



CHEETAH

A Predator Resource for the Students of Botswana






**CHEETAH CONSERVATION
BOTSWANA**
www.cheetahbotswana.com



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A Predator Resource for the Students of Botswana

Secondary Level

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FORWARD

by Doreen McColaugh

Human population growth and increasing demand for land and other natural resources, coupled with inadequate farming practices, poaching and climate change among others, have led to greatly diminished numbers of many wildlife species'. Cheetah Conservation Botswana (CCB) is making great strides in bringing attention to the plight of one of these threatened species through scientific research, outreach activities that promote non-lethal control of the cheetah and other large predators on farms, as well as education for the general public and school children.

This book, CHEETAH: a Predator Resource for the students of Botswana (Secondary Level) has been developed for use in Botswana's schools, as an educational resource about the important role that predators play in maintaining the balance of nature and biodiversity.

Environmental Education (EE) should be a priority issue in Botswana. Resources such as this help to foster EE by preparing both teachers and students for the need to appreciate and conserve this country's magnificent wildlife heritage. It provides people, especially young people, with the information that will help them to take informed decisions, demonstrate responsible environmental behavior, and to take constructive action concerning people, wildlife and our shared home, Earth. Today, in the face of pressures affecting the quality and sustainability of life on our planet as we know it, we must address the need for human beings to become responsible members of the shared ecosystem. People, especially young people in schools, who develop awareness and knowledge about cheetahs and other species and who follow-up by learning skills and developing commitment to action, will determine the direction we take and the future health of our environment.

This interesting and user-friendly resource is a welcome development which has applications in a variety of subject areas. May it be well-used to develop sound environmental attitudes and values that lead to the conservation of the cheetah as well as a better appreciation and understanding of the wider environment.

Doreen McColaugh
Environmental Educator



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INTRODUCTION

This book has been produced by **Cheetah Conservation Botswana** as part of its Conservation Education Programme. It has been designed for use by school students of Secondary level, in both urban and rural communities across Botswana.

Many of the students who study this book will already know something about the cheetah and the other predators featured in these pages. What may be new is the discovery of just how important predators are to the environment and the balance of nature. The role that predators play and where species, like the cheetah, originated might also be new discoveries for students.

The cheetah is becoming an endangered predator and is now vulnerable to the threat of extinction. Wildlife is a valuable resource for Botswana and despite on-going conflict between predators and sections of the farming community, the country is trying to maintain a sizable and sustainable cheetah population.

The reasons why predators have come into conflict with humans are discussed in this book, as are some of the non-lethal methods that farmers can use without the need to kill predators. It is becoming possible for humans to share the land with predators, even farmland. Greater awareness about predators and their habits leads to better understanding – to the benefit of all.

The aim of this book is to develop that understanding and remove some of the mystery and fear surrounding predators, so as to encourage a positive outcome for the long-term future of wildlife, farming and the people of Botswana.

As you read through this book, some words appear in **bold**. These words might need further explanation, so they are listed alphabetically at the end of the book to help those who are coming across them for the first time or others who are unsure of their meaning.



CHEETAH

1. The Running Cat

The cheetah is an athlete, famous around the world for being the fastest land **mammal** on Earth. But today, the cheetah's survival is threatened and the **species** is now becoming one of Africa's most **endangered** 'big cats'.

Botswana has one of the largest wild cheetah populations in the world. Due to increased human use of their natural habitat, the wild cheetah population is in a dramatic decline - here and across Africa. Predators are a valuable resource for the country because they not only play an important role in the tourist industry, but they also help to maintain a balanced natural environment for all of us.



Due to their shy nature, cheetahs can be pushed out of protected areas by increasing numbers of lions, leopards and hyenas – which compete for **territory** and **prey** animals. They move onto unprotected **marginal land** instead, but because these areas are also used for livestock and game farming the cheetah can then come into **conflict** with farmers.



Many farmers look upon cheetahs as a threat, because predators sometimes take livestock and thinking that there is no alternative, the farmer will often kill cats by shooting or attempted poisoning. *Cheetah Conservation Botswana* is just one project in southern Africa which is helping farmers to **deter** predators and to protect their livestock from them, so that they will not need to kill them.

The cheetah is one of many large predators in the world that is given ‘protected status’ by international treaties. The cheetah is classed as a ‘**Species at Risk**’ and appears in the ‘**Vulnerable**’ list on the World Conservation Union’s Red Data and Endangered Species lists. **Illegal** trade in large predators is also a problem affecting the cheetah. The Convention on International Trade in Endangered Species (**CITES**) Wild Fauna and Flora, lists the cheetah in Appendix I of an important document which limits the trade in **endangered species**.

In Botswana, since the year 2000, the cheetah is also protected by the law. It is against the law to kill cheetahs, for any reason.





The red areas on this map show the cheetah's population **distribution** more than 100 years ago, in the late 19th Century. As you can see, their **territories** once extended as far east as India and as far north as Turkey.



Today, cheetahs can be found in only 24 countries in Africa, and in very small numbers in Iran (probably less than 200 cats). The red areas on this map not only show the **distribution** of the cheetah population today, but also the decline of the **species** when compared with the map at the top of this page.



Cheetahs prefer to live and hunt in dry grasslands and **savannahs**, but they can also be found in open woodland and open bushveld. They survive better in open areas, because these spaces allow them to chase their **prey** at very high speed.



Typical cheetah habitat in Botswana

Cheetahs **prey** on small-medium sized antelopes and the young of some larger antelope **species**, but their diet also includes warthogs, hares and game birds.



Springbok



Steenbok



In Botswana, springbok, steenbok, impala and young kudu are amongst the most **common** antelope **prey species** for cheetah – as well as warthogs, hares and game birds.

Activity Sheet 1 (Side A)

PLEASE ASK YOUR TEACHER TO PHOTOCOPY THIS SHEET SO YOU CAN WORK ON THIS ACTIVITY

These activities are based upon what you have read about the cheetah so far.

Student Name _____

1. Give the two reasons why predators are important to Botswana.

2. What are the two conflicts causing the decline in cheetah numbers?

3. Why do farmers see cheetahs as a threat?

4. From what you learned on Page 4 of this book, fill in the missing words from the sentence below. What is the cheetah classed as?

The cheetah is classed as a _____



ACTIVITY SHEET 1 (Side B)

5. MAP

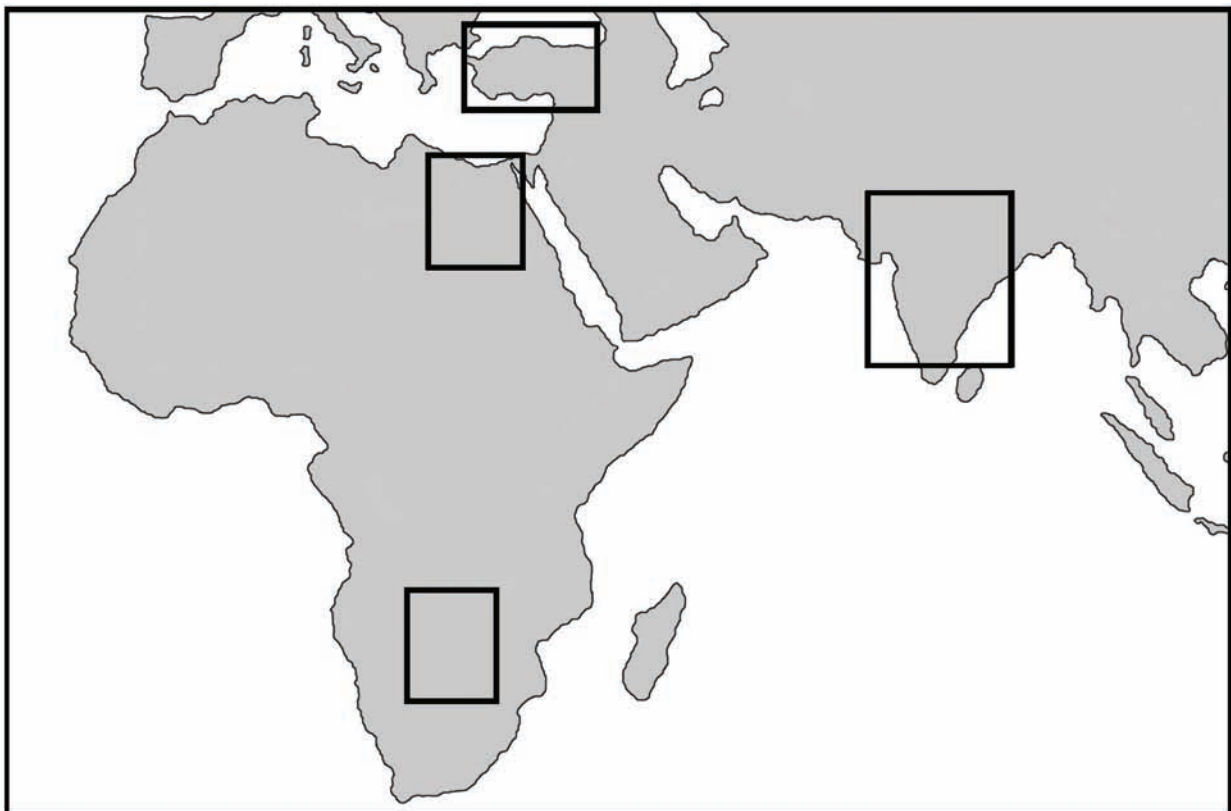
i) Look at the map below and write the names of the 4 countries which are marked with a box.

1. _____ 2. _____ 3. _____ 4. _____

ii) Which two of those countries still have cheetahs?

_____ and _____

iii) Using a red pencil or crayon, draw in the areas of Africa where cheetahs are still found today.



6. Name three of the most common prey for cheetahs in Botswana.



CHEETAH

2. History

The cheetah is famous around the world because of its speed, but from where did the **species** originate and how did it get its name?

Scientists have discovered that, in fact, the cheetah is the oldest of the African 'big cats', existing before both lions and leopards - which can also be found in Botswana and other countries on the African continent. The cheetah of today is, therefore, an ancient species - the last survivor of several 'sprinting cat' relatives that are all now **extinct**.





HISTORY

During the long history of Earth many natural events have slowly changed the land and oceans. Both the shape and the positions of the continents have changed over several million years. Slow changes to the **environment** have also caused the planet to cool for long periods in history, while other changes have made it heat up again.

These cooling and heating periods usually happen very slowly, but they have had a big effect upon all life – causing many species to flourish and others to become extinct. The most recent mass **extinction** took place about 10,000 years ago, during the last 'Ice Age'. Many species died-out around the same time.

The natural process that gives all plant and animal species (including humans) the physical appearance and behaviour we see today is called **evolution**. Generation after generation, species slowly change and adapt to their surroundings and environment. These changes usually take place over many thousands or even millions of years and they are continuing today.



