



SCHOOL EXPLORERS CURRICULUM

GRADES 3 - 4

SCHOOL EXPLORERS

CURRICULUM OVERVIEW

NGSS ALIGNMENT

3-LS2-1: Construct an argument that some animals form groups that help members survive.

3-LS4-2: Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

4-LS1-1: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

OBJECTIVE

Students will be able to show an understanding that living things interact with their environment using their adaptations.

MATERIALS

For chaperones:

- Tour pages
- Student activity instructions
- Map (optional)
- Bingo (optional)

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TEACHER GUIDE

HOW TO USE CURRICULUM PACKET

In this curriculum, you will find a *Chaperone Guide* for a self-led tour and activities. Make copies depending on your chaperone headcount. Students do not need any copies of the materials, however, you may print individual bingo sheets for students if you prefer.

Self-Guided Tour

Assign chaperone groups. Each chaperone will be able to lead the group using their Chaperone Guides. The headings on each page indicate the section of the zoo that correlates to where the tour is. There are talking points for certain enclosures, denoted by the subheadings named after the animal. For the talking points, there are italicized questions to spark discussions that can be led by each chaperone. Underlined words can be found in the Glossary.

Using the Map

Attached is a map with marked locations of the tour. The map includes dashed lines to indicate suggested walking paths. Numbered and starred locations, also referenced in the self-guided tour, denote enclosures with provided talking points. Some enclosures are multispecies habitats meaning there may be multiple animals for each star. You may print a map for each chaperone, or just use the written tour.

Facilitating the Activities

In this packet you will find two activities along with reflection questions. The chaperone-led activities are movement and observation based. Activity #1 should be done after the tour in an open space to allow for movement, while Activity #2 can be done during the tour. We recommend Village Watutu, the open space by African Aviary, Gecko Gulch, and the open space at Wild Prairies.

At the end of the of the guide, you will find reflection questions. Encourage your chaperones to engage students in discussion.

TEACHER GUIDE

FIELD TRIP SCHEDULE

Use the space below to plan your itinerary.

TIME

ACTIVITY

LOCATION

CHECKLIST

Item

Count

Item

Count

☐
☐
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SCHOOL EXPLORERS

CHAPERONE GUIDE

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INSTRUCTIONS

Included in this booklet is a map of the path you will be taking with your group, marked with a **dashed line**. As you move through the park, refer to the Guided Tour Pages for talking points. The **stars** on the map indicate enclosures you will stop at. Some enclosures have multiple species. Refer to the numbers on the guided tour for those stops as there may be duplicate numbers. If something is in **italics**, it is a question to lead a discussion.

