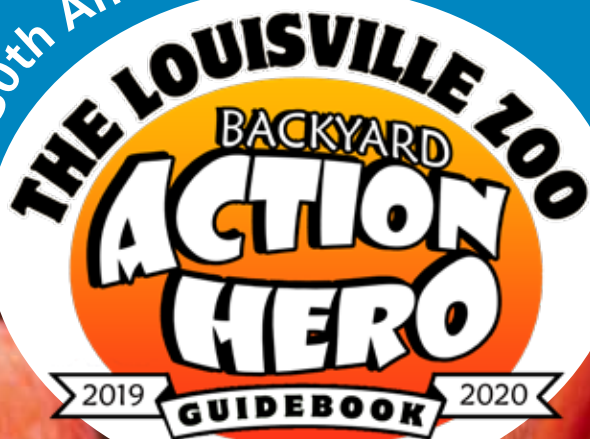
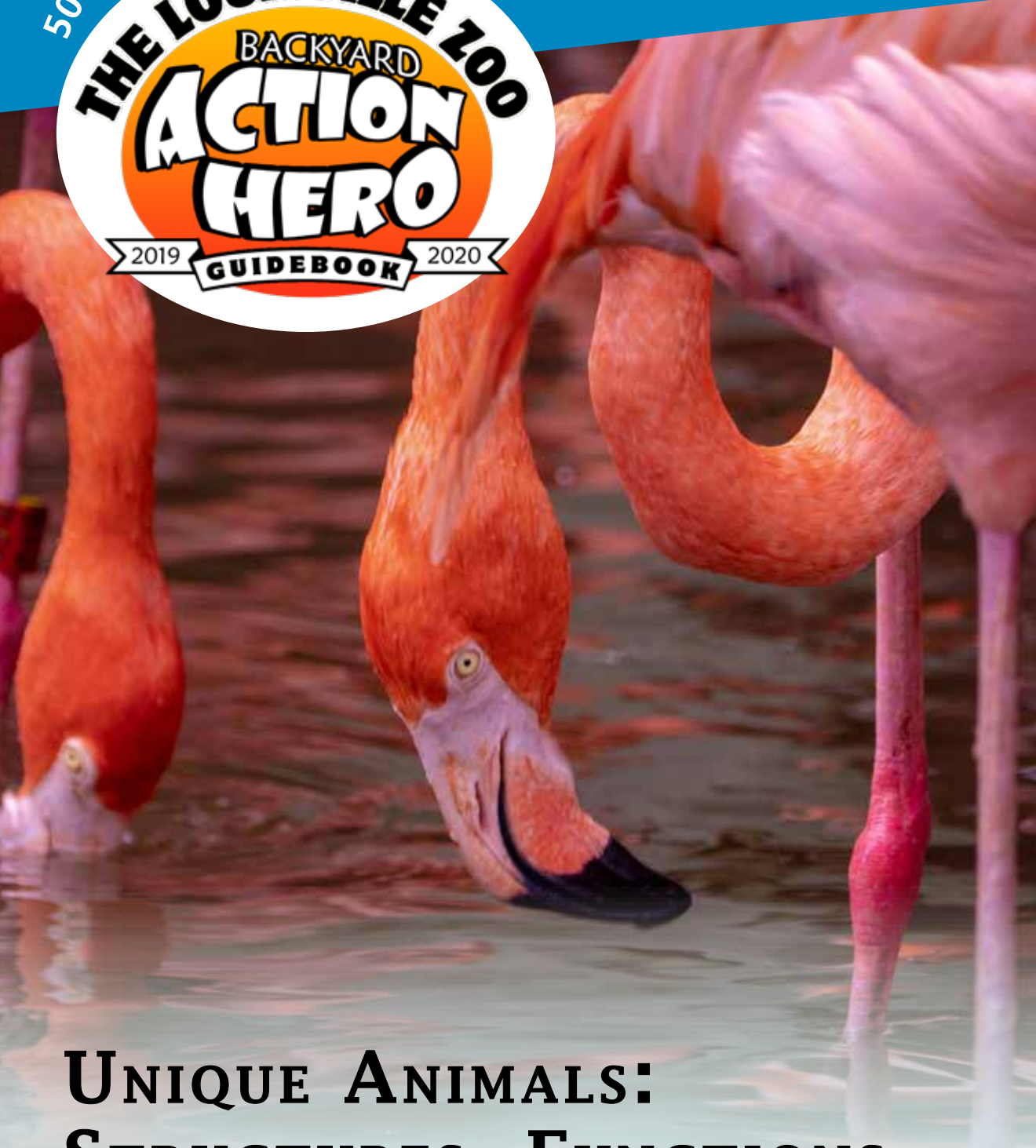


