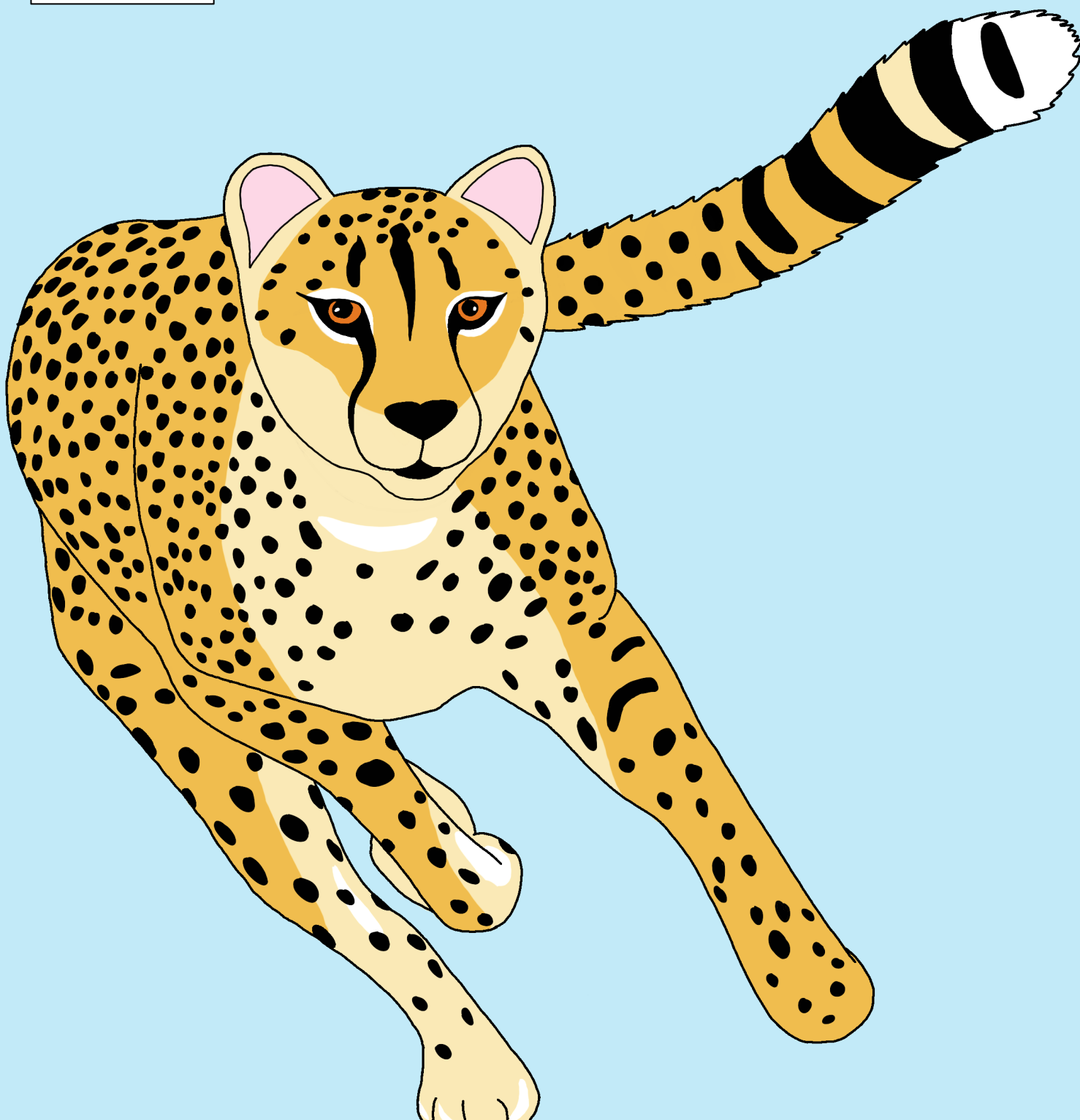




Activity Book:

Saving the Cheetah in Somaliland

Secondary



Acknowledgments

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At the school: _____

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Introduction

We are often taught to fear predators, such as the cheetah and leopard, without understanding their unique behaviours, special adaptations, and essential roles in the maintenance of healthy ecosystems. Our attitudes and misconceptions about these species have led to their endangerment because people often deal with their fear of predators by eliminating them. If we are to conserve healthy wildlife populations for the future, people must understand the ecology of animals and recognize their important role in the ecosystem.

Cheetahs are one of 41 wild cat species that live on the planet. Does it really matter if the cheetah becomes extinct? It is tempting to think that the loss of only one species will not affect us. However, it is important to understand that all living things are interconnected. The loss of one species has an impact on all the other species within that ecosystem. Even the loss of one species diminishes our world.

