Lowry Park Zoo
Educators' Activity Guide
Grades 3-5

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Dear Educator,

We hope you are excited about your upcoming field trip to Lowry Park Zoo. The zoo is an exciting place for children to learn while providing awareness of the natural world around us.
This guide is set up to provide pre-zoo, zoo, and post-zoo visit activities. The activities naturally flow from classroom activities to those that will be done at the zoo. Post-zoo activities will enable you to assess your students' understanding of the lessons they have completed. It is not intended that you incorporate all of these lessons into your curriculum. Feel free to choose what works for you, your students and your curriculum. The activities in this guide focus on endangered species, adaptations, habitats / biomes. Students will be able to take this knowledge with them and apply it to their zoo visit.
Sunshine State Standards and FCAT skills have been integrated into the lessons provided. A chart at the end of this guide provides you with an overview of the standards addressed in each lesson. We hope you enjoy using this guide. It provides many language arts, science, and math lessons to make your zoo learning FUN!

Contents

Endangered Species

Appreciation of the diversity of endangered species

Objective
Locating endangered species in the zoo by matching given clues.

Benchmark-SS.B.2.2.3 LA.A.2.2.5 SS.B.2.2.4

Materials-
Species Quest sheet

Advanced Information:
Lowry Park Zoo is home to over 20 species of endangered animals. Under the American Zoo Association's Species Survival Plan, Lowry Park Zoo manages 22 Species Survival Plans. The zoo's desire is for these 22 endangered species to one day be re-introduced into the wild. In a world of escalating habitat destruction, over-hunting, poaching, pollution of air, soil, and water, increasing human population and the general deterioration of our exosphere, zoological facilities around the world have become a safe haven for the propagation of these endangered species.

Lesson:
1 Review the definition of endangered species.
2 Discuss the role of a zoo in the preservation of endangered species, including education, breeding, and conservation.
3 Use the clues; complete the chart, "The Hunt for Endangered Species", using zoo animals. Note: there is more than one answer for some clues.

Extension / FCAT
Write new clues for classmates to discover the endangered species.
Using every letter of the alphabet, name endangered animals.
Research to find names of Florida's endangered reptile species.
Some animals migrate from the U.S.A. to Canada. How could problems arrive with the protection of endangered species? Research how laws protecting animals differ in Canada.
Research the migration of a protected species of whales. Plot their movement on a map.
The zoo will release young cougars into the wild, as they are captive bred. Write a letter taking the side of cattle ranchers who fear loss of property or the part of an environmentalist who is concerned about their extinction.

The Hunt For Endangered Species

Name_____

Clue Endangered Species
1. endangered due to loss of forest habitat
2. hunted for fur and persecuted for livestock attacks
3. not seen in natural habitat since 1968
4. nearly all survivors show scars from boating accidents
5. less than 50 survive in Florida
6. habitat destroyed for lumber, housing, and agriculture
7. threatened by trading, hunting, and loss of habitat
8. habitat taken over for agriculture
9. poachers slaughter them for their horns
10. habitat loss due to logging operations

Did you know?

Flamingos gather in large groups called a pat, of thousands in the wild. Since a flamingo is defenseless, other than flight, large pats offer security.

Manatees are herbivores. The largest and only increasing herd of manatees in the United States is in Crystal River Florida. The water temperature remains at 72 degrees year round. Manatee fossils have been found dating back to 60 million years.

A bald eagle builds a nest that can weigh up to a ton, is six feet in diameter, and six feet tall. It is located in the top of the tallest trees over a river or lake.

Over 600 injured or orphaned raptors are taken to Maitland, Florida each year for rehabilitation, eighty-five per cent of these injuries are due to human interactions such as poisoning, gunshot wounds, collision with vehicles or power lines and loss of habitat.

Giraffes are the tallest animals on earth measuring 16-18 feet.

Aladabra tortoises have a lifespan of 100 years or more.

The zebra's skin and hair are black and white striped, so if it were shaved bald, the zebra would still be striped.

The Hunt for Endangered Species

Teacher Copy

Clue	Endangered Species
1. endangered due to loss of forest habitat	Malayan Tapir
2. hunted for fur and persecuted for livestock attacks	Clouded Leopards
3. not seen in natural habitat since 1968	African Elephant
4. nearly all survivors show scars from boating accidents	West Indian Manatee
5. less than 50 survive in Florida	Florida Panther
6. habitat destroyed for lumber, housing, and agriculture	Golden Lion Tamarin
7. threatened by trading, hunting, and loss of habitat	Chimpanzee
8. habitat taken over for agriculture	Sumatran Tiger
9. poachers slaughter them for their horns	White Rhinoceros
10. habitat loss due to logging operations	Bornean Orangutan

Did you know?

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- Giraffes are the tallest animals on earth measuring 16-18 feet.
- Aladabra tortoises have a lifespan of 100 years or more.
- The zebra's skin and hair are black and white striped, so if it were shaved bald, the zebra would still be striped.

Adaptation

Understand the interrelationships of animal species

Objective
Deciding which pairs of animals to bring to an Earth II and justify their decisions.

Benchmarks-SS.B.2.2.2 SS.B.2.2.4 SC.G.1.2.1 SC.G.1.2.7
Materials
Worksheet, pencil

Advanced Information:
Within Earth's biosphere exists a multitude of life in a variety of colors, sizes, races, and purposes. This diversity is due to a natural selection of adaptations during the evolution of species within an ecosystem.
When a species has lived in an environment for a long period of time, it begins to develop traits that will allow it to survive in the environmental conditions of the ecosystem. These traits may be a color-scheme for camouflage, extremities for food gathering, or specific responses to danger and defense.