50th Anniversary Edition



LOOK INSIDE!

Activities and articles align with grades 3 – 5 science and English language arts standards.



UNIQUE ANIMALS: STRUCTURES, FUNCTIONS AND ENVIRONMENTS

Presented by

TOYOTA



KENTUCKY

TOYOTA MOTOR MANUFACTURING, KENTUCKY, INC.



What is a Backyard Action Hero?

A Backyard Action Hero is a kid or adult who really cares about nature and wildlife and is ready to take action to protect them. They care about the animals and habitats in their own backyards as well as around the world. They know that to make a difference they not only need to learn, but also to act. This guidebook will help you learn about the natural world around you and how you can help protect our planetary balance. Since the Louisville Zoo is a great place to learn about plants, animals and ways to help our wonderful world, your guidebook will also give you a peek at what's happening at the Louisville Zoo.

Welcome Future Heroes!

At Toyota Motor Manufacturing, Kentucky, Inc. (TMMK), we believe that protecting the environment is part of our mission to be a good neighbor across Kentucky. As we build cars in our plant in Georgetown, we are committed to protecting the environment, following environmental laws, preventing pollution and continuously improving our processes. Our commitment doesn't stop there — and neither should yours! It is everyone's responsibility to protect the environment.

By becoming a Backyard Action Hero, you commit yourself to taking an active step to coexist and learn about nature and wildlife. Once you have learned about some of the things in this book, you will be ready to take conservation action to your backyard and beyond. Good luck Heroes!

Sincerely,

Your Friends at

Toyota Motor Manufacturing, Kentucky, Inc.

TOYOTA



The Louisville Zoological Gardens, a nonprofit organization and state zoo of Kentucky, is dedicated to its mission to “better the bond between people and our planet” by providing excellent care for animals, a great experience for visitors and leadership in conservation education. The Zoo's collections which include botanical gardens are accredited by the Association of Zoos and Aquariums (AZA). The Louisville Zoo is also an agency of Louisville Metro Government.





SPECIAL SPECIES

The world is amazing, isn't it? There are 1.2 million known species of animals sharing our planet and they are all different! When you look outside, you can see all kinds of unique animals.

What makes an animal unique? It could be the way they look, the things they eat, how they move and even how they communicate. When we see the long legs of a flamingo, we see an interesting feature of a unique animal. But, did you know that all animals have unique features or **structures** to help them survive?

A **structure** is anything made up of parts that work together in a specific way. It can be something made by people, like a house, or something natural, like a skeleton. Structures can be internal or external. For example, the trunk of an elephant is an external structure that helps the animal to gather food. All animals have structures that function to help them survive in their environments.

In this issue of Backyard Action Hero, you will learn more about some amazing species and the way their structures function in the places they live. You'll meet animals like the Chilean flamingo and discover how this iconic bird is more than just a big beak and knobby knees. You'll learn about the snow leopard and the many functions of its large furry paws.

As we introduce you to these animals, you'll also learn about some of the struggles they face in the disappearing wild and how unfortunately, sometimes an animal's structures can't compete when human influence begins to disrupt their environment.

Every animal plays a part in its **ecosystem** (*living and nonliving things in the same area working together*). When one species suffers, it can harm the entire ecosystem. It's important to protect our wildlife to preserve our planetary balance.

Protecting the world around you may seem like a big job, but when everyone helps, we can make an impact! Just by reading this, you have already begun. It all starts with becoming informed about the world around you. Start your journey on the path to becoming a conservation hero and learn about these amazing animals. After you have finished reading, you can visit them at your Louisville Zoo!

