iExplore: Biodiversity

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iExplore

Museum Expectations

Keep a safe distance from objects, walls, cases, artifacts and photographs.

Stay with your chaperone.

Silent your cell phone.

Respect other visitors by using a quiet voice.

Keep hands and feet to yourself.

Do not run or jump in the museum halls.

Do not eat, drink or chew gum in the museum halls.

Vocabulary

Abiotic (adj) -
Nonliving, as in abiotic factor, which is a nonliving physical and chemical attribute of a system, for example, light, temperature, wind patterns, rocks, soil, pH, pressure, etc. in an environment.

Adaptation (noun) -
A change or the process of change by which an organism or species becomes better suited to its environment.

Behavior (noun) -
The observable response or reaction of an organism, an individual or a system to a situation.

Biodiversity (noun) -
The existence of a wide range of different types of organisms in a given place at a given time. The diversity of plant and animal life in a particular habitat (or in the world as a whole).

Biotic (adj) -
Pertains to a living thing (such as plant, animal, fungus, etc.) as well as its products (e.g. secretions, wastes,
and remains).

Carnivore (noun) -
An animal or plant that requires a staple diet consisting mainly or exclusively of animal tissue through predation or scavenging.

Consumer (noun) -
An organism that generally obtains food by feeding on other organisms or organic matter due to the inability to manufacture its own food from inorganic sources.

Decomposer (noun) -
An organism whose ecological function involves the recycling of nutrients by performing the natural process of decomposition as it feeds on decaying organisms.

Detrivore (noun) -
An organism that feeds on detritus or organic waste.

Ecology (noun) -
The science concerned with the interactions of living organisms with one another and with the environment.

Ecosystem (noun) -
A system that includes all living organisms (biotic factors) in an area as well as its physical environment (abiotic factors) functioning together as a unit.

Food chain (noun) -
A feeding hierarchy in which organisms in an ecosystem are grouped into trophic (nutritional) levels and are shown in a succession to represent the flow of food energy and the feeding relationships between them.

Food web (noun) -
A graphical model showing the interconnecting food chains in an ecological community.

Herbivore (noun) -
An animal that consumes herbaceous vegetation ("plant eater").

Omnivore (noun) -
An animal that includes both plants and animals in its normal diet.

Predation (noun) -
A predator, kills and eats another organism, its prey.

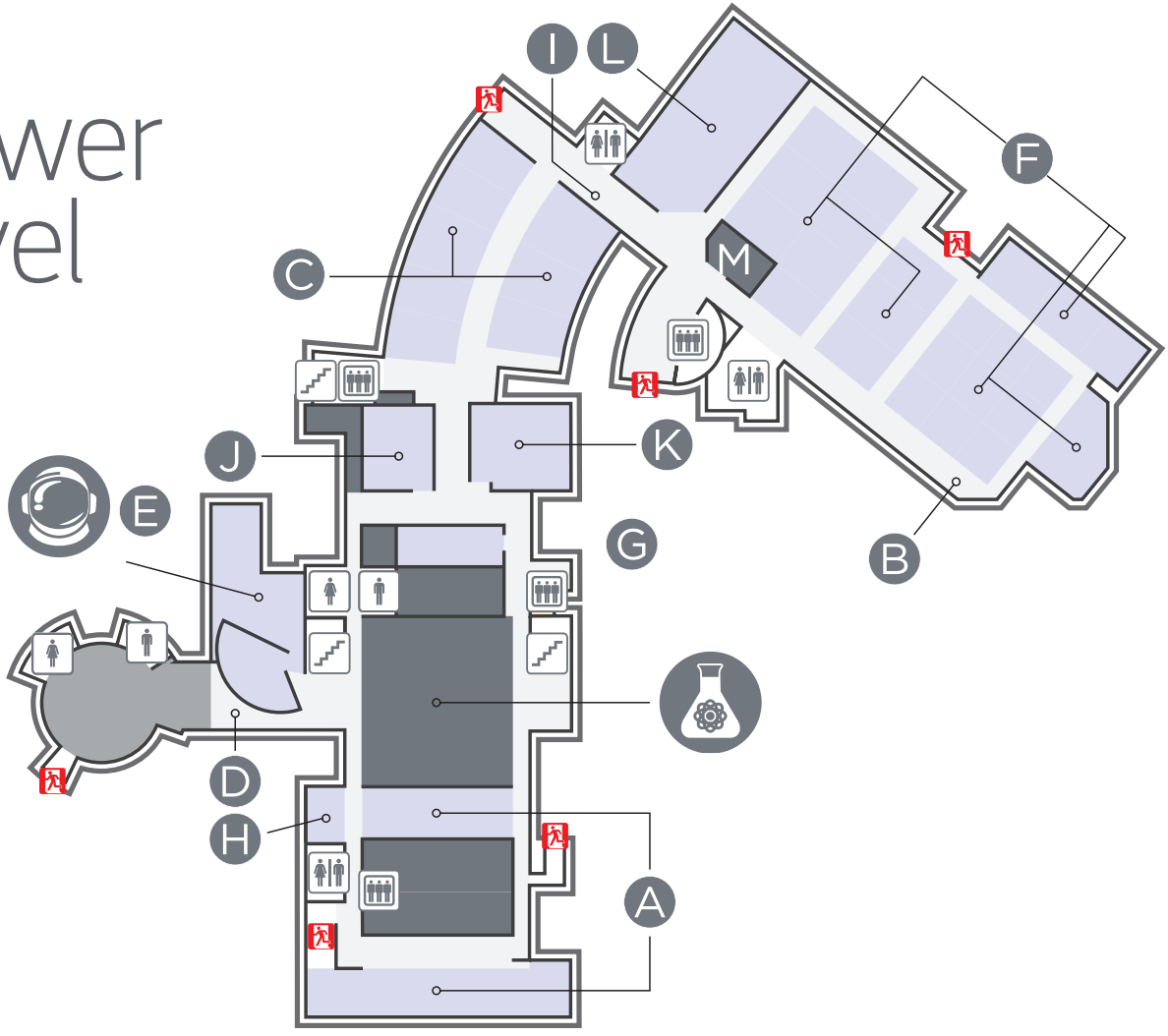
Producer (noun) -
A producer is in the first trophic level of a food chain. Serves as food source for consumers or for higher trophic levels.