Option 1. Earth II

- The year is 2020. The Earth is becoming consumed by pollution, ultraviolet and nuclear radiation. As a famed zoologist, you have been given the task of choosing ten pairs of animals to journey with you to the new planet. Although this new planet has the same habitat / climatic ranges as Earth, it is only the size of our Moon. Your mission while at the zoo is to explore, research, and determine which 10 pairs of animals best justifies the needs of Earth II.

Extension /FCAT

Should only people who are vegetarians be considered for the trip?

What are the food needs of the animals? Animal diet is critical, for an example, does the animal eat only other animals? How can your animal's needs be met? How does this affect your choices?

Should adults or juvenile animals be chosen? Justify

If there is no salt water on Earth II, how will this affect the animal choices?

Should a poisonous / venomous species be considered?

Justify if there is no electric power for the first two years of Earth II, what animals may also be helpful?

The animals will not be released into the wild, but kept in an area around the new settlement. Housing will need to be built for the new animal species. How does this affect your choices?

There will be 100 adults & 50 children on Earth II during the first year while water sources are found. It is uncertain how much clean water is readily available. Does this affect the choices?

An animal's ability to adapt is crucial on Earth II. Consider sudden climate changes in your selections.

Some smaller animals need frequent feedings. Consider the quantities of food that these animals require.

If there is a readily available supply of insects on Earth II, how will this affect the animal selections?

Earth II Animal Selections

Animal	Specific needs	Reason for being chosen
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Option 2.

May I Take Your Order ?

To understand how animals have adapted in a food web

Objective

Constructing a food web Identifying animal adaptations

Benchmark-SC.B.1.2.1 SC.G.1.2.3 SC.G.1.2.5 LA.A.2.2.5

Materials:

"May I Take Your Order" activity sheet

Lesson:

Review definitions- Herbivore- plant eating animal Carnivore- meat eating animal Omnivore- animal that eats both plants and animals Insectivore- insect eating animal

Discuss animal pictures and common physical adaptations.

While at the zoo, research the information markers to discover other animals for each group of adaptations. Graph the results of the discoveries. Make note of which characteristics were found most / least often. Write theories as to why these results occurred. Use graphs to support theories.

Extension / FCAT

Use zoo animals to create a food web with string. Be specific with the types of food that an animal eats.

Make an animal adaptation memory game.

How do herbivores contribute to the balance in the food chain? Use specific animal names. What would happen if there were only carnivores in the animal kingdom?

Some scientists think that humans had fingernails similar to claws in the early days of man. Why would this adaptation be necessary?

Many frogs and lizards are insectivores. Research to find out what insects can provide to sustain these animals.

Fast Fact:

A carnivorous plant captures, kills and digests animal life forms. There are approximately 600 species of carnivorous plants, although some of these are extinct. The largest carnivorous plant belongs to the genus Nepenthes and can grow up to 10 meters long. It has been documented to capture frogs and small birds.

Carnivore	Adaptation	Diet
1)		
2)		
3)		
4)		
5)		
6)		

Herbivore	Adaptation	Diet
1)		
2)		
3)		
4)		
5)		
6)		

Omnivore	Adaptation	Diet
1)		
2)		
3)		
4)		
5)		
6)		

Insectivore	Adaptation	Diet
1)		
2)		
3)		

Adaptation Scavenger Hunt

Identification of adaptations designed for survival

Objective
Observing a variety of animal species and matching survival adaptations.

Benchmarks- SC.F.1.2.3 SC.G.2.2.1SC.G.1.2.2 LA.A.2.2.5

Materials
Adaptations worksheet, pencil,

Lesson
Show pictures of various animal adaptations. Discuss the purpose of each adaptation for obtaining food.
Discuss why some animals would develop similar adaptations. Think about similar habitats.
Complete one or several charts in small groups or individually.

Extension / FCAT
Group animals with similar adaptations together and explain the choices.
Group adaptations and let students discover the link.
Given a list of animals, identify the adaptation and relationship to habitat.

Fast Fact: The sea otter is an example of a behavioral adaptation. It is one of the few marine mammals lacking an insulating layer of blubber. Otters constantly preen themselves to allow a protective insulating layer of air to be trapped against their skin.

ANIMAL IDENTIFICATION SCAVENGER HUNT		TEACHER COPY
ANIMAL	**HABITAT**	**ADAPTION**
1) Sumatran Tiger	Rainforests	eyes located on side of head for wider field of vision
2) Malayan Tapir	Rainforests	compact, streamlined, body for pushing through undergrowth
3) Roseate Spoonbill	Costal marshes, bays, estuaries, and mangroves	Spoon-shaped beak to sweep side to side in water to catch fish and shrimp
4) River Otter	Freshwater, aquatic	Tail and lower body work together for underwater speed
5) American Crocodile	Mangrove swamp	Glands in tongue to reduce salt intake
6) Red Wolf	Costal plains, pine/oak forests, marshes/swamp	Preys on animals that offer easy capture, rarely attack livestock
7) Wild Turkey	Woodlands, open forest, dense cover	Young stay in egg until eyes are open and are able to walk
8) Red-Ruffed Lemur	Rainforest	long bushy tail used for balance
9) Chimpanzee	Humid forests deciduous woodlands mixed savannas	uses opposable thumbs and sticks to get insects from mounds
10) Black Howler Monkey	Tropical rainforests	strong prehensile tail used as a fifth hand
11) Bornean Orangutan	Lowland, tropical rainforest	Longer, stronger arms than legs for easy movement though trees
12) Tortoise	Open, grassy areas	Hard shell attached to backbone for protection
13) Bat	High, dark trees, caves, buildings	uses skills in flight to catch 600 insects per hour
14) Gopher Tortoise	Dry land, open areas, low plant growth,	claws on toes used for digging long, deep,