By educating Zoo guests about wildlife conservation through amazing encounters with animal ambassadors and nature, the Louisville Zoo works to demonstrate how our actions at home impact our world and inspire guests to consider their role in the balance of the health of our planet.

FABULOUS FLAMINGOS

Chilean Flamingo

Scientific name:

Phoenicopterus chilensis

Habitat: shallow, volcanically heated lakes of Ecuador and lagoons in the Atacama Desert in Northern Chile.

Size: 3.5 feet tall

Weight: about 6 lbs.

Lifespan: about 25 – 40 years.

One flamingo at the Louisville Zoo is 50 years old!

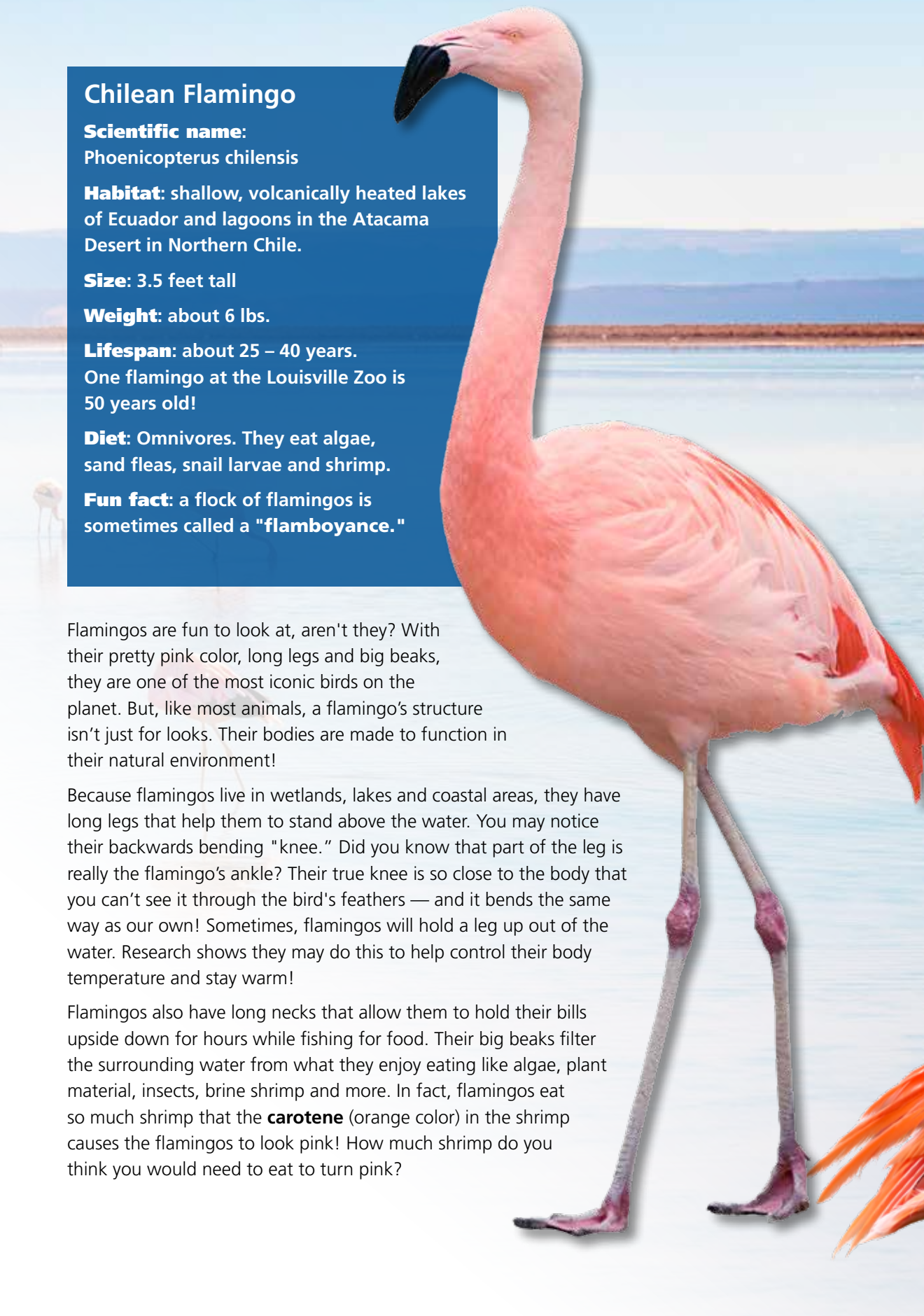
Diet: Omnivores. They eat algae, sand fleas, snail larvae and shrimp.

