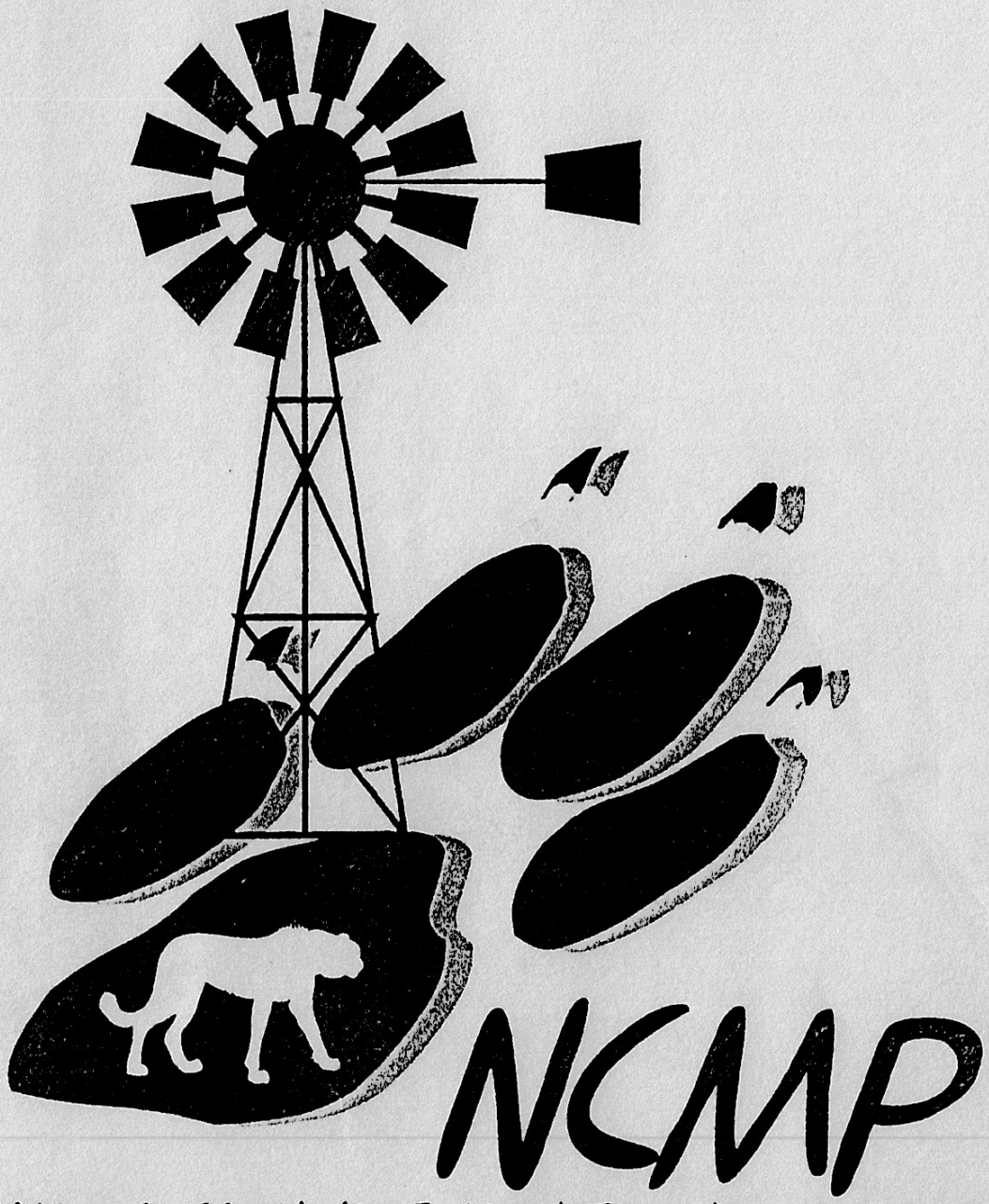
Research and Conservation of Large Carnivores in Namibia - 1999



NAMIBIA CARNIVORE MONITORING PROJECT

Ministry of Environment and Tourism
P/Bag 13306, Windhoek
☎ 061 263131

The Africat Foundation
Box 1889, Otjiwarongo
☎067 304563/4/6

LARGE CARNIVORE MANAGEMENT FORUM

What does the Large Carnivore Management Forum Do?

- Co-ordinates different research and monitoring projects in Namibia
- Implements the Namibia Carnivore Monitoring Project (NCMP)
- Discusses and makes recommendations on large carnivore management
- Creates public awareness
- Formulates recommendations for policy legislation
- Develops minimum captive standards

Active members of the LCMF

Africat Foundation
Allgemeine Zeitung: Dirk Heinrich
Cheetah Conservation Fund (CCF)
Dr Mark Jago (Otjiwarongo Veterinary Clinic)
Dr. Ulf Tubbessing (Veterinarian)
Ingrid Wiesel (Brown hyaena study)
Ministry of Environment and Tourism (MET)
Namibia Agricultural Union (NAU)
Namibia Nature Foundation (NNF)
Namibian Professional Hunting Association (NAPHA)
Namibia Animal Rescue, Rehabilitation and Education Centre (NARREC)
Okatumba Wildlife Research (OWR)

Other interested individuals and parties

Afri-Leo Foundation
African Wilderness Trails
Conservancy Association of Namibia (CANAM)
Claudia Du Plessis (Etosha Lion Project)
Okatbatere Lodge
Integrated Rural Development and Nature Conservation (IRDNC)
Ongava Game Reserve
Media
Ministry of Agriculture, Water and Rural Development
Namibian Game Sanctuary Association
Protected Resources Unit
Veterinarians

Ministry of Environment and Tourism (MET)

The MET initiated the Large Carnivore Management Forum to co-ordinate carnivore conservation efforts in Namibia. MET runs numerous carnivore research and monitoring projects. In addition, MET provides logistical and aerial support to other Namibia Carnivore Monitoring Projects.

Namibia Professional Hunters Association (NAPHA)

The Namibia Professional Hunters Association (NAPHA) is actively involved in the LCMF. NAPHA promotes carnivore conservation and is implementing a cheetah/leopard hotline in an effort to increase the value of carnivores to farmers.

Africat Foundation

The Africat Foundation, founded in 1991, is a non-profit organisation based in the Otjiwarongo District, that was established to conserve large carnivores. The Africat Foundation puts particular focus on leopard research on farmland and actively supports other large carnivore research projects in Namibia.

Cheetah Conservation Fund (CCF)

The Cheetah Conservation Fund was founded in 1990. Their mission statement is: "to secure habitats for the long term survival of cheetah and their ecosystems through multi-disciplined and integrated conservation programmes of research and education.

Okatumba Wildlife Research (OWR)

The Okatumba Wildlife Research Company, founded in 1998, conducts studies on leopards, cheetahs and brown hyaenas in the Seeis and Omitara areas. In close co-operation with the farming community (conservancies) Okatumba Wildlife Research is active in developing management plans to ensure the sustainable utilisation of natural resources.

NAMIBIA'S LARGE CARNIVORES

CHEETAH

Scientific:	Acinonyx jubatus
Oshiwambo:	Etotongwe\Shitona
Herero:	Otjitotongwe
Damara:	!Arub
English:	Cheetah
Afrikaans:	Jagluiperd
German:	Gepard

Cheetahs occur throughout most of Namibia at relatively low densities, occasionally even as south as the Orange River and as far west as Henties Bay. Commercial farms in the region of Hochfeld and Summerdown support high densities of cheetahs.

Contrary to popular belief, cheetahs are just as at home in savannah woodland as they are on the open plains. They will drink when water is available but can rely on their prey for their moisture requirements.

Namibia's cheetah population was estimated at 2500-3000 in 1987 and a more up-to-date estimate is needed in order to conserve and manage the species.

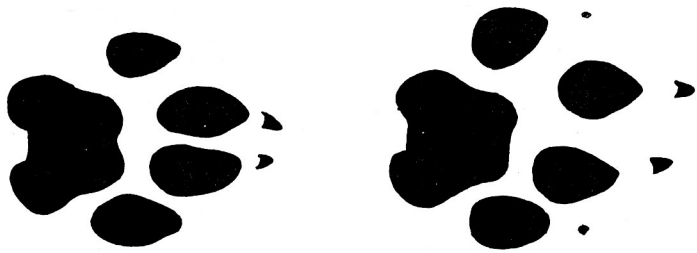
Conflict/Enemies

Cheetahs are often seen as problem animals by livestock farmers. As a result many cheetahs are trapped in box traps or gin traps.

