consumed and large pieces of meat taken from the carcass.

Corrective Management

Non-lethal Controls

This manual recommends a move away from lethal predator controls to non-lethal holistic predator management that works with the ecological process of predation in rangelands, instead of attempts to exterminate it. This approach is more ecologically acceptable, effective and cost effective over the long term. These methods have proven successful in various and numerous settings. It does however require effort and commitment from the farmer.

There is no longer any defensible reason to continue with lethal, cruel and indiscriminate control methods that have negative environmental impacts and that are ethically unacceptable and financially proven unsuccessful. The fact that generations of farmers have utilised indiscriminate, cruel and lethal control methods and that the problem continues to worsen, is proof that these measures do not work.

Consumers are demanding that new and acceptable methods of predator management be developed and implemented. This manual will detail some practical ways in which holistic predator controls can be applied acceptably. A single control method is unlikely to work completely, but applied together and alternately, these methods will reduce the problem significantly.

The techniques promoted in this manual are methodologies that are bringing intensive animal husbandry practices back to extensive farming operations, without changing the extensive nature of livestock farming. The interventions that are recommended can be grouped into the following categories that will be described in various degrees of detail to enable the farmer to pursue these techniques should they be relevant to his / her farm.

Guardians

These methods result in livestock being guarded against predators, namely: Livestock Guarding Dogs (inclusive of Anatolian Shepherd Dogs), Alpacas, herdsman, donkeys and cellular telephone technology used as a herding and guarding mechanism.

Deterrents

These methods deter predators from targeting livestock, including: protective sheep collars (inclusive of Dead Stop collars, King Collars and Bell collars), fencing, noises, lights and smells.

Management and Herding Techniques, and Breed Selection

These methods herd livestock so as to protect them. Both deterrent and guarding methodologies are used, namely: herding techniques utilising live-trapping techniques, fencing, kraaling, avoiding territories, coordinating lambing seasons as well as different types of species or breeds.

Indiscriminate control measures that potentially lead to any form of debilitating injury or protracted and / or unreasonable suffering or pain, are unacceptable. Thus live traps , leg hold / gin traps (in any form), indiscriminate poison traps and hunting packs of dogs are deemed unacceptable control measures.



Sedated Leopard Being Treated After A Gin Trap Injury

Lethal Controls

Lethal controls are not supported by the recommendations of this manual. These controls are only to be considered when holistic and non-lethal methods have been fully exhausted, and as a last resort that will only target individual damage-causing predators.

The misguided concept that all predators are problems has led husbandry practices to kill or remove almost all predators in some areas. This has resulted in the widespread extermination of large top-predators, leading to a dramatic increase in secondary predators as a result of the ecological imbalances caused by these methods.

Many wildlife species are killed for alleged livestock predation, even when they are not responsible or just due to accidental by-catch. They are sometimes deliberately targeted and killed, but mostly they are killed accidentally when other predators are targeted, usually with indiscriminate methods such as poisoning, gin trapping (snap traps or leg-hold traps) and indiscriminate hunting with dog packs.

Species such as the aardwolf, bat-eared fox, serval, armadillo and porcupine are some of the harmless victims killed by using these lethal control methods. Aardwolves are small animals that survive on termites and other insects (insectivores). They don't have adequate jaw strength or tooth structure to kill livestock. Bat-eared foxes eat insects and rodents and are also not adapted to kill livestock. They may be seen at carcasses, but this is usually to forage the maggots and other insects accumulated on the dead animal. Porcupines often gnaw on old bones (osteophagy) in order to gain essential minerals and nutrients. Many species ranging from tortoises to giraffes do this especially during dry seasons and poor veld conditions. They may drag carcasses down old warthog burrows, which they and other species inhabit. Farmers find the bones at these sites and all the occupants of the burrows are accused of livestock predation.



By – Catch

Leg hold/gin traps are banned in more than 90 countries across the world. There is no ethical defence for their continued use in a modern and humane society. It is inconceivable in a country like South Africa that government and even conservation bodies and academics continue to condone the use of these devices. Leg-hold traps should be outlawed by legislation and their use be

resisted and prevented by the marketplace. The agricultural industry should furthermore voluntarily disband the use of these barbaric practices.



The Use of Gin Traps Are Barbaric

Leg–hold devices and gin traps result in the clamping of an animal's limb. This method is entirely indiscriminate, as it cannot be set for specific animals or species. This clamping of the limb result in vascular occlusion to the distal limb if the pressure on the limb exceeds the systolic pressure of the blood supply system of the trapped animal, thus resulting in tissue damage and gangrene of the distal limb within 4 hours of the trap closing shut. Many animals will chew their own limbs off to try and free themselves. Many animals fracture their limbs and injure soft tissues (skin, ligaments, tendons and muscles) while captured in the traps. Gin traps should be checked daily, but if gangrene sets in within 4 hours this is a senseless effort, as the damage is already done and the animal almost invariably needs to be destroyed. Some cases have been reported of the traps being checked only fortnightly! Animals are often found dead in these traps. Such deaths occur from stress, or worse still, dehydration. Dehydration and thirst is the only animal drive that no animals can resist, and dying from it (never mind the barbaric injuries caused by these traps), is perhaps the most brutal death imaginable.

Many attempts have been made to justify the use of these barbaric tools such as changing the name of these traps to leg–hold devices, modifying edges, padding them, adding springs and justifying different shapes and sizes for

different species. Yet, they remain utterly indiscriminate torture devices. Padding only reduces the incidence of skin breaches, but does not prevent the secondary injuries and distal gangrene.



Result of a Gin Trap

Gin traps are indiscriminate and inhumane and cannot be used to effectively manage predators. They are ethically indefensible.



Shooting/hunting should be considered as a last resort in selectively eradicating a specific predator.

Jackal- and caracal hunts and denning (killing jackals in their den) practices are non-selective means of control and are not supported. The current practice in these hunts is to pay professional hunters per head of predator killed. This practice supports the indiscriminate and unselective killing and extermination of entire species. The incentive is to kill as many predators as possible, and not on identifying the culprit animal. These hunts are usually done at night using jackal calls to “call” the targets. As extensively detailed in this manual, it is counter-productive to effective management of predation, and ecologically unacceptable to target predators in this manner. Such indiscriminate killing of jackals and caracals causes chaos in the social structures of these predators, and in fact, is a stimulus for population explosions.

If all other non-lethal methods were unsuccessful, and hunting is utilised, every effort should be made to identify the problem individuals and not to indiscriminately target the entire species.



Professional Night Hunting

Photo: Thys De Wet

The indiscriminate use of **poisons** to control predators (or other “pests”) causes a ‘trigger effect’ in the ecosystem, resulting in massive damage to the ecosystem and killing many innocent animals, as entire food chains are affected and contaminated. The uncontrolled and reckless use of poisoned bait, which is scattered around in the veld holds great danger to animals and people alike. This practice is not recommended. Some estimates show that 110 non-target animals may be accidentally killed for every attempt to kill one jackal using poison bait incorrectly. This is completely unacceptable. Some of these poisons end up in the food chain, persisting in the organisms and could end in the food of humans. Various poison devices are used, either poisoning bait on the ground, or trigger devices often called “getters”. Some devices are legally obtainable over the counter, but many are illegal.



Poisoned Leopard and Baboons

Predator management should be selective and ecologically acceptable. It should not lead to the detriment of the entire target species, or any other species. At best, the incorrect use of poison merely offers short-term relief to a problem, and almost certainly results in negative long-term effects on the environment as a whole.

Although **poison collars** target specific habitual livestock-killing predators, this method should only be used as an absolute last resort when all other non-lethal methods have been fully exhausted. The collar is fitted to the neck of livestock and has a 'blister' that can be filled with poison. This will ensure that the individual responsible for the killing of the animal is killed. This methodology is target specific and very effective, provided it is administered by trained and professional experts. In cases of protracted livestock losses and where the holistic and non-lethal methods have failed after appropriate application, it may be acceptable to resort to such methods. The collars are placed on a few animals left in the camp where the predator has targeted livestock (the other livestock is removed). The habitual stock "thief" is then poisoned with his next attack on livestock in the affected area. The area is visited daily after the collar has been fitted, and the carcass removed and destroyed immediately when the predator is killed to avoid secondary poisoning.

In general no chemical control or any toxic substances should be used, unless it is lawful and under the direct supervision of a relevant authority (or their delegated representatives) and for specific reasons. The participating agencies must give specific and written consent to the use of these substances in each and every case. The use of such methodologies must neither result in the primary or secondary poisoning of non-target species, nor must they threaten the environment or public health. Such chemical control methods must be target specific, and the killed individual must be removed immediately from the ecosystem to avoid secondary poisoning.

The benefit of the poison collars is that a culprit animal is targeted and killed, but dangers remain for secondary poisoning if the dead carcass of the poisoned individual is not removed and destroyed. These methods, if used at all, should be utilised very carefully and with extreme caution.

Poison Collars and other predator control advice can be obtained from Mr Eddie Steenkamp, Tel: 022 723 1842, www.protect-a-lamb.com

Hunting dog packs are not recommended. They are an indiscriminate and mostly illegal means of predator control. These hunting dog packs cause massive damage through the dogs killing non-target species or individuals. This means of control is still widely used in South Africa and is the cause of much damage to the biodiversity on rangelands.

There are reports of highly trained and specialised dog hunting packs, but this is the exception. Recent talk of muzzled dogs with remote controlled shock-collars may hold some promise as a control method in future, but at this time is

not recommended as an acceptable control method, largely due to the unselective and cruel nature of the control.

Dogs are generally the largest cause of concern in predatory livestock losses but are often blamed on indigenous predators. As a general management practice, farmers should control the number of dogs on their farms and ensure that they are all sterilised and confined to areas where they cannot cause livestock losses.



Treating another Gin Trapped Leopard



Guardians: Livestock Guarding Dogs & Anatolian Shepherd Dogs

These dogs have been used for centuries to guard livestock against predation. The concept of using dogs to protect livestock is not new and has been used by many people over many centuries. These dogs are generally hybrid “breeds” and have been effectively integrated as protectors of livestock against predation. Shepherds have been using dogs for a very long time as herd guardians, and across Africa have developed small mongrel dog breeds to help protect livestock. These dogs present a significant opportunity to solving predator–livestock farming conflicts. There are significant opportunities for hybrid “breeds” to be utilised and judiciously bred in Southern Africa as effective livestock guarding dogs. While such hybrid breeding is being explored by experts in the field (and has effectively been used by stockmen for a long time), most of the local experience with conservation-driven programmes have been with the Anatolian Shepherd Dogs, and thus the focus on them in this manual. It is recognised however that several other breeds and hybrid dogs could be as effectively developed into livestock guarding dogs.