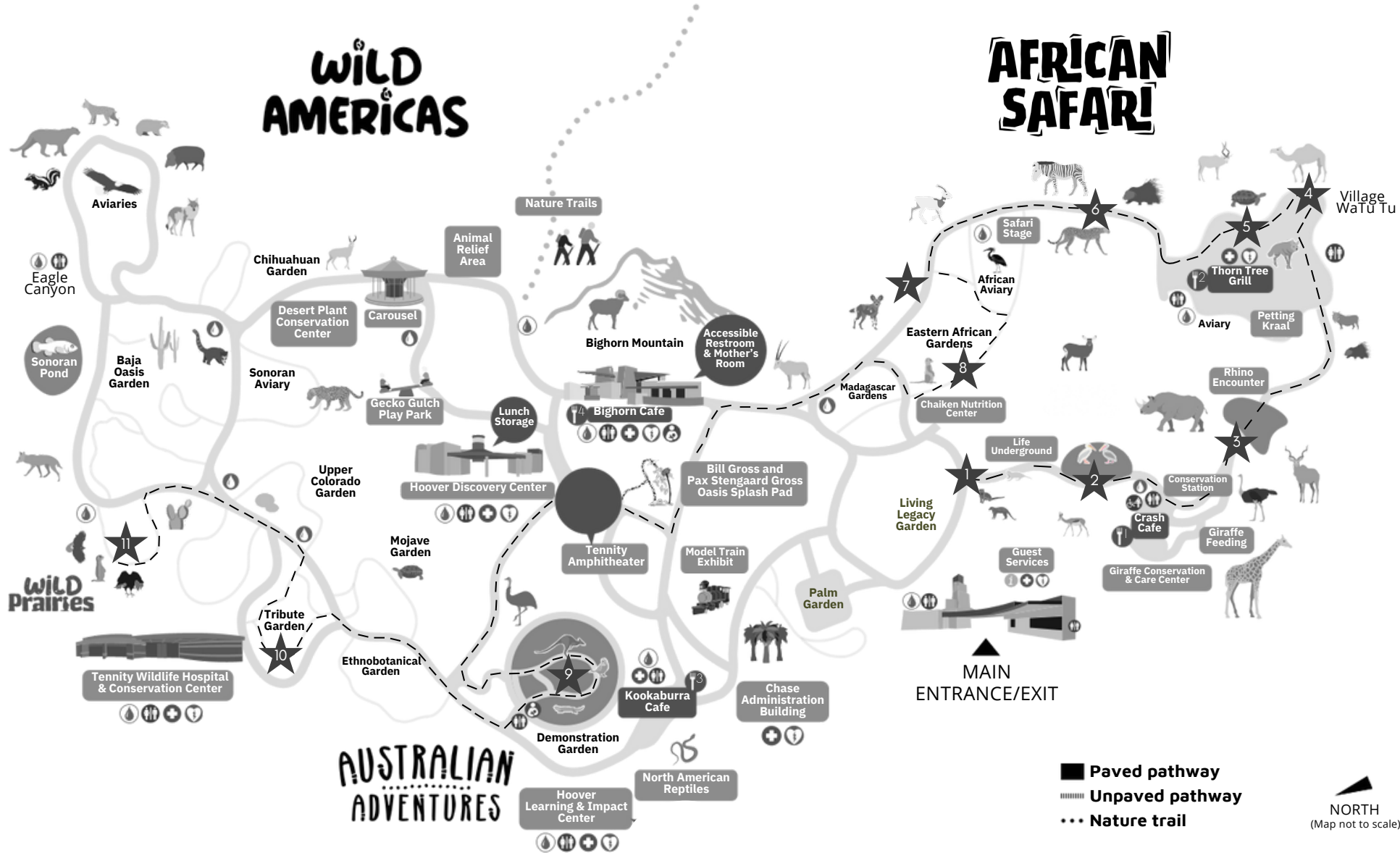
Underlined words can be found in the glossary.

To complete **Activity 1**, find an open space to complete and allow 15 minutes at the end of the guided tour. **Activity 2** can be done as you move through the park on the self-guided tour.

MY GROUP

List your student group's names below.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____



FOOD & DRINK:

- 1 **Crash Cafe*** - Specialty coffees, snacks, soft-serve, beverages, and draft beer.
- 2 **Thorn Tree Grill*** - Freshly-made burgers, hot sandwiches, salads, soft drinks, beer, and wine.
- 3 **Kookaburra Cafe*** - Made to order pizza, pasta, salads, snacks, soft drinks, beer, and wine.
- 4 **Bighorn Cafe** - Asian and Southwest inspired rice and noodle bowls, sandwiches, pizzas, smoothies, snacks, beer, wine, and more!

*Closed for Summer

GUEST SERVICES:

- i Information | Lost and Found
- Stroller/Wheelchair/ECV Rentals
- Restrooms
- Adult Changing Table
- First Aid Station
- Mother's Room
- Drinking Fountain
- Water Bottle Refill Station
- Automated External Defibrillator (AED)

THE SAVANNAS

THE SAVANNA

BIG IDEA: The savannas are warm with a wet season. They have continuous grass cover with some trees and shrubs, but low soil fertility.

Ask: What do you notice about the plants and land shown in the enclosures?

- African savannas are warm year-round and have two main seasons: a rainy season and a dry season.
- There are different types of savannas, such as wet savannas, dry savannas, and thornbush savannas, depending on how much rain they get.
- The soil in savannas doesn't have many nutrients, so it can be hard for new plants to grow.
- People use savannas for farming and raising animals like cows and goats.
- If too many animals eat in one area for too long (called overgrazing), it can damage the land.
- When land is damaged like this, it can become more like a desert, a process called desertification.
- One way to help protect the land is to rotate where animals graze, giving plants time to grow back.