		burrows
15) Canebrake Rattlesnake	Forest of northern Florida	pit near nostrils can detect body heat of small rodents
16) Dromedary Camel	Desert	Stores fat in its hump, can drink up to 30 gallons of water in a short amount of time
17) Meerkat	Savanna	Dig elaborate burrows to house and protect their social colonies
18) Kudu	Savanna	Brown coat with vertical

ANIMAL / ADAPTATION SCAVENGER HUNT	**TEACHER COPY**
ADAPTATION	**ANIMAL**
1) bony ridges over eyes that act as sun visors	Bactrian Camel
2) broad paddle-like tail for swimming	West Indian Manatee
3) dense layer of fur to repel water	River Otter
4) streamlined body for pushing through forest undergrowth	Malayan Tapir
5) gap in upper front teeth for sucking termites from nests	Sloth Bear
6) tongue covered with tiny hooks for scraping meat off bones	Sumatran Tiger
7) bacteria in saliva used to kill prey	Komodo Dragon
8) marks territory with scent glands on forefeet	Collared Lemur
9) uses skills in flight to catch 600 insects an hour	Bat
10) spoon-shaped beak to catch fish and shrimp by sweeping side to side	Roseate Spoonbill
11) arms are longer and stronger than legs for easy movement in trees	Bornean Orangutan
12) highly developed sense of smell, sight, and hearing to detect prey in wetland habitat	Florida Panther
13) uses a rotating shoulder joint to travel through trees	Siamang
14) uses sharp tusk-like teeth for defense in battle	Indian Rhinoceros
15) mother guards young by carrying them in her mouth	American Alligator

16) wallow in mud for protection from heat and parasites	Wart Hog
17) colorful, protruding patches of skin near eye and throat called wattles used to attract mates	Ground Hornbill
18) black rings around eyes reduce glare from the sun	Meerkat

ANIMAL IDENTIFICATION SCAVENGER HUNT		**NAME_____**
ANIMAL	**HABITAT**	**ADAPTION**
1)	Rainforests	eyes located on side of head for wider field of vision
2)	Rainforests	compact, streamlined, body for pushing through undergrowth
3)	Costal marshes, bays, estuaries, and mangroves	Spoon-shaped beak to sweep side to side in water to catch fish and shrimp
4)	Freshwater, aquatic	Tail and lower body work together for underwater speed
5)	Mangrove swamp	Glands in tongue to reduce salt intake
6)	Costal plains, pine/oak forests, marshes/swamp	Preys on animals that offer easy capture, rarely attack livestock
7)	Woodlands, open forest, dense cover	Young stay in egg until eyes are open and are able to walk
8)	Rainforest	long bushy tail used for balance
9)	Humid forests deciduous woodlands mixed savannas	uses opposable thumbs and sticks to get insects from mounds
10)	Tropical rainforests	strong prehensile tail used as a fifth hand
11)	Lowland, tropical rainforest	Longer, stronger arms than legs for easy movement though trees
12)	Open, grassy areas	Hard shell attached to

		backbone for protection
13)	High, dark trees, caves, buildings	uses skills in flight to catch 600 insects per hour
14)	Dry land, open areas, low plant growth,	claws on toes used for digging long, deep, burrows
15)	Forest of northern Florida	pit near nostrils can detect body heat of small rodents
16)	Desert	Stores fat in its hump, can drink up to 30 gallons of water in a short amount of time
17)	Savanna	Dig elaborate burrows to house and protect their social colonies
18) Savanna	Brown coat with vertical tan stripes useful as camouflage in tall grasses	
ANIMAL / ADAPTATION SCAVENGER HUNT	**NAME:_____**	
ADAPTATION	**ANIMAL**	
1)	Bactrian Camel	
2)	West Indian Manatee	
3)	River Otter	
4)	Malayan Tapir	
5)	Sloth Bear	
6)	Sumatran Tiger	
7)	Komodo Dragon	
8)	Collared Lemur	
9)	Bat	
10)	Roseate Spoonbill	
11)	Bornean Orangutan	
12)	Florida Panther	
13)	Siamang	
14)	Indian Rhinoceros	
15)	American Alligator	
16)	Wart Hog	
17)	Ground Hornbill	
18)	Meerkat	

Option4.

Who? Who? Who?

Appreciate the unique characteristics of an animal species

Objective
Identifying animal species using clues. **Benchmark**-SC.G.1.2.2 SC.F.1.2.3

Materials
Set of "Who? "animal connection cards, 2 pages for the class or for each team

Lesson
1.Show pictures of animals to students and discuss what is unique about each animal.

2.Have students develop a definition of adaptation.

3.Cut cards apart, shuffle, and distribute to teams or individuals. Read cards and listen for animal clues.

Extension / FCAT

Predict why animals have developed certain adaptations.

What adaptations have humans developed over time? Tell how these adaptations have helped humans to survive.