CHEETAH ORIGINS

The **ancestors** of the cheetahs we know today are thought to have **evolved** over 4 million years ago. Lions and leopards are thought to have evolved after the cheetah and have been here for just over 3 million years. We, as modern human beings, have only been around for less than 40,000 years.

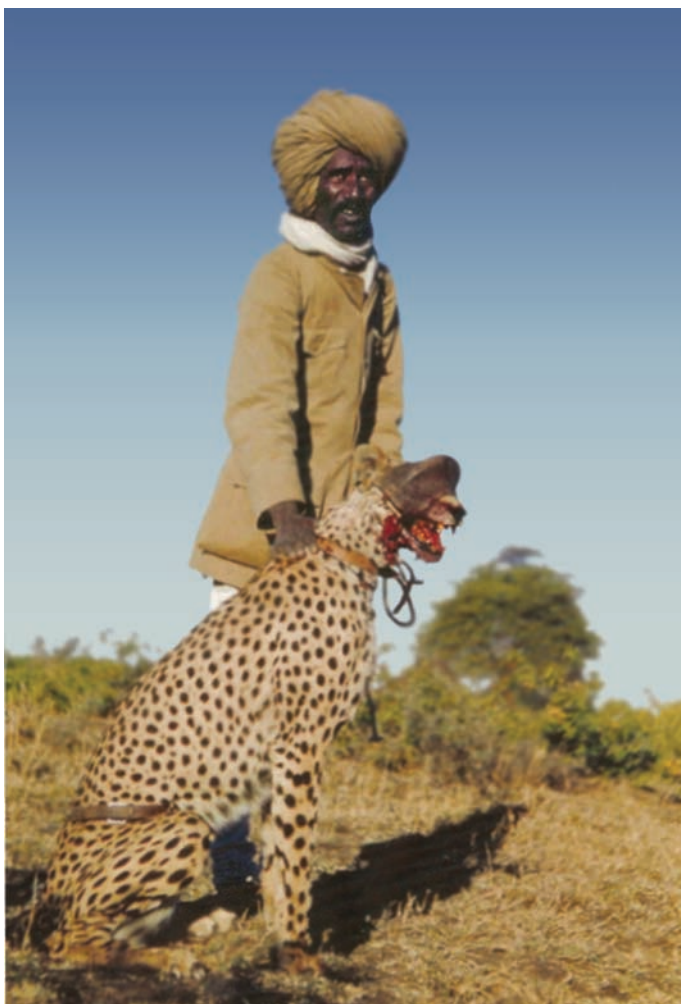
The continents of North America and Asia were once joined and this once allowed many animal species to cross from one continent to another. It is thought that the cheetah ancestors originated in, what is now, North America and that they eventually populated Africa over 200,000 years ago.

There were once several species of cheetah. They were all affected by the last Ice Age, when almost all of them disappeared. With just a few survivors in Africa and south-western Asia, the only species of cheetah to remain after the Ice Age was the one you will find in Botswana and in other parts of Africa today. This cheetah population slowly grew again until the 18th Century, when they could then be found in over 40 countries across Africa and Asia (see the maps on Page 5).





Human interest in the cheetah spans more than 5000 years. The species was once worshipped by early civilizations such as the Ancient Egyptians. The photograph (left) shows an ancient cheetah **artefact**.



More recently, the cheetah was once highly prized by the Royalty of old empires – who often used them as hunting companions. The photograph (left) was taken in India, at the end of this hunting era, and shows a hunting cheetah with its handler. Cheetahs became extinct in India during the middle of the 20th Century.



There have been times when people also kept cheetahs as pets. But during the last 100 years, many have realised that trying to keep wild animals as pets in the home is not a good idea.

Wild animals, such as the 'big cats', usually keep much of their wild personality and this can cause serious problems for their owners as they grow in size. Taking wild animals, like cheetahs, out of their natural **environment** to keep as pets can also add to a population **crisis**.

THE CHEETAH NAME

The cheetah's name comes from India and the **Hindi** word 'chita', which means the 'spotted one'. Scientists around the world give Latin names to all the plant and animal species on Earth and the Latin name for the cheetah is *Acinonyx jubatus*.

The first part of the scientific name is the category of animal, or **genus**. *Acinonyx* comes from the Greek words *akaina*, meaning **thorn**, and *onyx*, meaning **claw**.

The second part of the scientific name is the species name. *Jubatus* comes from the Latin word meaning a **crest** or **mane**.

The cheetah is known by many names in Africa. The Setswana word for cheetah is 'letotse'.



Activity Sheet 2 (Side A)

PLEASE ASK YOUR TEACHER TO PHOTOCOPY THIS SHEET SO YOU CAN WORK ON THIS ACTIVITY

These activities are based upon what you have read about the history of the cheetah.

Student Name _____

1. **During the long history of Earth**, what has become of many species that could not cope with changes to the environment?

They have become _____.

2. **Find the Hidden Word.**

Look at each row of letters below. Hidden in one row is a word with nine letters. We use the word to describe what has given all plant and animal species the appearance and behaviour we see today.

A	S	W	D	V	R	A	R	T	B	N	C
B	G	T	F	P	J	L	P	X	T	C	G
L	X	X	M	G	S	D	B	C	N	A	P
R	M	E	V	O	L	U	T	I	O	N	X
T	V	T	B	L	S	G	X	S	J	D	S
C	Z	N	O	U	X	B	P	F	D	A	W

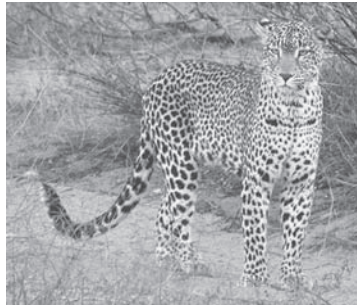


Activity Sheet 2 (Side B)

3. These three predators can be found in Botswana. Which one is the oldest of the African 'big cats'?



Lion



Leopard



Cheetah

The _____ is the oldest of these Botswana predators.

4. Suggest why you think keeping cheetahs as pets is not a good idea.

5. The cheetah gets its name from the **Hindi** word 'chita'. What does this word mean?



CHEETAH

3. Anatomy & Behaviour

Evolution has given cats a mixture of power, strength and speed. The cat which is different in so many ways is the cheetah, which has evolved almost purely for achieving high speed. Its **physical features** and **internal organs** are different from other cats and it is these differences which allow the cheetah to run at very high speeds. These **adaptations** also affect its **behaviour**.

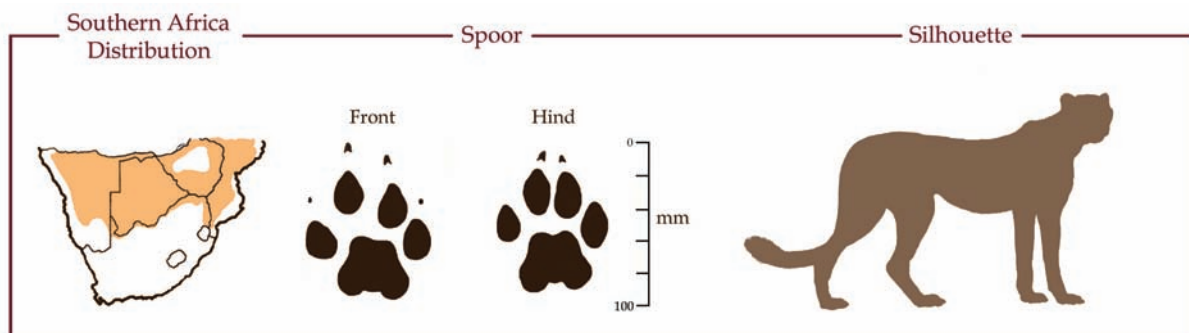


ANATOMY

The word **anatomy** is used to describe the structures and parts of the body of a plant or animal.



The cheetah is **aerodynamic**, or streamlined, so there is less resistance to it when running. It also has much longer legs than other members of the cat family and a flexible spine and shoulder blades, that are not connected to the collarbone. All these **adaptations** help the cheetah to stretch further, take longer strides and run at a faster pace. Cheetahs can cover over 7 metres in one stride while hunting.



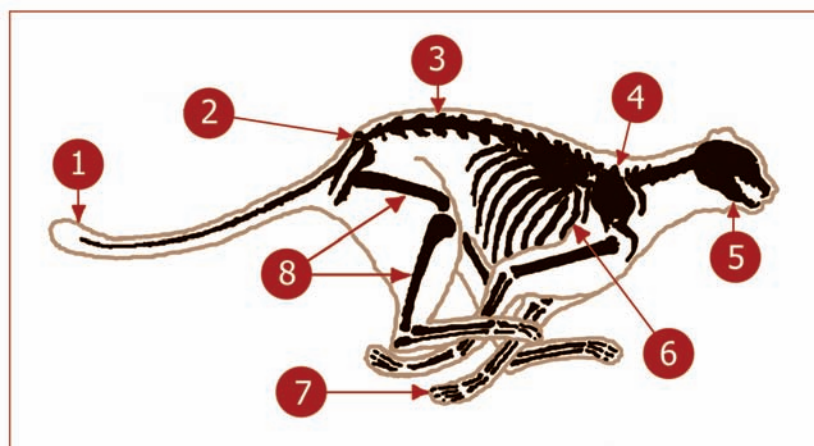
The cheetah has a long tail, between 65cm and 95cm long. This helps it to balance when making sharp turns while running. It has **semi-retractable** claws which help to get a better grip when running, in much the same way as running shoes that have spikes on the bottom. Other parts of the cheetah's **anatomy**, such as the heart, lungs, nostrils and sinuses, are enlarged because running at high speed means that the muscles need more blood and oxygen.

All of these factors are **adaptations** that have made the cheetah the fastest land animal on Earth, able to run at speeds of up to 110km/h.



CHEETAH ADAPTATIONS FOR SPEED

The bone structure and skeleton of the cheetah is very lightweight.



1.TAIL: Long and heavy, it helps with balance and steering at high speed.

2.HIPS: Help the cheetah increase its stretch and stride.

3.SPINE: Flexible in both directions, allowing the body to flex and stretch.

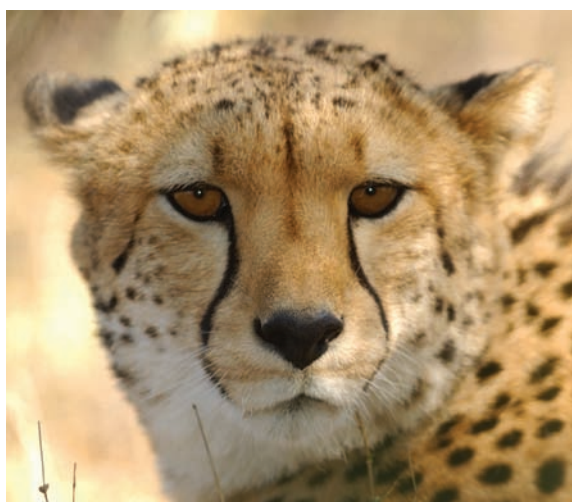
4.SHOULDER BLADES: Not connected to the collar bone, allows for stretching.