DWARF MONGOOSE

1

BIG IDEA: Individuals in a group can have different roles.

Ask: What do you think might happen if some animals had to do everything on their own, like finding food or taking care of babies?

- In dwarf mongoose groups, everyone has a job to do! These animals live in matrilineal groups (ma·truh·lin·ee·uhl), which means the oldest female is the leader or boss of the group.
- Only the dominant female, the leader, and her mate (the second-in-command) are allowed to have babies.
- The rest of the group is made up of non-dominant adults and newcomers. They have important roles, too. They help take care of the young by babysitting, grooming, and feeding them. Sometimes, even other females help nurse the pups.
- Dwarf mongooses are also very protective of their territory. If they meet another group near the edge of their home, they may become aggressive to defend their space.

THE SAVANNAS

CROWNED CRANE

2

BIG IDEA: Some animals have showy features or perform different things like dances to attract a mate.

Ask: Some animals have colorful or showy traits, and some perform to attract mates. Why do you think some animals perform special behaviors to attract a mate?

- Crowned cranes use dancing to attract a mate. Both males and females take part.
- Their dance includes head-bobbing, leaping, bowing, fluttering wings, running with wings open, and short, low flights.

GIRAFFE

3

BIG IDEA: Some animals live in groups and help raise their young.

Ask: Giraffes raise their young in groups. How do you think this helps them?

- Giraffes often live in groups, and it is usually the females who stay together, especially if they are related.
- When giraffe calves are young, they are sometimes left in nursery groups. In these groups, adult females take turns watching over the calves, not just their own.
- Some females will even nurse calves that are not theirs. This shared care is like having babysitters who also help feed the babies.
- These behaviors help protect the young from predators and allow mothers to share the work of raising their calves.

📍 THE SAVANNAS

GREATER KUDU

3

BIG IDEA: Animals that live in groups can communicate possible threats to one another.

Ask: Kudus are large antelopes that have good communication. What do you think greater kudu might do to communicate danger to the rest of the group?

- Kudus have an excellent sense of sight and smell, and they communicate in different ways, including by using scent, sounds, and body movements.
- They use scent to follow the tracks of other kudus, even from far away.
- If there is danger nearby, a kudu may lift its tail to show the white underside. This helps alert others that something is wrong.
- Kudus can also make many sounds, like barks, grunts, bleats, and whimpers. These can be used to attract mates or to warn the group about predators.

📍 VILLAGE WATUTU

CAMEL

4

BIG IDEA: Camels have many traits you can and can't see that help them deal with the sun, sand, and lack of water in the desert.

Ask: Camels live in sandy deserts that can get really hot during the day, and really cold at night. What do you think camels have to do to stay safe and healthy in the desert?

- Camels live in hot, sandy, and sometimes very windy deserts.
- To survive in this tough environment, camels have special body features called adaptations.
- Their feet, knees, elbows, and chest have thick, leathery skin to protect them from the hot sand.
- Camels have long eyelashes and can close their nostrils. This keeps sand out of their eyes and nose during wind or sandstorms.
- Deserts can be very hot during the day and very cold in the winter. Camels grow thick fur to stay warm in winter, then shed it before summer to stay cool.

📍 VILLAGE WATUTU

AFRICAN SPURRED TORTOISE

5

BIG IDEA: Animals have traits to defend themselves, like the African spurred tortoise.

The African Spurred Tortoise is an herbivore. How do you think herbivores protect themselves from predators?

- African spurred tortoises are named after the spurs, or spikes, on their legs.
- They also have long, pointed scales on their front legs.
- These strong front legs help the tortoise dig burrows to stay cool underground.
- When threatened, the tortoise pulls into its shell and uses its spiked legs to block the entrance.
- The spurs and scales help protect the tortoise from predators by making it hard to reach its softer body parts.

📍 AFRICAN SAFARI

CHEETAH

6

BIG IDEA: Some animals have special adaptations that make them strong hunters.

What do you think makes a cheetah so fast?

- Cheetahs are the fastest land animals and can run up to 80 miles per hour to catch prey.
- They have long legs and a flexible spine, which help them take big strides when they run.
- Their long tail helps with balance while turning at high speeds.
- Unlike most cats, cheetahs have claws that don't fully retract. This gives them better grip while running.
- Their paw pads are rough, like tire treads, to help them not slip.
- Cheetahs also have large lungs and hearts, which help pump lots of oxygen and energy through their bodies during a sprint.