All large carnivores, as well as man, pose a threat to cheetahs. There are numerous records of lion, leopards, wild dog and hyaenas killing cheetahs or their cubs. However, man is the cause of most cheetah deaths in Namibia.

Biology

Cheetahs are most active around sunrise and sunset, during the hottest hours of the day they up in the shade. Female cheetahs are solitary except when accompanied by their cubs. Groups of males, often brothers, are known to form coalitions. Cheetahs have very large home ranges. Namibia cheetah home ranges vary from 600km2 to 3000km2. Their home ranges have considerable overlap and within them they have preferred areas to which they will return. In Namibia cheetahs use "play trees" to mark with scent marks and faeces. Cubs (3-6) are born after a gestation period of 90-95 days. The cubs will stay with their mother for up to 18 months.



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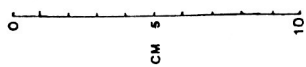


LION

Scientific:	Panthera leo
Oshiwambo:	Onghoshi
Herero:	Ongeyama
Damara:	Xami
English:	Lion
Afrikaans:	Leeu
German:	Löwe

In Namibia lions are restricted to Etosha National Park, Kaudom Game Reserve, parts of the Khorixas and Tsumkwe Districts and the Caprivi Region.

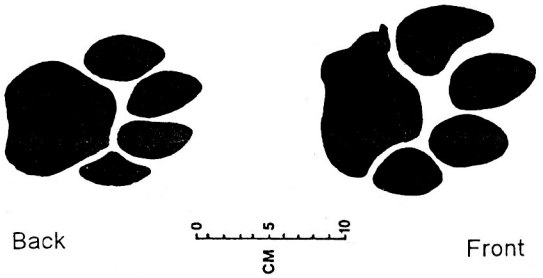
Conflict/Enemies

Man is the lion's only significant enemy. Lions that raid domestic livestock in communal and commercial farmland areas are often shot, poisoned or caught in gin traps.

Biology

The lion is the only truly social member of the cat family, living in prides numbering from 4 -30 animals. The pride sizes and home ranges depend on the availability of food. When prey is abundant prides tend to be larger and home ranges smaller. Up to four adult males live with a pride. Sub-adult males disperse from their natal pride to become nomadic or form small coalitions.

Lions are most active at night when most of the kills are made. During the day they rest in the shade. After a gestation period of about 108 days between 1-6 cubs are born in a secluded spot in a thicket or long grass. The cubs are hidden at first and join the pride after 3-6 weeks. Lactating lionesses will allow other cubs in the pride to suckle. When pride males are displaced by stronger males, the new males may kill the cubs in the pride. This stimulates lionesses to come into oestrus allowing the new pride males to mate and ensure the continuation of their genes.



LEOPARD

Scientific:	Panthera pardus
Oshiwambo:	Ongwe
Herero:	Ongue
Damara	≠Huiseb
English:	Leopard
Afrikaans:	Luiperd
German:	Leopard

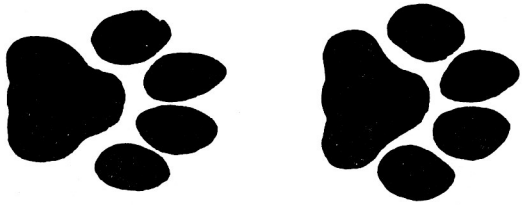
Leopards occur in a wide range of habitats in Namibia. Their distribution is more extensive than any other large carnivore. This is because of its stealthy, solitary way of life and its ability to adapt to a variety of environments. The leopard is generally associated with areas of rock koppies, rocky hills, mountain ranges and forest, although they also occur in semi-desert habitats. The Namibian population size has been estimated to be as much as 8,000 leopards.

Conflict/Enemies

Leopards sometimes take to stock raiding on farmlands and as a result are frequently trapped in box traps and gin traps. There are records of lions and spotted hyaenas killing cubs and adults in poor condition, but man poses the biggest threat to leopards.

Biology

The leopard is a solitary and secretive animal. Leopards are usually active at twilight and during the night. They usually spend the day well hidden in a secluded shady spot like a thicket or rocky outcrop. They also use trees for resting and storing their carcasses. Leopards live in defined home ranges but home ranges of different animals often overlap. After a gestation period of about 106 days 1-3 cubs are born.



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SPOTTED HYAENA

Scientific:	Crocuta crocuta
Oshiwambo:	Shimbungu
Herero:	Ombungu
Damara :	≠Hiras
English:	Spotted Hyaena
Afrikaans:	Gevlekte Hiena
German:	Tüpfel hyäne

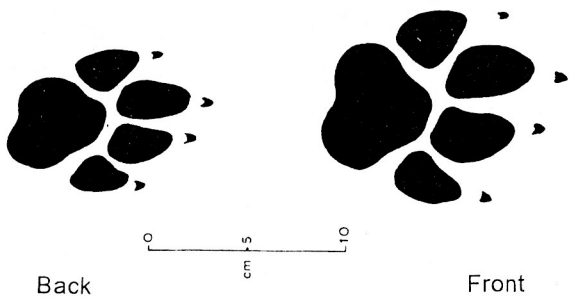
Spotted hyaenas occur at a variety of densities in both the north-east of Namibia and all along the Namib desert. High densities persist in parts of Etosha National Park and in the Capri Region. Spotted hyaenas are highly adaptable animals and they are successful in habitats ranging from the Namib desert to sub-tropical woodland.

Conflict/Enemies

Spotted hyaenas are successful and competitive predators in most ecosystems. In some areas of Namibia they are formidable predators of domestic livestock. Along the boundaries of Namib Naukluft Park, Etosha National Park and protected areas in the North-East, spotted hyaenas venture onto farmland and cause extensive stock losses. People attempt to destroy the culprits but they are shrewd and generally avoid persecution.

Biology

Spotted hyaenas live in highly complex social units called clans where the number of adults may range from 4 to 35. They maintain fixed territories, which average 360 km^2 in Namibia. Two to four pups are born at a communal den after a gestation period of 110 days. Contrary to popular belief spotted hyaenas are active predators rather than scavengers, and in areas where antelope are abundant they kill most of the food they consume. However, in desolate areas spotted hyaenas can adapt to become successful scavengers that can live on scraps and bones.



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BROWN HYAENA

Scientific:	Hyaena brunnea
Oshiwambo:	Haulamba
Herero:	Ombungu
Damara :	≠Hiras
English:	Brown Hyaena
Afrikaans:	Strandjut/Strandwolf
German:	Braune hyäne

Brown hyaenas occur at low density throughout Namibia, but are rare in areas of high human c ities and the sheep farming areas of southern Namibia. As an arid adapted species they occur at higher density along the Namib desert, especially the coastline. Their numbers have also increased in recent years on the commercial farms north and east of Windhoek.

Conflict/Enemies

By living at low density brown hyaenas avoid conflict with other large carnivores. They are however, frequently persecuted by man under the misconception that they kill livestock. Alarmingly, brown hyaenas are often killed accidentally by farmers attempting to solve livestock loss problems caused by lions or leopards.

Biology

Brown hyaenas are solitary foragers but they live and breed communally. Home ranges may be highly variable and have been observed at 310 km^2 in areas of stable food resources. Between one and five cubs are born at a communal den where all members of the clan visit the den frequently and provide food for the cubs. Female brown hyaenas lactate for up to nine months. Brown hyaenas are predominantly scavengers but small mammals, insects and fruit may form part of their diet. Very rarely an individual brown hyaena may kill sheep or goats.

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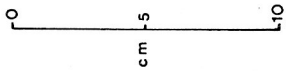

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WILD DOG

Scientific:	Lycaon pictus
Oshiwambo:	Ombidi
Herero:	Ohakane
Damara:	!au arib
English:	Wild Dog
Afrikaans:	Wildehond
German:	Wilder Hund

Wild dogs have been exterminated over most of their former range and are the rarest of the large carnivores in Southern Africa. The distribution of wild dogs has been restricted to the savannah woodlands of north-eastern Namibia.