Scavenger (noun) -
An animal (such as a vulture or coyote) that eats carcasses abandoned by predators, digs through trash cans for food, etc.

Museum Map

- Welch Hall of Chemistry
- A Albert and Margaret Alkek Education Center
- B Animal Alcove
- C Education Classrooms
- D Evelyn and Herbert J. Frensley Hall of Astronomy
- E Expedition Center
- F Hall of Science Exploration Education Classrooms
- G Lower Level Conference Room
- Expedition Center
- H Scout Office
- I Vintage Texas Wildlife Dioramas
- J Volunteer Library
- K Volunteer Office
- L The W. T. And Louise J. Moran Lecture Hall
- M Youth Education Office

Lower level

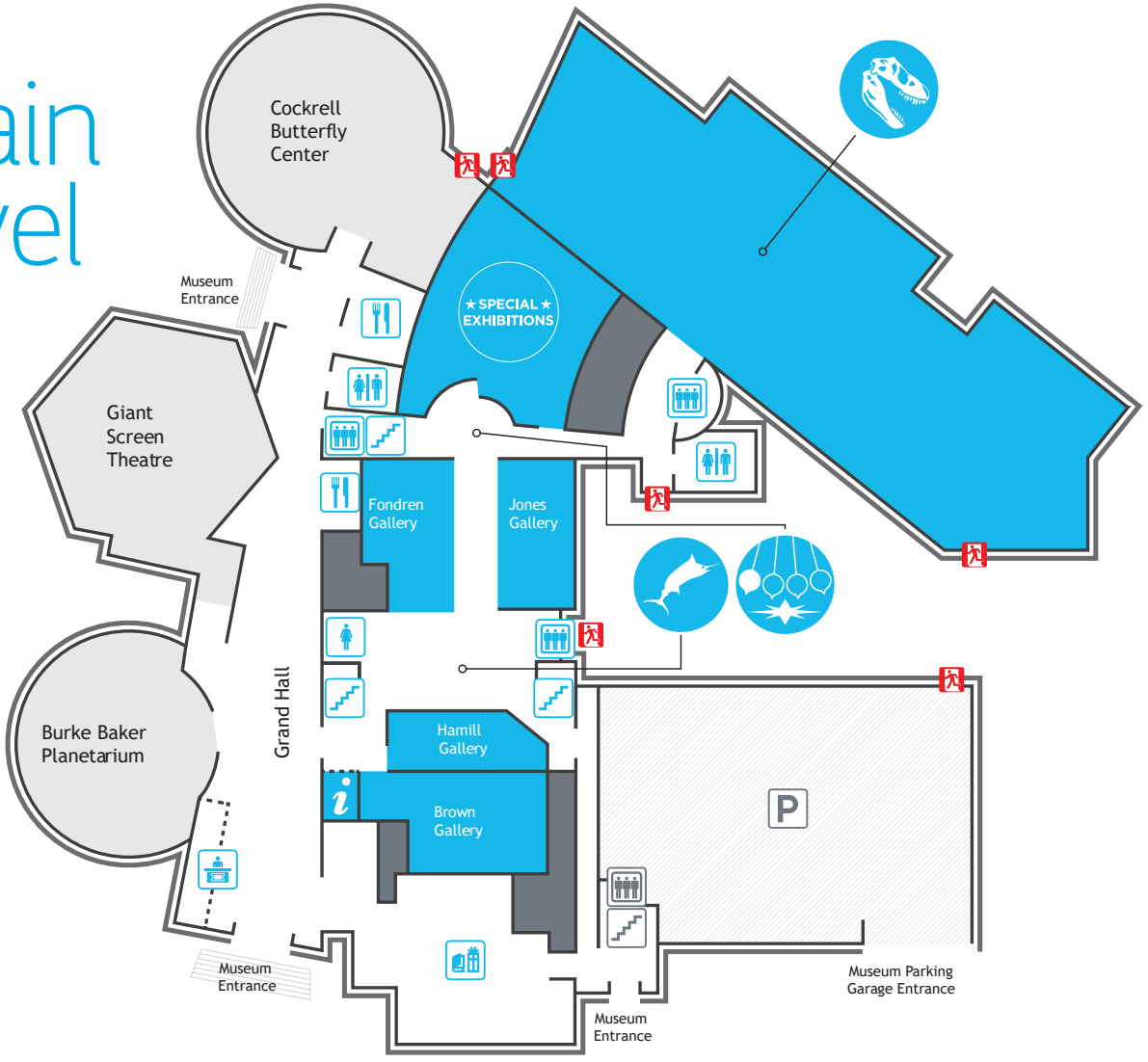


Museum Map

- Morian Hall of Paleontology
- Albert & Ethel Herzstein Foucault Pendulum
- Alfred C. Glassel, Jr. Hall
- Museum Services
- Hall of Special Exhibitions
  - Brown Gallery
  - Fondren Gallery
  - Hamill Gallery
  - Jones Gallery

- restrooms
- garage parking
- elevators
- garage elevators
- stairwells
- garage stairwell
- food
- emergency exit
- box office