Fun fact: a flock of flamingos is sometimes called a "flamboyance."

Flamingos are fun to look at, aren't they? With their pretty pink color, long legs and big beaks, they are one of the most iconic birds on the planet. But, like most animals, a flamingo's structure isn't just for looks. Their bodies are made to function in their natural environment!

Because flamingos live in wetlands, lakes and coastal areas, they have long legs that help them to stand above the water. You may notice their backwards bending "knee." Did you know that part of the leg is really the flamingo's ankle? Their true knee is so close to the body that you can't see it through the bird's feathers — and it bends the same way as our own! Sometimes, flamingos will hold a leg up out of the water. Research shows they may do this to help control their body temperature and stay warm!

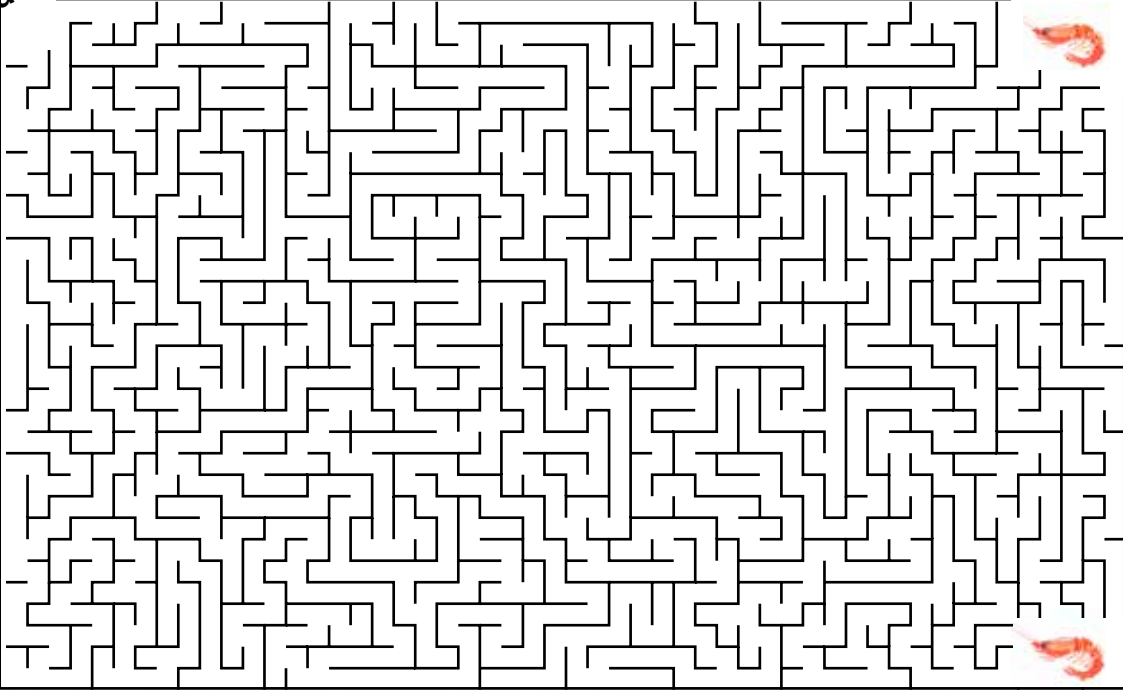
Flamingos also have long necks that allow them to hold their bills upside down for hours while fishing for food. Their big beaks filter the surrounding water from what they enjoy eating like algae, plant material, insects, brine shrimp and more. In fact, flamingos eat so much shrimp that the **carotene** (orange color) in the shrimp causes the flamingos to look pink! How much shrimp do you think you would need to eat to turn pink?