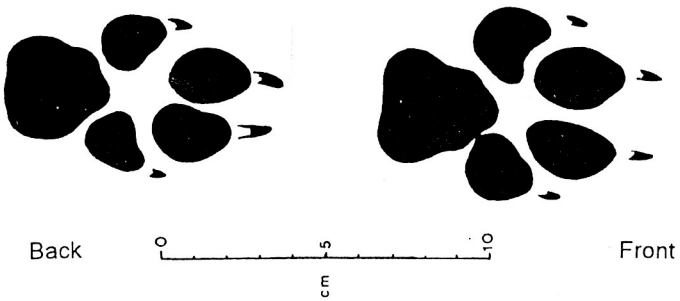
Conflict/Enemies

Wild dogs' greatest enemy in modern times is man. Persecution due to its reputation of being a ruthless killer and the loss of habitat has led to a decline in numbers over the years. Wild dogs are well able to defend themselves against most other predators but lions, leopards and spotted hyaenas, occasionally steal their kills.

Biology

Wild dogs are highly social animals, living in packs of 6-30 animals. All food is shared equally among members of the pack. The hunting members of the pack provide food for the young, and for the adults protecting the pups, by regurgitating or by carrying meat back to the den. Wild dog packs are nomadic and may move over areas as large as 500-4000km^2. Wild dogs rely on sight when hunting and it is therefore to their advantage to utilise relatively open habitat.

Usually only one female in the pack comes into oestrus and mates with the dominant male. A litter of 2-19 pups are born after a gestation period of 60-72 days. They suckle for up to 3 months, but from 3 weeks they are also fed on regurgitated meat. The first three months are spent in and around the den, which is usually a burrow in the ground. Wild dogs are seasonal breeders and most young are born from April to June. This is a favourable time since game is usually abundant and the adults do not have to venture far from the den for food.



RESEARCH

Successful protection and conservation of Namibia's large carnivores and other wildlife is dependent upon a good understanding of their basic ecology. Scientific research forms the basis of producing reliable information to guide the management and protection of large carnivores. The most important data that any good research programme will provide is:

- the number of animals in a specific area (true density)
- the distribution and areas of concentration
- the number of males, females, young and old

Additional research can provide specific and useful information on a variety of aspects, such

- predation
- disease
- genetics
- conflicts with farmers
- behaviour

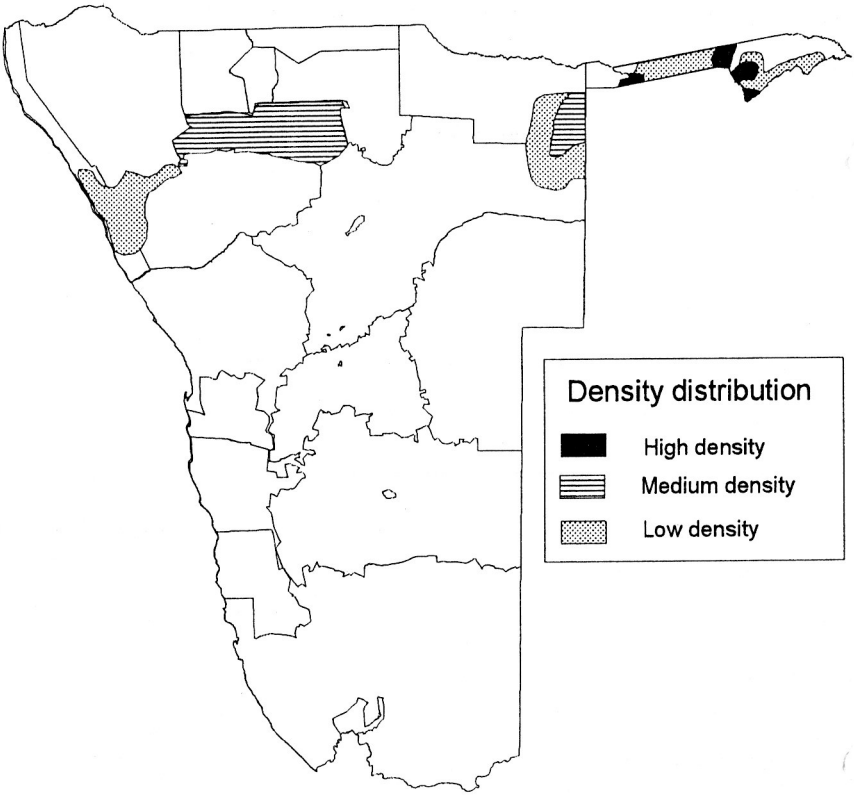
Such specialised research cannot, however, replace the value of reliable scientific data on the basic ecology of the carnivore species.

DENSITY AND DISTRIBUTION

The density, or number of animals that live in a specific area, is important information. A good understanding of animal numbers and their distribution help us to plan and implement effective conservation.

The density of large carnivores is generally dependent on the abundance of food and suitable habitat. Each large carnivore species fills a specific niche in the ecology. They have specific habits and specialisation that allow them to adapt to different habitats. Some species, such as leopard, cheetah and brown hyaena are highly adaptable and live in close proximity to people and farming activities. They are frequently in conflict with people and are persecuted. Lions, spotted hyaenas and wild dogs are formidable predators of domestic livestock, but are less adaptable and, as a result, have been exterminated throughout most of Namibia.

Lion


Density distribution
High density
Medium density
Low density

LION

Known lion densities

Kaudom Game Reserve	1 lion on 5,880 – 8,330 hectares
Nyae Nyae Conservancy	1 lion on 25,000 – 50,000 hectares
Etosha National Park	1 lion on 5,550 – 10,000 hectares

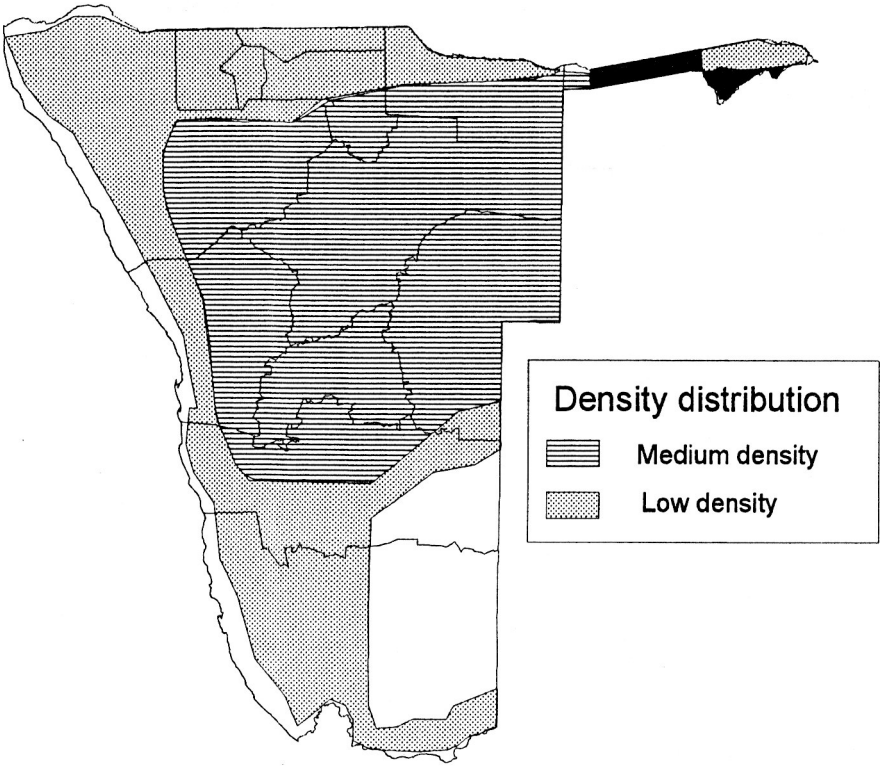
Estimated lion densities in Namibia

High Density	1 lion on 5,550 – 10,000 hectares
Medium Density	1 lion on 8,000 – 15,000 hectares
Low Density	1 lion on 25,000 – 50,000 hectares