A Turkish hybrid “breed”, the Anatolian Shepherd Dog, is used to protect livestock against predators. This “breed” is in fact a hybrid dog that has been developed into a breed fairly recently. Today these impressive Anatolian Shepherd dogs are now being bred and reared by several entities in Southern Africa, most notably the Cheetah Conservation Fund (of Namibia), Cheetah Outreach and some private breeders in South Africa. The Landmark Foundation, Cheetah Outreach and the De Wildt Cheetah and Wildlife Trust run extension programmes in South Africa where these dogs are being introduced to farming areas in an attempt to conserve predators on agricultural landscapes. The dogs are ideally suited to areas experiencing problems with leopards, cheetahs, caracals and jackals in particular.



In Turkey, the Anatolian Shepherd has been used as a livestock-guarding dog for approximately 6000 years.

These dogs are introduced to farms between 6 – 9 weeks of age. It is important that the socialisation to livestock and the farm environment start as early as the second week of the puppy's life. These dogs are raised exclusively with the flock, instinctively protecting them from a variety of predators and threats including cheetahs, leopards, jackal and caracals. By deterring predators, this important working relationship removes the need for farmers to trap, hunt and poison these predators indiscriminately. The dogs have become a potential key tool in developing holistic, non-lethal predator control mechanisms in the livestock farming industry.

As a result of successful initiatives, it is strongly recommended that these dogs, and other livestock guarding dogs, provide an important armament for farmers struggling with the control of predators on their land.

It is important that these dogs are introduced and trained properly for maximal gain. It is thus recommended that any dog that is taken into a livestock guarding environment, be bred and trained by breeders that are knowledgeable and skilled. In particular, training should start before the third week of the puppy's life as the important olfactory bonding and socialisation development ensues at this stage of development (followed by the auditory and the visual functions by about 5 – 6 weeks of development). It is most important that early socialisation occurs correctly, as many failures are blamed on the dogs, whereas it is really the fault of poor socialisation and training. It requires application and dedication by the farmer. Should all go well with the dog, it is fairly confidently predicted that improvement of up to 90% in control of predation can be achieved. It is stressed however that the training and care of the dogs **MUST** be rigorously applied and implemented and problems must be addressed early on if this kind of success is to be obtained. It is also recognised that not all people can work with dogs. If these dogs start working to their full potential, and predatory losses are indeed as high as some report, these dogs will become the most cost-effective means of control available, and in fact, one of the most valued assets to the stock farmer.

To give the dogs the best possible chance of success, it is important to follow the introduction and monitoring processes advised for them.

Important Practical Things to Note before Getting Started

- Consult an agency (e.g. Landmark Foundation, Cheetah Outreach, the De Wildt Cheetah and Wildlife Trust, Cheetah Conservation Fund), or a farming colleague with experience in working with guarding dogs, prior to taking on a puppy.
- Allocate two or three people on the farm that will manage and handle the dog, and get them trained and schooled in the management of these dogs.
- Consult the manual on how to keep, train and manage the dog.
- Prepare the accommodation (shelter) and camps for the introduction of the puppy, and have lambs, kids or calves ready to be deployed with the puppy from day one.
- The dog needs to know its master, but should be imprinted on the animals it is to guard, and not the homestead, the farmyard or its people.



- Keep to the veterinary recommendation and sterilisation schedules.
- Always leave your puppy with some sheep or goats from the herd it will be protecting, even if one or two, when the herd leaves for the veld. The remaining individuals and puppy should be securely kraaled. This is important until the puppy is old enough to travel with your herd to the veld and take up its duties as protector.
- Leash your dog for a few minutes every day, or several times a week at least, to maintain sufficient relationship to enable easy husbandry and veterinary care.
- Do not encourage your dog to come to you. The goats or sheep are the family with whom it must bond.
- Do feed your dog a quality dry dog food especially while growing, we recommend Vet's Choice Large Breed Puppy pellets. Its optimum health will help him serve you better. Do not feed your dog meat; remember it is living with your herd.
- Do not allow your dog to run and play with your herd as he grows. This behaviour should be restricted if it gets excessive and endangers the lambs, calves or kids. Separate your dog from the herd for a few days in a kraal adjacent to the herd – do not use a drop-stick on his collar as this has been known to injure and kill Anatolian puppies.
- Keep a keen check for illness especially Biliary – consult your husbandry manual. Pallor, lethargy and rejection of food are signs of Biliary.
- Follow parasite control protocols – consult your husbandry manual.
- Report any concerns immediately to your nearest veterinarian or support agency.
- Consider the introduction of a replacement dog early on as these livestock guarding dogs have a significantly higher mortality than pet dogs.

This important partnership between dog and owner requires interest and investment, especially during its first year of growth. The dog's ability to appropriately guard the flock for many years to come will adequately repay the owner's efforts.

A potential owner needs to ask:

- What are the main predators the dog will need to defend the livestock against?
- What function have the available breeds been developed for? (i.e. working, herding, hunting, etc.)
- What are the advantages / disadvantages of the various breeds and their sizes?
- Is the area particularly hot and rocky?
- Is commercial dog food affordable and readily available?

Selecting A Good Livestock-Guarding Dog

Some breeds have been developed for specific functions. For example, border collies and kelpies have been bred as herding dogs. Anatolian Shepherds, on the other hand, have been developed as livestock guarding dogs. Most mongrels can perform either of these tasks and significant opportunities exist for developing effective guarding dogs through hybrid breeding of effective livestock guarding functions from neighbourhood dogs.



Anatolian Puppy in Training

Large dogs may have an advantage in that they can confront large predators, such as cheetahs and leopards, although smaller dogs may be equally effective as livestock guardians. Their loud bark and imposing size are good deterrents to predators. These large dogs become herders against threats from predators, replacing the dominance and territoriality that top predators would have in the natural environment.

However, certain disadvantages must be considered. The diet of a large, fast-growing breed of dog such as the Anatolian Shepherd needs more attention and can be more expensive than a smaller breed of dog or mongrel. Large-breed dogs grow rapidly and therefore require a well-formulated diet that includes pellet food. Maize-meal (porridge) is not adequate and frequently results in bone deformities. A dog with a poorly developed bone structure will be unable to maintain the hard life of a working dog, and its increased dietary needs may result in hunting behaviour and scavenging. A high-quality diet is therefore important, especially in the growth phase of the first 18 months. It should also be remembered that the dietary needs of working dogs in volume of food consumed could be 20% more than recommended for domestic dogs and provision should be made for this.

Larger dogs may also find it tougher to walk over very rocky terrain and if they develop bad behavioural habits such as chasing wildlife, they can do a lot of damage. This should be actively managed and discouraged.

Another problem is that large breeds of livestock-guarding dogs are not readily available. With the increasing demand for these dogs as their reputations grow and pressure mounts to convert to non-lethal holistic predator controls, the demand and price of these dogs will increase. Prospective owners are advised to make contact with reputable breeders and / or agencies that can source good and well trained animals.

Small dogs have the advantage that they may cope with rough terrain and heat better than larger dogs. It is thus important that the Anatolian Shepard is provided with shelter in the field. This shelter should be moved with the herd or flock in the grazing rotation. The food and water should be placed near the shelter.

A possible disadvantage with smaller dogs however, is that they may be unable to defend livestock against large predators.

Raising and Training a Livestock-Guarding Dog

A few golden rules and a lot of patience need to be applied when raising a livestock-guarding dog.

A puppy should preferably be obtained from a working livestock-guarding dog (preferably from a recognised breeder and / or agency), and placed with its new livestock at six to nine weeks of age, although training and socialisation should be commenced as early as the third week of life, as bonding and imprinting is more successful the earlier this starts. The dog should always be with livestock and never left alone in the kraal, even if only two livestock remain with it. A bond needs to be formed between the developing puppy and its livestock. If the bond formation fails, the dog will probably fail as a livestock-guarding dog, as it will not be motivated to stay with the livestock and protect them. Avoid letting the dog close to people and the farmyard, as it may become too familiar with the homestead.



When selecting a livestock-guarding dog, the size of the dog and the environment it will be working in are of importance.



It is very important to familiarise a livestock-guarding dog with all the animals it will encounter while accompanying its livestock. A herder should walk the puppy past or through wildlife and other livestock to teach it to ignore them.



Hunting behaviour in a livestock-guarding dog should not be encouraged. A warthog seriously injured this dog.

Dogs must be familiarised with other livestock in the area, such as other flocks or herds, horses, cattle, etc. In communal areas this is of particular importance, as livestock share communal water points. If the dog is not familiarised with the neighbours' livestock, it may "defend" its livestock against them and chase or attack them. This could result in problems with neighbours and can get the dog shot or killed.

Dogs also need to be taught not to view non-predator wildlife as a threat to their livestock. If they bark at something, it means they are concerned and view the intruder as a threat. If they bark at or chase non-predator wildlife or other livestock, they should be reprimanded immediately.

Once behaviour such as hunting has been learned, it may be very difficult to correct. A dog that is allowed to chase game will not stay to protect its livestock when it is unsupervised in the veld. Therefore, as the dog develops and matures, its progress needs to be closely monitored so that any undesirable behaviour can be corrected immediately.

Dogs that come home with wounds caused by warthog tusks or antelope horns should be monitored, as those wounds were more than likely caused while the dog was hunting. The time and effort put into raising and training a good livestock-guarding dog will have been wasted if the dog is lost due to hunting injuries.

The dogs should not be allowed to wander back to the homestead. Should this occur it should be constrained in a camp in the veld.



A livestock-guarding dog should have shelter against bad weather.



Most puppies go through a playful stage and will chase livestock around. This early predatory behaviour should be actively discouraged.



A swivel clip and light weight chain suitable for a run wire.

Run Wires are NOT Recommended

The anchors for the wire should be knocked in level with the ground so that the chain does not get tangled. Have the run wire traverse the kraal; and make sure the dog cannot reach a fence and try to jump over it. The dog should be able to reach shade and water; Use a light-weight chain and attach it to the dog's collar with a swivel clip. The dog should also be familiar with restraint on a lead before attaching it to a run wire, and then observed when first attached to it.

Run wires are not encouraged to correct this behaviour.

Close monitoring of the dog will also allow owner and dog to become familiar with one another and develop a working relationship. This allows the owner to be able to handle the dog and inspect it for ticks and injuries, and to treat it when necessary.

Lead training the dog while it is young is also essential for the dog to be managed, especially for veterinary care. Puppies need to have protection against aggressive livestock and against being trampled by the flock. A small pen within the kraal should be adequate for this.