FIND FLAMINGO FOOD

Complete the maze to help the flamingo find the shrimp!

Start



Conservation status

Flamingos are listed as near threatened by the International Union for Conservation of Nature (IUCN). They are at risk due to habitat loss, predators, lack of food and pollution. One way to help local birds that live in water is by carefully picking up any trash you see on the ground and recycling it or throwing it away. When it rains, this ground litter can end up in our waterways and creates pollution that is harmful to wildlife.

SNOW LEOPARD

Scientific name: *Panthera uncia*

Habitat: rocky highlands and the mountains of central Asia including Afghanistan, China, Russia, Tibet, Nepal, India and Pakistan. In winter, the snow leopard follows prey to lower forests.

Size: 6 – 7 feet long

Weight: about 55 – 165 pounds.

Lifespan: About 10 – 12 years in the remnant wild. In accredited zoos like the Louisville Zoo, up to 19 years.

Diet: Carnivores. They eat Himalayan blue sheep, wild goats, yaks, musk deer, wild boar, small mammals, birds and domestic livestock.

Fun fact: Snow leopards do not roar but they do make other noises like growling, hissing and mewling.

Conservation status

Snow leopards are listed as vulnerable by IUCN due to habitat loss, climate change and illegal hunting. When food is scarce, snow leopards may hunt livestock which can cause conflict with humans. **Learn about how you can help snow leopards by visiting the Zoo's conservation partner snowleopardtrust.org.**

You can also learn about snow leopards by visiting the Louisville Zoo's Snow Leopard Pass exhibit, modeled after a Himalayan village. Overhead passageways let the cats explore their varied environment. There are three cats you may get to observe: male snow leopard Meru, female NeeCee and male Kimti. **Learn more at LouisvilleZoo.org/snowleopardpass.**



COOL CATS

When you think of snow leopards, you likely think of the cold, snowy places where they live. Snow leopards spend most of their year climbing the rocky crags of the Himalayan mountains. They can live up to 18,000 feet above sea level!

It sounds like a rough place to live, right? The good news is that the snow leopard has many structures to help it function in its icy home. One external structure is its thick, fluffy fur that insulates it against the cold. The snow leopard also has wide, furry paws that function like rough snowshoes, helping it climb over snow and slick surfaces. The air up in the mountains can be chilly and so the snow leopard has a large, wide nose, to heat up the air it breathes in.

Did you know snow leopards can leap up to 49 feet? Snow leopards use their powerful legs and long tails to help them when climbing and leaping. They can also use their tail like a scarf and wrap it around their body to stay warm in the cold.

The color of the snow leopard's fur is helpful as well. Their black-spotted fur functions as camouflage on the rocky terrain. This helps the cats sneak up on prey.

Find the Snow Leopard

See if you can spot a camouflaged snow leopard on the mountainside below. *Hint: It's not the big one on the left!*



theZOO

L O U I S V I L L E

LOUISVILLEZOO.ORG/BAH

Rhinos have many interesting structures that help them survive. What features do you notice about this rhino?

Why do you think rhinos have excellent hearing and smell?

Have
excellent
hearing and
smell

Are colored
gray, despite
their name

Have two
horns
to spar with
other rhinos



Have
thick skin
& roll around in
mud to protect
from sun and
flies

Can eat
plants that are
toxic to other
animals

THE SOUTHERN WHITE RHINO

RHINO-RIFIC!

Southern White Rhino

Scientific name: *Ceratotherium simum*

Habitat: Southern Africa

Weight: 4,000 – 6,000 pounds

Size: about 6 ft. tall and 11 ft. long

Lifespan: about 40 to 50 years

Diet: Herbivores. They eat leaves, grasses and woody plants.

Fun Fact: a group of rhinos is sometimes called a "crash."

Conservation status: Near threatened (IUCN) due to poaching for their horns and habitat loss. Status was last reviewed by IUCN in 2011. There are currently approximately 18,000 rhinos. The population is at great risk and continues to decline.