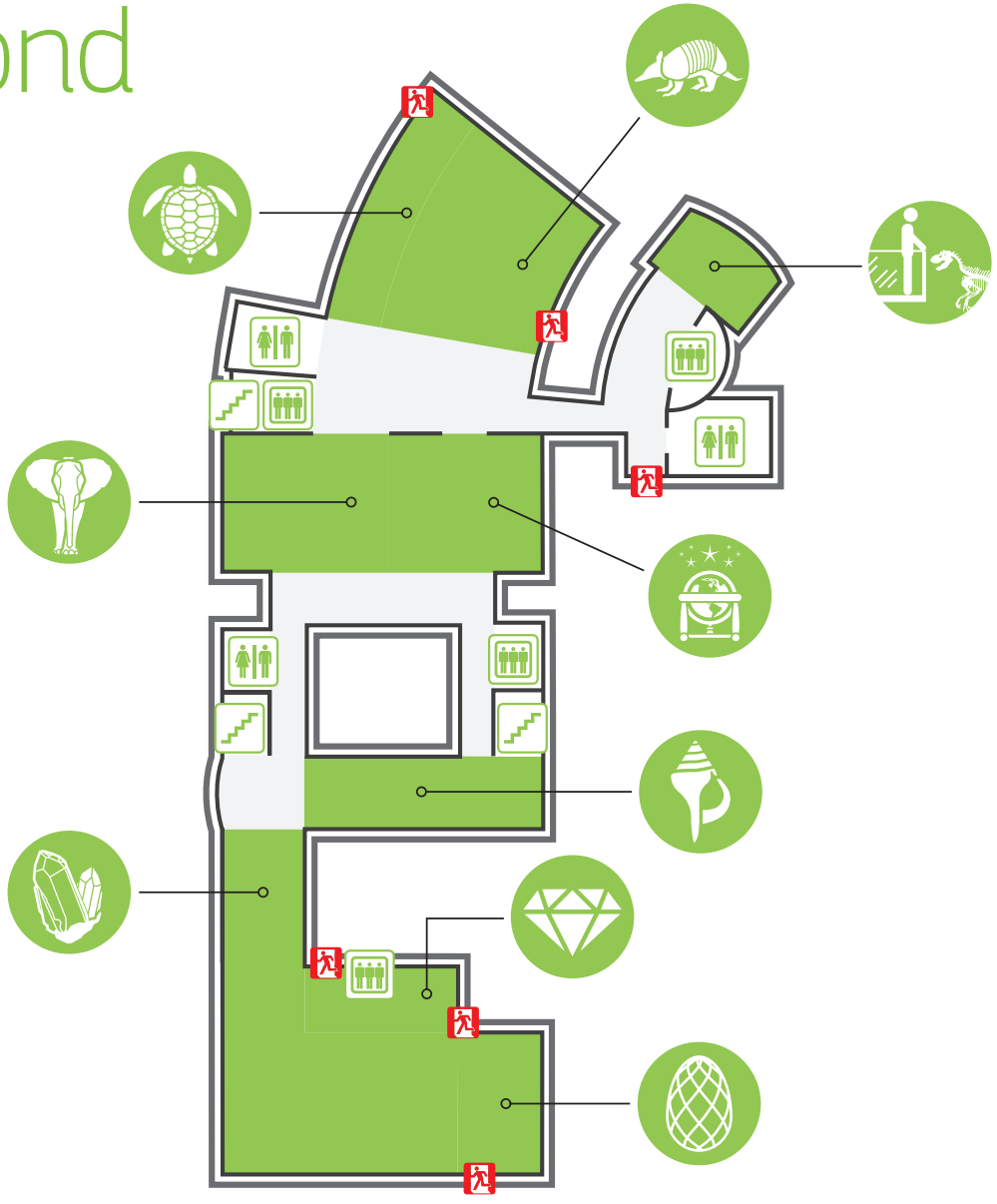
Main level


Cockrell Butterfly Center
Museum Entrance
★ SPECIAL ★ EXHIBITIONS
Giant Screen Theatre
Fondren Gallery
Jones Gallery
Burke Baker Planetarium
Grand Hall
Hamill Gallery
Brown Gallery
P
Museum Entrance
Museum Entrance
Museum Parking Garage Entrance

Museum Map

- Cullen Hall of Gems and Minerals
- Lester and Sue Smith Gem Vault
- Dorothy and Artie Mcferrin Gallery
- Strake Hall of Malacology
- Cabinet of Curiosities
- Evelyn and Herbert Frensley Hall of African Wildlife Graham Family Presentation of Ecology and Conservation Biomes
- Hamman Hall of Texas Coastal Ecology
- Farish Hall of Texas Wildlife
- Morian Overlook

Second level



Frensley/Graham Hall of African Wildlife

The Frensley/Graham Hall of African Wildlife is located on the second level adjacent to the Hamman Hall of Coastal Ecology

Frensley/Graham Hall of African Wildlife

Locate the Lowveld display. Read the text panel titled "What is an Ecosystem".

Label the plants and animals on the food web using the following words: producer, primary consumer, secondary consumer, scavenger (detrivore)

biodiversity

Locate the Ethiopian Realm display. Read the text panel titled "Living Together in Harmony"

What regions generally support the highest levels of biodiversity?

What is a niche?

Why does the Ethiopian Realm have lower biodiversity than the West African Tropical Forest?

Explain the role niches play in biodiversity. Using the T-chart below compare and contrast the Ethiopian Realm with the West African Tropical Forest.

Farish Hall of Texas Wildlife

The Farish Hall of Texas Wildlife is located on the second level of the Museum.

Farish Hall of Texas Wildlife

Ecosystems

An ecosystem is all the living and non-living things that interact with one another in a given area. Observe one of the six ecosystems.

Write the name of the ecosystem and list three biotic and three abiotic things within that system.