Estimated numbers of lions in Namibia

High Density	
Mudumu National Park	15 – 25 lions
Nova area (Caprivi)	10 – 20 lions
Mahango Game Reserve	5 – 10 lions
Medium Density	
Kaudom Game Reserve	45 – 85 lions
Etosha National Park	175 – 320 lions
Low Density	
Khorixas District	20 – 45 lions
Nyae Nyae Conservancy	10 – 35 lions
Mukwe District	8 – 15 lions
Katima Mulilo District	5 – 12 lions
Total	293 – 567 lions

Leopard



LEOPARD

Known leopard densities

Okonjima, Otjiwarongo	1 leopard on 1,400 – 2,680 hectares
Kaudom Game Reserve	1 leopard on 1,610 – 3,450 hectares
Nyae Nyae Conservancy	1 leopard on 6,895 – 14,285 hectares

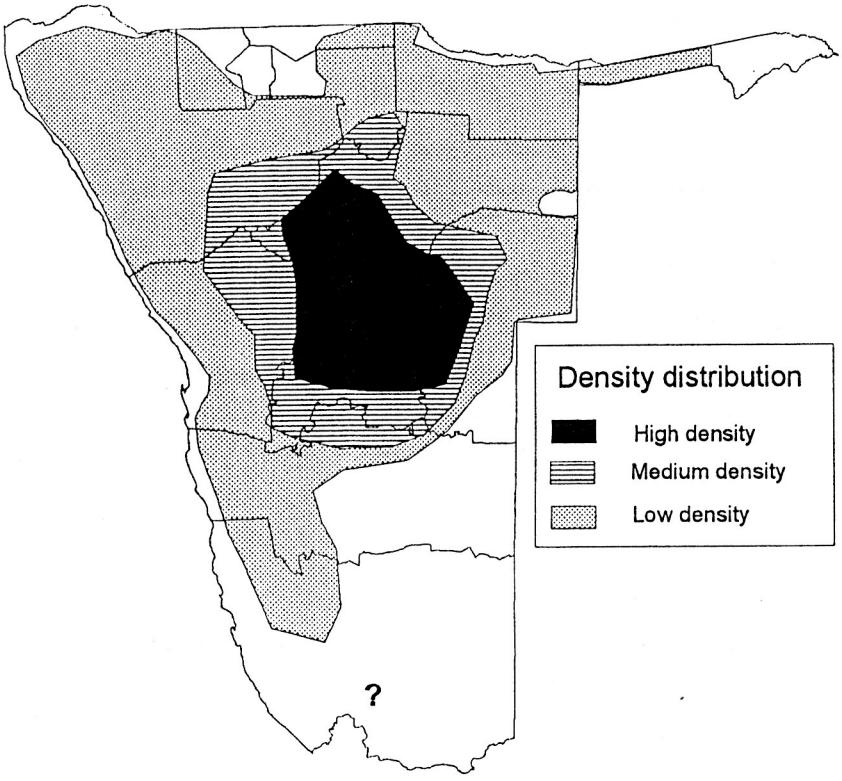
Estimated leopard densities in Namibia

High Density	1 leopard on 1,400 – 2,680 hectares
Medium Density	1 leopard on 1,612 – 3,448 hectares
Low Density	1 leopard on 6,895 – 14,285 hectares

Estimated numbers of leopards in Namibia

High Density	
Caprivi Region	360 – 695 leopards
Medium Density	
Central Namibia	2,810 – 5,820 leopards
Low Density	
Katima Mulilo District	20 – 45 leopards
Western Namibia	851 – 1836 leopards
Total	4041 – 8396 leopards

Cheetah


Density distribution
High density
Medium density
Low density
?

CHEETAH

Known cheetah densities

Hochfeld area	1 cheetah on 2,898 – 5,000 hectares
Omitara area	1 cheetah on 13,054 hectares
Etosha National Park	1 cheetah on 8,333 hectares
Kaudom Game Reserve	1 cheetah on 142,857 – 200,000 hectares
Nyae Nyae Conservancy	1 cheetah on 71,428 – 100,000 hectares

Estimated cheetah densities in Namibia

High Density	1 cheetah on 2,898 – 8,333 hectares
Medium Density	1 cheetah on 13,054 – 71,428 hectares
Low Density	1 cheetah on 100,000 – 200,000 hectares

Estimated numbers of cheetahs in Namibia

High Density	1,040 – 3,000 cheetahs
Medium Density	270 – 1,500 cheetahs
Low Density	270 - 540 cheetahs
Total	1,580 – 5,040 cheetahs

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SPOTTED HYAENA

Known spotted hyaena densities

Kaudom Game Reserve	1 spotted hyaena on 4,350 – 6,250 hectares
Nyae Nyae Conservancy	1 spotted hyaena on 5,263 – 7,142 hectares
Etosha National Park	1 spotted hyaena on 1,250 – 3,330 hectares

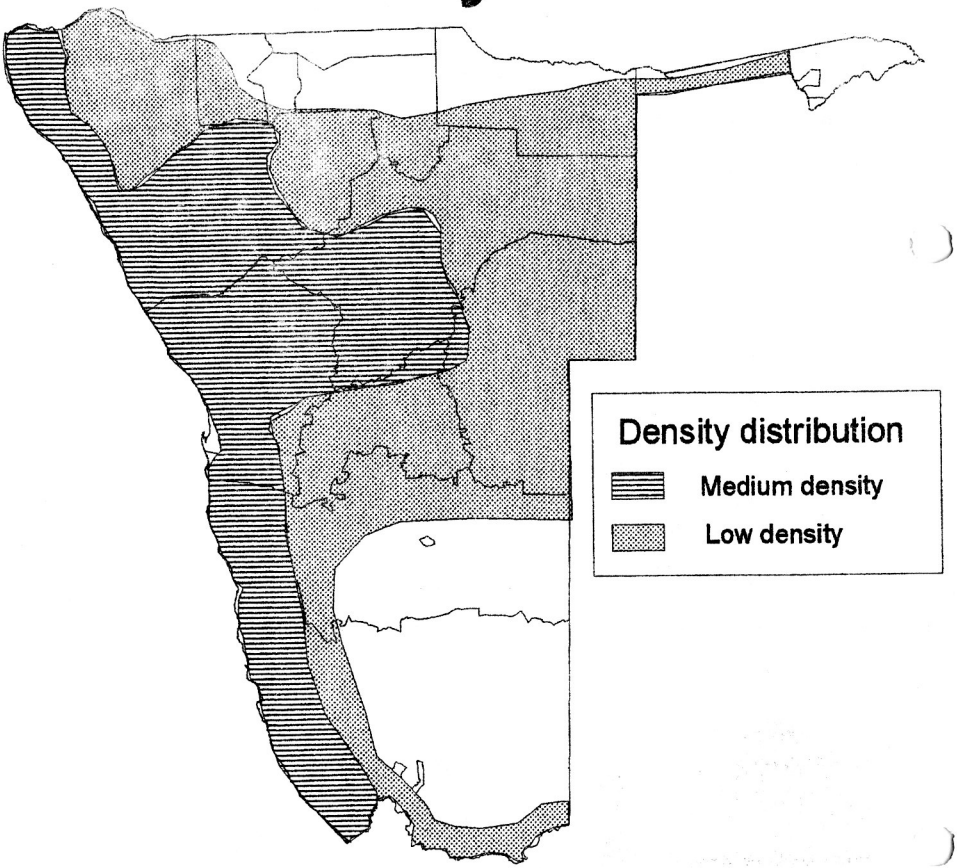
Estimated spotted hyaena densities in Namibia

High Density	1 spotted hyaena on 1,250 – 3,330 hectares
Medium Density	1 spotted hyaena on 4,350 – 7,142 hectares
Low Density	1 spotted hyaena on 66,667 – 2000,000 ha