5.HEAD: Small and streamlined to aid speed, with large eyes.

6.HEART & LUNGS: Very large to pump blood and oxygen at high speed.

7.CLAWS & PADS: Claws act like running spikes and pads like tyres, for grip.

8.LEG BONES: Longer to help the cheetah take longer strides.



The cheetah has a flat muzzle and a small head. Black 'tear marks' run from the inner corner of each eye, on either side of its nose, down to its mouth. These tear marks help to reduce glare from the sun and direct sunlight away from the eyes. This is essential for the cheetahs, as they are **diurnal** animals (which means 'active in daytime').

While the tear marks act like sunglasses for the cheetah, they can also be used to identify individual animals - as they are as unique to the cheetah as human fingerprints are to us.



The jaws of a cheetah are not large and strong, like those of lion or leopard. Cheetahs are **non-confrontational** animals, so they usually avoid fighting with other cats or animals. They would much rather flee than fight.



Cheetah coat



Leopard coat

Cheetahs have a coarse, buff coloured coat with small round black spots. Cheetah spots are real spots and they vary in size from small flecks on the face to 30mm diameter on the back of the pelt. The spots of a cheetah are different to those of a leopard, which carries a rosette or flower shape of two colours.

Spots are used by many animals as a natural **camouflage**. They help to disguise the body when the animal needs to hide. The cheetah needs to be hidden when stalking its prey, so spots help it to get very close without being seen.



Even in green grass, close up, the cheetah in this photograph is difficult to see.



The cheetah's body size is usually between 180cm – 220cm long. The average weight of a male is 40kg – 60kg, with females weighing between 35kg – 45kg.



CHEETAH BEHAVIOUR

The word **behaviour** is used to describe the way that animals usually act and the natural habits they may have.

Male and female cheetahs behave differently. Males can often be seen together in groups of three or more. This is called social behaviour. Groups such as these are usually made up of brothers, who have stayed together since they were cubs to form a **coalition**. Female cheetahs usually prefer to stay alone, except when they are raising cubs. This is called **solitary** behaviour.

Cheetahs are **diurnal**, meaning active in daytime, where as most other species of cats are **nocturnal** – meaning active at night time. They prefer to hunt during the cooler part of the day, like the early morning, late afternoon and early evening. Cheetahs often sit on high points such as termite mounds, where they can get a good view of their surroundings. Though not very good tree climbers, cheetahs sometimes use shallow sloping branches to get into a tree.

Cheetahs can growl, hiss and purr exactly like domestic cats. They purr when content, but this can sometimes also be a sign that they are nervous. Cheetahs are less aggressive than the other 'big cats' and are not a threat to humans, even though humans now pose a threat to them because of human **encroachment** onto predator habitat.



CHEETAH CUBS



A female cheetah gives birth 3 months after mating with a male. Though she can have up to 6 cubs in one litter, the average is usually 3 to 5.

She prefers to give birth in bushy tall grasses and hollows, so as to hide the cubs from threatening predators. They are born with a smoky-grey coat and long hair on their shoulders and back, called a **mantle**.



The mantle makes the cubs look bigger than they actually are and some people think it makes them look like a honey badger (which most predators avoid).

Cheetah cubs are born blind and helpless, weighing between 250-350g (equal to a small bag of sugar). They are only about 30cm long. Though cubs can crawl after only 2 or 3 days, they do not open their eyes for about 10 days. They can walk at 3 weeks.

After being hidden in thick undergrowth for 6 weeks, the cubs will begin to follow their mother out of hiding when she goes off to hunt. They will stay with her for 18 months, while she teaches them hunting and survival skills, including which other predators and **competitors** to avoid. At around 18 months, the mother will leave the cubs. Now ready to live on their own the cub group can stay together for up to 6 months, until the females go off to live alone. The males will normally stay together for life.

Cheetah cubs usually have a hard time and sometimes only 10% of them will survive into adulthood. They can easily catch diseases and fall victim to other predators. Lions and hyenas may see them as future competitors, so will often kill them.



HUNTING

Like most animals, cheetahs are born with a natural instinct which will affect how they act and behave as they grow. Stalking, chasing and catching prey is part of their instinct, but they will learn many life and survival lessons from their mother.

They grow up watching her hunt and she will often return with live prey for them to chase. They will also learn by playing and practicing on each other. If the mother dies before she has taught them how to hunt properly, then the cubs will stand little chance of survival on their own.

Young cheetahs start to become successful at hunting as their mother leaves them. Even then, after the mother has left, youngsters need to practice over and over again to perfect their **technique**. Eventually, they will be amongst the most successful hunters of all the 'big cats' and can catch 50% of the prey they chase – better than lions with their poorer success rate of about 30%. Hunting at dawn, dusk and sometimes during the day, cheetahs make the most of the times when other predators are not active – giving them a better chance to keep their kills and to avoid encounters with other predators.

The different stages of a cheetah hunt are:

SIGHTING PREY – Cheetahs have excellent eyesight. They can see in detail up to 5 kilometres. They like to find high spots, like termite mounds, to look for prey.

STALKING PREY – The cheetah tries to stalk prey to within 50 metres, by carefully walking and crouching to blend into the grass. The closer it can get before having to run, the better are its chances.



THE CHASE – When the prey finally notices the cheetah, it will immediately try to escape by running. The cheetah must instantly burst into a sprint, accelerating from 0 - 75km/h in 3 seconds and soon reaching speeds of up to 110km/h to get within striking distance. It can only maintain top speed for a few seconds, after which it must catch its prey or give up the chase, due to overheating and **exhaustion**. During a chase, a cheetah's body temperature can rise to 41° C.



THE TRIP – The cheetah uses its front paws to trip-up prey. At high speed, it reaches out and hooks a sharp dewclaw into its prey. The dewclaws, on the inside of both front wrists, are the cheetah's only sharp claws. The other claws go blunt from gripping the ground constantly, while running.

A LETHAL GRIP – Cheetahs **suffocate** their prey, by biting down on the throat and holding it tightly. Without air, their victim is soon unable to breathe.



CATCHING A BREATH – At this point, the cheetah is **exhausted** from the chase and in danger of overheating. Before feeding, it must first try to rest – sometimes for up to 30 minutes. This can often be a time when a cheetah's kill will be stolen from it by other predators.

FEEDING – Cheetahs usually start feeding on the hindquarters of the animal. They must eat quickly before **scavengers** arrive, because they will be unable to defend their kill from much larger and stronger **carnivores**. Even groups of jackals and vultures can drive cheetahs off their kills.



Cheetahs are always on the look-out while feeding.



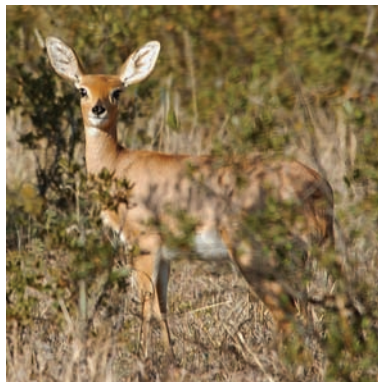
In some parts of Botswana, scavengers such as this spotted hyena can easily drive cheetahs off and steal their kills.



CHEETAH PREY IN BOTSWANA



Warthog



Steenbok



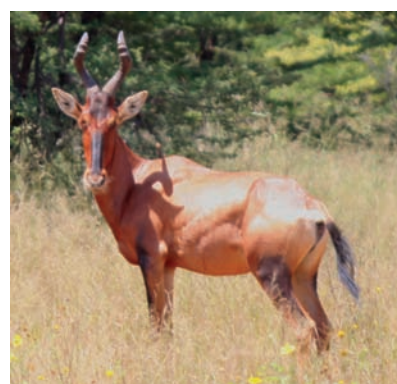
Impala



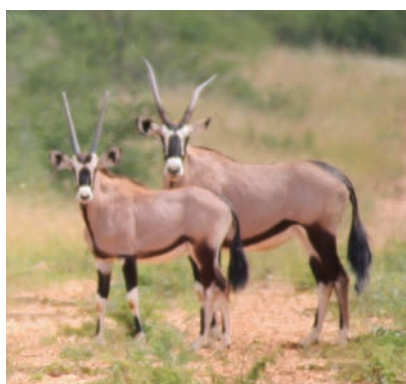
Springbok



Young kudu



Young red hartebeest



Young gemsbok/oryx

Hares and game birds such as guinea fowls are also preyed upon by cheetahs in Botswana. Mothers teaching their cubs to hunt will sometimes start their training on these smaller animals.



Activity Sheet 3 (Side A)

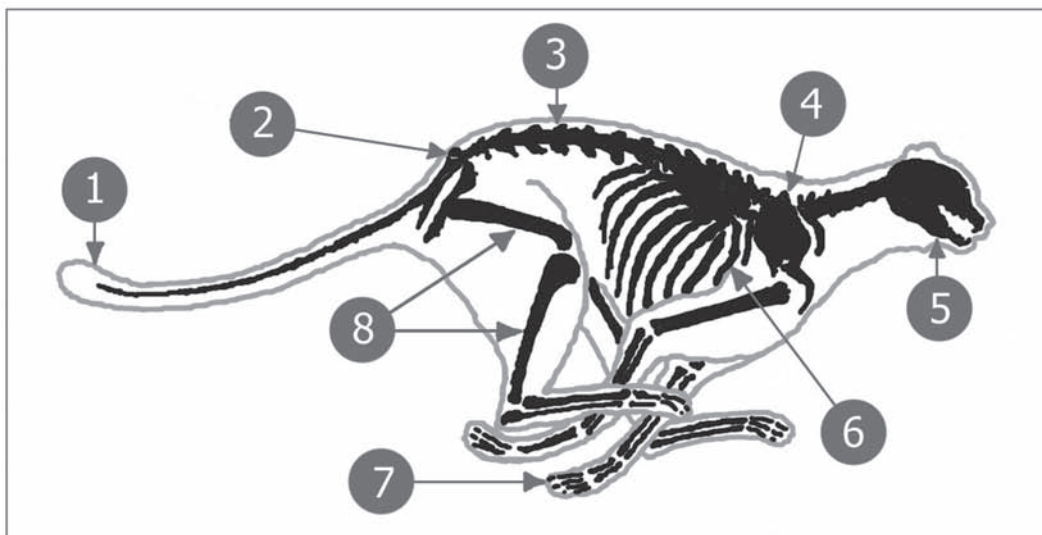
**PLEASE ASK YOUR TEACHER TO PHOTOCOPY THIS SHEET
SO YOU CAN WORK ON THIS ACTIVITY**

These activities are based upon what you have read about the anatomy and behaviour of the cheetah.