Stages of Development

Children go through defined developmental stages. By certain ages, infants can be expected to crawl, walk and begin talking.

Puppies go through very predictable developmental stages as well. Between two weeks and four months of age, social bonding takes place, which is why it is critical that puppies are fully imprinted with their own herd and the animals it should guard by this age. Whatever a dog grows up with, is what it will bond to. A dog that has grown up with and bonded to goats cannot later be transferred to sheep. Undue human contact at this “cute” stage can cause problems for your dog and result in a poor bond between the dog and the herd, and thus hinder the efficacy of its herding in field. This is a common cause of failure in these dogs. The earlier bonding is encouraged, the better the results. It is thus important that breeders of these dogs also start the livestock socialisation to which the dog is expected to be trained.



If you take care of your herder,
it will take care of your
livestock. (Armas Shaanika, CCF herder.)



This dog is underfed. This is unacceptable!

At six months most breeds such as the Anatolian Shepherd, go through a playful stage, which can result in livestock fatalities if the dog is not monitored and the behaviour corrected. Such behaviour may be an expression of early predatory behaviour by the dog. The dog should be reprimanded and, if necessary, actively discouraged to engage in such activity.

The Adult Dog

A dog is only as good as its owner. Even an adult dog needs care and monitoring. Large dogs mature later than smaller breeds (18 months).

Therefore, although they may be the size of adults, it must be remembered that their behaviour will still be that of a young dog, requiring training and patience.

A Successful Dog Owner Should Be:

- Dedicated to making the dog a success;
- Available to monitor the dog's progress;
- Guide the dog's development;
- Willing to invest time and money into the dog's health, welfare and development; and
- Have patience and an understanding of the dog's behaviour and needs.

Specific Guidelines to Raising and Training Anatolian Shepherds

Below are basic guidelines to raising and training a new livestock guarding dog. Adhering to these suggestions could mean the difference between the success and failure of a new livestock guarding dog.

For Herds Kraaled at Night

- ***Early Juvenile Stage 3-16 weeks***

Puppies should be fully weaned from their mothers prior to placement.

This is one of the most critical stages in the dog's life. During this period the puppy will bond with whatever species it is placed with – by 16 weeks this critical stage is over. If a puppy has bonded well with its livestock, it will be motivated to always stay with and protect them. A failure in the bonding process will result in the dog roaming and not staying with the livestock. The puppy should never be left alone, but at all times be accompanied by some members of the herd it will be spending its life with. At the same time though, when the herd comes in at night, keep the puppy in its own pen (with one or two kids, calves or lambs) in the kraal to protect it from the more aggressive livestock.

Socialisation to livestock should start early, even while the puppy is still with its mother. The earliest and strongest stimulus for socialisation and imprinting, the olfactory sense, develops from the 3rd week of life. This is followed by the auditory sense and only followed by visual sense at about 5 weeks, which is the weakest of the three senses. Breeders should be attuned to this need, as it will impact on the future success of these dogs. The later this socialisation takes place, the greater the chances of the dog failing as a livestock guardian as the appropriate imprinting would be less.

Decide which herd the dog will live with. Moving a dog between herds is very disruptive to the dog and may result in behavioural problems such as roaming.

New livestock individuals may be introduced to the herd but a core group that the dog has bonded with must remain with it.

Playful behaviour with lambs should be discouraged immediately as it may indicate early predatory behaviour. Problem times are usually early mornings and evenings.

- **Late Juvenile 3-6 months**

By three months the puppy should be accompanying its livestock, preferably under supervision. Basic lead training should also take place at this stage.

If other livestock such as cattle and horses are in close proximity to the dog's livestock, it should be exposed to them. Any barking should be reprimanded, as barking indicates that the dog is viewing them as a threat to his livestock. Frequently walk the dog together with its livestock through these animals, until the dog accepts them.

In areas with game, the dogs must be taught from an early age that game animals are permitted near the livestock, excluding predators of course. Failure to apply corrective training at this stage will result in game-chasing problems later.

- **Sub-adult 6-12 months**

Playful behaviour may surface at about 3 months of age and again at about 6 months of age. If the puppy is being playful with the livestock, reprimand or take steps to ensure it cannot play when not being observed. This can be done by confining the dog to a pen within the kraal, so that it is still surrounded by its livestock.

The use of a run wire: Although some manuals recommend the use of these devices, it is discouraged and advised against. However, should any such device be installed, please ensure that it does not run past any obstacles such as trees, posts or fencing. If the run wire is too near the kraal fence, the dog may try jump over it whilst attached to the run wire and choke itself. A lightweight chain, 1 to 1½ meters long, should be used to attach the dog to the run wire. Use a swivel clip to attach the dog to the chain as this prevents the knotting of the chain. The run wire should be as long as possible, preferably running the length of the kraal and including solid reliable shade and access to water.

- **12 months and older**

By 12 months the dogs that have properly bonded with livestock should be effective guardians. Note however, a one-year old dog is not yet fully mature and may not yet have the confidence needed to challenge serious predators.

Anatolians are a large breed of dog and as such, mature at the later age of 18 to 24 months. Patience is therefore required in teaching and training until this age.

For Herds Permanently in the Field

- **8 weeks old**

The puppy is placed with livestock. Placing a puppy much younger than 8 weeks is not recommended, however early livestock socialisation should take place as above. The puppies should be fully weaned from their mothers.

- **8-16 weeks old**

The puppy should be placed with approximately 10 lambs in a small kraal close to the homestead. The lambs must be weaned and should not be accompanied by any ewes. This will become the core group of animals the puppy bonds with and it is imperative that they are never removed from its herd. As long as these core animals remain with the herd, the composition of the rest of the herd may change without experiencing any problems. A dog kennel should be placed in the paddock for the puppy to sleep in. The kraal should be “dog proofed” to prevent him from leaving the area. This can be achieved by attaching chicken mesh to the fence.

These two months are absolutely essential for the development of the dog in terms of bonding with his herd and would mean the difference between a successful placement and a failure. This success is also dependent and builds on the socialisation from week three onwards as described above.

Monitoring and disciplining the puppy is also essential during this stage. Monitoring and training should be done by the farmer / owner and should include the following:

- **Daily monitoring** of the puppy to identify any undesirable behaviour such as playing, biting, chasing etc. The farmer needs to be very attentive to the behaviour and interaction of all animals. During this period the farmer is expected to make a real commitment in terms of his time in order to monitor the puppy adequately. Many problems have been encountered when using herders, such as the inability of the herders to discipline the dogs. It is thus recommended that the farmer fulfils this vital role, or at least supervise it.
- **Lead training.** The farmer should take the puppy for short walks every day in order to get him accustomed to being walked on a lead. This might be essential for later veterinary visits or medical treatment, and would also provide ample opportunity to introduce the puppy to all other animals and workers on the farmyard. It is important for the puppy to be exposed to these elements, but he should not be allowed to interact with them. The puppy is expected to accept these animals and people and not to bark at them, a behaviour that would imply he perceives them as a threat. When barking does occur, he should be told “no” in a firm voice and should be

praised when he walks past them without barking. The puppy needs to be completely comfortable being handled by the farmer.

- **Feeding.** The puppy should be fed twice per day initially, in the morning and afternoon. High quality pellets can be mixed with porridge to provide a high protein, high calorie diet. We recommend Vet's Choice Large Breed Puppy pellets. Feeding should be done inside the kraal and should be supervised since animals from the herd might try to steal his food.
- **Disciplining** the puppy when any undesirable behaviour is observed. It is natural for the puppy to display playful behaviour, but excessive playful behaviour should be discouraged. It is recommended to reprimand the puppy by pushing him down on his back while voicing a firm "NO!" Beating the puppy is **not** recommended as it will affect the dog's confidence.
- **Corrective training.** When a dog is observed leaving his herd, the dog should be confined to a kraal in the camp with its herd. Run wires are not encouraged. This will insure that he makes a negative association with leaving the herd.

16-24 weeks old

During this stage the puppy, together with his core group, is moved to a bigger camp, approximately 3-5 ha in size. The puppy should gradually be introduced to more members of the herd.

If problems are encountered such as animals eating its food or using his kennel, a small paddock can be built around its kennel. This would prevent the other animals from getting to its food or bed, but would still allow it access to its belongings by simply crawling through the fence.

Progress should be assessed on a daily basis and daily monitoring and involvement is still very much expected from the owner / farmer. The farmer should intervene whenever playful behaviour is seen and continue disciplining the dog. It is still very likely that behaviour such as nibbling or pulling at wool will be observed, but should be discouraged. (This may require a deterrent such as pepper powder or chilli sauce or -powder.) Disciplining should never lead to fear of the owner (seen by the dog wetting itself, for example) but it is normal for the dog to show submissiveness such as crawling low or turning on its back. Discipline the dog through dominance and the use of a loud voice, never beat the dog!

- **24 weeks**

From this age the puppy should be confident enough to be moved to one of the big grazing camps. It is recommended to start with an "easy camp". This should be one of the smallest and most level camps available. The dog's kennel can be moved with it. It is recommended to have the farmer continue doing the feeding himself. This allows for the opportunity to monitor and assess the condition of the dog and the general behaviour towards the herd. It is normal for the dog to catch and eat small animals like mice and should not lead to any behavioural problems.

The dog can now be expected to patrol the area and move around within the camp. He should always stay in visual contact with the herd though, and never wander off too far.

The Dog's Diet

Puppies acquire adequate milk from their mothers for the first six weeks. If the bitch's milk is poor, puppies should be supplemented with goat's milk. When weaning occurs, it should be done gradually between four to six weeks. Puppies are then supplemented with pellet food and goat's milk, so that they become less reliant on the bitch.

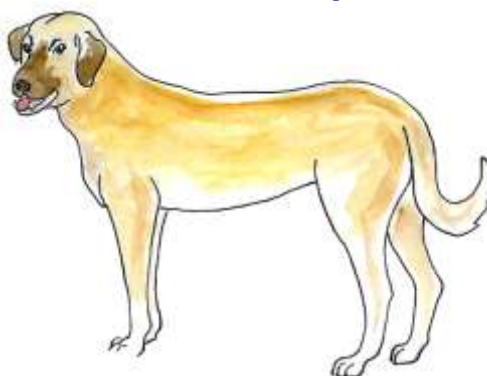
Bone growth is rapid between six weeks to six months, so the calcium content of the diet should be adequate. Large dogs need more calcium than small dogs. Muscle development takes place from three to six months, so protein is important early in the dog's growth. Protein is supplied through pellet food, milk, meat and eggs. A growing dog needs more protein than an adult dog. An adult dog requires more energy. Vet's Choice Large Breed Puppy pellets are recommended for the first 18 months of the dog's life.