You have the power to make a difference! Become part of the global effort to save endangered species and conserve our world's rich biological diversity. Read this book and complete the activities to learn more about cheetahs and their conservation. Spread your newfound knowledge to those around you and become an advocate for change.



Chapter 1: Biology

1.1 What is a cheetah?

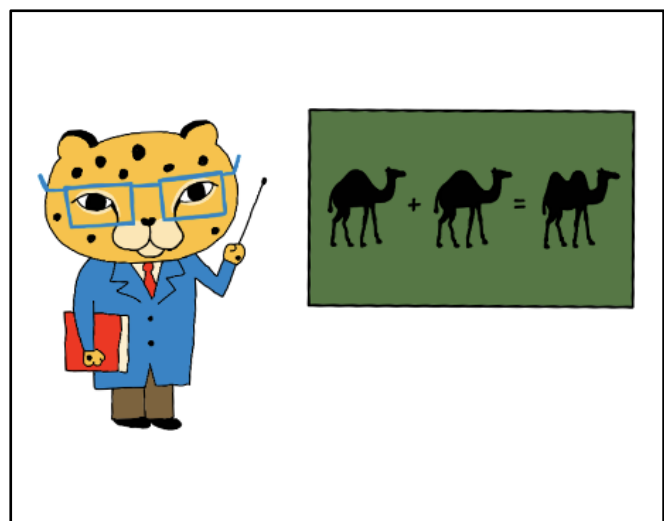
The cheetah, *Acinonyx jubatus*, is a tall and slender wild cat. The off-white to tan coat color is dotted with an average of $6000 \div 2 = \underline{\hspace{2cm}}$ black rounded spots. Black lines, called “ ”, run from the inner corner of the eyes to the mouth. Cheetahs are which means that they hunt during the day, and these black face lines help reflect the glare of the . The cheetah is the only cat that does not have fully retractable and the impressions can be seen in their paw tracks. Cheetahs in the wild are found mostly in , mainly in open savannah and grasslands.

The females are solitary unless mating or raising for up to $9 - 7 = \underline{\hspace{2cm}}$ years. In contrast, males can form groups with their brothers called .

The cheetah is the land mammal on Earth! It can run speeds as fast as $10 \times 11 = \underline{\hspace{2cm}}$ km/h over very short distances. Cheetahs are very fast which allows them to hunt effectively: they are so their main prey consists of antelopes, but they can also hunt birds and hares that weigh up to $32 + 28 = \underline{\hspace{2cm}}$ kg. Cheetahs are and they need your help!

Word Bank:

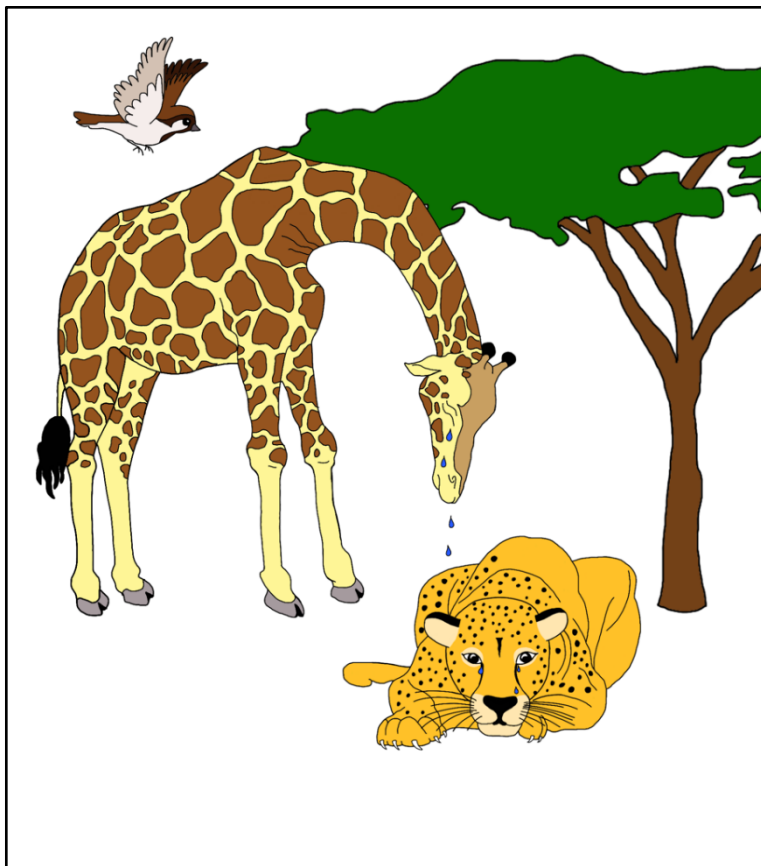
Carnivores	<u>E</u> ndangered
Claws	Diurnal
2	3000
Fastest	110
Tear marks	60
Cubs	Coalitions
Africa	Sun