Student Name _____

1. CHEETAH ADAPTATIONS FOR SPEED

Look at the diagram and table below and write what each adaptation is for in the 'Function' column.



PART	FUNCTION
1 TAIL	
2 HIPS	
3 SPINE	
4 SHOULDER BLADES	
5 HEAD	
6 HEART & LUNGS	
7 CLAWS & PADS	
8 LEG BONES	



Activity Sheet 3 (Side B)

2. Leopard or cheetah?

Look at these pictures and write the correct name under each one.





3. Active in daytime or night time?

There are two words, used to describe animals that are **active in daytime** and **active at night time**. What are they?

_____ means 'active in daytime'.

_____ means 'active at night time'.

4. Cheetah cubs are born with a smoky-grey coat. What is the name used to describe the long hair on their shoulders and back?

5. Why do cubs have this coat?



Activity Sheet 3 (Side C)

**PLEASE ASK YOUR TEACHER TO PHOTOCOPY THIS SHEET
SO YOU CAN WORK ON THIS ACTIVITY**

6. Plotting and Drawing a Line Graph.

The tables below show the growth rate of a young cheetah and a human child, but a much better way to show all this information is on a line graph.

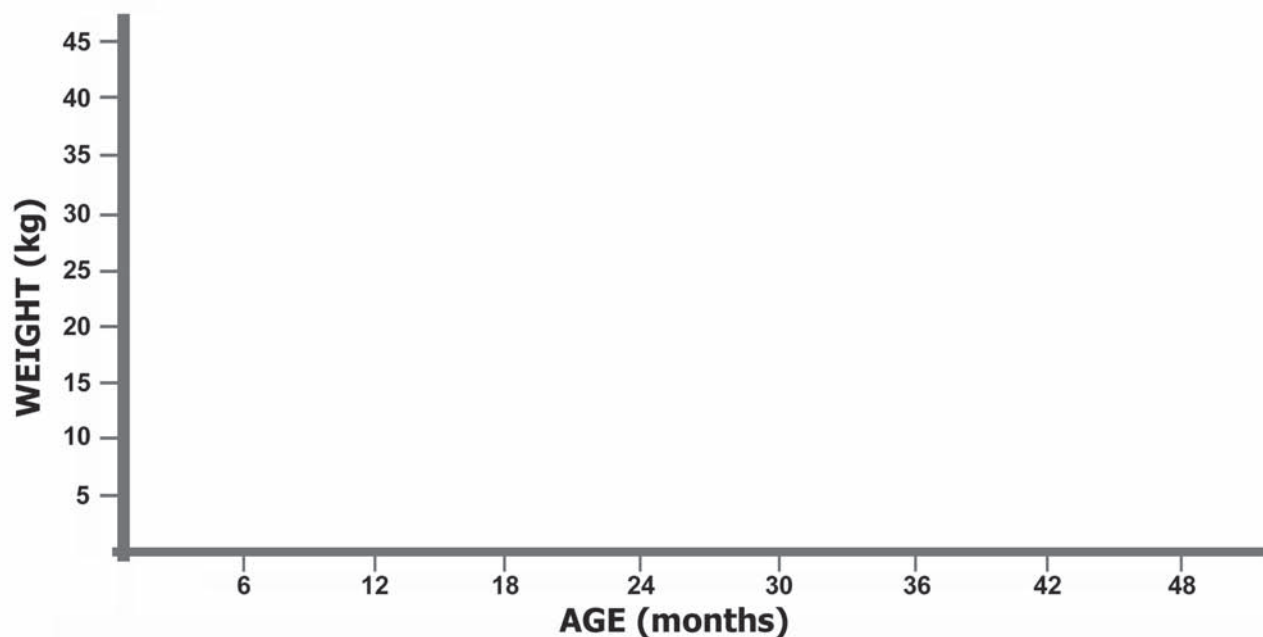
Using the information in the tables, mark the growth points on the graph. Use red dots for the cheetah cub and blue dots for the human child. Then, join the red dots together to make a red line. Do the same with the blue dots to make a blue line.

CHEETAH CUB

AGE	WEIGHT
Birth	0.3 kg
2 months	3.0 kg
4 months	7.0 kg
6 months	12.0 kg
12 months	25.0 kg
18 months	30.0 kg
24 months	35.0 kg
48 months (adult cat)	35 - 45 kg

CHILD

AGE	WEIGHT
Birth	3.5 kg
2 months	5.5 kg
4 months	6.5 kg
6 months	8.0 kg
12 months	10.0 kg
18 months	11.0 kg
24 months	12.0 kg
48 months	16.0 kg
8 years	26.0 kg
12 years	43.0 kg
Adult person	63.0+kg



Activity Sheet 3 (Side D)

7. Results from the Graph

What does the graph now tell you about the rate of growth of a cheetah cub?

8. Cheetah prey.

Of these three, which is **not** commonly preyed upon by the cheetah?



young kudu



zebra



warthog

Cheetahs do not usually prey upon _____.

9. Explain why, after catching their **prey**, cheetahs have to remain alert, be on the look-out and eat quickly?



CHEETAH

4. Other Predators of Botswana



While Botswana remains a stronghold for the cheetah, the country is also home to many other predators. The types of habitat they each prefer and their behaviour differ in many ways and there is often competition between them for food and territory.

Botswana's predators are very important to the nation. Not only are they famous all over the world and help to bring tourists here, but they also play a much bigger role in maintaining the balance of nature. If there were no predators, game populations could grow out of control, overgrazing would have a terrible affect on framing and the condition of the land, disease would spread more quickly and scavenger numbers would increase.

THE HERBIVORE & THE CARNIVORE

Herbivores are animals that eat only plants. There are 2 groups, **grazers** (animals that feed mostly on grasses) or **browsers** (animals that feed mostly on the leaves, flowers, twigs or branches of trees). Springbok are grazers and kudu are browsers. However, impala are mixed feeders – they graze and browse!

Carnivores are meat-eaters. Some carnivores, also called predators, chase and kill the animals they eat. Others, called scavengers, usually feed on the meat of animals that are already dead. Some carnivores also act as both predators and scavengers. Lions are carnivores and so too are spotted hyenas, but they can also be scavengers.

THE FELINE & THE CANINE

Feline are all members of the cat family. There are 37 different species of wild cat in the world and they can be found on every continent except Australia and Antarctica. 'Big cats' are the lion, tiger, leopard, jaguar, puma, and cheetah. Medium-sized cats include the lynx, caracal, and serval. Small cats include the African wild cat, Andean cat, as well as domestic or pet house cats.

Canine animals are all members of the dog family. They are found on every continent in the world except Antarctica. Wolves, foxes, jackals and the African wild dog are all in this family, as well as domestic or pet dogs.

THE HYENAS

Although they look and act like dogs, hyenas are a separate family of carnivore and scientists believe that they are probably more closely related to cats.



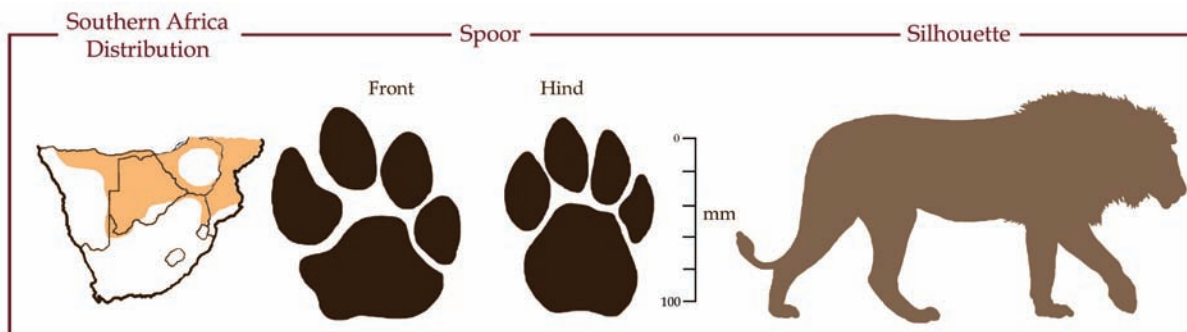
THE FELINE PREDATORS OF BOTSWANA

English name : LION
Setswana name : Tau
Scientific name : *Panthera leo*
Shoulder height : up to 120cm
for males
Weight : 150 - 225kg (male)
110 - 152kg (female)
Coat : tan/light brown



The lion is the largest African predator and is sometimes known as the ‘king of beasts’. Male adults are bigger than females and have a mane of long fur on the back of the head and over their shoulders. They weigh up to four times more than a cheetah.

Lions are mainly **nocturnal** and the females do most of the hunting, at night. Because of their size and strength lions can take very large prey. When hunting in a group, lions can easily kill an adult male buffalo. Lone lions usually have a low rate of success and hunt smaller prey, such as impala, wildebeest and zebra. Though group hunting is much better, their success rate is still lower than that of lone cheetahs – from which lions will also try to steal their prey and will often kill cheetah cubs if they come across them.



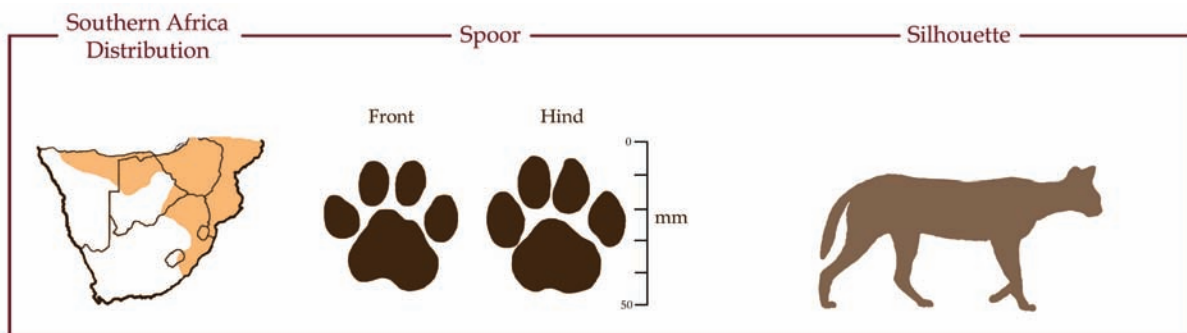
Lions can spend over 20 hours a day resting. They are very social and live in groups called prides, of between 4 - 12 related females and 1 - 6 males unrelated to the females. Males can be chased out of prides and replaced by others, from outside. Prides are **territorial** and intruders are warned off by roaring. If intruders invade a **territory**, fierce fighting will break out.