A dog that is not fed properly will not work efficiently. Hunger may cause the dog to chase game, or to appear lazy, as it may just want to lie in the shade. Working dogs should be fed a good meal twice a day, preferably in the morning before going out and in the afternoon when returning home, in the case of dogs that are kraaled at night. Before going out, the dog should have access to water and not be fed dry pellets or dry porridge. Feeding should be done at the kraal, preferably where the livestock cannot steal it from the dog. Some farmers have had success in using self-feeders for dogs permanently living with herds in the veldt. These self-feeders need to be checked every second day, or at the outside, every 3rd day.

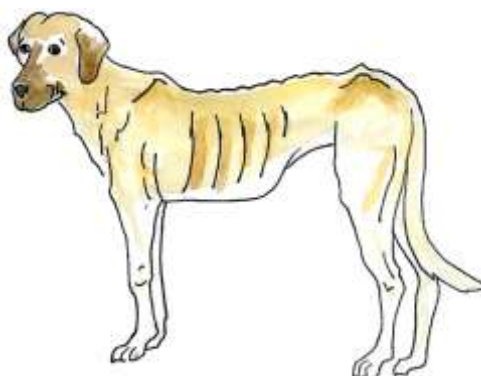
Dogs, like humans, can only work well if they are healthy. The dog should be inspected every day for ticks, tick-bite



Working dogs should be fed a good meal twice a day, preferably in the morning before going out and in the afternoon when returning home.



Dogs, like humans, can only work well if they are healthy. A healthy dog will not be showing ribs, the spine and hip bones.



A dog that is not fed properly will not work efficiently. Hunger may cause the dog to chase game, or to appear lazy, as it may just want to lie in the shade.

wounds and other injuries. These should be treated before they become infected.

A regular vaccination schedule should be followed. Vaccinations build up a dog's immunity by exposing it to diseases in small quantities.

If a bitch does not have good immunity, she cannot pass it on to her puppies in their first 6 weeks. Up until this age, the immunity from the bitch is all that protects puppies against diseases. Puppies should receive the 5-in-1 vaccination at least three times, three to four weeks apart, from the age of six weeks. At three months of age they should receive the rabies vaccination. Following the initial series of vaccinations, a dog should receive a yearly booster for rabies and the 5-in-1 combination.

Main Diseases Dogs Are Susceptible To (And Should Be Vaccinated Against)

Distemper: Symptoms of this disease include a discharge in the corner of the eyes, slime coming out of the mouth, and the dog becoming thin. Dogs can survive this disease but they become lame and develop wobbly heads.

Parvovirus: The dog can develop bloody diarrhoea, which can lead to death. Dogs are very susceptible to this disease when not vaccinated.

Rabies: This disease is fatal. It is very serious and all dogs should be vaccinated against it at three months, followed by a booster every year. Livestock-guarding dogs are particularly vulnerable to rabies, because they must protect their livestock against wild predators and scavengers. They therefore run a high risk of being bitten by these animals and contracting the disease if not vaccinated.

Symptoms vary from unexplained aggressiveness and a personality change, to salivating and loss of coordination, among other symptoms. Any dog behaving strangely should be treated with caution and taken to a veterinarian. The disease is transmitted via saliva.

If a dog with an unknown vaccination history, or a dog behaving strangely, bites a person, that person should be taken to a doctor immediately, as the disease is fatal to humans.

Adeno virus: This disease affects a dog's eyes. In severe cases they may go blind.



Ear infection.



A porcupine quill in a dog's nose.

Leptospira: Symptoms of this disease in dogs include fever, shivering and muscle tenderness, followed by signs such as vomiting and rapid dehydration, together with an increased heart rate. The kidneys are also affected. The disease is eventually fatal if not treated.

Hepatitis: The liver is affected.

Other Common Ailments

Tick bite fever: Symptoms include a high fever, listlessness and weakness (often interpreted by owners as laziness), anaemia (pale eyelids and gums) and nose bleeds. Pus discharge may occur from the eyes and nose, with eventual collapse and death.

Some dogs may survive, but if tick bite fever is suspected, the dog should always be treated with a full course of tablets, as it is very often fatal.

Porcupine quills: Do not just pull quills out, as the barbs may remain in the skin. This results in a festering wound. Push the quill slightly in and then pull out while turning the quill gently.

Ear infections: Be careful, when bathing or dipping the dog, not to get the dip too deep in the dog's ears.

Worms: Working dogs should be de-wormed regularly. De-worming does not make a dog immune to worms. It only removes current infestations, which is why de-worming should be repeated at least every three months. Living out in the field exposes the dog to much more carrion, and opportunities to pick up worm infestations; thus the need for regular de-worming treatments. Any dog coming into contact with the working dog should be de-wormed according to the same schedule as the working dog.

Symptoms of a severe worm infestation include:

- A potbelly in puppies – the puppy's stomach is big and round but the rest of the dog may be skinny;
- Vomiting – worms may even be visible in the vomit;
- Poor coat – loss of sheen, dry, brittle;
- Lethargy and depression (often interpreted as lazy by owners); and
- Diarrhoea – worms may be visible in the faeces.

Hyaloma ticks: These ticks have a very sore bite and result in a chunk of tissue around the bite dying and falling out. These ticks should be removed as soon as possible, to diminish the dead tissue that falls out. Keep wounds clean until they heal. Be very careful when applying dips and other tick prevention measures. Wear gloves and only use what has been recommended for dogs.

“Steekgras”: Dogs with a lot of hair between their toes may get grass seeds that work their way in between the toes. Trim the hair between the toes if this is a problem, and check daily for seeds.

Open Wound Treatment

Clean well and flush with salt water if no other antiseptic is available. Trim any hair around the wound, as it will compact and keep dirt in. Flies may also lay eggs in a wound that is not kept clean. Aerosol wound sprays are very effective.

Sterilisation (Spaying and Neutering)

A bitch will come into heat every 6 months. Every time she comes into heat, there is a risk she will forget about her livestock and roam to find a mate. She also cannot work effectively when pregnant and lactating. Sterilising working dogs is important, because it may help prevent them from roaming. Sterilisations should occur between 6 and 8 months.



A table salt solution is suitable for cleaning wounds. Mix one teaspoon of solution with one cup (250ml) of water.

Health Care in Summary

Prevent disease rather than trying to cure it.

Vaccinate, de-worm and de-tick your dog.

Healthy nutrition = Healthy dog.

Sick or injured dogs should be treated as soon as possible to prevent expensive complications or losing the dog.

Sterilise your dog to avoid roaming. A guarding dog that is roaming is not protecting your livestock. It also runs the risk of being shot on a neighbour's farm, in addition to learning bad habits such as chasing non-predator wildlife.

Be informed – the more you learn about the care and training of your livestock-guarding dog, the better its chances of a long, healthy, and productive life, thereby increasing the safety and productivity of your livestock.

Veterinary Protocols

Vaccinations

Nobivac or Vanguard:

- 1st vaccine at 6-8 weeks
- 2nd vaccine at 12 weeks
- 3rd vaccine at 16 weeks
- A booster shot administered at 1 year of age, then every year thereafter.

Ticks and Fleas

Frontline

- Can be administered from 6-8 weeks
- Prevents ticks and fleas
- Once every month

Advantix

- Puppies can only be treated with this from the age of 4 months
- Prevents ticks, fleas and flies
- Once every month

In conjunction with either option, each dog should be fitted with a Preventick collar at 8 weeks of age. Collars must be replaced every 14 weeks and monitored in puppies to accommodate growth.

De-worming

Any broad-spectrum de-worming method such as *Drontal*, *Zeroworm*, *Prazifen* or *Mediworm*

- Initial de-worming done at 6-8 weeks for new puppies
- Thereafter, de-worming to be administered every 4 months

Rabies

Rabisin

Defensor Rabies

- 1st vaccine at 3 months
- Yearly thereafter

Castration / Spaying

Six to eight months

Golden Rules for Raising a Livestock Guarding Dog:

Obtain a puppy from a proven working dog. Communities can work together to develop a good line of working dogs by selectively breeding the best ones and then distributing them.

Never separate the dog from its livestock.

The dog should be kept with its own herd. Never move the dog from its core herd to a new herd or a different type of livestock.

Have patience raising and training the dog and start the training in the critical period of imprinting.

A dog is only as good as its owner and the care it receives.



Anatolian Shepherd Dog Contacts:

Contact: Landmark Foundation, Cell: 083 324 3344, www.landmarkfoundation.org.za

Contact: Cheetah Outreach, Cell: 082 491 0231 bartpaul@gmail.com / 082 927 2729, www.cheetah.co.za

Contact: Janeco Breeders, Tel: 049 836 9091, 27829250297@vodamail.co.za

It is important to ensure that dogs come from reputable breeders, and preferably breeders that commence the training early (3 weeks). Furthermore good blood lines need to be proven, and problems with hip dysplasia need to be excluded.

Guardians: Alpacas

An alpaca belongs to the camelid family and is primarily a fleece producing animal. Like all camelids they are gregarious, intelligent, hardy and have a strong herding instinct. As a herder it will run an intruder down, stamp on it with its front legs, and spit at it. Males develop sharp fighting canines.



Alpacas Herding Sheep

Alpacas can reside with the herd permanently, but are of particular value around lambing season. If the animals are to be used intermittently with the herd, it is important that they be introduced to the herd at least 6 – 8 weeks prior to lambing.

Alpacas are ruminants and browsers, with a lifespan of about 20 - 25 years. Alpacas have only been introduced into South Africa within the last 5 years, and their numbers are limited as the flocks are currently being bred up. They are either bred for fleece production or as guarding animals.

The meat is not currently eaten in SA, and the global population of alpacas is considered to be about 4 million. 75% of which are still in South America from where they originated, but both Australia and North America currently have herds of about 100 000.

Even-toed ungulates, they are classified in the Artiodactyla order, which include pigs, cattle, goats and antelope. They are part of the South American Camelid family, related to the Llama, vicugna and guanicoe. There are 2 types of alpaca, the suri and the huacaya. The suri has long fibres like that of an angora goat, and the huacaya has a more “fluffy” fibre, like that of a merino sheep. 80% of the alpacas globally are huacaya.

They are hardy creatures originating from harsh conditions in South America. They can take extreme temperatures, although humidity is obviously not an ideal condition for them.

It is natural for an alpaca to wade into water and roll. As they have a dry fleece, maggots are not a problem, and therefore they do not have to be treated for this.