With their big horns and tank-like bodies, rhinos certainly look tough. But these ancient giants, the world's second largest land mammal after elephants, can be quite gentle. Southern white rhinos, like the ones at your Louisville Zoo, are the calmest and most sociable species of rhino. They also have many structures that help them in their native environment on the sunny plains in Africa.

Rhinos have thick, tough skin on their back and sides with hair only on their ears, tail tips and eyelashes. This thick skin is great insulation from heat during the day and cold at night. It also protects them from rough, thorny vegetation when they graze – but it doesn't protect them very much from the harsh sun! To protect their skin, the rhinos find a nice watering hole and roll around in the surrounding mud. This mud works as a natural bug repellent and sunblock for them.

Did you know?

Rhinos were among the first animals at the Louisville Zoo when it opened in 1969! In 2019, the Zoo's 50th anniversary, the Zoo debuted a new rhino mascot named Leroy in honor of one of the Zoo's first rhinos. You can visit the Zoo's current rhinos, 35-year-old female Sindi and 4-year-old male Letterman, in the Africa zone near the giraffe exhibit.



Another unique structure of the rhino is their large neck muscles. These muscles help support the rhino's large head which is lowered most of the day while grazing.

Southern white rhinos also have two big horns. The rhinos use these horn structures to protect their young and to spar with other rhinos. The horns are made from keratin, like our own fingernails.

Unfortunately, many humans illegally hunt rhinos to take their horns because they believe the horns have medicinal qualities. There were once over 30 species of rhino, but today there are only five. The southern white rhino is listed as near threatened (IUCN). The northern white rhino is critically endangered and near extinction. The good news is there are people working to help the rhinos — including your Louisville Zoo! Learn what you can do to help at worldwildlife.org.

MONKEY MATTERS

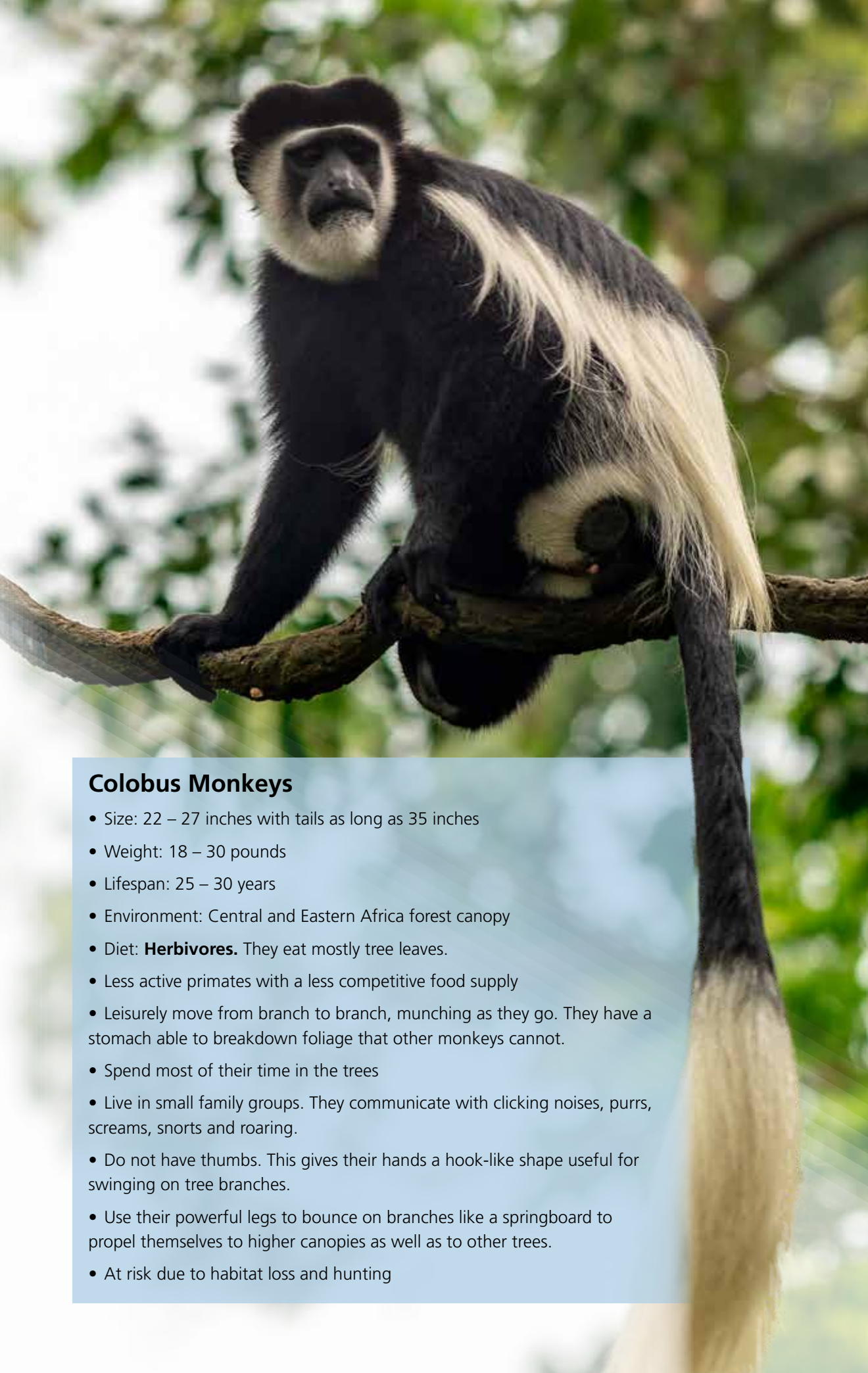
You might think that similar animals with similar environments may also have similar structures — but did you know that's not always true?