One possible theory about why dinosaurs didn't survive was their inability to survive climatic changes. Research to find out how dinosaurs could have adapted to survive.

Some lizards are over four feet long, while others are less than two inches long. Why did similar species develop such differences?

On the Galapagos Islands, there are many very unique species of animals. What influences play a part on these specialized island animals? Find support for your theories.

Using the animal connection cards, have students race to see which team connects the cards correctly first.

Research to locate other animals that could fit into the similar adaptation groups.

Many animals that were unable to adapt perished. What adaptation would have helped an extinct species to survive? Find support for your findings.

TEACHER COPY

_ _ _ _ _ _ _ _ Who? Who? Who? (page 1) I am a Florida Panther.

Who has a dense layer of fur to repel water and webbed feet to aid in swimming? (River Otter) **I am a River Otter.** Who has a broad paddle-like tail for swimming and clear membranes that cover the eyes while underwater? (Manatee)
I am a Manatee. Who scratches trees to identify territory and signal presence to others? (Black Bear) **I am a Black Bear.** Who has keen sight, sharp talons, and superb flight skills to catch its prey? (Bald Eagle)
I am a Bald Eagle. Who travels through trees by using a rotating shoulder joint? (Siamang) **I am a Siamang.** Who uses sharp tusk-like teeth for defense in battle? (Indian Rhinoceros)
I am an Indian Rhinoceros. Who has a compact streamlined body for pushing through forest undergrowth? (Malayan Tapir) **I am a Malayan Tapir.** Who has body ridges over the eyes that act as sun visors? (Bactarin Camel)
I am a Bactarin Camel. Who uses its skill in flight to eat 600 insects per hour? (Bat) **I am a Bat.** Whose only defense is flight or gathering in large groups on the ground? (Flamingo)
I am a Flamingo. Who stays in the egg until their eyes are open and they're able to walk? (Turkey) **I am a Wild Turkey.** Who has long, claws fingers and toes for looking in tree holes for insects? (Golden Lion Tamarin)
I am a Golden Lion Tamarin. Whose mother guards her babies by carrying them in her mouth? (American Alligator) **I am a American Alligator.** Who preys on animals that are easy to capture and rarely attack livestock? (Red Wolf)

TEACHER COPY

Who? Who? Who? (page 2)

I am a Red Wolf. Who has a gap in the upper front teeth for sucking termites from nests? (Sloth Bear) **I am a Sloth Bear.** Who uses its rattle to deter predators rather than strike? (Eastern Diamondback)
I am an Eastern Diamondback Rattlesnake. Who has a n opposable thumb to use sticks to get insects from mounds? (Chimpanzee) **I am a Chimpanzee.** Who has glands in their tongue to reduce salt intake? (American Crocodile)
I am an American Crocodile. Who uses snorts, grunts and stomping as an auditory threat, to others? (Bison) **I am an American Bison.** Whose beak is adapted to eating acorns, berries and crustaceans? (Whooping Crane)
I am a Whooping Crane. Who has teeth similar to a saber-toothed Tiger? (Clouded Leopard) **I am a Clouded Leopard.** Who has a tongue covered with tiny hooks for scraping meat from bones? (Sumatran Tiger)
I am a Sumatran Tiger. Who kills it's prey with bacteria in the saliva? (Komodo Dragon) **I am a Komodo Dragon.** Who has a strong, prehensile tail to use as a fifth hand? (Black Howler Monkey)
I am a Black Howler Monkey. Who has hands for turning over stones to look for food? (Mandrill Baboon) **I am a Mandrill Baboon.** Who has a scent glands on the forefeet to mark territory? (Collard Lemur)
I am a Collard Lemur. Who has a huge hard shell that offers protection? (Tortoise) **I am a Tortoise.** Found in Wallaroo Station Petting Zoo, whose small body is adapted to hot, humid climates. (Goat)
I am a Goat. Who can spray a pungent odor to defend itself? (Striped Skunk)
I am an African Crowned Crane. Who has a skin protrusion called a wattle on its face, similar to the American turkey? (Ground Hornbill)
I am a Duiker. Who can eat deadly scorpions by first biting off their venomous stingers? (Meerkat) **I am a Meerkat.** Whose keen sense of smell, sight and hearing help it to detect prey? (Florida Panther)

NAME:_____

_____Who? Who? Who?_(page 1)_I am a Florida Panther.

Who has a dense layer of fur to repel water and webbed feet to aid in swimming? **I am a River Otter.** Who has a broad paddle-like tail for swimming and clear membranes that cover the eyes while underwater?
I am a Manatee. Who scratches trees to identify territory and signal presence to others? **I am a Black Bear.** Who has keen sight, sharp talons, and superb flight skills to catch its prey? _
I am a Bald Eagle. Who travels through trees by using a rotating shoulder joint? **I am a Siamang**. Who uses sharp tusk-like teeth for defense in battle?
I am an Indian Rhinoceros. Who has a compact streamlined body for pushing through forest undergrowth? **I am a Malayan Tapir.** Who has body ridges over the eyes that act as sun visors?
I am a Bactarin Camel. Who uses its skill in flight to eat 600 insects per hour? **I am a Bat.** Whose only defense is flight or gathering in large groups on the ground?
I am a Flamingo. Who stays in the egg until their eyes are open and they're able to walk? **I am a Wild Turkey.** Who has long, claws fingers and toes for looking in tree holes for insects?
I am a Golden Lion Tamarin. Whose mother guards her babies by carrying them in her mouth? **I am a American Alligator.** Who preys on animals that are easy to capture and rarely attack livestock? _

.