Alpaca with Wool

Photo: Anonymous, Internet

Alpacas are convenient animals to use as livestock guardians as they do not require any additional feeds (they live off the veld like the sheep or goats), and their fleece is a potential income earner. They have a long productive and guarding lifespan.

The alpaca wool industry is in its infancy in South Africa, but it provides high quality fibre with excellent thermal qualities and is devoid of lanolin oil. It has been reported that fleece quality is equivalent to cashmere. Between 2 – 4 kg of fleece is produced and prices of R300/kg have been reported. An array of natural colours is produced from a light off-white to dark brown.

No extra facilities are required by the farmer to introduce the animals, and existing operations can continue as before.

An alpaca's life span is about 20 - 25 years. The females have long gestation period of about 11 months and fertility begins at two years of age. Only single

offspring are conceived and mating can occur within weeks of birth, thus a single birth can be produced annually.

Guarding Livestock

The alpaca “guards” by being a 24-hour watch guard. They are alert and curious animals, able to see well while standing tall. They can see an intruder at a distance. Alpacas have an inbred herding and protective instinct, much like Anatolian Shepherd Dogs and donkeys. They place themselves between the predator / intruder and their flock, and set off the alarm, which is a high-pitched sound. They approach what they consider to be a threat, and intimidate it by chasing it and spitting at it. Being agile, they can run down most predators. They have the ability to kick with their hind feet, and will stomp on something that does not run away. Male alpacas have fighting teeth, and naturally in the wild, when fighting each other, will bite as a form of aggression.

This form of aggression has been a proven deterrent against jackal- and caracal predation. It is unproven against larger predators like leopards and cheetahs.

There are 2 factors at work that make an alpaca a successful guard:

- Its flock instinct is strong, i.e. it bonds with the sheep / goats, as if they were their own, and protects them; and
- It is a territorial animal. A male alpaca marks its territory and patrols the area once it is established. An alpaca has a distinct smell, and this alone is a communication of its presence to other animals that use smell, e.g. jackals and cats.

This method of protecting livestock has been used for more than 10 years already in Australia and for about 4 years in South Africa, and it continues to provide positive results. Where records are available, they have resulted in a 10 – 20% increase in lambing percentages.

Alpacas should have a working life of about 15 years.

On initial introduction to a herd an alpaca would tend to patrol the fence line and later associate with the herd more closely. Alpacas should never be kept alone as single animals.

Handling Alpacas

Research so far in South Africa has shown that the common denominator for success with these animals as guardians is to run them in a ratio of 2 alpacas per 250 ewes, on about 250 hectares. Where they are run on highly controlled areas, such as lands, success is greater than in extensive camps. It is recommended that alpacas are run in pairs.

The best facilities for working with and handling alpacas are cattle facilities. One can use sheep handling facilities, but usually the height of the fence is a bit low for an alpaca, and it will easily jump over fences when stressed.

An alpaca is an intelligent animal. Once they know the routine and layout of a property, they will easily lead the small stock, and allow people to work with them. To restrain an alpaca, it is best to get it into a small enclosure, and approach it from the side. Remembering they do spit. To hold an alpaca, one takes it around the neck, high up, with one arm, holding the head against one's shoulder, with the mouth pointing away from the one's face. The other hand can be resting on the alpacas back, or holding its tail. DO NOT attempt to catch an alpaca by its hind feet, or to just hold its head. It will either kick or spit.

The alpaca needs to be shorn annually, in spring. The fleece can be sold at present, although a national market does not yet exist for alpaca fleece. When transporting an alpaca, do not put them on an open bakkie, as they will jump off. They usually lie down during transportation, so either a closed-in bakkie, or a trailer is necessary.

Veterinary Care and Vaccinations

The veterinary care of alpacas is similar to sheep and cattle. Not all veterinarians are familiar with these animals, and it is important that farmers make contact with experienced alpaca farmers or veterinarians to make sure that the correct regimes are followed. Veterinarians may have to educate themselves and communicate with people experienced in caring for these animals.

Subcutaneous injections are given either on the inner hind leg or behind the shoulder. It is possible to drench an alpaca. One just needs to remember that it will spit a lot back out again.

Alpacas may require trimming of toenails if they are not run on stony ground. Depending on their feed, they may also require incisors to be trimmed in time.



Trimming Incisors

As this is just a guideline to the caring and handling of alpacas, the vaccinations that alpacas need must always be checked with the local veterinarian for the area. Onderstepoort has information available on alpacas, so veterinarians do have access to this information.

Enterotoxemia, at least every 6 months, is necessary, no matter where in South Africa. The other vaccinations commonly given to alpacas are pasteurella, tetanus, glanvac, and anthrax. They should also be treated against external parasites, e.g. paralytic ticks, and where one finds a high degree of tick-borne diseases. Alpacas do not appear to be susceptible to Blue Tongue Disease.

Alpacas are susceptible to the same variety of poisonous plants as other farming stock. It is also recommended that they should not have access to urea or rumensin found in licks. Most veterinary products used on farming stock, can be used on an alpaca (anti-parasitic remedies and vaccines), although it is advisable to always check with your veterinarian first, and to not use the strongest products available, as it is generally not necessary with alpacas.

Acquiring Alpacas

For the purpose of guarding small livestock, an alpaca needs to be at least 18 months old. It is recommended that an alpaca is not used to defend stock until at least 12 months old. It usually takes time for the alpaca to mature into this role, being at least one full lambing season. Since an alpaca male is not truly mature until 3 to 4 years of age, his confidence and aggressive ability needs time to develop.

Due to the fact that it is estimated that there are only about 1 000 alpacas in SA (2008), there are not a lot of alpacas available for the purpose of guarding stock yet. Only “culled” or castrated males are used for this purpose.

There is an Alpaca Breeders Society associated to Studbook, where a list of stud breeders can be obtained. Tel: 051 4480772.

Contact details for Alpacas:

Sally Kingwell, Tel: 049 8400354 / 084 2510426, Email: aaks@adsactive.com

James Brodie: Tel: 082 823 3835, Email: jbrodie@lri.co.za

Andrew Pringle: Tel: 045 848 0059, Email: kelsofarms@cybertrade.co.za

Guardians: Herdsmen

Not long ago human shepherds were a common management tool to tend livestock in the field, and protect animals against predators. As farms got more extensive, and labour costs and practices changed, this practice has all but disappeared.

Herdsmen remain a very effective means of herding livestock and flock management, not forgetting an opportunity for job creation. They usually have their own dogs, which also act as herd guardians. Herdsmen should not be allowed to use their dogs to hunt or to hunt themselves. They have further value in being able to attend, recognise and deal with other management interventions, e.g. fencing repairs, sick animals as well as stock theft monitoring and prevention. Many of these proactive interventions can also reduce stock losses (for which predators are often wrongly blamed), and make the appointment of the “old style” herdsman a cost effective and efficient management tool.

In the current agricultural and political climate it may in fact be prudent and entirely appropriate that this method experiences resurgence. Incentives, profit sharing and partnerships are all options in this methodology, and as such provide the farmer with opportunities to use an age-old means in a new way to deal with empowerment imperatives and effective predator control. This method could have direct social, economic and environmental benefits.



Herdsmen

Guardians: Donkeys

Donkeys have traditionally been used as a means of transport. However, these animals have also proved themselves very efficient at chasing away predators and other intruders from their camps and territories. In Kenya, donkeys have even been used in some areas to guard cattle against lions. In areas where cattle are kept in fenced-off camps, only one or two donkeys are needed per herd of cattle.

Donkeys are naturally more alert and aware of predators than cattle and other livestock. They will find predators and chase them away. Being herd animals, if there are only one or two individuals, they will instinctively gravitate towards and remain with a herd for security. Donkeys are also extremely protective of their foals, so a mare with a foal is an added advantage.



Donkeys are not afraid of predators. As they can bite and kick, they make formidable opponents.

Stallions may break fences and become aggressive during breeding, kicking and biting livestock, so may not always be suitable. They may be particularly aggressive to calves, lambs and kids.

Mares are preferred over stallions, due to the aggressive behaviour of the stallions. Donkey foals should be raised with the livestock they will protect. They should be kraaled with the livestock at night.

Donkeys are ubiquitous throughout South Africa and the neighbouring countries. They may be a cost effective means of holistic predator control. The additional benefit of donkeys is that they are very hardy animals requiring no additional feed or expenses for the farmer. In Switzerland, donkeys have even been successfully used to protect livestock against the European wolf and lynx.

Llamas and ostriches have been reported to provide similar protection.

Guardians: Smart Technology Collars, the “Veldwagter”



“Veldwagter”: stock theft and predator alarm on cellular phone technology collar

This collar utilizes cellular telephone and GSM network technology to act as an alarm call as soon as stock theft starts, stray dogs or predators attack livestock, or veld fires threaten the livestock.

These collars work by a motion-sensing device, whereby excessive movement of the collared livestock (as when chased by predators) will activate a SMS to the farmer alerting him where the problem is. The farmer could then investigate and deal with the threat appropriately and while it occurs.

Not the entire flock needs to be collared, but the system relies on the farmer being in a cellular phone reception area, and him being able to respond immediately. In herds that stay together only a single collar is required per herd, but scattered herds may require several. The system has resulted in significant reductions (up to 90%) in stock losses and has been particularly successful with stock theft losses.

The advantages of the “Veldwagter” alarms are as follows:

- The farmer is given peace of mind, as he will be warned in time to react to potential stock losses as they occur
- Suspicion of stock theft by employees is eliminated.
- Deterrents are put in place.

- An alarm system is functional on a 24-hour basis, and can contact the farmer remotely on this cellular phone.
- With the “Veldwagter”, the farmer can catch culprits (thieves or predators) in the act of causing stock losses.

The Cellular Collars

The “Veldwagter” is a small collar around the neck of one or more animals in a group. It monitors the behavior of the animals on a 24-hour basis through a motion-sensing device that triggers a SMS message to the farmer in the event of excessive motion.

As soon as there is “abnormal behaviour” the “Veldwagter” sends an alarm call to the farmer’s cell phone. This abnormal behavior is induced by excessive motion when the animal is for example chased by predators, stock thieves, veld fires and stray dogs.



Collar and Cell phone Technology

The “Veldwagter” can be set to work only during pre-selected times in a 24 hour cycle or be active 24 hours a day. The battery must be recharged every 4 weeks depending on the cell phone signal strength in the area. Every “Veldwagter” is supplied with a battery charger. Daily, or at certain designated times, the “Veldwagter” sends a missed call to verify that it is still active.