English name : SERVAL
 Setswana name : Sebalabolokwane
 Scientific name : *Felis serval*
 Shoulder height : up to 40cm
 for males
 Weight : up to 15kg (male)
 8 - 12kg (female)
 Coat : tawny/yellow
 with black spots



The serval is a medium-sized cat, larger than a house cat but not nearly the size of any of the ‘big cats’. Its face is small and it has very large ears. Its tawny coat is covered in small black spots.



Servals are usually **nocturnal** but they can sometimes be seen hunting during daylight hours. Their prey includes reptiles, rodents, hares and birds such as guinea fowl. They will sometimes also hunt the smaller antelopes, such as duiker and steenbok.



THE CANINE PREDATORS OF BOTSWANA

English name : AFRICAN WILD DOG

Setswana name : Lekanyane

Scientific name : *Lycaon pictus*

Shoulder height : over 70cm
for males

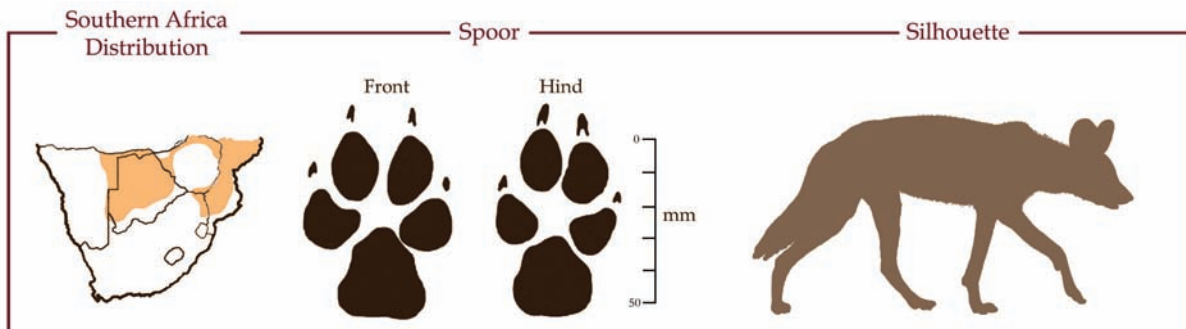
Weight : 17 - 36kg

Coat : blotchy yellow/brown/
white/black



The African wild dog, also known as the African hunting dog or painted dog, is only distantly related to domestic dogs. Its most noticeable features are its blotchy coat of white, yellow, brown and black, and its very large rounded ears. It has thin long legs, a large head and powerful jaws.

African wild dogs are very social and can travel in packs of up to 40 animals, although most packs do not number more than 20 or 25 members. Together, the pack looks after the young, old or sick members. Males are slightly larger than the females.



Wild dog **habitat** is open grasslands, open woodland and bushveld. They hunt by day, usually in the early morning and evening and their main prey is antelope, such as impala and kudu, as well as hares and sometimes warthogs. When they are chasing, they can reach speeds of 56 km/h over distances of 3 – 5km.

The African wild dog is threatened with **extinction** because of habitat loss and conflict with humans. They are now mostly found in southern Africa – including Botswana, which has the largest remaining population in the world.



English name : BLACK-BACKED JACKAL

Setswana name : Phokoje

Scientific name : *Canis mesomelas*

Shoulder height : up to 40cm
for males

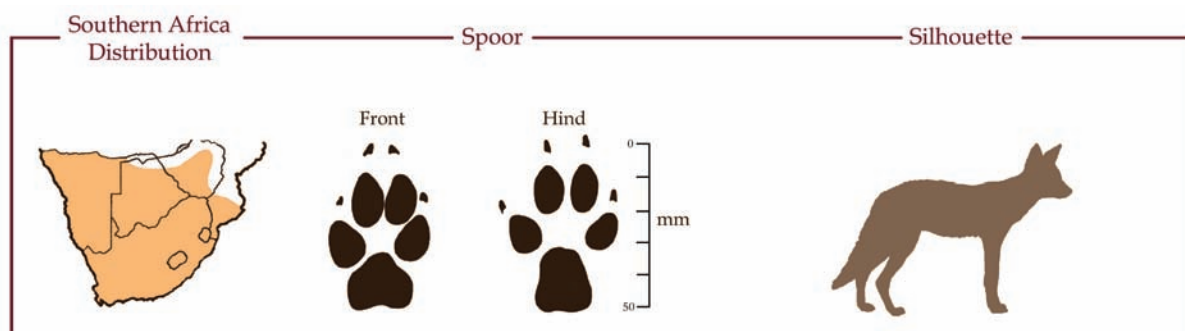
Weight : 6 - 12kg

Coat : reddish brown/
black back



The black-backed jackal is a small canine and the most **common** of the two species of jackal in Botswana (the other is the side-striped jackal). The black-backed jackal has large pointed ears and a pointed nose. The tail is long and bushy, usually darker than the body. The belly is creamy to white.

Black-backed jackals are hunters and scavengers. They are mostly nocturnal but they can sometimes be seen during the day. They usually hunt small animals, such as rodents and hares, but they will also take birds and reptiles.



Working together as a pack, black-backed jackals can sometimes take small stock at farms. But they can also be a friend to the farmer because, as a scavenger of other dead animals, as they help to clean up the bush and this stops flies from breeding and diseases from spreading.



English name : BROWN HYENA
 Setswana name : Phiri yo morokwa
 Scientific name : *Hyaena brunnea*

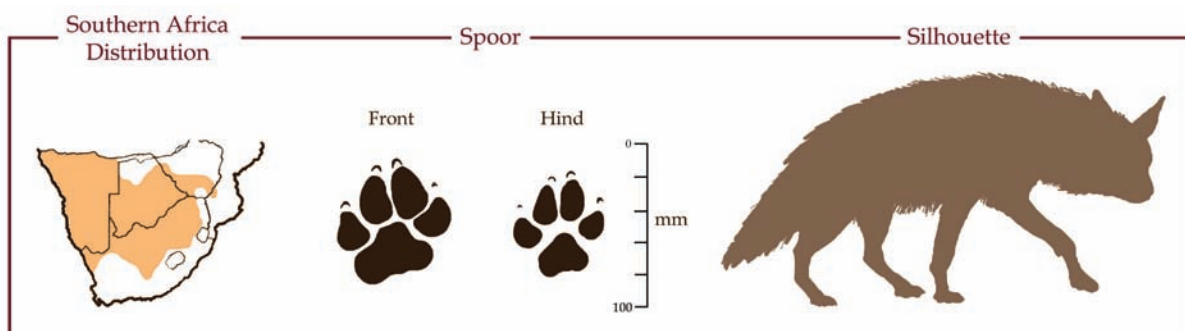
Shoulder height : up to 80cm
 for males

Weight : up to 45kg

Coat : blackish brown



Smaller than its spotted cousin, the brown hyena has a long shaggy coat of coarse fur and the tail is long and bushy. Some brown hyenas may have a faintly striped body, but in most animals the stripes are seen only on the legs.



Unlike the spotted hyena, the brown hyena is not a pack animal and is mostly **solitary**. It is **nocturnal** and a **scavenger** by nature, though it can also hunt the young of some antelope species.

Because it is smaller than the spotted hyena and does not form packs, the brown hyena is not able to take domestic cattle, not even calves. However, it has been known to kill young and even adult small stock.



THE PREDATORS OF BOTSWANA

Predators and their natural prey have evolved together, over millions of years. For as long as there have been herbivores, there have been carnivores to eat them. They have always played a major role in the balance of nature and they continue to be very important to Botswana's environment today. In addition, predators now also have an important **economic** value for Botswana's tourist industry.

THE BALANCE OF NATURE

Predators keep herbivore populations healthy, by weeding out sick or weak animals. This is a good example of the principle of **natural selection**, or "the survival of the fittest." When the sick and weak are removed, the remaining healthy individuals breed with each other, leading to a much stronger and better adapted population.

Predators also help to control the size of herbivore populations. When food supply is plentiful — such as in a year with heavy rains — herbivore numbers can increase dramatically. But without enough predators, the population would soon become too great. They will consume all of the food supply too soon, leading to outbreaks of disease and eventual **starvation**. Some scientists believe that if all the predators were to die out, all of their natural prey would as well!

PREDATORS & TOURISM

Many international tourists like to holiday in undisturbed natural environments. They also like to see the large predators and Botswana benefits greatly because of its high wildlife numbers in many areas. Big cats — including cheetahs — are especially favoured by tourists, as well as rare species such as the African wild dog and nocturnal or secretive species, such as brown hyena and the caracal.

Cheetahs are more common in southern Africa than in East Africa and the African wild dog is now seen mostly in southern Africa. Tourists come to Botswana, Zambia, Namibia, South Africa or Zimbabwe to see these animals. So, the Botswana tourist industry will continue to benefit greatly if we can help endangered predators to survive and recover in numbers.



Activity Sheet 4 (Side A)

**PLEASE ASK YOUR TEACHER TO PHOTOCOPY THIS SHEET
SO YOU CAN WORK ON THIS ACTIVITY**

These activities are based upon what you have read about
the Other Predators of Botswana.

Student Name _____

1. Herbivores & Carnivores

A **herbivore** is an animal that eats only _____ .

A **carnivore** is an animal that eats _____ .

2. This list of animals is a mixture of herbivores and carnivores. Look through the list and see if you can separate them out into their two groups, by writing their names in each of the boxes. You should have 7 herbivores and 5 carnivores.

kudu
springbok
lion
impala
cheetah
African wild dog
steenbok
red hartebeest
wildebeest
leopard
spotted hyena
oryx

HERBIVORES	CARNIVORES

3. Cats & Dogs

Feline is the family name for which type of animal?