NAME:_____

Who? Who? Who? (page 2)

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I am a Whooping Crane. Who has teeth similar to a saber-toothed Tiger? **I am a Clouded Leopard.** Who has a tongue covered with tiny hooks for scraping meat from bones?
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Option 5.

Beneficial Beaks

Analyze how habitats aid in determining specific physical adaptations

Objective

Matching the beaks of a variety of birds to their habitat and food selections **Benchmark**-SC.G.1.2.2 SC.G.2.2.3SC.G.1.2.5 SC.F.1.2.3

Materials

Beneficial beaks page, pencils

Beak Types

Spatulate-(Flamingo, Roseate, Spoonbill)-Filtering food from water.

Conical- (Cardinal, Orange-breasted Bunting)- cracking hard seeds.

Long probing- (Blacknecked Stilt, Ibis)-probe into insect and crab burrows.

Serrated- (Toucan, Wreathed Hornbill)- having tooth-like projections which aid in holding onto foods.

Chisel- (Golden-backed Woodpecker, Grosbeak Starling)- bores into rotten wood searching for insects.

Short Probing- (Blue whistling Rush) probes into the soil and leaf litter searching for food.

Terete- (Hummingbirds, Red-legged Honeycreeper)- aids in sipping nectar from flowers.

Compressed- (Heron, Kingfisher)-streamlined bill used to capture food in dense cover such as marsh grass.

Depressed/Serrated- (Duck)- used to strain food particles from the water.

Depressed/Wide- (Swallow, Nighthawk)- larger mouth for catching flying insects.

Lesson

1. Using the definitions provided, discuss

how birds use their beaks to: catch, handle or search for food, select /carry supplies to create nests, defend territory against predators.

2. Use the clues to complete the chart.**Extension / FCAT**

Predict why certain species of birds developed specialized beaks.

If humans evolved with beaks, what kind of beak would you have and what foods would you eat? Illustrate.

The bird's habitat controls what that species eats. Tell what happens to an Ibis when there is a drought.

What beak category would parrots be in? Justify your response with facts.

What birds could live on the same block as your school? Give details to support your theory.

Research to find at least 4 other species of birds with specialized beaks.

Fast Fact:
The ruby – throated hummingbird makes a small cup nest from plants held together with spider webs and lichen. It travels over 500 miles from North America to South America twice in a year.

Teacher answer key

Beak	**Food**	**Habitats**
1.long,probing	crabs	salt water
2.compressed	fish	wetlands
3.short,probing	insects	leaf litter
4.terete	nectar	gardens/forests
5.spatulate	aquatic plants	wetlands
6.depressed/ serrated	duckweed	ponds
7.spatulate	shrimp	estuary

NAME:_____

Word box spatulate, insects, terete, depressed / serrated, fish, aquatic plants, wetlands, long probing, shrimp, leaf litter, ponds, wetlands, salt water, nectar,

Beak	Food	**Habitat**
1.	crabs	
2. compressed		
Short, 3. probing		
4. Gardens, forests		
5. spatulate		
6.	duckweed	
7. estuary		

Beak Types

Spatulate- (Flamingo, Roseate, Spoonbill)- Filtering food from water.

Long probing- (Blacknecked Stilt, Ibis)- probe into insect and crab burrows.

Serrated- (Toucan, Wreathed Hornbill)- having tooth-like projections which aid in holding onto foods.

Chisel- (Golden-backed Woodpecker, Grosbeak Starling)- bores into rotten wood searching for insects.

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Compressed- (Heron, Kingfisher)- streamlined bill to capture food in dense cover such as marsh grass.

Depressed/Serrated- (Duck)- used to strain food particles from the water.

Habitats /Biomes

Observation and discovery of nest builders

Objective- Visually locating nest structures and their builders.

Benchmark- SC.H.1.2.2 SC.G.1.2.2
SC.H.1.2.4 MA.E.1.2.1

MA.A.3.2.2

Materials Pencil, aviary area

Advanced information
For centuries man and animal lived together sharing ecosystems, each depending on the other for survival. As time went on, man began to take more and more of the land for his own existence. Animals that once roamed freely over large tracts of land now found themselves surrounded by wire fences, concrete highways and enormous buildings. With the loss of habitat, animals saw the disappearance of their food and water supplies as well as a decrease in space and materials needed for basic survival. Surpassing illegal hunting or the disastrous affects of pollution, loss of habitat is the number one cause of species loss.

Option 1.

Empty Nest

1 Sketch three different nests in the aviary.
2 Why do birds make different types of nests?

1 Construction nest #1 nest #2 nest #3
2 Birds in the nest nest #1 #2 #3

3) Nest 1	Nest 2	Nest 3
High in a tree		
Low in a tree		
On the ground		

4) Construction	Nest 1	Nest 2	Nest 3
Constructed using:			

5) Birds in nest	Nest 1	Nest 2	Nest 3
Yes-No-Unknown			

6) Size of bird	Nest 1	Nest 2	Nest 3
Small, Medium, Large, Unknown			

7) Tally Birds flying	Tally birds eating

8. There are approximately 50 birds in the aviary. What percentage of the birds did you see?

Extension / FCAT

Graph your tally results. Use line, bar and / or picture graph.

Some birds reuse their nests year after year. Research to find out which birds use old nests. Bird nests vary greatly in size. Identify the largest and smallest bird nest builder. Write detailed paragraphs about the materials used, habitat, and the average number of eggs for each bird.