The “Veldwagter” is packaged in a watertight and strong PVC container. The system carries a 12-month guarantee. The oldest “Veldwagters” have been used since 1999 and are still in service. The product was re-developed in 2006 into the second generation “Veldwagter” with better performance.

When the animal with the collar dies, the “Veldwagter” sends an “Animal is dead” SMS that is prompted by a prolonged period of lack of movement.

Each collar has its own cell phone number. This number is saved on the farmer's cellular phone with the name of the herd or the number of the camp where the collar will be used. When an alarm call is received this name is displayed on the farmer's cellular phone, which will indicate which collar and herd the message came from. The farmer can then act on this information by investigating the "abnormal" activity of the livestock that "sent" the message.

The result of this technological innovation

More than 500 farmers across the country have utilized the system and some have reported stock loss reductions of more than 90% on average (2008, P Lotter, Pers. Comm.).

Because many thieves were caught red handed with the "Veldwagter" systems, they avoid farms if they know there are "Veldwagters". The farmer with the best results previously lost 320 sheep in a year. His losses are down to 12 per annum since he installed his "Veldwagters" in 2001. Oakdale Agricultural School in Riversdale (Western Cape) lost 65 sheep per year and for the past 5 years they have lost only 7 on average per annum.

The "Veldwagter" is suitable for: cattle, sheep, goats, angoras, ostriches, horses and other livestock.

One major drawback is that the system requires cellphone coverage and thus it will only benefit farmers with this luxury.

Contact information

The price of the system (March 2008) is quoted at R4 885 (+VAT) per collar and it is estimated that one collar is needed per herd or flock. The monthly costs are R39 per collar.

Developed and manufactured by Inwenta and Etse Electronics, Stellenbosch, South Africa.

Contact:

Mr. Philip Lotter, 27 Plantasie Street, Caledon, 7230, Tel: 028 212 3346, Fax: 028 212 1905, Cell: 082 333 0101

Deterrents: Livestock Protection Collars

Livestock Protection Collars come in various forms. Extensive experience and success have been demonstrated with three different types of collars: the King Collar, the Dead Stop Collar and the Bell Collar.

The basic mechanism of the collars is that it provides a physical barrier to the neck of livestock, as it is the most likely area where predators bite. Bell Collars function as a noise deterrent. The success has been against feline predation with the Dead Stop Collars and marginally less so against jackals due to the fact that they adapt quickly and can learn to kill by biting on other parts of the body (chin, flank and behind). King Collars, however, have been very successful against jackals.

The collars are designed to act as a barrier to predation and to deter predators from attacking livestock. It is based on the assumption that predators are territorial and if they can be deterred from attacking the livestock in an area, less predation would occur through learnt behaviour (i.e. that collared livestock are not easy or pleasant prey). Being territorial, these predators will keep other predators out of their home ranges.

The King Collars and the Dead Stop Collars provide a physical barrier to the predator bite, the former through a plastic barrier and the latter through a metal grid. Significant reductions in predator losses have been consistently reported through the use of these collars. These reductions in losses have been between 80 – 100% due to predation.



King Collar Fitted

King Collars are adjustable, broad, 1 mm thick, semi-rigid, high-density polyethylene collars that are attached to the entire flock of livestock. These collars come in two sizes. The small collar is fitted on lambs and kids between 1 and 6 weeks, and the larger collar for animals between 6 weeks and 18 months. The small collars cost about R5.00 each and the larger ones about R6.00 each (2008).

The King Collar has been used since 1998, and has proven efficacy. Cat canines and particularly top predators such as leopards and cheetahs can penetrate the plastic collar. It has also been reported that some jackals have learnt to hunt in a different manner and thus attack the prey on other body parts than the neck. Despite these shortcomings, significant (>80%) improvements can nonetheless be achieved using these collars.



Lambs protected by King Collars

Jackals almost invariably begin their attacks on small stock by biting their prey on the cheeks and neck. This helps to immobilise the animal, in order for the jackal to switch its grip to the windpipe. The prey is then asphyxiated. The King Collar armors the cheeks and windpipes of lambs. Jackals are thus unable to make their first bite to the cheeks. The collar also prevents any occlusion of the windpipe.

Contact:

King Collars can be obtained from Mr Larry King: Tel: 045 846 9155 / 083 261 2368.
(Larry King's email: terri.c.king@gmail.com)

The **Dead Stop Collars** are manufactured of a broad metal mesh, which is epoxy-coated. The entire flock is kitted out with these collars. They come in sizes small (< 2 weeks old lambs or kids), medium (2 – 8 weeks olds), large (8 weeks – 5 months), jumbo (5 months and older) and extra large (rams and excessive wool on some breeds, or angoras with large necks). The cost of these collars is just over R20.00 each (2008), but they are significantly hardier than the plastic King Collars and can thus be re-used over extended periods.

Significant successes have been experienced in the Baviaanskloof area, Eastern Cape, where more than 12 000 sheep and goats have been collared in an extensive trial with the Dead Stop Collars. This is an area with leopards and caracals, but minimal jackal livestock predation. On some farms up to a 100% decrease in deaths due to predation has been experienced, and on some of the farms this was over a period of 18 months.



Dead Stop Collar on a Mature Sheep

Contacts:

Dead Stop Collars can be obtained from Mr Klaas Louw 02762 ask 1711 or 072 424 7752

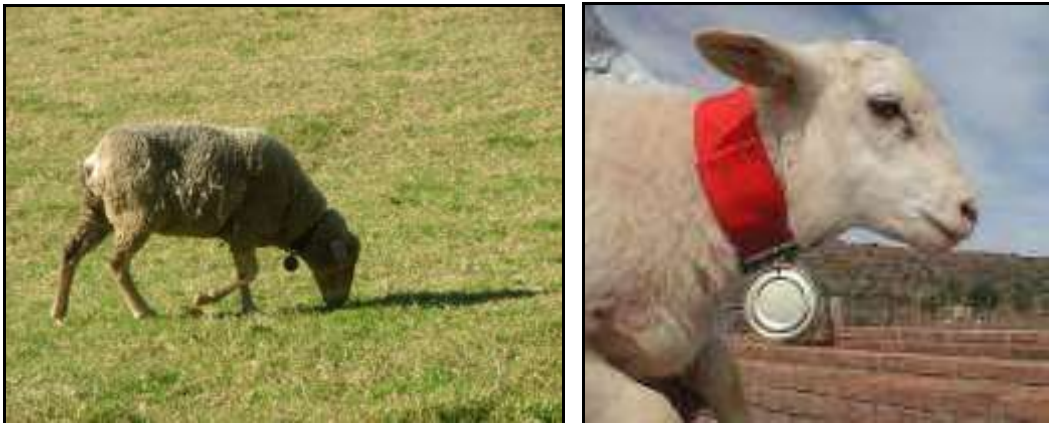
Bell Collars have been used with mixed success. They consist of a collar that is fitted around the entire flock's necks. It consists of a thick (3 – 5 cm) plastic band, with a tin containing a hard (metal) object. This makes a noise when the sheep is prompted to run or move fast. It acts as a device that makes an unnatural noise at time of stress, and as a result startles the predator when it stalks or chases the livestock, thus putting it off its attack.

Habituation has been experienced with this method and it should thus only be used intermittently and at specific times, like in the lambing season. It can however be used on an ongoing basis, and if a habituated predator continues to be “attracted” to the bell collar, such behaviour could be used to eliminate such a problem causing predator. The collar then reverts from a deterrent to an

identifier of a problem individual. This method would also be good to use in conjunction with other methods, like a guarding dog as it would serve to alert the dog of alarms when predators are in the region.

These collars can also be fitted with scent devices which will deter predators through the presence of unnatural scents. Protect a Lamb also recommends the use of the Bell Collars with the poison collars it has developed, specifically to remove the habitual livestock killing predator.

Bell Collars and other predator control advice can be obtained from Mr Eddie Steenkamp, Tel: 022 723 1842, www.protect-a-lamb.com



Bell Collars

Deterrents: Fencing

Fencing has been used as a deterrent to predation for many years. During the last century the South African Government actively assisted farmers to “predator-proof” their fences. This was done with agricultural fencing subsidies, and reportedly dramatically improved the “control” of jackal losses. Most of these fences are now very old and in various stages of disrepair, depending on the level of maintenance by owners.

A fence is only as good as the weakest point in the particular fence, and largely dependent on the level of maintenance and repairs that is applied to it. Fences have to be maintained and are not to be seen as a single action intervention. Fences do however remain a useful deterrent to predator losses, albeit an expensive one. It can however be a very cost effective intervention, especially if minor adaptations are needed on existing fences, particularly with the addition of electrification.

Fences are thus both a deterrent and a herding technique that can dramatically reduce predatory losses to livestock. The fence can be used to keep livestock away from an area where losses are commonly incurred. Newer applications of movable electric fences also provide opportunities to manage the livestock-predator interactions in a more dynamic fashion.

Many different configurations of fences can be implemented with varying and similar success. The basic recommendations made here might not be applicable universally and may be elaborated upon or reduced, depending on the circumstances. The advisor listed in this report can consult with interested farmers, and help with the assessment of what is required or where help can be obtained. There are other service providers all across the country. It is important to stress that each farm has its own unique characteristics and would benefit from individual assessments and intervention with respect to fencing.

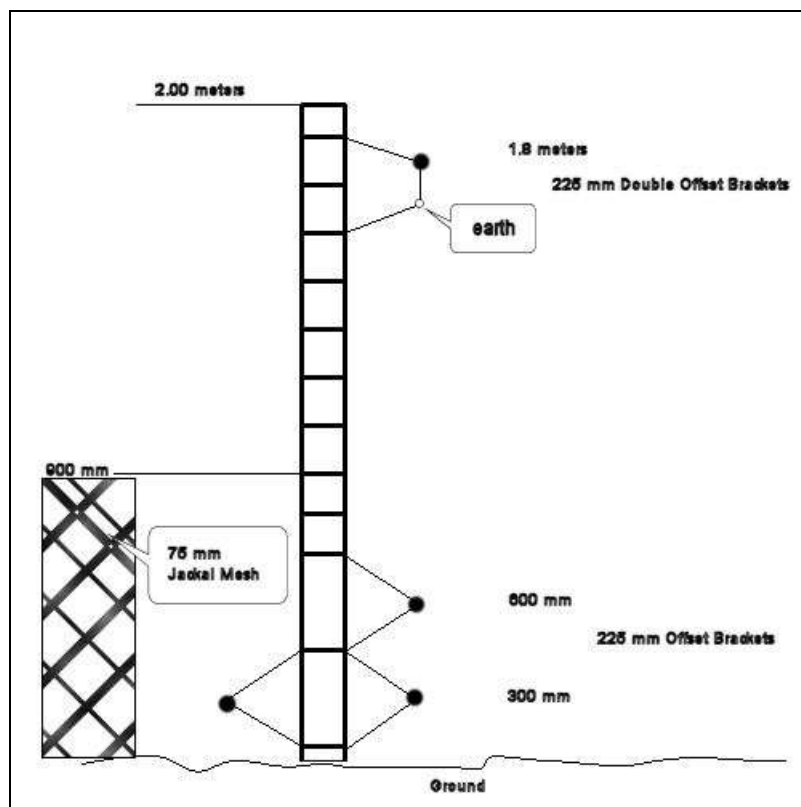
A basic 120 cm fence should be fortified with at least 75 cm aperture mesh fence. This could be further fortified with an overlap of mesh fencing on the ground at 90 degrees to the fence to counter any burrowing animals. This can easily be added to existing fence lines. The cost of such mesh jackal proof fencing is approximately R15 000 per km. This mesh should have an impact on jackal predation, provided the integrity of the fence, all gates and closed gaps are maintained. The cats would easily clear such fences. It is important that regular fence patrols secure any breaches.