Estimated numbers of spotted hyaenas in Namibia

High Density	
Mudumu National Park	25 - 70 spotted hyaenas
Nova area (Caprivi)	30 – 80 spotted hyaenas
Namutoni area (ENP)	145 - 380 spotted hyaenas
Medium Density	
Kaudom Game Reserve	140 - 230 spotted hyaenas
Etosha National Park	590 - 970 spotted hyaenas
Mukwe District	70 – 110 spotted hyaenas
Low Density	
Naukluft mountains	20 - 60 spotted hyaenas
Northern Namibia	20 - 60 spotted hyaena
Southern Namibia	20 - 60 spotted hyaena
Rundu/Tsumkwe Districts	20 - 60 spotted hyaena
Katima Mulilo District	3 - 8 spotted hyaenas
Total	1083 - 2088 spotted hyaenas

Brown hyaena



BROWN HYAENA

Known brown hyaena densities

Okonjima, Otjiwarongo	1 brown hyaena on 4,672 – 7,142 hectares
Omitara area	1 brown hyaena on 133,333 hectares
Kaudom Game Reserve	1 brown hyaena on 66,666 - 100,000 hectares
Nyae Nyae Conservancy	1 brown hyaena on 100,000 – 142,857 hectares

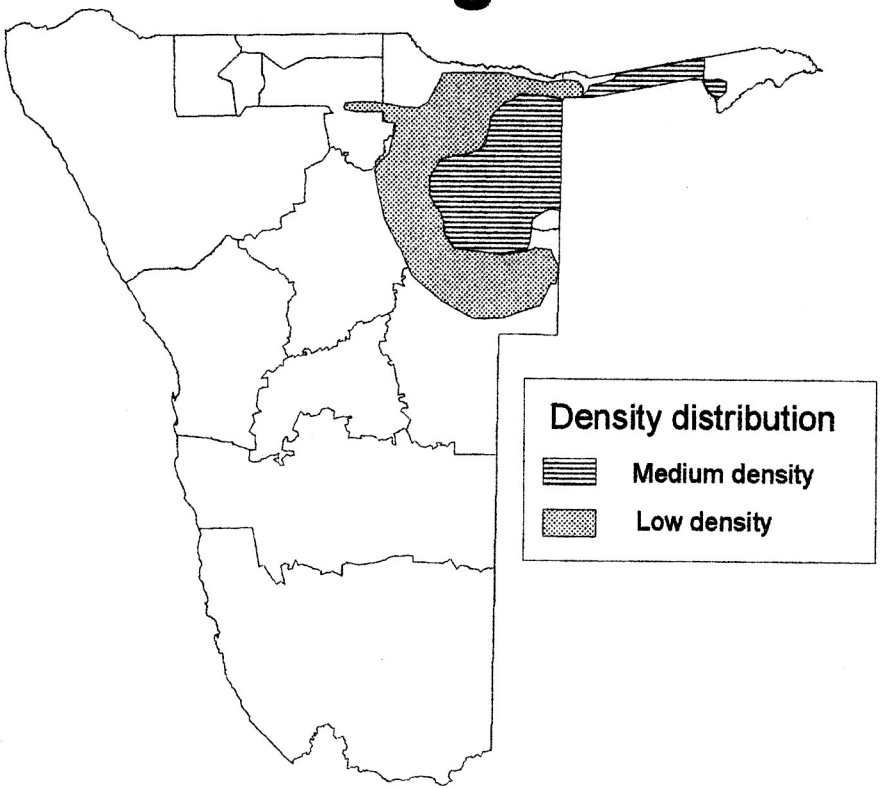
Estimated brown hyaena densities in Namibia

Medium Density	1 brown hyaena on 66,666 – 100,000 hectares
Low Density	1 brown hyaena on 100,000 – 142,857 hectares

Estimated numbers of brown hyaenas in Namibia

Medium Density	240 - 360 brown hyaenas
Low Density	260 – 360 brown hyaenas
Total	500 - 720 brown hyaenas

Wild dog



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HOME RANGES

A home range is an area occupied by an individual animal in a population. The home range is used extensively by the animal to satisfy its basic living requirements including food, water, protection and reproductive needs. The size of an animal's home range may change over time and depends primarily on the availability and abundance of food resources. In addition, factors such as the sex and age of the animal and group size may also affect the size of the home range. Defending of home ranges is costly to individual animals, therefore the overlapping of home ranges, within and between species, is common.

Species	Study area	Home range size (ha)
Lion	Etosha National Park	207,500 ha
	Kaudom Game Reserve	400,000 ha
Leopard, female	Okonjima, Otjiwarongo	5,000 ha
Leopard, male	Okonjima, Otjiwarongo	4,200 ha
Leopard, female	Nyae Nyae Conservancy	21,000 ha
Leopard, male	Nyae Nyae Conservancy	120,000 ha
Cheetah	Nyae Nyae Conservancy	106,900 ha
Cheetah, female	Otjiwarongo area	330,000 ha
Cheetah, male	Otjiwarongo area	240,000 ha
Spotted hyaena	Etosha National Park	36,000 ha
Brown Hyaena	Okonjima, Otjiwarongo	25,000 ha
Wild dog	Kaudom Game Reserve	123,480 ha

GENETICS

Most large carnivores have a sufficient degree of genetic variability. This is called heterozygosity, which means that they are not inbred. Cheetahs are the only exception to the Namibian large carnivores. About 10,000 years ago, the cheetah's range was restricted to Asia and Africa when they went through a population "bottleneck". This resulted in the cheetahs inbreeding and loosing genetic variability. A "bottleneck" occurs when a population declines to only a few animals. These few animals then breed amongst each other to re-establish the population.

Genetic problems resulting from small populations

1. Fragmentation of large carnivores into isolated populations results in restricted exchange of genetic material.

2. Isolated small populations are seldom large enough to contain viable numbers, resulting in inbreeding.

3. Due to the cheetah's lower genetic variability the survival of the species could theoretically be threatened through the inbreeding of small, isolated populations.

Possible consequences of low genetic variability among cheetahs

Morphological (Physical structure)

A number of morphological abnormalities have been found in captive cheetah populations. Some of these abnormalities have also been seen in Namibia's free-ranging population of cheetahs. The abnormalities include:

1. Kinked Tails: Usually located in the last section of the tail.
2. Crowded Lower Incisors: The uneven spacing of the lower incisor teeth does not appear to effect the cheetah's hunting and feeding behaviour.
3. Focal Palatine Erosion: The lower premolars erode the upper palate, primarily among captive cheetahs, which may actually be the result of an inadequate diet, rather than genetics.

Reproduction

- Cheetahs have relatively low sperm counts (1/10th of that observed in domestic cats) with a high degree of abnormal sperm (71%). These apparent abnormalities do not appear to affect breeding in the wild population;
- Birth defects have often been observed in the captive cheetah population;
- These abnormalities, especially in the captive population, are congenital and result when close relatives interbreed

Increased vulnerability to disease

Large carnivore populations with low genetic variability could be more susceptible to infectious diseases. There is concern for the safety of wild large carnivore populations exposed to domestic animals that are infected with diseases, as these diseases may be transmitted to the wild carnivore populations.

PREDATION

Predators' role in the ecosystem

Predators play a very important role in natural ecosystems. Predation is functional in all ecosystems and the relationship between large carnivores and their prey is generally well balanced. Predators have a positive impact on the health of prey populations by taking old and sick animals. Furthermore, large carnivores are a very important part of the food chain and they provide food for other species, especially scavengers.

All carnivores depend on the availability of sufficient prey biomass. Every leopard, for example, needs about 3-5 kg of meat daily to satisfy its needs irrespective of the habitat or available prey species. Under natural conditions predators will not kill more animals than they need and do not waste.

It is natural for carnivores to kill animals, which often puts them in direct conflict with man. In general, carnivores will not have a detrimental effect on the prey populations. On farmland, humans often influence and alter the ecosystem and as a result compete with carnivores. This conflict between large carnivores and people results when farmers compete with predators for the use of some wildlife species or when farmers lose livestock.

Natural Prey

Lion

Lions feed on a wide range of animals. Their principle prey depends on what is available, falling generally within a range of species that weigh between 50 and 300 kg. In most African conservation areas lions feed predominantly on wildebeest, zebra and buffalo. In the Kaudom Game Reserve and Tsumkwe District lions take mainly kudu, gemsbok, giraffe and wildebeest. In contrast, Etosha lions prey mostly on springbok and smaller animals (73% of all kills).