You can see one example of this by observing red-tailed monkeys and colobus monkeys. Both primates live in the Colobus Crossing exhibit at the Louisville Zoo. While both primates are **arboreal** (meaning they live in trees) and hail from the leafy forests of eastern and central Africa, the way they function in their tree-filled environment is quite different. Read the boxes to learn more about each monkey. **Discuss how these monkeys are the same. How are they different?**

Red-tailed Monkeys

- Size: 24 inches with tails as long as 35 inches
- Weight: 6 – 10 pounds
- Lifespan: up to 28 years
- Environment: East Central African forests and rainforests
- Diet: **Fruitivores.** They eat fruit, seeds, insects, small lizards and frogs.
- Highly active primates with a competitive food supply
- Have large cheek pouches to store food. They will eat their food once they are in a safe place where it can't be taken.
- Will descend from the trees to forage fallen fruit
- Can live in large family groups of up to 30 individuals. They communicate with trills, chirps, growls, screams and hacking calls.
- Use their long tails to help guide them as they leap quickly from tree to tree
- Act as seed dispersers when they collect fruit and other food items. This allows more plants and food to grow.
- At risk due to habitat loss and hunting





Colobus Monkeys

- Size: 22 – 27 inches with tails as long as 35 inches
- Weight: 18 – 30 pounds
- Lifespan: 25 – 30 years
- Environment: Central and Eastern Africa forest canopy
- Diet: **Herbivores.** They eat mostly tree leaves.
- Less active primates with a less competitive food supply
- Leisurely move from branch to branch, munching as they go. They have a stomach able to breakdown foliage that other monkeys cannot.
- Spend most of their time in the trees
- Live in small family groups. They communicate with clicking noises, purrs, screams, snorts and roaring.
- Do not have thumbs. This gives their hands a hook-like shape useful for swinging on tree branches.
- Use their powerful legs to bounce on branches like a springboard to propel themselves to higher canopies as well as to other trees.
- At risk due to habitat loss and hunting

BLACK-FOOTED FERRETS: A SECOND CHANCE



Sometimes, even though species are perfectly suited for their environment, other factors can cause them to struggle or even go extinct! **Extinct** is a word that means that a type of animal or plant species no longer exists. The scary thing about extinction is that it's hard to tell what the effects of that species' absence will have on our environment and our ecosystems.

One of the animals you can see at the Louisville Zoo's MetaZoo Discovery Center was once thought to be extinct. It's called the black-footed ferret (BFF). Black-footed ferrets come from the great plains. They primarily eat prairie dogs.