1.2 How the Cheetah Got Its Spots

A very long time ago when the Earth was first created, all the animals came down onto the savannah. A sniffing cheetah searched around looking for friends of its own kind. Not having found any other cheetahs, it sat down next to a giraffe and said: "I have been crying for a long time because I am lonely. Look at my beautiful face, the tears have burnt marks on my fur." The giraffe, seeing how sad its new cheetah friend was, also began to cry. As a result, the giraffe's tears fell onto the cheetah and burnt spots on its coat. A flying bird stopped on the camel thorn tree next to them and chirped: "I have travelled throughout this land and you, cheetah, are the most splendid and unique of all the cats I have seen." Ever since that day, the cheetah has had spots and started chirping like a bird, because thanks to its new friends, it was now proud of being different and the most unique of all cats.

After reading this tale, create your own story about an African animal adaptation. Here are some examples you could use: how did the elephant get its trunk, the camel its humps, or the zebra its stripes?



1.3 Cheetah Adaptations

Connect the adaptations in each box to the correct location on the cheetah's body!

Long heavy tail: Allows sharp turns while running and acts as a boat rudder to provide balance for the cheetah.

Flexible Spine: Allows the cheetah's body to stretch while running which also increases its stride length so it can run far in only a few steps.

Small, streamlined head: decreases friction from the air, which allows the cheetah to run faster.



Semi-retractable claws: The claws are always out which allows for better traction on the ground.

Enlarged heart and lungs: Allows the cheetah to get oxygen and avoid getting tired when running.

Long leg bones: Increases stride length so the cheetah can run far in a few steps.

Light skeleton: Decreased body weight allows the cheetah to move faster.

1.4 Genetic Diversity

Genetics is the study of how traits are passed down from one generation to the next. More diversity of traits in a population, also known as *genetic diversity*, allows those animals to adapt to a changing environment and to survive. Endangered species, like the cheetah, have low genetic diversity, making them more susceptible to changes in their environment.

Activity: Collect 25 objects to represent the 5 cheetah traits listed. (5 different colors, 5 objects per color). Put your 25 objects in a container (like a bottle. With your eyes closed, choose 10 of them randomly. Record the numbers you get in the table.

Genetic Characteristic	Color	Number of objects
Camouflage		
Precise vision		
High speed		
Healthy rate of reproduction		
Large teeth		

- Describe your new cheetah population based on the genetic variants you have. For example, does your population have precise vision and/or a healthy rate of reproduction?
- Would your population struggle or survive in an environment where the prey run faster?
- Does your population have the genetic variant for camouflage to avoid human contact? If yes, they survive.



Chapter 2: Ecology

2.1 What is a Habitat?

All living things need a home, or *habitat*, in which to live and find the resources they require to survive. Humans also have habitats: this includes the entire environment that we come in contact with, not just one's house. Animals generally have resource requirements found in specific habitats based on their unique physical and behavioral adaptations. As resources change over time, they directly impact animal populations within the habitat. For example, during a good rain year, habitat resources would be abundant and both herbivore and predator populations would thrive.

A habitat provides the four basic resource needs that all animals share:

1. **Food** supplies energy needed to live.
2. **Water** also supplies energy to live.
3. **Shelter** protects from the weather and provides a safe place to raise young.
4. **Space** to find food, water, and shelter.

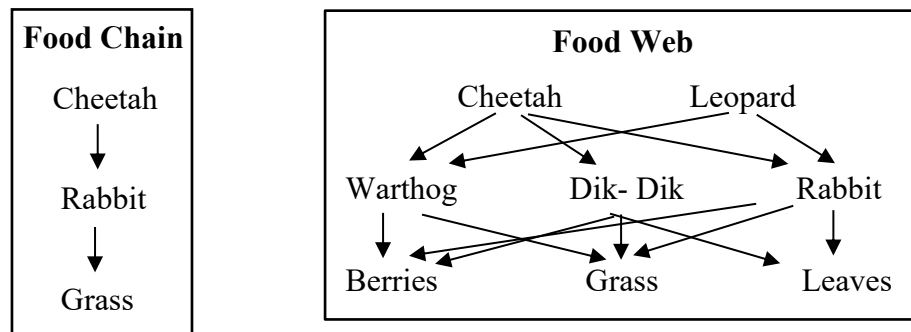


Answer the questions below:

1. If another predator is introduced to a cheetah's habitat, what do you predict would happen to the cheetahs' population?
2. How might we humans affect changes in wildlife populations? Hint: think about both predators and prey.
3. What are some of the "limiting factors" that affect the survival of animals?