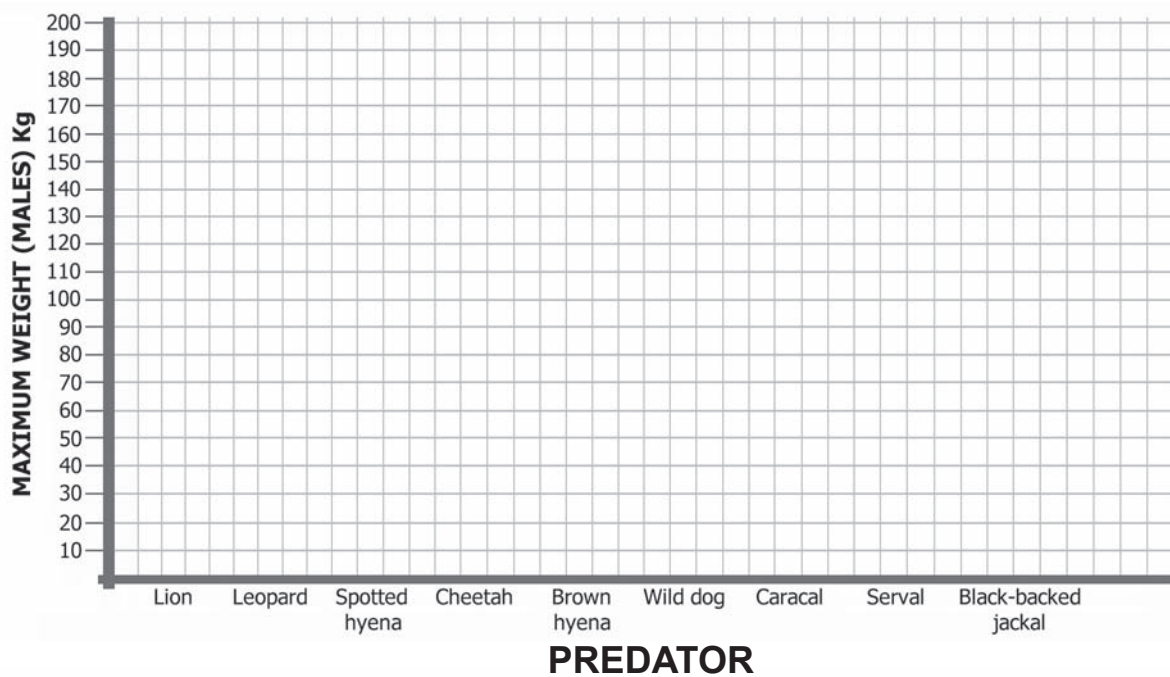
Activity Sheet 4 (Side B)

4. Plotting & Drawing a Bar Graph

The table below shows the weights of all the predators in Botswana. An easier way to see all this information and to compare it, is by drawing a bar graph.

Look at the table and draw a block in the graph to meet the weight of each predator. If you wish, you can use different colours for each different group of predator, but remember to use a colour key on the graph to show what the colours mean.

PREDATOR	MAXIMUM WEIGHT (males)
Lion	225 kg
Leopard	95 kg
Brown hyena	45 kg
Spotted hyena	55 kg
Serval	15 kg
Cheetah	60 kg
Caracal	18 kg
Black-backed Jackal	12 kg
African wild dog	36 kg



Activity Sheet 4 (Side C)

**PLEASE ASK YOUR TEACHER TO PHOTOCOPY THIS SHEET
SO YOU CAN WORK ON THIS ACTIVITY**

5. What is the scientific name for the lion?

6. If you were to come across a kill hanging up in a tree, which of the three predators below do you think would have put it there?

Put a circle around the correct answer.

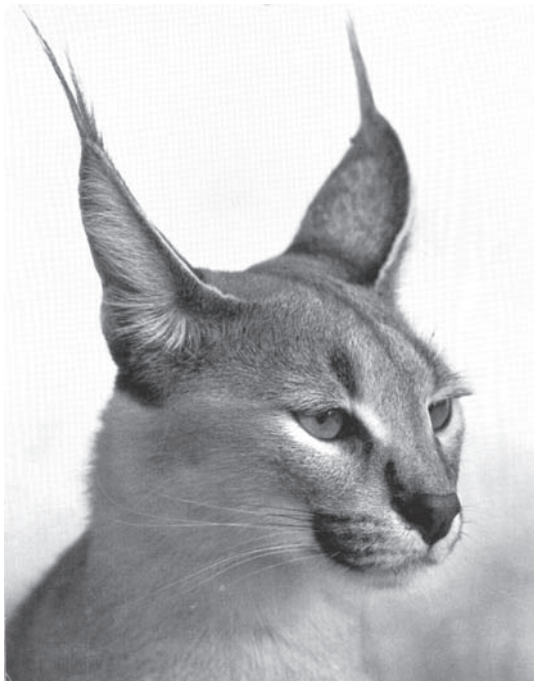
Wild dog

cheetah

leopard

7. Which Predator?

Look at the photograph and read the description, then name the predator.



This predator is more than twice the size of a house cat. Its coat is tawny in colour, but often more of a reddish brown.

It is a lone, nocturnal predator.

It is excellent at climbing and jumping, and is very shy and difficult to see.

This predator is a member of the

_____ family and is called a

_____, in English, or

_____ in Setswana.



Activity Sheet 4 (Side D)

8. The Balance of Nature

On page 42, you read about the balance of nature. Try to answer these questions.

a). For as long as there have been herbivores, what other group of animals have been around to eat them?

b). How do predators help to keep the herbivore population healthy?

c). Without enough predators, what would happen to the herbivore population?

9. Tourists

Look at this map of southern Africa. Can you name each of the five countries to where tourists go, to see cheetahs and African wild dogs?



1. _____

2. _____

3. _____

4. _____

5. _____



CHEETAH

5. What Will Become of
the Cheetah

Today, the cheetah faces a threat to its long term survival in the wild. Human activity in more wild habitat has led to a conflict between humans and predators, especially between farmers and the cheetah. Farmers are, naturally, very worried about predators that might take their livestock.

Cheetah Conservation Botswana is trying to work with farmers, helping them to protect their livestock without having to harm predators.



WHY THE CHEETAH NEEDS OUR SUPPORT

There are some wide-open spaces in Botswana that have been turned into national parks and game reserves. This has been done to protect natural habitats and the wildlife that lives within them. National parks are very important and many countries around the world, like Botswana, have their own areas kept free of human and industrial development so as to protect wilderness, wildlife and habitat.



Many people may think it possible for cheetahs to survive the threat of extinction, because they will be safe in national parks and their numbers will grow there. But much of Botswana's wildlife also lives outside or wanders freely in-and-out of protected areas and for the cheetah, national parks are not the answer to survival. This is because there is often a lot of competition between predators that live in those parks and cheetahs cannot cope easily with more powerful competition from lions, leopards and hyenas. Cheetahs and wild dogs also need larger areas of land than some parks are able to provide.



Cheetah numbers are kept down by conflict with other predators in the large parks and reserves. Many will therefore seek out new territories where there are fewer or even no other big predators. Very often in Botswana, this means that cheetahs move onto land between the parks and human settlements – and onto the big areas of open farmland. The area between the parks and human settlements is often called marginal land.



THE CONFLICT BETWEEN HUMANS & PREDATORS

Many farmers see predators as a great threat to their livestock. Because cheetahs are diurnal, they are more likely to be seen by farmers and their workers in daytime. Even though the cheetah may not actually be responsible for taking livestock, you can see why, as a result of seeing one, a farmer might blame, trap or then shoot a cheetah.

All predators can take livestock, if they see a good chance to do it or because it becomes very easy for them to do if livestock is left unprotected – so they take the opportunity! If farmers are unable to have some control over their livestock and if herds wander unprotected, then they can fall victim to predators, theft or disease. Cheetahs can sometimes become involved in trying to take small stock, such as goats or sheep, if given the opportunity.



WHAT CAN BE DONE TO HELP FARMERS & PREDATORS?

Livestock and game farming are of course very important to Botswana, but so too are the country's natural and wildlife resources.



Cheetah Conservation Botswana realizes that farmers need to protect their livestock from predators and so it has a programme to help them do this, without the need to kill predators.

This method of controlling predators without killing them is known as **non-lethal predator control**. There are many ways for farmers to make it difficult for predators to take livestock. This is very important, because if it is not easy for predators then they will move on and the livestock will be safe.



Changes to the ways some farmers look after their livestock do not often cost a lot of money and are only a matter of time and effort. *Cheetah Conservation Botswana* is trying to help more farmers to make these changes. Some of the changes can also help farmers to produce better meat and to reduce the outbreak of disease in their livestock, so they can then get better prices at the market!



CATTLE FARMERS

Only the bigger, more powerful predators will sometimes try to take fully-grown cattle. However, calves are most at risk. These examples can work very well for cattle farmers:

Monitoring. Predators don't like approaching livestock when there are people around. Regular livestock monitoring can help farmers to protect their cattle and also to detect injuries, sickness and disease early in livestock.

Calving. Some farmers have calving seasons, to match the seasons when wild game give birth, so that most calves are born at around the same time. This also helps the farmer and his staff to keep calves together in a safe place, such as a calving camp or kraal. This gives them much better protection against predators which might be in the area. Predators will also have more wild game to hunt.

Guard Animals. Some farmers have discovered that dogs and donkeys make very good guarding animals for their livestock. Both types of animal become very protective of the stock they live with and will defend them. They will make a lot of noise and aggressively challenge anything that tries to approach. Predators will rather move on than take a chance with guard animals! Many farmers will have ordinary dogs and donkeys, so they will know that guarding animals will be as easy to keep and not too expensive.



GOAT & SHEEP (SMALL STOCK) FARMERS

Many types of predators are capable of taking small stock if it becomes easy for them to do so. Domestic dogs that have turned wild can also be a very big problem. The following examples can work very well for small stock farmers.

Herders. Herders are very important and this may even be a part-time chore after school for some of you and your friends reading this book. Goats and sheep should not be allowed to wander off too far from herders for long periods of time. Some predators will take this easy opportunity, but don't usually like to approach stock guarded by herders.



Kraals & Enclosures. The way thorn kraals or fenced enclosures are built is very important for protecting goats and sheep at night. They must be strong with no gaps and built in a way that will make life very difficult for climbing and jumping predators – such as leopards or caracals that might be in the area. Predators should also not be able to see inside the enclosures. Acacia thorns facing in and out often work best to fill in warthog holes.



Guard Animals. Guard dogs can be very good at protecting sheep and goat herds, on their own or with herders. Remember, they will make a lot of noise and aggressively challenge anything that tries to approach. The best guard animals are raised with the herd and stay with them constantly, so they are very different from pet dogs or herding dogs.



Remember: Predators that sometimes prey upon livestock do so because it becomes very easy for them. All the above methods are about making it difficult for predators to take livestock. The easiest option for the predator will then be to hunt its natural prey! This will be a positive outcome for everyone in Botswana.

Cheetah Conservation Botswana will help farmers who want to use these or other methods of non-lethal predator control to protect their livestock. If you know a farmer who needs our assistance, ask them to contact us.



Activity Sheet 5 (Side A)

**PLEASE ASK YOUR TEACHER TO PHOTOCOPY THIS SHEET
SO YOU CAN WORK ON THIS ACTIVITY**

**These activities are based upon what you have read about
what will become of the cheetah.**

Student Name _____

1. Cheetahs in National Parks

From what you have read on Page 49, can you explain why cheetahs often find it difficult to live only in national parks and reserves?