📍 AFRICAN SAFARI

AFRICAN PAINTED DOG

7

BIG IDEA: Some animals share responsibility like hunting, raising their young, and caring for the sick.

Ask: *Why might it be important for animals to work together when hunting?*

- African painted dogs live in very close packs where everyone works together.
- When pups are born, the whole pack helps care for them.
- When it's time to hunt, the pack works as a team to chase and catch prey. If there are pups, an adult will stay behind to protect them.
- In the past, people blamed African painted dogs for killing livestock, which caused a lot of conflict, or problems, between humans and dogs.
- To help reduce this problem, some people now use domesticated dogs to protect livestock from wild predators. These programs help keep both people and animals safe.

MEERKAT

8

BIG IDEA: Individuals in a group share responsibility for defense, raising young, etc.

Ask: *Why do you think it could be important for animals to have different jobs?*

- Meerkats work together and share different responsibilities every day.
- In the mornings, they come out of their burrows and use their strong sense of smell to find food.
- Some meerkats act as babysitters, guarding the pups while the others search for food.
- A couple of meerkats take on the role of the sentry. They climb to a high point, like a rock or tree, to watch for predators.
- If they spot danger, they give a high-pitched squeal to warn the rest of the group.

AUSTRALIAN ADVENTURES

AUSTRALIA

BIG IDEA: Australia has many climates, including an arid desert with high temperatures in the summer.

Ask: Take a second to look around. What do you notice about the plants, rocks, and animals in this enclosure?

- Australia has many different climates, including tropical rainforests and dry deserts.
- Desert parts of Australia get very little rain and can be extremely hot in the summer.
- The soil in these areas has low nutrients, which makes it harder for big plants to grow.
- Many Australian soils look red because the rocks in the area have a lot of iron.

KOOKABURRA

9

BIG IDEA: Some animals have special adaptations that help them feed and be strong predators.

Ask: How might a kookaburras large beak help it survive?

- They are aggressive hunters and use special techniques to quickly catch their prey.
- Kookaburras have excellent eyesight, similar to falcons, which helps them spot prey from a distance.
- Kookaburras eat a variety of animals, such as insects, spiders, small reptiles, and even some venomous snakes.
- They have strong neck muscles that help them build the strength needed to hunt.
- Their heavy beaks are about the same length as their heads and give them the power they need to catch and hold onto their prey.

📍 AUSTRALIAN ADVENTURES

BUDGERIGAR

9

BIG IDEA: Prey species may rely on each other when feeding, fleeing danger, etc.

Ask: *Why do you think some animals travel in large groups?*

- Budgerigars (a.k.a. budgies) live in flocks, meaning they do many things together, like feeding and staying safe.
- Budgies often migrate in small- to medium-sized flocks, but when there is plenty of food, they can form flocks of thousands.
- When one budgie finds food, others in the flock will follow and gather at the same spot.
- As prey species, budgies are always on the lookout for danger. If one budgie gets scared or sees a predator, it will fly away, and the rest of the flock quickly follows.
- Budgies also vocalize together—when they feel safe, they make noise, but they become quiet if they sense a threat nearby.

📍 TRIBUTE GARDEN

POLLINATORS

10

BIG IDEA: Some pollinators work together to survive.

Ask: *Why do you think some pollinators like bees live in larger groups?*

- Bees live in colonies, where every bee has a job.
- The queen lays eggs, workers gather food, and drones mate.
- Living in groups helps them protect their hive, find food faster, and raise their young safely.
- Compare with our zoo animals:
 - Meerkats take turns being on lookout and babysitting pups.
 - Mongoose hunt in groups for protection and better success.
 - Painted dogs hunt and raise pups cooperatively.

📍 TRIBUTE GARDEN

POLLINATORS

10

BIG IDEA: Pollinators have special structures that help them survive and pollinate.