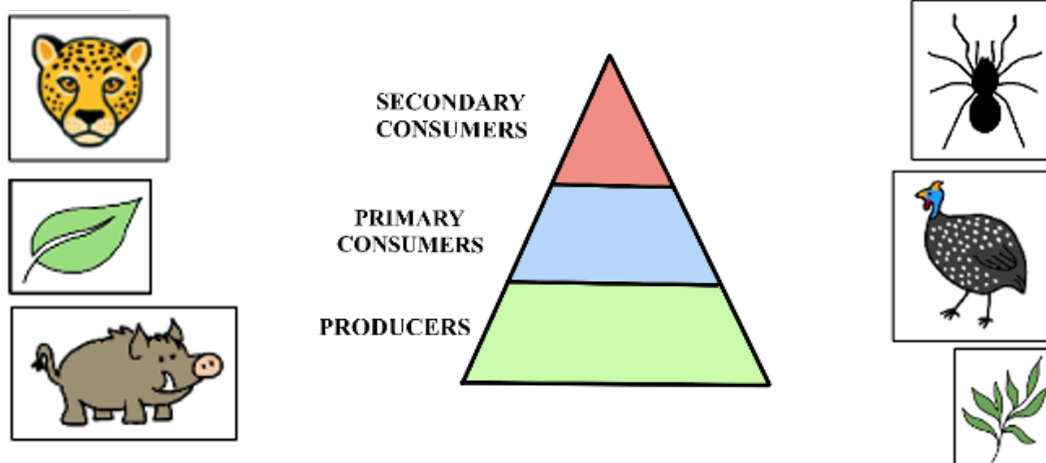
2.2 Food Chains

Every animal needs to eat food to get energy. *Food chains* illustrate some examples of an organism's energy sources. A *food web* is more complicated and takes into account all sources of energy between organisms in a specific habitat.



A *food pyramid* shows the relative number of each organism. Plants use the sun's constant energy and are called “**producers**”. Producers are the base of the pyramid because they are the most abundant and provide the most energy. Moving up the pyramid, each new level is smaller because most of the energy is lost as heat. Above producers are the “**primary consumers**” which are *herbivores* that eat plants. The top of the pyramid contains the “**secondary consumers**,” which are the *carnivores*, like the cheetah, that prey on herbivores.

Draw a line connecting each organism to its correct category on the food pyramid.