Leopard

The leopard is an opportunistic feeder. Leopards tend to prey on animals less than 70 kg in mass. In some areas leopards kill mainly dassies and klipspringer and in other areas impala or springbok may be the dominant prey. In the Kaudom Game Reserve duiker form the most important part of the diet (33% of all kills and 60% of biomass), followed by steenbok and eland. Leopards may prey on between 20 to 30 different species. These include birds, primates (like baboons), and other carnivores (like black-backed jackal, cheetah, aardwolf and bat-eared fox).

Cheetah

The principle prey consists of small or medium-sized antelope and the young of larger antelope. Prey weighing up to 60 kg is favoured. In addition cheetahs take a wide range of ground-living birds and small mammals including guinea-fowl, bustards, hares and porcupines. In Etosha cheetahs mainly prey on springbok (70-80% of all kills), followed by scrub hare and steenbok. On commercial farmland cheetahs appear to take kudu calves, followed by warthog piglets, steenbok, gemsbok and hartebeest calves, duikers, hares and guinea fowls. When available, cheetahs will also prey on exotic game species like impala or blesbok.

Spotted Hyaena

Throughout their range, spotted hyaenas feed predominantly on large or medium-sized antelope. Although they are effective hunters they also scavenge a wide variety of other items. In former times spotted hyaenas were thought to be primarily scavengers but today it is known that they kill a substantial portion of their food. In Etosha about 75% of prey is killed by the hyaenas themselves, providing more than 70% of the meat eaten. The main prey species are zebra, blue wildebeest, and springbok. In the Namib desert, spotted hyaenas most often feed on gemsbok and mountain zebra.

Brown Hyaena

Brown hyaenas are predominantly scavengers. They spend little time and energy hunting. Brown hyaenas rarely hunt small mammals and birds but never hunt large antelope. A major part of their diet consists of animal remains. Eggs, including ostrich eggs, insects and reptiles as well as wild melons form an important part of their diet.

Wild Dog

Due to a dramatic reduction in the distribution of wild dogs there is little data for Namibia. In other countries the major prey species are: impala (38%), kudu (26%), waterbuck (6%), duiker (5,5%), sable (5,5%), steenbok (3%), wildebeest (3%) and bushbuck (3%). In addition wild dogs prey on rats, porcupines, hares, springhares, warthogs, Thomson's and Grant's gazelles, dik-diks, zebras, reedbucks, hartebeest, ostriches and other predators.

Main prey species of large predators

Prey Species	Cheetah	Leopard	Lion	Spotted Hyaena	Brown Hyaena	Wild Dog
Kudu	*	*	*	*		*
Oryx	*	*	*	*		*
Hartebeest	*	*	*	*		*
Springbok	*	*	*	*		*
Steenbok	*	*	*	*		*
Duiker	*	*	*	*		*
Warthog	*	*	*	*		*
Eland		*	*	*		
Zebra		*	*	*		*
Wildebeest	*	*	*	*		*
Porcupine		*	*	*		
Baboon		*				
Rock Dassie		*				
(Spring-) Hares	*	*	*		*	
Carnivores		*	*	*		
Ostrich	*	*	*	*	* (eggs)	*
Birds	*	*	*		*	
Reptiles		*			*	
Insects		*			*	
Fruits		*			*	

Stock Losses

General comments:

- A carnivore feeding on a carcass is often blamed unfairly for the killing.
- In most cases an individual "problem" carnivore is responsible for stock losses and not the particular species in general. Various instances have shown that after removal of a "problem animal" the predation on livestock ceases.
- Not all carnivores take livestock.

Lion

Lions that venture onto livestock farming areas become problem animals and can cause grave losses to cattle and small stock. In Namibia conflicts between lions and the local community are well known in the Tsumkwe district, Caprivi region and along the Etosha border.

Leopard

Occasionally leopards can become adept domestic livestock raiders, taking calves, sheep, goats and poultry. Serious problems with leopards are reported more often than problems with cheetahs. Leopards are known to kill small-stock and cattle. In contrast to cheetahs, leopards hide their food and return to finish the carcass.

Cheetah

In Namibia conflicts between cheetahs and farmers occur nation-wide. Cheetahs may take cattle calves as well as small-stock. Some farmers feel that cheetahs "waste" meat. Most often they leave a kill after a few hours and do not eat the entire carcass. But this behaviour is a very important factor of the cheetah's role in the ecosystem: the cheetah provides food to other species and a carcass is never wasted.

Spotted Hyaena

Nowadays spotted hyaenas rarely occur on commercial farmlands. Some cattle losses due to spotted hyaenas are only reported from the Grootfontein, Otavi and Outjo areas (the Etosha border). Small-stock losses due to spotted hyaenas are mainly reported from the Omaruru district.

Brown Hyaena

Brown hyaena may only on very rare occasions capture livestock in poor condition. They are often blamed unfairly by farmers for killing livestock.

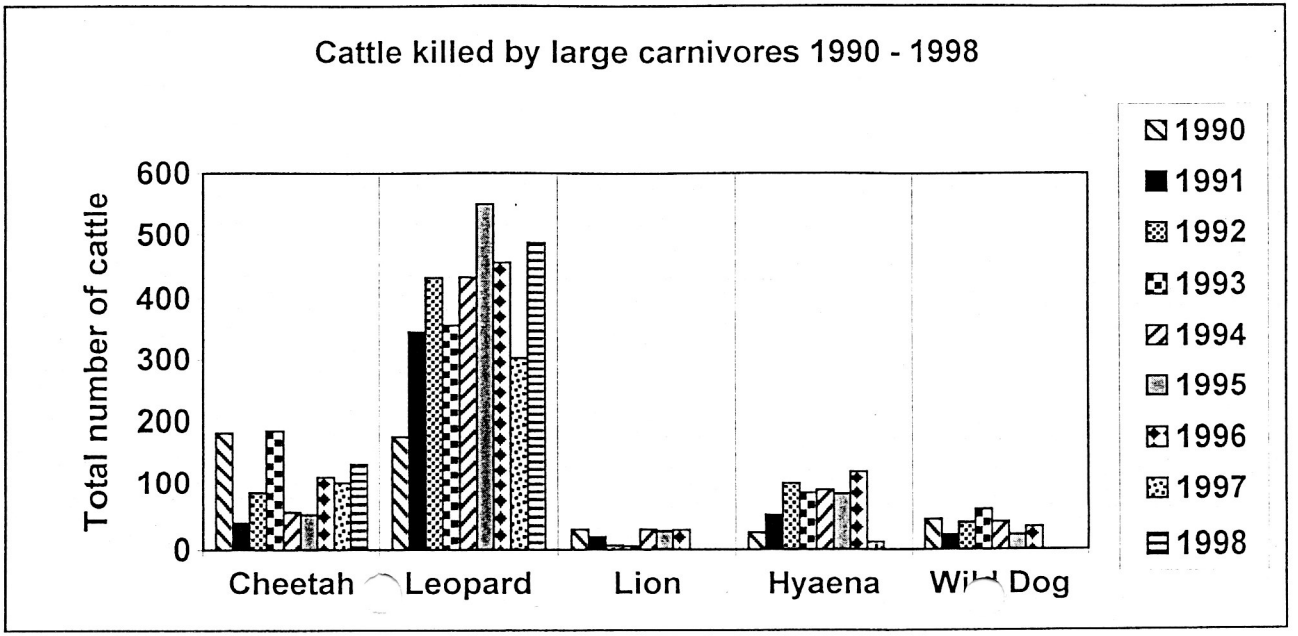
Wild dog

Records of cattle losses due to wild dogs are very rare, they mainly prey on sheep and goats. Some cattle losses due to wild dogs are reported in the Grootfontein and Gobabis districts.