Ask: *What special body parts help pollinators do their jobs?*

- Bees have hairy legs that trap pollen, and long tongues to drink nectar.
- Butterflies have mouthparts like a straw, called a proboscis (proh·bos·kis), to help them reach deep into flowers for nectar.
- Hummingbirds have fast wings, narrow beaks and long tongues to drink from tube-shaped flowers.
- Compare with our zoo animals:
 - Cheetahs have flexible spines, big lungs, and long legs for fast running to catch prey.
 - Camels have long lashes, tough lips, and calluses to help them survive the harsh desert.
 - Kookaburras have strong necks and beaks for hunting prey.

BIG IDEA: Pollinators and flowers adapt to where they live.

Ask: *How do pollinators and flowers differ depending on where they live?*

- In hot deserts, pollinators might prefer to come out early morning or evening to avoid the heat
- Some flowers open at night for moth or bat pollinators! Look for white flowers.
- Compare with our zoo animals:
 - Prairie dogs dig tunnels that help them reach water, food, and homes for themselves and other animals.

BIG IDEA: Differences between pollinators can help them survive and reproduce.

Ask: *How do difference between pollinators help them survive?*

- Not all bees or butterflies are the same. Some may have longer tongues, bigger wings, or are more active at different times of the day.
- These differences can help them reach certain flowers, fly farther to find food, or avoid predators better than others.
- Compare with our zoo animals:
 - Crowned cranes have spikey feathers and those with more elaborate dances might have better chances of finding a mate.
 - Cheetahs with longer strides may be able to catch up to prey more easily than others.

📍 WILD PRAIRIES

THE PRAIRIES

BIG IDEA: The prairies are hot and dry in summer and have many similarities with the savanna climate.

Take a look around. How would you describe the environment shown by this enclosure?

- Prairies are wide, open grasslands with very few trees.
- Summers can be hot and dry, while winters are cold.
- Grasses in prairies are strong and grow in windy, dry places.
- There are different prairie types: shortgrass, tallgrass, and mixed-grass, depending on how much rain they get.

PRAIRIE DOG

11

BIG IDEA: Some animals rely on communication for defense.

How might smaller animals communicate any danger?

- They are peaceful and cooperative, but they can be territorial if needed.
- Prairie dogs have different vocalizations to warn others of different threats.
- They can communicate details like the size, shape, color, and speed of a predator.

BURROWING OWL

11

BIG IDEA: Animals are adapted to live in different areas, like underground.

How do you think burrowing owls have adapted to better survive living underground?

- Burrowing owls live underground, like other burrowing animals, and have adapted to handle higher levels of carbon dioxide in their environment.
- They have long legs, which help them run quickly when chasing prey.
- Their long legs also help them balance their body weight for better movement.

ACTIVITY #1: BUILD AN ANIMAL

ACTIVITY OVERVIEW

Goal/Objective: Demonstrate an understanding of how animals are adapted to survive in specific environments.

Topic Overview: Adaptations, behavior, and climate

Activity Time: 15 minutes

Location: Find an open space for students to move like Gecko Gulch.

Chaperone Materials:

- Page 16 & 17

INSTRUCTIONS

In this game, students will create and act out animals that are best adapted to survive in different environments. The chaperone leads 2 rounds of prompts. In each round, students imagine a new environment and act out their animal's adaptations based on the prompts (complete 8 prompts per animal). After each round, students pair up or get into small groups to respond to real-world survival scenarios for the animal they created.

Chaperone Instructions

Call out each of the following prompts one at a time, choosing one of the bolded words when applicable. Students will respond by acting out how their imaginary animal would move, behave, or survive based on the prompt. Then have students get into partner or small groups to showcase how they would survive.

PROMPTS

1. Your animal lives in the [**desert / mountain / grassland / forest**]. How would it move around? Would it climb, crawl, fly, or run? Show me!
2. You are a [**bird / mammal / insect**]. What makes you special? Show me your wings, legs, fur, antennae-- whatever makes your animal unique!
3. In your environment, you face [**extreme heat / cold nights / strong winds / drought**]. How does your animal handle this challenge? Show me how you stay safe or comfortable!