Additional electrification would have a dramatic impact on deterring predators from entering camps with livestock. This can be achieved in numerous ways. An effective way has been to span 3 strands on the “outside” of the fence, the lower line 200 – 250 mm above the ground and clear of any vegetation and structures. The second line is midway up the fence and the third should be near the top. The electrical lines are set off the fence by about 300 mm. A fourth line should be spanned on the inside of the fence, equivalently 200 – 250 mm above the ground.

The electrifications of the fences could be done from the electricity grid with battery back up, or through solar panels with batteries to store energy. Several systems are available on the market. The costs for these systems are constantly changing and should be determined on an individual basis.

The farmer should be guided in the cost benefit analysis of his / her decision-making process but weighing up the costs of this methodology as opposed to his / her losses. These costs need to be verified to address the particular needs of each farm.

The cost of game fencing in a particular area could cost anything between R55 000 and R70 000 per km of full predator and electrified fencing. This depends on the terrain, which animals need to be kept in or out as well as whether grid electricity is available or solar systems needed. It clearly would not be required in most farming scenarios.



Configuration of a type of Predator Proof Game Fence

Contact:

Mr Patrick Grehan of Wildlife Management Systems who can give specific advice and direction of each farm's needs: Tel: 041 379 4654 / 083 563 7234 or email patrick@maricosoft.com .

Deterrents: Noises, Lights and Smells

Noises and flashing lights have reportedly been used as a deterrent to predators especially around kraals and camps at night. Habituation has also been reported with these devices and thus has to be used for limited times and in conjunction with other methods.

A predator's dominant sense is its sense of smell. Hunting dogs' and guard dogs' scents are as much a deterrent as the threat of the dog itself, therefore scent marking is a very useful way of keeping predators away from livestock. Human scent has a similar effect, and human urine can be used to spray on kraal walls and fences.

A scent device can be attached to collars such as Bell Collars. The "unnatural" smell emitted from these collars discourages the predator to attacking. These scent blocks are made from a perfumed block that is effective for up to 6 months. They are sold in conjunction with the Bell Collars marketed by *Protect a Lamb*, and they are attached to the inside of the band of the Bell Collar (protecting it from sunlight exposure and abrasions). These scent devices probably should not be used on lambs younger than 6 – 8 weeks, as it could interfere with the ewe–lamb recognition system that relies on smell.

Scent devices and other predator control advice can be obtained from Mr Eddie Steenkamp, Tel: 022 723 1842, www.protect-a-lamb.com

Management Interventions: Live Traps

Live traps are devices that merely contain animals without causing any major injuries. This is the recommended way of removing any animal from an area, should that be the indicated course of action.

These traps were designed and developed by Mr Jaco van Deventer of CapeNature, who has more than 20 years experience in the field. Many leopards, caracals and other species have been captured using these, unharmed.



Traps are set in the Likely Walking Path of the Intended Target.

The traps allow the farmer or conservation officer to capture the animal once a thorough assessment of the situation is made. Permits are required to capture protected species (e.g. leopards and cheetahs) in this fashion. The traps function with a trap door that slams shut once the animal has walked into the cage and set off the trap plate. The cages are checked on a daily basis and if an innocent animal is trapped it is released on site and unharmed.

If the culprit animal is in fact captured, it can be removed for release to another area, or if it is decided that the animals should be destroyed it can be done humanely. These traps have also been used to release even culprit individuals on site with GPS tracking collars.



Leopard Caught In A Live Trap, Unharmmed.

The Landmark Foundation developed an innovative measure of fitting leopards blamed for stock losses with GPS collars before releasing them on the site. Agreements were reached with farmers that should the GPS data prove the leopards to be responsible for stock losses, the farmers would be directly compensated for any recorded losses correlating with the GPS position of the collared leopard. This has worked brilliantly - leopards have been rescued in this region instead of being destroyed. In 4 years, 16 leopards were rescued in the Baviaanskloof area of the Eastern Cape, helping to stabilise the populations of this important top-predator.

The live trap systems are very effective and if expertly employed, they are ecologically acceptable as non-target individuals and species are not harmed. The traps are cost effective and specific to the problem individual and are therefore come highly recommended. Although the traps are not as successful with jackals, they are with almost any other species.

The traps are occasionally used with a lure, or bait. But are mostly set in the known path of a predator, for example leopards are habitual animals, and caracals return to their fresh prey. These behavioural characteristics should be used to entrap them.

The traps set in the predicted paths of the predator, are packed in by brush and loose bushes, with the trap floor well secured and covered with a thin layer of loose soil. Some traps have a single entrance, while others have a double entrance.



Caracal Trapped Using Feathers as a Lure

Even where these problem animals have been re-released, they appear to have heeded the warning of the experience of being caught in a trap and have stopped their livestock predatory habits. As such, these traps have acted as deterrents, but more importantly, enabled humane methodologies to be employed in managing problem individuals.

Landmark Foundation Leopard Research

The cages have been very effective tools for research projects, as in the case of the Landmark Foundation project in Baviaanskloof. This project enabled farmers to trap leopards without injuries, convinced them to re-release leopards in their original territories, and enabled the tracking of these elusive and poorly understood cats via GPS collars. The information from these projects has enabled groundbreaking research into leopard behaviour, ecology, population dynamics and into the management of their interactions with livestock and their owners. It has enabled farmers to understand leopards better, to adjust both grazing territories and lambing management. It has also been instrumental in changing attitudes towards these animals and has instilled a sense of “ownership” by an entire community of these magnificent cats.





Farmers of the Baviaanskloof Helping to Conserve “Their” Leopards

This research project has also utilised infra-red camera traps that is providing information on leopard population dynamics and behaviour in conjunction with the GPS data of the tracking collars. It has also provided fantastic data on the indigenous prey base in the region.



Prey, Secondary Predators and a Collared Female Leopard and a Cub

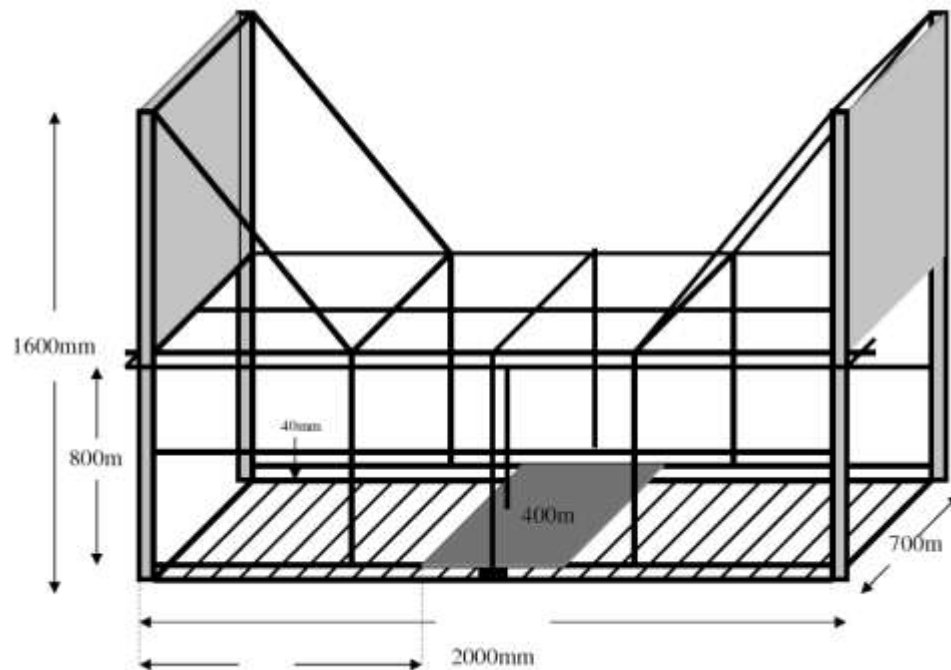
The research has resulted in a much better understanding of the interaction between farmers, their livestock and predators in the region. The holistic predator management strategies employed in the Baviaanskloof, would enable similar work in other areas.

Some of the collared leopards had to be translocated from the Baviaanskloof to the Addo Elephant National Park due the fact that the affected farmers would not continue to have them on their farms due to alleged stock losses. Seven leopards that were translocated in this manner have successfully and ecologically integrated into Addo. Translocations are not the preferred management option, but are better than destroying the animal when no alternative options exist, particularly where habitats are available for appropriate local relocations.

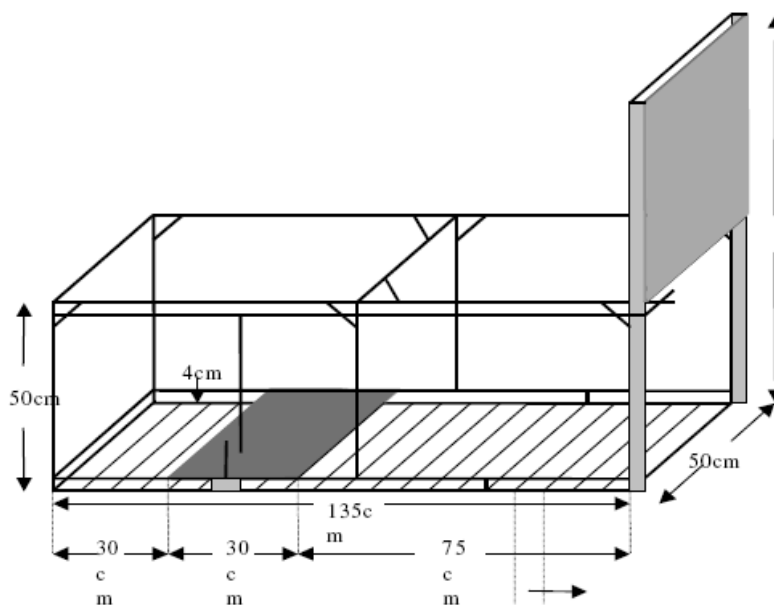


Leopard Collared and Translocated to Addo Elephant National Park for Release.