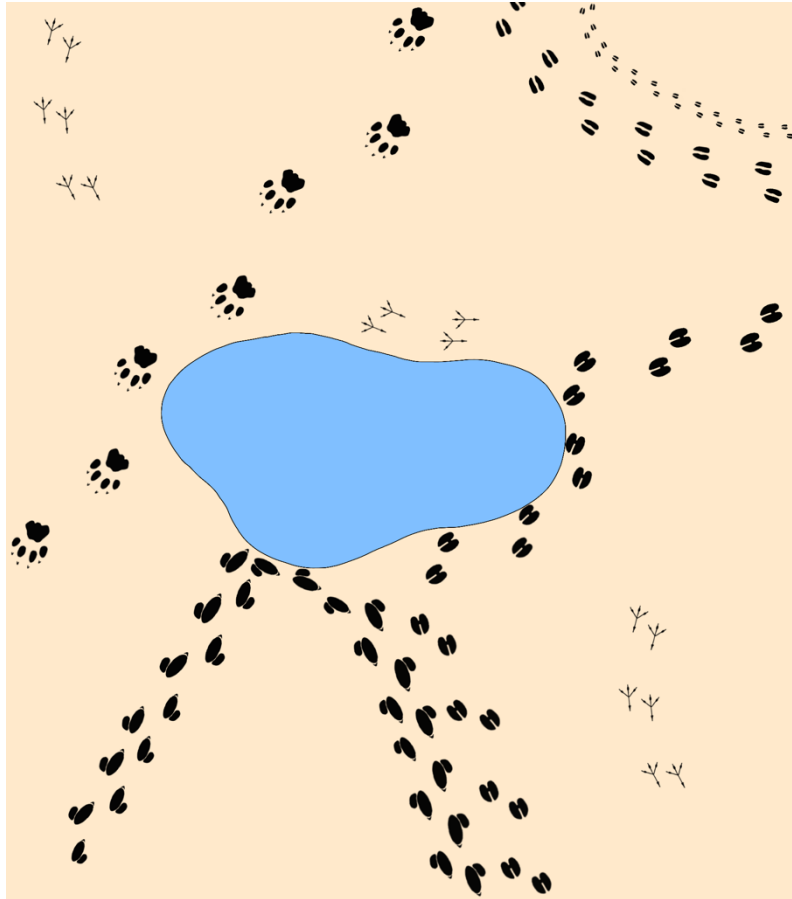


When plants and animals die, organisms known as decomposers (insects, fungi, bacteria) recycle the dead organisms and turn them back into nutrients and soil that feed the plants. The energy cycle can now start over! Removing an organism from the pyramid breaks the balance of nature. This is why big cats like cheetahs play an important role in the energy cycle and need our protection.

2.3 The Story Animal Tracks Tell

The footprints animals leave in the dirt, sand, or mud are called *tracks*. Tracks can help you learn which animals are nearby and how many there are. As a result, tracks tell stories. By looking at tracks, you can determine what an animal was doing, for example, if it was walking or running.

*The drawing below is a top-down view of a waterpoint that many animals visit.
Answer the following questions:*



1. What track belongs to which animal?

Hint: a guinea fowl, a camel, a cheetah, an ostrich, and warthogs visited the waterpoint.

2. For what reasons, other than drinking water, would animals visit a water point?

3. What story do the tracks of each animal tell you? What was the animal doing?

Chapter 3: Agriculture and Conservation

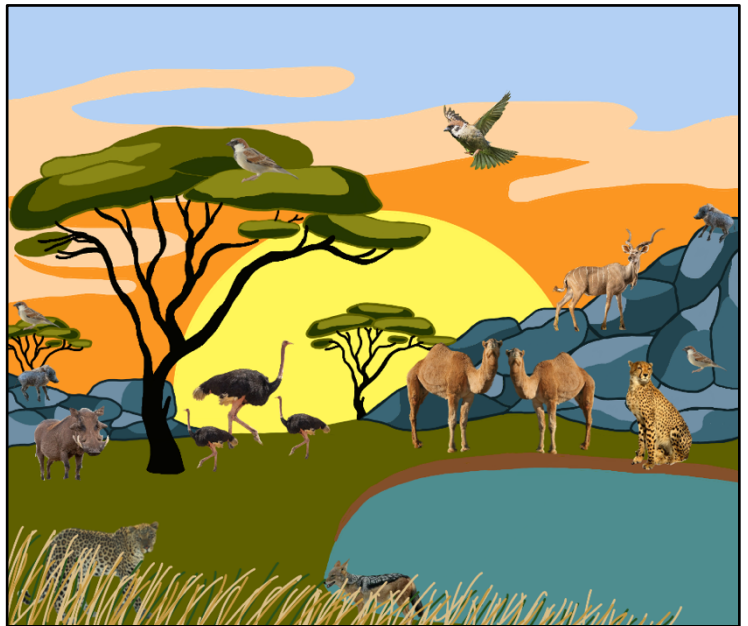
3.1 What is Extinction?

Species are *endangered* when there are few individuals left. Endangered species, like the cheetah, are at risk of extinction if they aren't protected. *Extinction* is the complete disappearance of a species from Earth. Species can also become *locally extinct*, meaning that they are no longer found in an area where they used to live.

Unfortunately, there are many species that can no longer be found in Somaliland, such as the Swayne's Hartbeest and the Beisa Oryx.



Find the 15 differences between these two drawings:



Did you notice that the drawing on the right has less cheetahs?

It's because the cheetahs are endangered. Reasons why cheetahs are endangered are habitat loss, decreases in prey species, and conflicts with livestock farming. Understanding why species become endangered can help us humans change our actions and prevent their extinction.

3.2 Cheetah Map

Map of Africa



Country	Number of Cheetahs
Algeria	50
Angola	200
Benin	30
Botswana	1500
Burkina Faso	30
Cameroon	0
Central African Republic	50
Chad	200
Democratic Republic of Congo	0
Ethiopia	500
Kenya	500
Malawi	20
Mali	0
Mauritania	500
Mozambique	20
Namibia	1500
Niger	30
Somalia	100
Somaliland	100
South Africa	500
South Sudan	300
Tanzania	1000
Uganda	50
Zambia	30
Zimbabwe	250

*Note: This information is from a 2018 census.
These numbers are lower today.