ACTIVITY #1: BUILD AN ANIMAL

PROMPTS CONTINUED

4. Your animal mostly eats **[insects / fruit / small rodents / bark / grasses / nectar / leaves / cacti / carrion (dead things)]**. Show me how you find or catch your food. What special body parts do you use?
5. What physical features help your animal survive? Do you have long legs, wings, thick fur, scales, armor, or camouflage? Show me how you use them!
6. It's very **[hot / cold]**. How do you **[cool down / warm up]**? Do you burrow, sweat, stay active at night, or grow thick fur? Show me!
7. How does your animal get its food? Do you use strong claws, a long tongue, a sharp beak? Act it out!
8. There's danger nearby. How does your animal stay safe from predators? Do you run, hide, spray, puff up, or do something else? Show me how you protect yourself!

PARTNER OR SMALL GROUP

Directions:

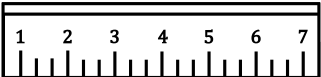
After each round, students get into pairs or small groups. Read each scenario out loud and have students act out their response.

1. There's a predator nearby. Show your partner what you do to stay safe.
2. Suddenly it rains and gets very cold. Show your partner how you keep warm.
3. Food becomes hard to find. Show your partner how you look for new food.
4. There's a drought and not much water. Show your partner what you do to survive.
5. It's very hot, and you need to cool down. Show your partner how you cool off.
6. You need to build a home or shelter. Show your partner where and how you would do it.
7. Your group is migrating to a new area. Show your partner how you move and travel.
8. You see another animal like you. Show your partner how you communicate or greet each other.
9. You've found a big food source. Show your partner how you eat or store the food.
10. Strong winds suddenly blow through your habitat. Show your partner how you stay safe or steady.

ACTIVITY #2: ADAPTATION BINGO

DIRECTIONS

While you're visiting the zoo, try to spot the following adaptations that help animals survive.

 Large ears for hearing or cooling off	 Thorns to protect against herbivores	 Large eyes for better vision
 Larger feet or hooves for support	 A camouflaged animal	 White-tipped tail
 Long eyelashes to keep eyes safe	 Thick skin for protection	 Long claws for digging

REFLECTION

REFLECTION QUESTIONS

Chaperone instructions: Ask each question to your group and discuss solutions.

A bird of prey flies above a mob of meerkats, how does living in a group help them?

Answer: Meerkats have a sentry, which is responsible for warning others of predators by squealing. This allows meerkats to hide from predators.

A sandcat moves quietly through the desert. How does being quiet help the sandcat?

Answer: Being silent makes it harder for prey to hear the sandcat, allowing the sandcat to be a better hunter.

3. During a drought, a camel's thick lips allow it to eat thorny plants that others avoid. How does this help the camel survive when food is scarce?

Answer: Camels can eat tough, spiny plants that other animals can't, which gives them more food options in harsh environments.

4. What was your favorite thing you learned about? Why?

5. What is something new you learned that you are excited to share with your friends and family?

GLOSSARY

GLOSSARY

- **Adaptation:** A special feature or behavior that helps a plant or animal survive in its environment.
- **Arid:** Very dry, with little to no rain.
- **Carnivore:** An animal that eats only meat.
- **Carbon dioxide:** A gas in the air that animals breathe out and plants use to make their food/energy.
- **Climate:** The usual weather in a place over a long period of time.
- **Desertification:** When land slowly turns into a desert, often because of too little rain or too many animals eating the plants.
- **Domesticated:** An animal that has been tamed by people and now lives with or helps humans, like cats, dogs, and goats.
- **Dominant female/male:** The most powerful female or male in an animal group; the leader.
- **Herbivore:** An animal that eats only plants.
- **Matrilineal:** A group where family and leadership are passed down through the female's side.
- **Monogamous:** When an animal has one partner that it stays with to raise its young.
- **Non-dominant female/male:** Animals in the group that are not the leaders and usually follow the dominant one.
- **Nursery group:** A group of young animals that stay together, often with a few adults watching over them.
- **Omnivore:** An animal that eats both plants and meat.
- **Overgrazing:** When too many animals eat in one place, so the plants can't grow back.
- **Pollinator:** An animal that helps move pollen from one flower to another so plants can make seeds or fruit. Examples: butterflies and bees.
- **Prairie:** A large, flat area covered with grass and few trees, mostly found in the Americas.
- **Proboscis:** A long flexible mouth-like part of an insect.
- **Savanna:** A grassy area with few trees, found in warm places like in Africa.
- **Soil fertility:** How healthy a soil is based on if it has enough nutrients to help plants grow.