Option 2.

Habitat Patchwork

To recognize how animal habitats interact to form an ecosystem

Objective

Comparing and contrasting habitats to identify the connections in an ecosystem.

Benchmark-SS.B.2.2.3 SC.G.1.2.1 SC.G.1.2.7 LA.A.2.2.5 SS.B.2.2.3

Materials

Habitat Patchwork sheets

Directions

Define "habitat" and generate a list of habitats.
Make predictions on the interdependence of these habitats.
Discuss the food chain.
Complete one or more of the habitat charts.

Extension / FCAT

Create a class habitat quilt by illustrating each habitat scene and piecing them together.

Make a habitat paper chain linking each animal or plant that depends on another for food, or shelter.

Use your favorite characteristic of several animals and put them together to create one new animal. Explain why this new creation could survive in a very harsh environment.

Animals at the top of the food chain have the least number of threats. Choose something at the base of the food chain and name all of its threats.

Some animals are very territorial with animals of their own species. How can this become a threat?

Fast Fact:

The largest recorded insect swarm invaded Kenya in 1954. These desert locusts numbered about 10 billion. A migratory insect, they used wind currents to help carry them across the Atlantic Ocean in 1988.

Although a scorpion's venomous tail stinger provides good protection from predators, this stinger cannot save it from the meerkat who is able to bite the stinger off before devouring the scorpion.

Name:_____

Habitat Patchwork

HABITAT	CHARACTERISTICS	ANIMAL	THREATS
Uplands, hardwood, hammock	Moist, thick trees, ferns, palms		
cypress swamp	Wetlands, cypress trees act as water storage		
wetlands	Filter pollution support fisheries year-round		
aquatic	Buoyant surroundings		
rainforest	Three layers- canopy understory, forest food		
desert	arid, harsh, hot		
savannah	grassy, partly dry, few trees/shrubs		

Name:_____

Habitat Patchwork

HABITAT	CHARACTERISTICS	ANIMAL	THREATS
Uplands, hardwood, hammock	Moist, thick trees, ferns, palms	Birds, skunks, squirrel	
cypress swamp	Wetlands, cypress trees act as water storage	Wading birds, frogs, snakes	
wetlands	Filter pollution support fisheries year-round	Raccoon, frogs, birds, snakes	
aquatic	Buoyant surroundings	Manatee, river otter	
rainforest	Three layers- canopy understory, forest food	Black howler monkey, orangutan, tapir	
desert	arid, harsh, hot	Dromedary camel	
savannah	grassy, partly dry, few trees/shrubs	Zebra, rhinoceros, African elephant, meerkat	

Name:_____

Habitat Patchwork

HABITAT	CHARACTERISTICS	ANIMAL	THREATS
Uplands, hardwood, hammock	Moist, thick trees, ferns, palms		Destroyed for the construction of homes
cypress swamp	Wetlands, cypress trees act as water storage		Destroyed by construction
Wetlands	Filter pollution support fisheries year-round		Drained for homes, industry, agriculture
Aquatic	Buoyant surroundings		Pollution, careless boaters
Rainforest	Three layers- canopy understory, forest food		Destroyed for agriculture, cattle
Desert	Arid, harsh, hot		Poor water/land management causing deserts to grow - allowing for less plant and animal diversity
Savannah	grassy, partly dry, few trees/shrubs		Cleared for agriculture, wood and charcoal

TEACHER COPY

Habitat Patchwork

HABITAT	CHARACTERISTICS	ANIMAL	THREATS
Uplands, hardwood, hammock	Moist, thick trees, ferns, palms	Birds, skunks, squirrel	Destroyed for the construction of homes
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FCAT To the Zoo

Determine the average number of students that can fit in a given space.

Objective-area, estimation, averaging

Benchmark – MA.B.3.2.1 MA.B.2.2.1 MA.A.3.2.2

Materials:
Benches in the Manatee Orientation Court, small groups of students, pencils

Advanced information
The activities in each section of this curriculum are designed specifically to enhance your FCAT curriculum, providing students with an opportunity to solve real world problems within an FCAT format using motivational zoo opportunities. The major areas of study focus on math, reading and writing, as well as science and social studies integration. This last curriculum section provides additional practice in mathematics skills using detailed lessons pertaining to science content, and artistic communication opportunities, also written in an FCAT form.

Option 1.
Have Room Enough For Me?

Estimate the number of students that it would take to fill all the benches in the Manatee Orientation area. Write your estimation.
_____

Student's shoulders should be just barely touching.
Test your hypothesis.
Complete the charts.

Students per bench	Number of benches	Total

Students with one adult per bench	Total	
Number of boys in your group	**Number of girls in your group**	**Significance**

Extension / FCAT

If each bench also had to accommodate an adult, how would this change your results?

If all the benches were connected, how would this change your results? How many more children could fit?

If you could squeeze together without sitting on laps, how many students will fit on a bench?

If your group has only boys, how would this effect the number of students that fit on a bench?

Fast Fact:

The average height of a male is 5ft. 10 in. The average height of a woman is 5ft. 4 inches. Gheorghe Muresan, who played in the movie, "My Giant" is 7 feet 7 inches.

Option 2.