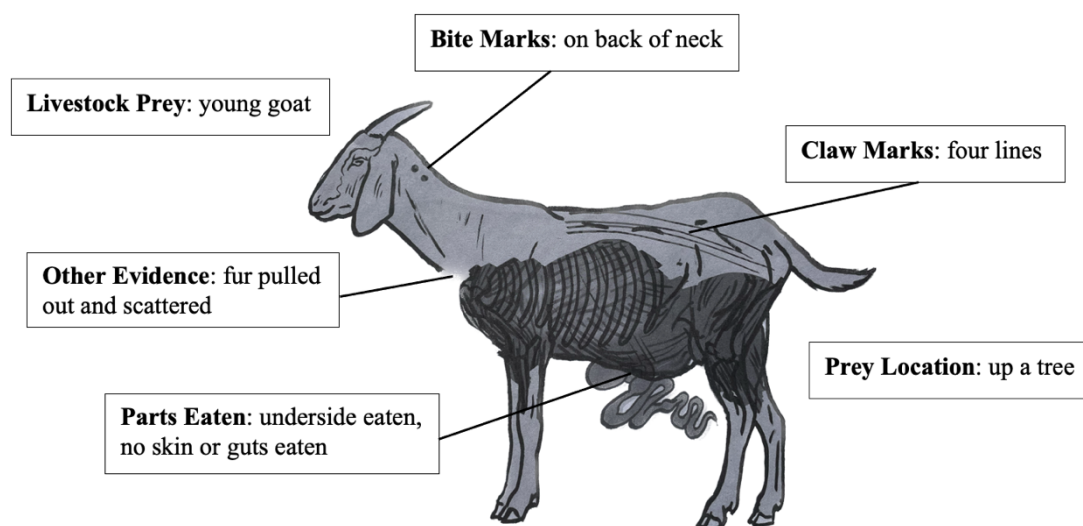
Using the information in the table, answer the following questions.

1. Which country in Africa has the highest population of cheetahs?
2. On the map, shade in all the countries that have cheetahs.
Circle the countries where cheetahs went extinct (0). Make darker shade where there are over 1000 cheetahs.
3. **H**ow many countries did you shade in? Wild cheetahs used to live throughout Africa, but now only reside in these few countries.
4. Cheetah numbers are decreasing each year. What are some reasons for this decline?




3.3 Human-Wildlife Conflict

Farmers perceive cheetahs as having an excessive economic impact on their livestock, but research indicates that less livestock is taken by cheetahs than is thought. Complete the activity below to learn more about how animals kill prey and how a farmer can use clues to determine how their livestock died.

Who Killed My Goat?



Use the information in the table to determine which animal killed the goat in the image.

Species	Prey Location	Livestock Prey	Claw marks	Bite Marks	Parts Eaten	Other Evidence
Domestic Dog	Anywhere	Young sheep and goats	None	All over body	Not much eaten	Wool, fur, skin is scattered
Spotted Hyena	Anywhere	Young and adult cows	None	None	Everything is eaten, even bones	Messy carcass remains
Cheetah	Under a tree, in the shade	Young sheep and goats, cows younger than 6 months		On throat	Bowl made in body cavity	Does not eat skin or guts
Leopard	In a tree or hidden well	Young sheep and goats, cows younger than 9 months		On back of neck	Underside eaten	Wool and fur scattered, does not eat skin or guts
Caracal	Under a tree, in the shade	Young sheep and goats		On back of neck	Underside, belly, rump	Wool and fur scattered, does not eat skin or guts, red hair left behind

3.4 Friendly Dogs

In many countries, dogs are referred to as “man’s best friend”. If dogs are aggressive and try to bite, it is often because they are afraid. If you treat them right and don’t harm them, dogs will trust you and behave nicely. Being good to dogs has many benefits: they are very loyal and protect their owners from danger. Also, predators like leopards can smell a dog’s presence and won’t prey on your livestock if a dog is near.

Calculate the number each dog below represents, then solve the equation:

$$\begin{array}{c} \text{Dog 1} \end{array} + \begin{array}{c} \text{Dog 1} \end{array} + \begin{array}{c} \text{Dog 2} \end{array} = 25$$

$$\begin{array}{c} \text{Dog 2} \end{array} - \begin{array}{c} \text{Dog 3} \end{array} + \begin{array}{c} \text{Dog 1} \end{array} = 14$$

$$\begin{array}{c} \text{Dog 3} \end{array} + \begin{array}{c} \text{Dog 3} \end{array} + \begin{array}{c} \text{Dog 3} \end{array} = 3$$

$$\begin{array}{c} \text{Dog 1} \end{array} \times \begin{array}{c} \text{Dog 2} \end{array} - \begin{array}{c} \text{Dog 3} \end{array} = ?$$

3.5 Farmers and Cheetahs Living Together



Cheetahs have adapted to live outside national parks and protected areas due to the absence of other large predators and the increased availability of water and prey. Farmers may indiscriminately capture cubs or kill adult cheetahs; however, this removes an important predator from the ecosystem. We need predators to maintain healthy ecosystems, and without rangeland, most wildlife species would go extinct. This is why it is important for farmers to implement good livestock management practices and **p**redator control methods in a non-lethal manner.