2. What kind of land do cheetahs often move into, in Botswana?

3. Human Conflict with Predators

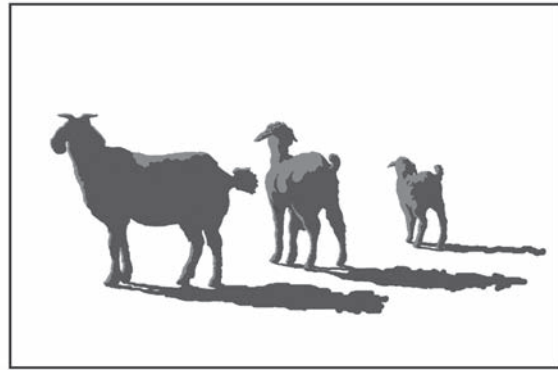
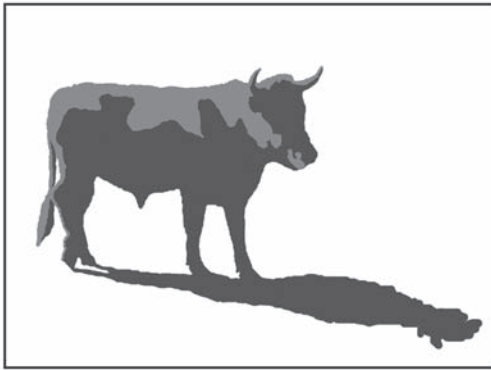
From what you have read on Page 50, can you give two reasons why predators might start taking livestock?



Activity Sheet 5 (Side B)

4. Livestock Guarding Animals

- a). Look at the two types of livestock below. From the predators you have read about in this book, write the names of two that you think might be able to take a fully grown cow and two that might take an unguarded goat.
- b). Then, underneath the predators' names, write which type of Guarding Animal you think would be good for protecting it from those predators.



a) _____

b) _____

a) _____

b) _____



Glossary of Words & Terms

Use this section to look-up or check words or phrases that you may not know too well or which you might not have heard of before while reading this book. Your teacher will also be able to help you with difficult or new words.

A

adaptation	the process of changing; adapting
aerodynamic	having a shape that moves through the air smoothly and quickly with low resistance
aggressive	very angry and forceful
anatomy	the body structure of plants and animals
ancestors	the previous generations of a person's or animal's family i.e. grandparents; great grandparents; great great grandparents; etc
artefact	an artistically made object from the past

B

behaviour	the way a person or animal acts or behaves
browsers	animals that move around eating from trees

C

camouflage	the natural appearance of an animal which allows it to blend in with its surroundings
canine	relating to the dog family, or dog-like
carnivore	an animal that eats only meat
CITES	Convention on International Trade in Endangered Species
coalition	a group of individuals or organizations who agree to work together
common	found widely or easily, not rare
competition	the activity of contest between individuals or animals
competitors	the individuals or animals that take part in competition
conflict	a serious struggle between groups in disagreement
crisis	a time of great difficulty or danger



Glossary of Words & Terms

D

deter	to make a person or animal not do something by making things difficult for them or making them afraid of what would happen otherwise
distribution	the way things are spread over an area
diurnal	active in daytime

E

economic	relating to the earning of money
encroachment	to gradually intrude on a territory
endangered	animals that exist in very low numbers and are under threat of becoming extinct
environment	the surroundings in which people, plants and animals live – the natural world and the man-made world.
evolution	the usually slow process by which all living things develop to take a newer or better form
evolved	something that has gradually developed or changed
exhausted	tired out or used up
extinct	died out or no longer in existence
extinction	the process of becoming extinct

F

feline	relating to the cat family, or cat-like
---------------	---

G

genus	a scientific category to group or classify plants or animals
grazers	the group of herbivores that eat only grass



Glossary of Words & Terms

H

Hindi	the language of the Hindu people of northern India
habitat	the natural home of a plant or animal
herbivore	an animal that feeds only on plants

I

illegal	not legal, against the law
instinct	an inborn, natural drive and ability or way of behaving that is not taught
intelligent	a person or animal that is good at thinking, learning and understanding
internal organs	inner structures of the body, ie; heart, lungs, liver.

M

mammal	warm-blooded animals with hair or fur, that produce milk and which give birth to live young
mantle	a close covering; the long grey hair on the shoulders and back of a cheetah cub
marginal land	in the margin or space between two areas

N

natural selection	the process of evolution which favours the strongest or better adapted which tend to survive longer and produce more offspring
nocturnal	active at night time
non-confrontational	coping or dealing with something in a way that avoids conflict or fighting
non-lethal	
predator control	the way of controlling and living with predators without killing them



Glossary of Words & Terms

P

physical features relating to the appearance of body parts
prey animals that are hunted and killed for food by other animals

S

savannah a grassy plain in hot regions of the world
scavengers an animal that searches for and eats those already dead or feeds on the unwanted waste of other animals
semi-retractable draw something back only partly
solitary existing alone or in an isolated way
starvation to suffer or die from hunger
suffocate to cause death by lack of air or being unable to breath

T

technique a particular or developed way to carry out a task
territory an area of land occupied and defended by an animal against another
territorial behaving in a way as to occupy and defend territory
typical the usual features of a thing or place

V

vulnerable open to being threatened, attacked or harmed



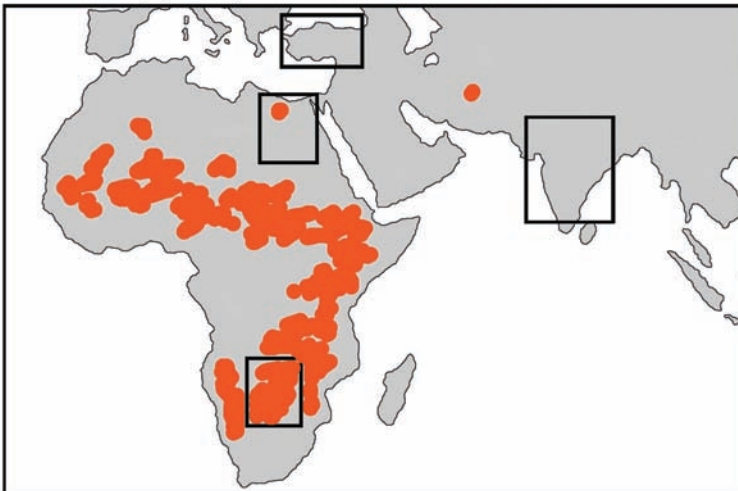
TEACHER REFERENCE

Activity Sheet Solutions

Activity Sheet 1 : The Running Cat

1. They play an important role in the tourist industry *(contained in text Page 3)*
They help maintain a balanced natural environment *(contained in text Page 3)*
2. Conflict with other predators *(contained in text Page 4)*
Conflict with livestock farmers *(contained in text Page 4)*
3. Because predators sometimes take their livestock *(contained in text Page 4)*
4. 'Species at Risk' *(contained in text Page 4)*
5. (i) Turkey; Egypt; India; Botswana
(ii) Egypt & Botswana
(iii) Map:

Southern Europe, Africa, Middle East and South West Asia



The coloured map should look something like this.

- 6 Any three from this list are acceptable;
springbok; impala; young kudu; steenbok; warthogs; hares; game birds



Activity Sheet Solutions

Activity Sheet 2 : History

1. They have become extinct. (contained in text Page 11)
2. Find the hidden word. (contained in text Page 11)

A	S	W	D	V	R	A	R	T	B	N	C
B	G	T	F	P	J	L	P	X	T	C	G
L	X	X	M	G	S	D	B	C	N	A	P
R	M	E	V	O	L	U	T	I	O	N	X
T	V	T	B	L	S	G	X	S	J	D	S
C	Z	N	O	U	X	B	P	F	D	A	W

3. The cheetah is the oldest of these Botswana predators. (contained in text Page 12)
4. Wild animals keep much of their wild personality (contained in text Page 14)
Removing animals from their natural environment adds to a population crisis.
5. the spotted one (contained in text Page 14)

Activity Sheet 3 : Anatomy & Behaviour

1. Cheetah Adaptations for Speed

PART	FUNCTION
1 TAIL	steering & balance
2 HIPS	increase stretch & stride
3 SPINE	allows the body to flex & stretch
4 SHOULDER BLADES	not connected - for stretching
5 HEAD	streamlined to aid speed
6 HEART & LUNGS	pump blood & oxygen at a fast rate
7 CLAWS & PADS	for grip
8 LEG BONES	for longer strides

2. Cheetah or Leopard?



Cheetah



Leopard



Activity Sheet Solutions

3. Active in daytime or night time?

diurnal means active in daytime

nocturnal means active at night time

(contained in text Page 21)

(contained in text Page 21)

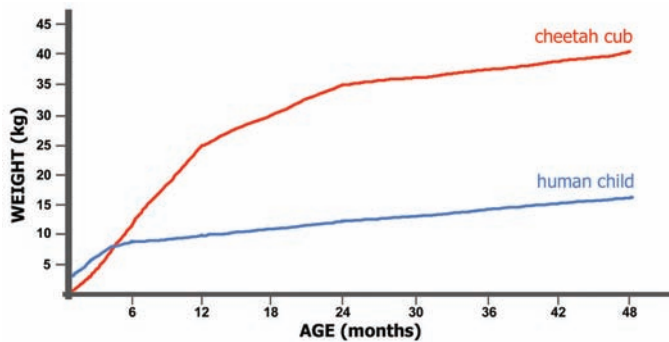
4. mantle

(contained in text Page 22)

5. It makes the cubs look bigger and, some people think, like a honey badger which most predators avoid.

(contained in text Page 22)

6. Plotting and Drawing a Line Graph



7. The growth-rate of a cheetah cub is much faster

8. Cheetah Prey



*Cheetahs do not usually prey upon **zebras***

9. They must feed before scavengers arrive

(contained in text Page 25)

They cannot defend their kill from much stronger predators (contained in text Page 25)

Activity Sheet 4 : Other Predators of Botswana

1. Herbivores & Carnivores

A *herbivore* is an animal that eats only plants

(contained in text Page 33)

A *carnivore* is an animal that eats only meat

(contained in text Page 33)



Activity Sheet Solutions

2.

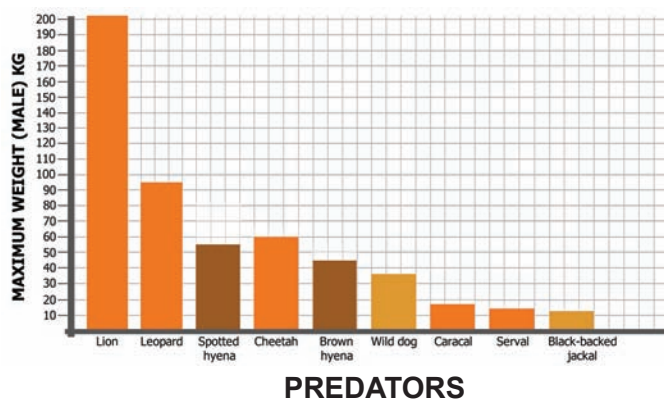
HERBIVORES	CARNIVORES
kudu	lion
springbok	cheetah
impala	african wild dog
steenbok	leopard
red hartebeest	spotted hyena
wildebeest	
gemsbok/oryx	

3. Cats & Dogs

cats

(contained in text Page 33)

4. Plotting and Drawing a Bar Graph



Extra marks could be available to students who use colour keys to separate felines canines and hyenas.