Leopard Trap Design



Caracal Trap Design



Herding Techniques and Breed Selection

Certain herding techniques could assist in reducing livestock–predator conflict. Maintaining a good veld condition is an important first step to achieving this. It requires the farmer to ensure the correct livestock carrying capacity is maintained for the farm, and that adjustments are made as conditions change. Maintaining an appropriate carrying capacity and species mix will ensure that the veld condition remains healthy. This will help ensure that natural prey is abundant, thus reducing competition between livestock and predators.

Fencing is a management tool for stock as well as for veld condition. As discussed previously, several forms of fencing is available, inclusive of newer mobile electric fencing. It is helpful to construct lambing camps. These camps should be near the homestead so that better supervision can take place and other deterrent techniques could be used. It may help reduce predation to fit the mothers and lambs / kids with collars (Bell or King or Dead Stop collars), prior to the animals being moved to larger or remote camps. Such methods allow for very accurate recordkeeping of stock numbers.

Old-fashioned kraaling of livestock at nightfall is an effective way of protecting livestock against predation. This is particularly helpful around lambing season, as are smaller camps around the homestead. Such simple interventions are commonly used by farmers to great effect. It allows for easy administration of other inexpensive and useful methodologies such as scent deterrents, herdsman, guard dogs, noises and lights.



An Old Fashioned Kraal

The research work done by the Landmark Foundation in the Baviaanskloof has clearly demonstrated the dynamics of the top-predator of this region, the leopard. It has indicated the territorial habits of these animals and has helped farmers to adjust their grazing schedules, avoiding livestock grazing at lambing times. A farmer who knows where he / she suffered regular livestock losses can easily avoid these areas on the farm.

Coordinating lambing to avoid the breeding season of certain predators, like jackals, could also be an effective mitigation strategy. Predators typically have seasonal breeding patterns. The farmer could try to shorten the lambing season, thus reducing the time needed for intensive management attention required to protect young calves, lambs or kids. There is also an option to divide the flock into management groupings to affect their lambing or calving at different times and locations. It may be advisable to coordinate lambing and calving between neighbours, as it makes sense to address predator management interventions on a regional basis, instead of isolated and ad hoc interventions. The latter is currently the norm through uncoordinated actions between neighbouring farms across most of South Africa.

Predators are mostly at risk at the end of winter as the food stress and decrease of natural prey base could necessitate them preying on livestock for survival. It is at this time that livestock losses also tend to increase. It would be advisable to coordinate lambing and calving when plenty of wild prey is available. At the end of winter the numbers of reptiles, rodents, insects and other prey species tend to be reduced.

Certain species or breeds are more resilient to drought, diseases, food shortages and other stressors. In the same way, other breeds are better adapted to resist predators. Indigenous breeds like Nguni cattle or Damara sheep may not have the growth and breeding qualities, or bulk and fleece characteristics that are traditionally bred for, but are hardy breeds. Species are often bred for physical characteristics, ignoring behavioural characteristics that are more difficult to measure. Certain breeds may be more suited to regions with major predator threats. In some areas farmers have resorted to cattle farming as sheep farming was not profitable due to stock losses. In habitual stock loss areas this needs to be considered.



It is imperative for farmers to promote indigenous prey species on their farms. Predators will NEVER be eliminated. 200 years of dedicated attempts to do so

has not been successful, but has resulted in dramatic imbalances in predator relationships, especially due to the removal of top-predators. The proliferation of secondary predators, jackals and caracals, has been the result of such practices. Much of the approach of this manual is to promote the re-establishment of stable and healthy predator-predator and predator-prey relationships (the predation biodiversity process). This necessitates healthy natural prey bases on farms. Farmers should encourage and promote natural prey species, and avoid unsound hunting, killing or reductions. Such interventions may be the cheapest and most effective way of improving the predator-livestock co-existence. With the expansion of extensive farming methods, where livestock is left in remote areas untended by any herding or deterrent methods for extended periods of time, it is not surprising that predators target livestock in areas where their natural prey species numbers have been denuded.

Simple husbandry practices could avoid many other problems. Helping cows and ewes birth in protected and undisturbed ways, with interventions where required, could reduce birth related losses. Stress-free grazing in pregnancy and around birth improves the lambing percentages, as does shelter against inclement weather, particularly for angoras. Veterinary controls are to be followed to treat any infestations and pests. General husbandry interventions are important to ensure that healthy herds are established (the ambit of which is beyond the scope of this manual) as predators target isolated and weak individuals.

Another important intervention, often the most neglected as it is perhaps the most difficult, is the regional cooperation and coordination of holistic, non-lethal predator management strategies. It has been demonstrated that where neighbours and farmers of a region act together in a coordinated fashion, dramatic improvement in reducing predator-induced stock losses can be achieved in a very short period of time. The Baviaanskloof area in the Eastern Cape is a case in point, where 10 farmers with altogether over 40 000 hectares converted their management strategies to holistic, non-lethal controls. Dramatic reductions in livestock losses were achieved in a very short period of time. This was achieved by working in collaboration with the Landmark Foundation. Other areas may achieve the same result by similar interventions by outside organisations or local collaborations.

The Solution

It is clear that the predator “problem” is an economic, or potential economic, problem to the livelihood of livestock farmers. The solution therefore needs to be at least partly economic whereby incentives will negate the predator persecution by livestock farmers.

Those incentives are created through the effective and acceptable mitigation measures as detailed in this manual. The fact that these measures are ecologically acceptable, humane and ethical would add value to the produce, thereby qualifying the producer to sell his produce as wildlife–friendly, enabling him to earn a premium.

The incentives are derived from the improved yield in production (through the mitigation measures proposed here) and from the value achieved at the market by qualifying as a wildlife-friendly brand.



This manual has focused largely on acceptable mitigation measures (guarding techniques, deterrent mechanisms or improved animal husbandry practices) whereby agricultural produce can be protected against predation. The code of practice for improved predator management on rangeland livestock farms that would be acceptable as production standards in the development of the proposed wildlife–friendly brand, has been discussed.

The development of the production practices described is relevant to the market into which the products are to be released, and thus the development of the wildlife–friendly brand or label. This manual is part of the Landmark Foundation’s development of the market mechanisms to help solve the livestock–predator conundrum.

This is a three–phased process:

- Firstly the development of a **Code of Practice** (contained herein) which producers would sign up for;

- Secondly the implementation of the recommendations and the mitigation measures contained in this manual of **holistic, ecologically acceptable and humane productions practices**; and
- Thirdly the development of an **independent** (of producer and retailer) **monitoring and evaluation** system by which the brand can get accredited and audited, and thus labelled.

The Landmark Foundation will launch this independently audited and administrated brand later in the year (2008). This accreditation system will allow the farmer to get his product certified and will provide him with the negotiating power to earn a premium on the produce that is farmed in an environmentally and wildlife–friendly manner.

This manual offers the farmer the tools to become a wildlife–friendly rangeland livestock farmer. The brand will give the consumer the tool to support such producers as consumers are demanding this as a desired product.

Ethical and wildlife–friendly farmers will be rewarded by the increased demand in the market, resulting in incremental premiums for their produce. This financial gain should easily compensate the farmer’s losses in the field (that should in any event be reduced by the highly effective measures propagated in this manual). The farmer therefore wins through the value–adding of the brand and the improved returns through better prices and better production returns. The environment wins through the stabilisation and conservation of the biodiversity patterns and processes of predation, and animals are treated in an ecologically acceptable and ethical manner. The consumer becomes directly involved in the development of a solution.

It is important to embark on a strong marketing campaign to educate consumers as well as users of animal fibre products (leather, wool and mohair) to oppose unacceptable production practices that this manual describes (like gin traps, other leg–hold devices, indiscriminate poison traps and hunting dogs).

It is anticipated that consumer pressure, and possibly resistance to offending practices and products, will continue to grow and that responsible production practices will be supported. Initial research amongst a cohort of 2500 inner city retail customers, indicated a 97% support for this cause, and significant support for the development of a premium “wildlife-friendly” brand.



Farmer Signboards in the Baviaanskloof

The Landmark Foundation has developed a support system for farmers who are proudly applying the mitigation measures as detailed in this manual in support of the conservation of top-predators. The aim of this initiative is to expand to other areas, involving several predator species and other biodiversity assets.

The new brand will be called Fair Game™. It will be administered and audited independently to any producer, retailer or advocate in the industry. It will grow to be a brand known for excellence in providing an accredited product that is wildlife-friendly. The marketing of predator-friendly and other wildlife-friendly products will be marketed under the Fair Game™ brand in future. It will be available to any producer of any product supporting biodiversity and complying with the codes of practice.

***Fair Trade* did it for the people**
***Organics* did it for the land**
***Fair Game* will do it for the animals**





The Landmark Foundation recognises that the intact natural landscapes of the Southern African region are under threat from irresponsible human activities. These landscapes are now amongst our most treasured landmarks. The threats to these places are the result of land-uses that have degraded the aesthetic value of the areas and the biodiversity patterns and processes contained in them, and in most cases for short-term financial gain. What is required is a landmark change in thinking and behaviour, whereby biodiversity and landscape conservation provides investment returns and benefits to people, that in turn creates incentives for its conservation. The Landmark Foundation strives to build the conservation economy so that these landscapes can be conserved effectively.

The Landmark Foundation is a conservation NGO, registered as a Charitable Trust (IT 656/2004), as a Not-for-Profit Organisation (039 – 416 – NPO), and as a tax exempt charitable entity (930023926 – 18 A Exemption). The NGO is audited annually and is governed by a Board of Trustees.

The major Landmark Foundation projects are:

- The Landmark Foundation Leopard and Predator Project
 - The Madiba Corridor Project
- Tsitsa Falls Adventure Tourism and Agriculture Project
- The Landmark Solar Solutions for South Africa Project
 - Amathole Mountains Biosphere Reserve Project
- Skilderkrantz Private Nature Reserve and Conservation Initiative
 - Umzi Wentaba Great Fish River Project
- Landmark Foundation DIY Alien Plant Insulation Board Project

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