On the left are common problems farmers face and on the right are management techniques farmers can use. Match each problem with its solution.

Carnivores have access to domestic livestock during kidding time.

Herders have seen cheetah tracks near the kraal.

Cheetahs are seen around the flock.

Over grazing of the range land by livestock has reduced the numbers of wildlife which is prey for predators.

Think of some other problems farmers may face when it comes to cheetahs.

Herder needs to be more alert to the flock and not leave it alone. The use of a livestock guarding dog could help

Increase human presence, integrate dogs, and make small cooking fires close to kraal during livestock birthing times to keep predators away.

Keep a few older cows that have horns with the calves to protect them.

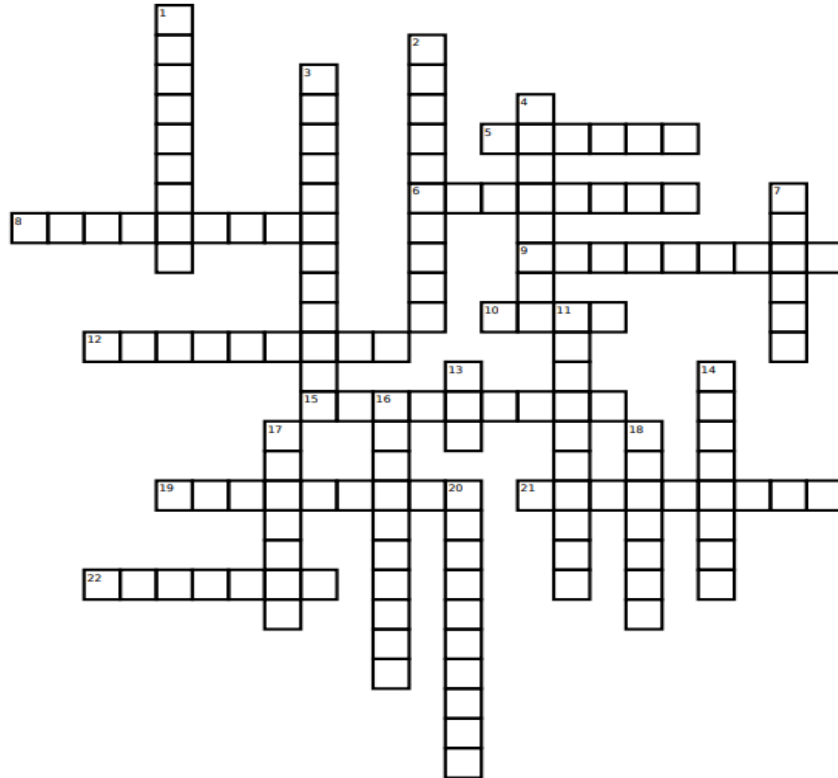
Promote wildlife repopulation on the range lands areas with larger wildlife populations experience fewer predator problems.

Think of some other solutions farmers can use to control cheetahs.

Chapter 4: Conclusion

4.1 Test Your Vocabulary

Complete the crossword puzzle below. Use the vocabulary you have learned to fill in the blanks for each definition.



Down:

1. The community of living and non-living things working together in one area.
2. An organism, like insects, fungi, and bacteria, that recycle dead organisms and turn them back into nutrients and soil to feed plants.
3. Protecting wild animals and plants in their natural habitats for future generations.
4. A living thing, like a plant, that makes its own food by using soil, water, air, and sunlight.
7. A large continent where many animals and people live.
11. When an animal is at risk of extinction because there are not many left.
13. The name given to a baby cheetah, leopard, or hyena.
14. An animal that eats meat and plants.
16. When animals blend in to their surroundings so they are not seen by other animals.
17. A large, spotted cat found in parts of Africa. It is the fastest animal on land.
18. The environment of a living thing that that gives it food, water, shelter, and space.
20. When an animal dies out and can no longer be found.