Batter Up

Objective
graphing, averaging, writing, research(frogs, bats),

Benchmark-MA.A.3.2.2 MA.E.1.2.1 LA.B.2.2.6

Bats eat approximately 600 insects per hour. If a colony of 10 bats were feeding, what would be the approximate number of insects eaten per hour? If the colony doubled, how would this effect the insect population? Frogs are also excellent insect controllers. Name three other animals that help keep the insect population in check.
The largest bat, the flying fox has a wingspan of 6 feet. How many inches longer is this than your arm?
The heartbeat of a hummingbird is 1,260 beats per min. A child has the heartbeat rate of about 80 beats per min. If the rate increases 10 percent for each minute of exercise, complete the graph showing these rates during a 3-minute period.

Of the bats worldwide, 70% feed exclusively on insects. Research to find out what the remaining 30% eat. Use a circle graph to show your results.

Due to habitat destruction, 45 species of bats have become endangered or extinct. In a narrative form, write a two-minute newscast about the problem.

Life expectancy pf a bat is about 30 years. Human life expectancy is approximately 76 years. How many times greater is a bat's life? Use a fraction.

A free tailed bat weighs one ounce. Name another insectivore that weighs about that amount.

If a frog eats 300 insects per night, (6-hours) how many per hour would it have eaten?
f the wingspan of a free tailed bat is 10 inches, how does this compare with the width of your palm?

Fast facts Of the 4,500 different species of mammals, nearly 1,000 are bats. Bat droppings, (guano), contain bacteria, which can neutralize toxic wastes

Option 3.

Fountain Frolic

Determine the average height of water sprays produced at the Manatee Orientation Court

Objective Measurement, averaging

Benchmarks- MA.B.2.2.1 MA.A.3.2.2 MA.B.3.2.1
Materials:
Pencils, chart, tape measure

Directions

Measure the highest point of each water spray. Chart the data for each fountain. Calculate the average height. Complete the chart.

Measure just one fountain at two-minute intervals to determine if the height fluctuates. Graph results

Fountain 1

Fountain 2

Fountain 3

Fountain 4

Fountain 5

Fountain 6

Fountain 7

Fountain 8

Total	Average spray

Fountain #	2 minutes	4 minutes	6 minutes

Average spray

Extension / FCAT

If the water flows from one fountain at a rate of 90 gallons per minute, how many gallons do all of the fountains produce in a five-minute period?

The greater the pressure, the higher the spray. How can you prove this?

The water flow from a fire hydrant is about 300 gallons per minute. How does this compare to a ten minute flow at the Manatee Orientation Court? Make a graph showing this comparison.

Did you know?

About 3% of the world's water is fresh and three-fourths of that is in glaciers and icecaps.

A person takes in an average of 16,000 gallons of water in their lifetime. Each person uses about 100 gallons of water a day.

Fast Fact:

A human body contains about 65% water, an elephant is about 70% water, and a chicken contains about 75% water. A potato is 80% water and a tomato is 95% water.

Time in a Bottle

Observation and calculations using the carousel

Objective
calculations, timing, averaging

Benchmark - MA.A.3.2.2 MA.B.2.2.1

Materials:
Pencils, timer, carousel, group work

Directions

Observe the carousel from the sidewalk to answer these questions.

- In 5 minutes, how many revolutions does it make?
- How many would that be per hour?
- Are there more makes or females riding?

Tally below as they leave the carousel

Males Females Total

3. In an hour, will there be more males or females riding the carousel. Justify your ideas with facts that you've discovered.

4. The carousel has 35 places for riders. How many seats are unoccupied?_____ What % is this to the total ____

5. If the zoo were to charge $1.00 per person, how much money would be collected from all the riders in one ride?

6. Are more children or more adults riding? Tally below

Children Adults Total

7. Name an animal not chosen on the carousel. _____
8. Your favorite animal on the carousel is the _____
9. What information is needed to discover the speed of the carousel?
10. What animals are there more of on the carousel? _____

Wildlife Wall of Honor

Art, Music, Writing

Materials

Art supplies, construction supplies which could include clay, Play-doh, fabric scraps etc.

- Design your own artistic Wildlife Mural using crayons, paint, colored pencils, magazine clippings etc. Your finished product must include at least one of the following:
    1. An endangered species,
2. A primate,
3. A bird,
4. A native species,
5. A reptile,
6. A venomous snake,
7. An arachnid,
8. Your school's mascot,
9. A border that uses a habitat theme,
10. A large mammal,

- Rewrite the "Twelve Days of Christmas" using Lowry Park Zoo animals, then illustrate.
- The zoo needs a new animal sculpture for its reptile exhibit. Construct a possible product that incorporates wildlife conservation and reptiles.
- Make a carousel mobile with your favorite zoo animals.
- Design your own zoo. Include a Primate World, Florida Wildlife area, Aviary, Manatee or Aquatic center, Safari Africa, and Petting area in the plans. Be sure your customers have places to eat, rest, and refresh themselves during their visit.
- Create a three-minute infomercial about a Florida panther that will be visiting your school. Include detailed information about his environment, needs, and endangered status. Draw a poster for your presentation.
- Using a shoebox, design a special zoo habitat for alligators. Be sure to meet their specific needs and include viewing areas, safety precautions, and wet/dry landscapes.
- Write a short skit about a missing pot bellied pig. Use stick puppet to explain where the missing pig went and who found it.
- Write a cheer for saving the rain forests.
- Write a poem about what a fly sees as he soars above Lowry Park Zoo.