Cattle killed by large carnivores

From: Directorate of Veterinary Services, Ministry of Agriculture, Water and Rural Development

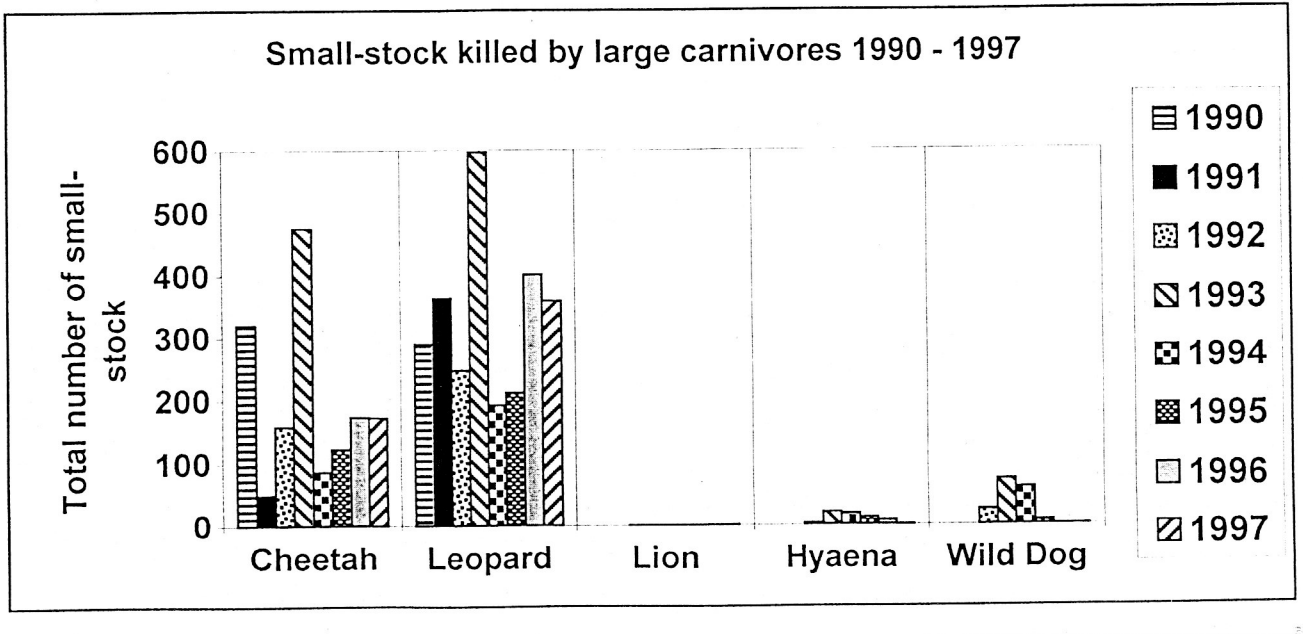
	1990	1991	1992	1993	1994	1995	1996	1997	1998	Total
Cheetah	181	40	84	184	55	52	109	100	131	936
Leopard	175	345	432	356	433	550	456	302	487	3536
Lion	30	19	7	5	30	28	29	0	0	148
Hyaena	25	51	99	84	88	82	119	11	0	559
Wild Dog	45	22	40	59	41	22	34	0	0	263
Total	456	477	662	688	647	734	747	413	618	5442



Small-stock killed by large carnivores

From: Directorate of Veterinary Services, Ministry of Agriculture, Water and Rural Development

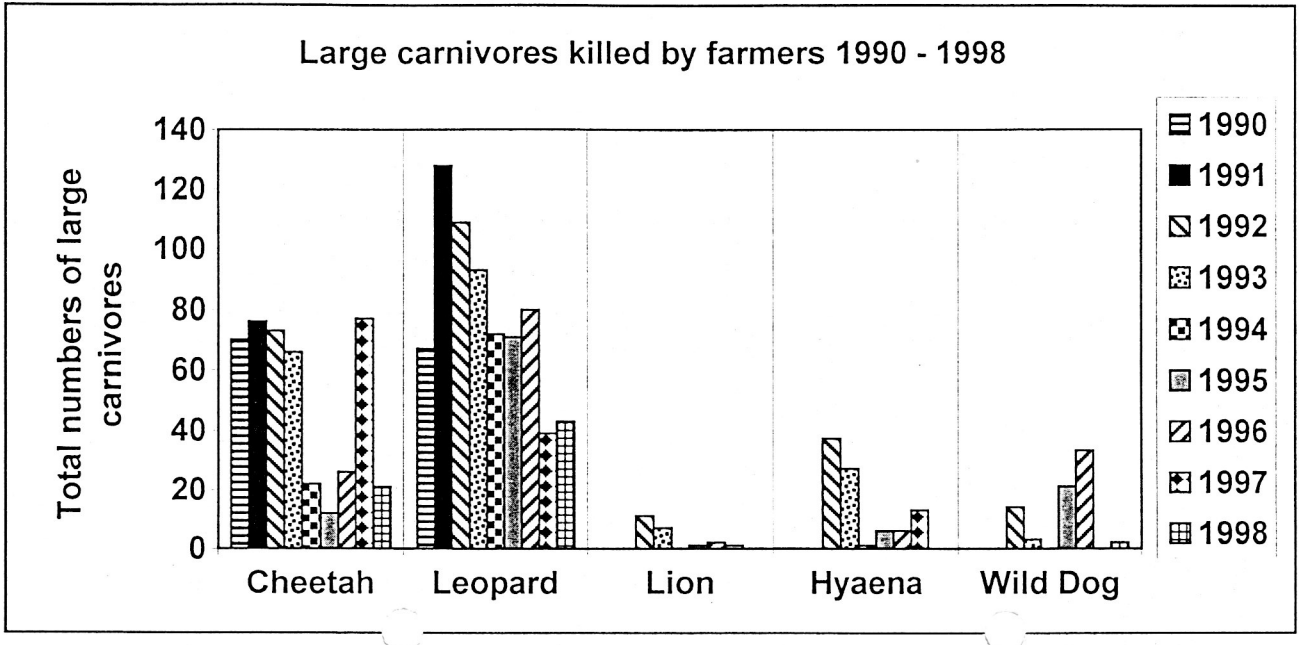
	1990	1991	1992	1993	1994	1995	1996	1997	1998	Total
Cheetah	320	49	158	474	86	123	173	172	N/A	1555
Leopard	291	364	247	596	192	212	402	360	N/A	2664
Lion	N/A	N/A	0	0	0	0	0	0	N/A	0
Hyaena	N/A	N/A	3	20	18	12	7	0	N/A	60
Wild Dog	N/A	N/A	25	73	60	7	0	0	N/A	165
Total	611	413	433	1163	356	354	582	532		4444



Large carnivores killed by farmers

From: Directorate of Veterinary Services, Ministry of Agriculture, Water and Rural Development

	1990	1991	1992	1993	1994	1995	1996	1997	1998	Total
Cheetah	70	76	73	66	22	12	26	77	21	443
Leopard	67	128	109	93	72	71	80	39	43	702
Lion			11	7	0	1	2	1	0	22
Hyaena			37	27	1	6	6	13	0	90
Wild Dog			14	3	0	21	33	0	2	73
Total	137	204	244	196	95	111	147	130	66	1330



FARMERS AND CARNIVORES

Livestock farmer/predator conflict.

Calves, sheep and goats that roam unprotected in the veld are often preyed upon by large carnivores. Lack of suitable livestock management practices often result in stock losses. As a result carnivores in Namibia are often regarded as vermin by the livestock farming community.

Game farmer/predator conflict

A growing problem for carnivores in Namibia is the increase in the number of farms with game camps. These camps are game-fenced for tourism or trophy hunting and often support an unnaturally high density of antelope. This acts like a predator magnet, as the antelope are unable to escape yet the fences are not a barrier to predators. As the value of game increases and becomes the sole income for many farmers, increasing numbers of predators are removed from game farms for killing expensive antelope species.

Carnivore removal is not a solution

Removing carnivores is an option frequently used by farmers to solve problems. Predators are caught in boxtraps or gintraps, poisoned or shot on sight.

- Boxtraps and gintraps are placed at cheetah playtrees (which are the common scent-marking areas).
- Boxtraps and gintraps are placed at fresh kills of leopard (leopard often return to eat from a kill for several days.)
- Poisoned carcasses are often left in the veld for leopards. This is an alarming tactic as for every problem animal killed by the poison, many more die as the poison, which is often non-biodegradable and spreads through the food chain.
- The active removal of large carnivores does not decrease livestock loss. Large carnivores have home ranges up to thousands of square kilometres. Removal of a resident carnivore may cause an influx of nomadic individuals.
- One can seldom be sure that the problem carnivore has been caught. Carnivores have overlapping home ranges. Many cheetahs may visit the same playtree and readily walk into boxtraps. Leopards will feed on each others' kills and are therefore attracted to the same bait.
- The sale of the captured animal or its skin rarely compensates for the financial loss experienced by the farmer.
- The prevention of livestock losses through sound livestock management techniques is far more effective than carnivore removal.