Across:

5. the footprints animals leave behind in the dirt, sand, or mud.
6. an animal that hunts and kills other animals for food.
8. an animal that feeds on dead animals.
9. an animal that eats meat.
10. an animal that is hunted for food.
12. a group of male cheetahs that live together.
15. animals that are active and hunt during the night.
19. a small body of water used by animals for drinking, socializing, hunting, and other activities.
21. an animal that eats plants.
22. animals that are active and hunt during the day.

4.2 How Can You Help Save the Cheetah?

Search through all the previous pages in the book and look for any bolded and underlined letters. Write the letters below in the order you find them to uncover a secret message!

— — — — —

Here are some things you can do to help save the cheetahs:

Learn more about cheetahs and other predators.

Start your own conservation club at school.

Teach your friends and family about cheetahs.

Protect cheetah habitats and conserve their prey species.

Learn about the laws that protect cheetahs.

Express how you feel about cheetahs in art and writing.

Encourage farmers not to trap or kill cheetahs.

Support wild animals living in the wild, not as pets.

You can make a difference!

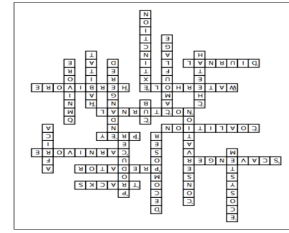
What is your plan to help save the cheetahs?

4.3 Answer Key - Turn page up-side-down

What is a Cheetah? (p. 4)

- 3000
- Tear marks
- Diurnal
- Sun
- Claws
- Africa
- Cubs
- 2
- Coalitions
- Fastest
- 110km/h
- Carnivores
- 60kg

- What is a Habitat? (p. 8)**
1. If another predator is introduced into the cheetah's habitat, it will compete with the cheetah for resources (shelter, food, water, and space). As a result, cheetah numbers would likely decline.
 2. Humans can effect change in both predator and prey populations. We can limit our impact on wildlife by not capturing or killing wild animals.
 3. Limiting factors include the amount of prey/food, space, water, and shelter an animal has.



Test Your Vocabulary (P.16)

Promote wildlife repopulation on farms because farms with larger wildlife populations experience fewer predator problems.

Electrify the fences and barb the lower wires to prevent warthogs from digging holes.

Increase human presence, integrate dogs, and make small cooking fires close to kraal during calving times to keep predators away.

Keep a few older cows that have horns with the calves to protect

Overhunting wildlife to provide more grazing area for cattle has caused predators in the area to hunt your livestock.

Cheetahs are crawling through warthog holes under your fence and eating young hartebeest in your game farm.

Farm workers have seen leopard tracks near the kraal.

Carnivores have access to domestic livestock during calving time.

Farmers and Cheetahs Living Together (p. 15)

1. Namibia
2. Shade in Sudan, Ethiopia, Kenya, Tanzania, Namibia, Zimbabwe, Botswana, and South Africa
3. 8
4. Cheetah numbers are declining due to habitat loss, poaching, drought, illegal pet trade, and many other factors that limit their ability to survive in the wild.
5. Somaliland has 100 cheetahs. This is much less than most other countries. This is why cheetahs really need our help!

Cheetah Map (p. 12)

1. Namibia
2. Shade in Sudan, Ethiopia, Kenya, Tanzania, Namibia, Zimbabwe, Botswana, and South Africa
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4. Cheetah numbers are declining due to habitat loss, poaching, drought, illegal pet trade, and many other factors that limit their ability to survive in the wild.
5. Somaliland has 100 cheetahs. This is much less than most other countries. This is why cheetahs really need our help!

Food Chains (p. 9)

Secondary Consumers – Cheetah, Spider
Primary Consumers – Warthog, Guinea fowl
Producers – Plants

Friendly Dogs (p. 14)

10 = 10
5 = 5
? = 49
1 = 1

Human-Wildlife Conflict (p. 13)

A leopard killed my goat.

How Can You Help Save The Cheetah? (p. 17)

Secret message: Cheetahs need our help



What is Extinction? (p. 11)

The Story Animal Tracks Tell (p. 10)

1. Animals visit a waterhole primarily for drinking water and socialization with other animals. Predators may go to waterholes to find and hunt prey. Herbivores may go to waterholes to find more plants to eat. Some animals may even swim in the water to cool down on a hot day.
2. A cheetah took a drink from the waterhole. A Guinea fowl was walking around looking for food. A mother warthog and her baby walked near the waterhole, but decided it was too dangerous to go all the way. A camel and an ostrich took a drink and walked away as friends.
3. A cheetah took a drink from the waterhole. A Guinea fowl was walking around looking for food. A mother warthog and her baby walked near the waterhole, but decided it was too dangerous to go all the way. A camel and an ostrich took a drink and walked away as friends.