Prairie dogs were a plentiful food source for BFFs 100 years ago. The BFFs could take shelter in abandoned prairie dog burrows. The BFF's physical structures also made them a perfect prairie dog predator. Their long, slender body allowed them to easily crawl in and out of burrows. They have front paws and claws perfect for digging after their prey, and their beige and black coloring allowed them to blend easily into their surroundings.

BFFs also have a keen sense of smell, sight and hearing which makes them adept nighttime hunters. So, they could sleep underground during the day to hide from their own predators. Then, they would go hunt at night.

It sounds like the perfect environment for a black-footed ferret, doesn't it? However, humans began to move into their habitat. Unfortunately, many ranchers and farmers thought the prairie dogs were pests! So, they started to get rid of them. When the prairie dog population suffered, the BFFs began to suffer. This caused them to go almost extinct.

Black Footed Ferrets

Scientific name: *Mustela nigripes*

Habitat: Originally, the great plains from south Canada to north Mexico. Now released into parts of Arizona, South Dakota, Montana, Wyoming, Utah, Colorado, Kansas, New Mexico and Mexico.

Size: 18 – 24 inches (including a 5-inch tail)

Weight: about 1 – 3 pounds

Lifespan: about 7 years, less in the remnant wild

Diet: **Carnivores.** Prefer to eat prairie dogs but when scarce they will eat rabbits, mice and squirrels.

Conservation status: Endangered (IUCN) due to disease and loss of habitat and food source.

Fun Fact: a group of ferrets is sometimes called a "**business.**"

Luckily for everyone, a group of ferrets was discovered in 1981 and the Black-Footed Ferret Conservation Program was born. These remaining 18 ferrets were collected and moved to US Fish and Wildlife facilities as well as AZA-accredited zoos so that professionals could help the ferrets repopulate in a safe environment.

A CONSERVATION HERO



The Louisville Zoo is one of only six facilities who are part of this program. Since the Louisville Zoo joined the efforts in 1991, Zoo keeper Guy Graves has been leading the charge to help save these ferrets. He is the head of the Black-footed Ferret Conservation Center at your Louisville Zoo. Guy's experience with the ferrets over the years has helped other conservation organizations increase the number of **kits** (ferret babies) born. One of the things Guy discovered was that keeping the mother and kits in a cool environment would encourage the mothers to take better care of their offspring.

Every year, some of the ferrets born are released into managed environments out west. So far, about 700 ferrets have been released from the Louisville Zoo alone. The BFF population is slowly recovering, but they are still one of North America's most endangered animals. Guy said, "It's still a challenge. The ferrets will likely always need intervention because we have to ensure there are enough prairie dogs where they are released."

"The lesson of the black-footed ferret is we should never allow this to happen again," Guy explained. "We need to consider the animals early on as we develop our world, or we will continue to lose more species. And you never know just how important they are until they are gone."



Guy Graves prepares to clean the "den" of a black-footed ferret. Ferret keepers wear masks and scrubs while working in the Conservation Center to protect the ferrets from outside diseases like canine distemper.



Want to know more about BFFS?

Visit the black-footed ferret at the Louisville Zoo MetaZoo Discovery Center. You can also learn more about the latest black-footed ferret recovery efforts at blackfootedferret.org.



Present this coupon and receive

ONE FREE CHILD'S ADMISSION

With the purchase of one regular adult general admission to the Louisville Zoo.

Valid during regular Zoo hours. Not valid with other offers, for ticket packages, "The World's Largest Halloween Party!" presented by Meijer, or other after-hours events. One ticket per transaction.

Expires 10/31/2020



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BACKYARD ACTION HERO MENTORS!

Hello teachers and parents! Help your kids on the path to becoming Backyard Action Heroes. Use the resources within for guided lessons, activities and fun experiments.

For additional education materials, more Backyard Action Hero content and a chance to win a free behind-the-scenes tour of the Louisville Zoo, visit LouisvilleZoo.org/BAH.

TEACHER E-MAIL UPDATES

Stay updated on educational events at the Zoo by signing up for our free e-mails.
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