Effective Farm Management Techniques

A newly born calf is too weak to follow the mother. Often the cow hides the calf under a bush or tree while she grazes, returning later to feed it. It is at this stage that the calf is most vulnerable and often caught by predators. It is vital to provide adequate protection to calves and small stock.

Keeping small stock or calves in a kraal near the farmhouse is often not adequate. Problem animals will risk venturing near human settlements to find food.

1. Calving seasons

- Cows generally have a birth peak making it easier for the farmer to control animals dur the calving period.

2. Predator-proof enclosures

- These enclosures are built at watering kraals where cows come to drink.
- At this time cows feed their calves which means the calves do not have to venture out into the veld where they are likely to be preyed upon.
- Cows protect their calves, but they have to leave them in order to graze.
- A predator proof enclosure protects calves at all times.
- The enclosure is usually made of mesh so that predators are unable to stick their paws through and grab an animal to the side.
- The top is covered over so that a predator climbing the sides will not be able to enter.
- Calves should be kept in kraals until they are 3 months old.

NOTE: Predator-proof enclosures should ideally be erected at all the main watering areas so that when cows change grazing camps, their calves can be moved with them. This reduces the distance that the cows have to walk and is especially significant during drought years.

3. Electric fencing

- Electric fencing is very effective on both livestock and game farms and is extremely co efficient when protecting smaller areas.
- Electric fencing runs easily off solar energy making it ideal for farms that do not have mains power.
- Electric fences should not completely surround a farm, but only specific areas so that they do not interfere with the natural migration or movement of game, yet prevent predators from interfering with the farmer's livelihood.

4. Herders

- Human presence has always been a deterrent for predators. Animals are naturally afraid of people and will avoid them.
- A farmer has to weigh up the differences between the cost of livestock losses and the salary of a herder.

5. Guarding dogs

- Dogs are effective in protecting flocks of small stock against cheetah predation (lions, hyaenas or leopards may easily kill a dog)
- Dogs must be hardy and have to be reared with the flock from a young age.
- Dogs should be well trained and should not be allowed to chase game or turn on the flock.

6. Donkeys

- Donkeys can be very aggressive against carnivores and have been known to help protect young calves.

7. Cattle breeds

- Certain breeds of cattle are more aggressive and make better mothers.
- Cattle can protect themselves effectively against carnivores when they have horns.

CAPTIVITY IS NOT CONSERVATION

- The conservation of any species depends on a viable wild population.
- Putting wild carnivores in a captive environment to keep them alive is purely animal welfare and does not contribute to the conservation of the species.
- Captive carnivores do not produce offspring that could contribute to the wild population.
- It is important to understand that large carnivores are expensive to keep in captivity.
- Captive carnivores need proper food and veterinary care.

Veterinary Care

Carnivores are extremely complex animals and background knowledge of their health and possible diseases is essential for correct animal husbandry.

Vaccinations

- Captive carnivores are often kept in enclosures in close proximity to humans and domestic animals.
- Diseases such as rabies can be transmitted between domestic animals and captured carnivores and then again transferred to healthy wild populations.
- Animals need to be vaccinated annually to prevent diseases and transmission to the wild animal populations.

Parasite Control

- Carnivores kept in captive facilities are susceptible to internal and external parasites.
- Anti-parasite remedies for internal parasites should be given at least four times a year.
- Captive carnivores should be regularly treated for external parasites with products recommended by a veterinarian.

Disease Control

- Carnivores should be tested for disease by a veterinarian before entering a facility.
- Carnivores testing positive for a disease should be separated from other animals until it is cured.
- If diseases are incurable, e.g. FIV, and a threat to other animals within the facility or the wild population, then the carnivore should be humanely euthanased.

Nutrition

- Carnivores eat meat in the wild and should be fed on meat in a captive environment.
- Mealie meal, table scraps and dog pellets are not adequate for carnivores and will result in malnutrition, illness and even death.

Hygiene

- Large carnivores are prone to disease in captive environments.
- Overcrowding or the introducing of new animals into a facility may promote disease outbreak.
- Bones, debris and faeces should be cleared on a daily basis.
- Fresh, clean water should be available at all times.

To breed or not to breed?

- Animals like cheetahs, leopards, lions and wild dogs are considered endangered in Namibia.
- Captive breeding has seldom contributed to effective conservation of endangered species. Due to genetic, disease and behavioural problems captive bred carnivores in Namibia may not be released into the free ranging population.
- Due to restrictions on the export of large carnivores from Namibia the breeding of large carnivores is not an option.
- Cute cubs grow up into extremely large animals that have to be housed and fed and then become dangerous and a burden.

Breeding can be prevented in the following ways:

- Sexes can be kept separate.
- Contraceptive implants can be used.
- Animals can be sterilised by a veterinarian.

Public Safety Requirements

- It is important to remember that large carnivores are dangerous to people.
- Enclosures should be secure and inaccessible to the public.
- Owners of captive carnivores are responsible for the safety of their employees, their animals and members of the public at large.

NEW STANDARDS FOR KEEPING LARGE CARNIVORES

The Ministry of Environment and Tourism may soon implement new minimum standards for keeping large carnivores in captivity. Important aspects of these standards are:

- Cage size has to be one hectare per carnivore
- Carnivores have to be marked and good records maintained
- Permits are issued for individual animals which must be suitably marked/recognizable
- Wild, free-ranging carnivores may not be caught for captivity
- Breeding in captivity will not be allowed
- Wild carnivores may not be purposefully tamed
- Captive carnivores may not be released into the wild
- Permits will be valid for one year and renewed after inspection

HUNTING

Farmers suffer losses from large carnivores in almost all parts of Namibia. Such losses can often be alleviated through better farming management methods, however, some losses will nevertheless always occur. Indiscriminate shooting, catching and poisoning are not reliable solutions. Better ways need to be found that will allow the carnivores to co-exist with the farmers. Good hunters, such as those that support the management of the resource they utilise can play an important role in conservation.

Namibian hunters strive to work with researchers, conservationists and the Ministry of Environment and Tourism in order to manage and utilise large carnivores wisely. A programme of sustainable utilisation involving selective trophy hunting will enhance the survival of the species by providing benefits to farmers involving selective trophy hunting.

Professional hunters and guides can contribute towards large carnivore conservation by:

- Hunting ethically and lawfully.
- Hunting on farmland where farmers suffer losses.
- Professional hunters and guides are encouraged to make use of the cheetah and leopard hotline.
- Assisting in research by the collection of biological samples from trophy animals.
- Collecting data on population size and age/sex structure. Supporting farm management techniques that reduce carnivore conflict.

NAPHA'S Hunting Guidelines

Ethical ways of hunting large carnivores

- Stalking/tracking.
- Waiting at an area where cheetahs pass through (i.e. playtrees, walkways and waterholes).
- Using a predator caller (no 24 hour calling)
- Baiting a leopard using its own prey.

Non-ethical ways of hunting large carnivores

- Shooting of large carnivores in traps or small game-proof camps (legal minimum camp size is 1000 hectares game fenced)
- Using artifical lights for hunting at night.
- Using pre-conditioned or "set-up" hunts (eg. Partially tranquillising the carnivore or catching a carnivore to be released at time of hunt.)
- Using a live-trapped carnivore as bait to attract other carnivores.
- Using dogs to hunt cheetahs.

Additionally:

- Hunters must have hunting permits prior to the hunt.
- Female carnivores with cubs should not be shot. Orphaned cubs can become "problem animals"
- All trophies must be documented properly

CARNIVORES AS TOURIST ATTRACTIONS

Wild and free-ranging large carnivores are great assets to tourism in Namibia. Progressive tourism ventures are creating opportunities to view carnivores in the wild and therefore support carnivore conservation in Namibia. Tourism ventures benefit by understanding more about carnivore behaviour and ensuring better sightings in the wild. With such positive developments, there seems little reason to keep carnivores in captivity for tourism.