FCAT Goals and Sunshine State Standard Correlates

SC.H-Uses the scientific processes and habits of mind to solve problems page 23

SC.G- Understands the competitive, interdependent, cyclic nature of living things in the environment page 4, 7, 9, 14,19, 23,24
MA.A - Understands the effects of operations on numbers and the relationships among these operations selects appropriate operations, and computes for problem solving page 23, 28, 29, 30, 31

MA.E- Understands and uses the tools of data analysis for managing information page 23, 29

SC.F- Describes patterns of structure and function in living things page 9,14,19

MA.B- Compares, contrasts and estimates within systems of measurement in real-world problem situations page 28, 30, 31

LA.B-Writes to communicate ideas and information effectively page 29

SS.B- Understands the interaction of people and the physical environment page 2, 4, 24

SC.B- Recognizes that energy may be changed in form with varying efficiency page 7

LA. A- Constructs meaning from a wide range of texts page 2, 7, 9, 24

Web sites

- www.lowryparkzoo.com
- www.audubon.org/
- www.cfbw.com/
- www.americanbirding.org/
- http://gvn.ifas.ufl.edu/www/agator/html/aligator.html.gainsville.
- www.state.fl.us/fwc/psm/manatee/eiwelcome.html
- http://wetlands.fws.gov/educator.htm
- www.batcon.org/topbats.html
- www.enature.com

VOCABULARY

Avian: Pertaining to birds.

1 **Brood**: Groups of young raised simultaneously by a pair of (or several) birds.

Canopy: Fairly continuous top layer of forest growth made up of intermingled branches.

1 **Carnivore:** Meat eating.

Clutch: The total number of eggs laid by a female at one time.

Conservation: The responsible use of natural resources in order to ensure their future availability.

Covey: A name for a group of birds, usually gamebirds.

Crest: Long feathers on the top of the head of birds.

Deforestation: The process of removing an area of trees and other vegetation.

Development: The alteration of an environment for the benefit of humans.

Diurnal: Active during the day.

Echolocation: The ability of an animal such as a bat or a dolphin to orient itself by the reflection of the sound it produces.

Ecosystem: An environment in which living and non-living things interact.

Emergent: The layer of trees in the rainforest that receives the most sunlight.

Endangered Species: A species threatened with immediate biological extinction.

Exotic: A species introduces into an area where it did not exist before.

Extinction: Permanent loss of an animal or plant species.

Habitat: An area that provides enough food, water, shelter, and space for an organism to survive and reproduce.

Herbivore: An animal that eats plants or parts of plants.

Insectivore: Insect eating.

Migration: Seasonal movement where animals move from one climate or area to another.

Natural Selection: The process in which environmental pressures act on an individual. The better adapted of a species survives enabling the most desirable trait to be spread throughout a population.

Niche: The role of a species within its community, including predator-prey relationships and physical space.

Nocturnal: Active at night.

Omnivore: Feeding on both plant and animal material.

Opposable: When the thumb and/or big toe and forefinger can be brought together for grasping, it is said to be this.

Prehensile: Able to grasp or hold. For example, the tails of some New

World monkeys have this capability.
Raptor: Bird of prey with large claws.
Scent Mark: Secretions of scents that are deposited, by various methods, as a means of communication.
Terrestrial: Pertaining to animal life on land.
Territory: An area defined by an individual/group, which is protected against intruders.
Understory: Foliage layers beneath and shaded by the canopy of a rainforest.
Vertebrates: The group of animals that have internal skeletons with backbones.
Web of Life: The complex interrelationships between all living things and their place the natural world.

Tampa's Lowry Park Zoo Map Extensions

1. Using a measuring wheel, measure the boardwalk that starts at Sarus Crane and ends at American Alligator. Give your answer in meters, feet and inches.
2. Using a compass, which direction is the Primate World from the Jungle Carousel?
3. Begin at the orientation court and walk past the Dry Prairie to the northern most point of Lake Sharon. How many times would you need to walk this distance to have walked about a mile? Use a measuring wheel. Show your work.
4. The Manatee tank holds 6,600 gallons of water. If you had to fill it with cups, how many would you need?
5. Standing at the chimpanzee exhibit, use a compass and look southwest. Name four animals housed in that direction.
6. What is the circumference of the sidewalk around the carousel?
7. What animal exhibit is located at the northern most point of the zoo?
8. From the Asian Domain, what direction is Lake Sharon?
9. The parking lot has 400 spaces for visitors. Each parking space is approximately 9 ft. by 18 ft. How large is the parking lot? Give the total area in yards.
10. Taking the shortest route possible, how far would you walk to visit the gift shops?
11. For each hour you walk, you burn 150 calories. If you have eaten a small French fry, how far do you need to walk to burn it off?_____ Did you walk far enough?____

FUN EXTRAS TO ENHANCE YOUR ZOO EXPERIENCE

Camera Scavenger Hunt

Use the following clues to take pictures at the zoo. Can you find…

1. a person performing a job at the zoo?
2. an animal with lines around its body?
3. an animal that breathes under water?
4. an animal with a color as part of its name?
5. an animal that was injured and now must live at the zoo?
6. a mammal that sheds its fur?
7. an animal with scales?
8. an animal with a mucus coating?
9. an animal with whiskers?
10. an animal that is nocturnal?
11. an animal with stilt-like legs?
12. an animal that uses its arms for locomotion?
13. an animal whose name is similar to red?
14. an animal that lives on the ground?
15. an animal with antlers?
16. an animal whose name means “nose horn?”
17. an animal that is related to the raccoon?
18. the largest mammal at Lowry Park Zoo?
19. Write your own clue here and take a picture?