5. *Panthera leo*

(contained in text Page 34)

6. circle around leopard

7. Which Predator?

This predator is a member of the **feline** family and is called a **caracal**, in English, or **Thwane** in Setswana

8. The Balance of Nature

(contained in text Page 42)

- carnivores
- weed out sick or weak animals
- it would become too great

(Student answers containing similar for b & c would be acceptable)



9. Tourists

1. Botswana
2. South Africa
3. Namibia
4. Zimbabwe
5. Zambia

Activity Sheet 5 : What Will Become of the Cheetah?

1. Cheetahs in National Parks

Answer should be based around predator competition and the cheetahs inability to cope with other large predators. *(contained in text Page 49)*

2. marginal land

(contained in text Page 50)

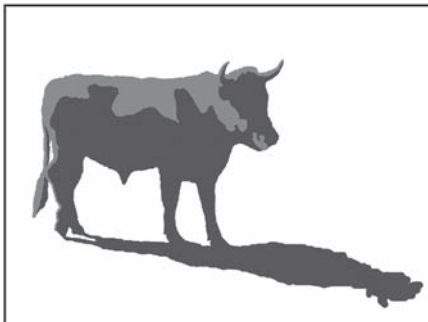
3. Human Conflict with Predators

because there may be a good chance or opportunity
it may become very easy for them

(contained in text Page 50)

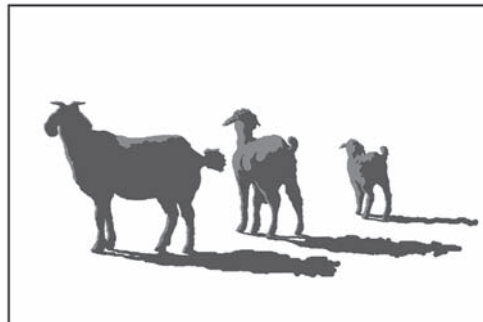
(contained in text Page 50)

4. Livestock Guarding Animals



a. lion; leopard;
spotted hyenas

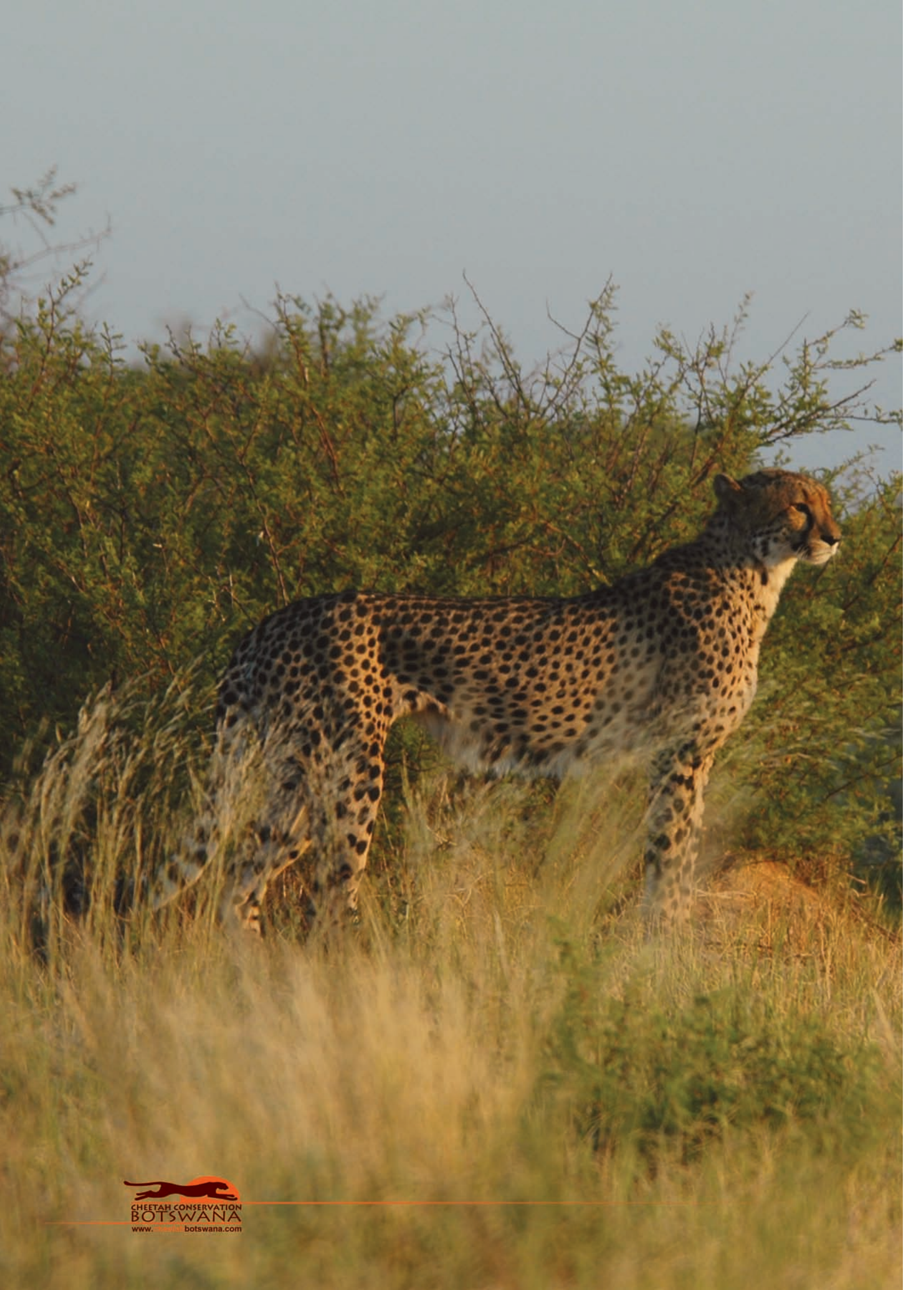
b. donkeys



a. cheetah; leopard; caracal
spotted hyena

b. guarding dogs





Further Information & Resources

BOTSWANA

CHEETAH CONSERVATION BOTSWANA

e-mail: info@cheetahbotswana.com
website: www.cheetahbotswana.com

KHUTSE LEOPARD TRUST

website: www.leopard.ch

MOKOLODI NATURE RESERVE

website: www.mokolodi.com

DEPARTMENT OF WILDLIFE & NATIONAL PARKS

e-mail: dwnp@gov.bw

SOUTH AFRICA

CHEETAH OUTREACH

website: www.cheetah.co.za

DE WILDT CHEETAH & WILDLIFE TRUST

website: www.dewildt.org

NAMIBIA

CHEETAH CONSERVATION FUND

website: www.cheetah.org

THE AFRICAT FOUNDATION

website: www.africat.org

INTERNATIONAL

IUCN (The World Conservation Union)

Cat Specialist Group
website: [www.lynx.uio.no/catfolk/](http://www lynx.uio.no/catfolk/)

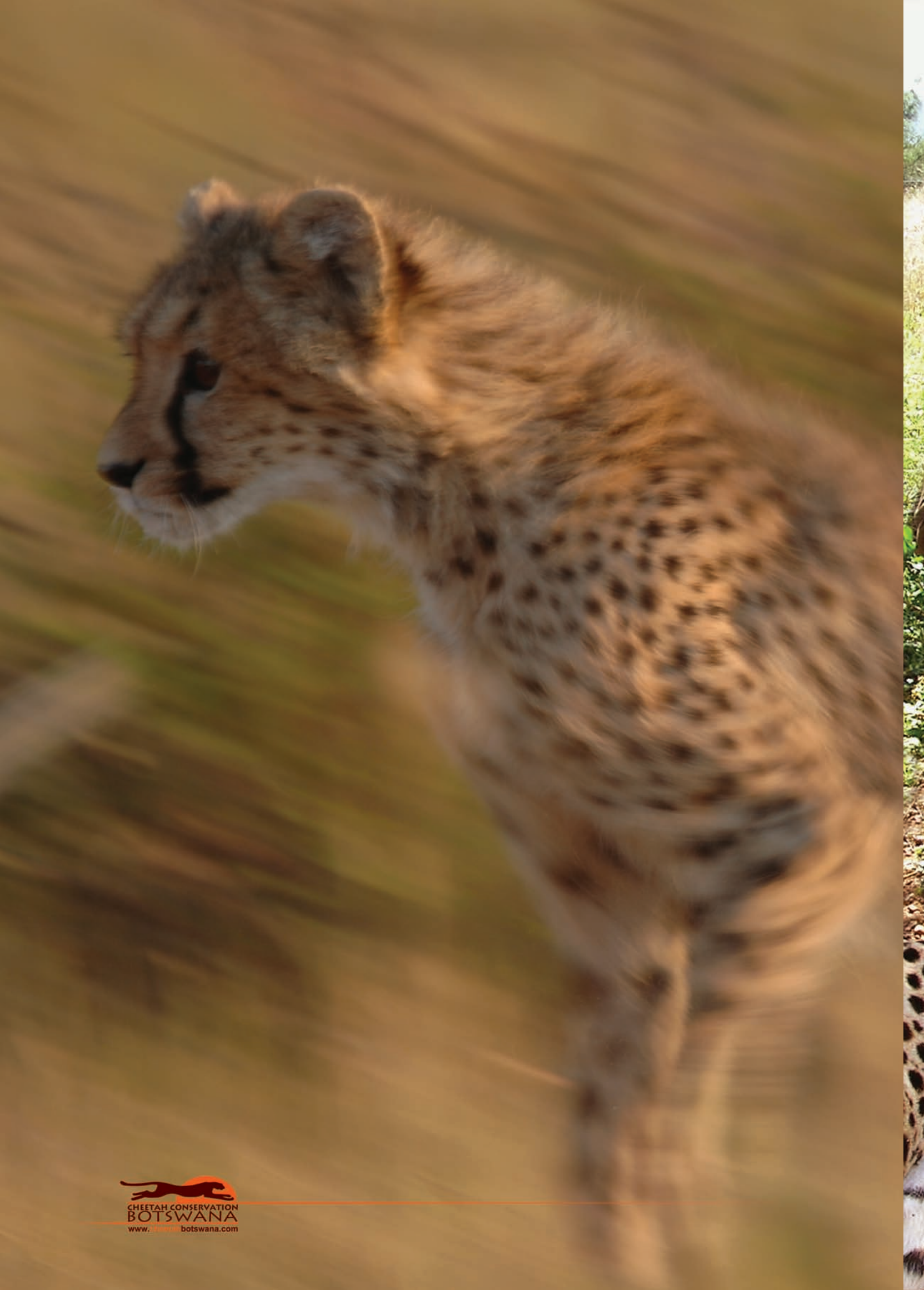
CITES (The Convention on International Trade in Endangered Species)

website: www.cites.org

SHASHE-LIMPOPO PREDATOR RESEARCH GROUP

website: www.predator-research.org







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