System: _____

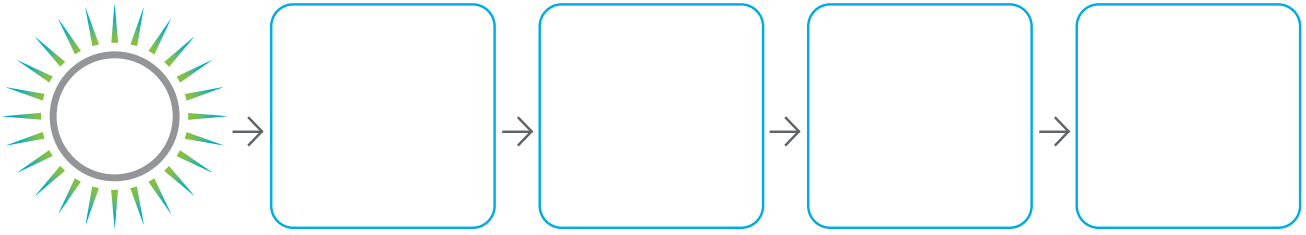
Biotic (Living)	Abiotic (Non-Living)

Abiotic resources often determine what kinds of plants and animals you will find in a particular ecosystem.

What resource might you find in an ecosystem that has many different species of ducks? Why?

Food Chains

A food chain shows how energy and materials flow from producers to consumers and recycle again with decomposers. Pick one of the ecosystems from the previous activity and fill in the food chain using what you see.



Adaptations

Teeth and bills are adaptations that help animals eat a particular diet.

Carnivores eat other animals, herbivores eat plants and omnivores eat both plants and animals. Find the following animals and look at their teeth or bills, then fill out the chart.

Animal	Sketch the tooth or bill	Carnivore, Herbivore or Omnivore?
American Alligator		
Bald Eagle		
Pronghorn		
Mottled Duck		

Hamman Hall of Texas Coastal Ecology

The Hamman Hall of Coastal Ecology is directly connected to the Farish Hall of Texas Wildlife.

Hamman Hall of Texas Coastal Ecology

Ecology

Search the map of Texas on the wall and locate Houston (Harris County) . Mark the location of Houston in your workbook.

Ecology

Describe the ecology of this area and explain why it is important to the Houston area.

Changes in ecosystems

Locate the oyster reef in the Upper Coast section of the hall. Look at the display (including the background pictures).

List all of the biotic and abiotic features of the oyster reef below.

Biotic (Living)	Abiotic (Non-Living)

Name one natural and one man-made disaster that would affect the health of an oyster reef.

Natural Disaster:

Man-made Disaster:

Adaptations

Locate the brown pelican. The brown pelican's beak is adapted for scooping up fish from the water. Propose a man-made tool that would work in the same manner. Make a sketch of the device, and label it.

My device is a:

draw device here

Morian Hall of Paleontology

The Morian Hall of Paleontology is located on the main level next to the elevators.

Morian Hall of Paleontology

Inherited traits

Look at the Trilobite Timeline. Notice how there are many different varieties and shapes. Trilobites changed as time progressed, but some traits remained and were passed down from one generation to the next. List some of the traits that are common to all of the trilobites on the timeline.

adaptations

As you walk through the exhibit, find and list four different animals and their adaptations. Explain how the adaptation helped the animal to survive in its ecosystem. You have been provided with one example.

Animal	Adaptation	Survival Function
Stegosaurus	Spiked tail	Defense against attacks from carnivorous dinosaurs

Tying It All Together

You explored many different types of animal adaptations in the Museum's exhibit halls. Explain how color could be used as an adaptation to help butterflies and moths survive in their environments.

Color the butterfly below so that it would be difficult for a predator to find it while it was resting on a tree.

Construct a food chain below, using the following: eagle, butterfly, plant, sun, lizard

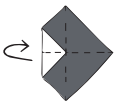
You saw many different kinds of insects in the Brown Hall of Entomology. What was your favorite insect? Why? Many insects are decomposers. Add a decomposer to the food web you created above.

Food chains

how to make

1. Carefully cut along the outline of the square. Fold and unfold the square in half diagonally in both directions to make two creases that form an X.

2. Place the paper facedown, and. Then fold each of the four corners in so that their points touch the center.



3. Turn the paper over so the flaps are facedown. Again, fold each of the four corners in so their points touch the center.

4. Fold the square in half, making a rectangle. Unfold and fold in half in the opposite direction, making a rectangle.

5. Slide both index fingers and thumbs under the four flaps.

6. Use your thumbs and index fingers to pinch the top corners together and form a point. You are ready to play.

how to play

1. Choose a number from one to five.

2. Open and close the cootie catcher (front to back and then sideways) as many times as the number selected.

3. Choose one of the four questions shown inside and answer it.

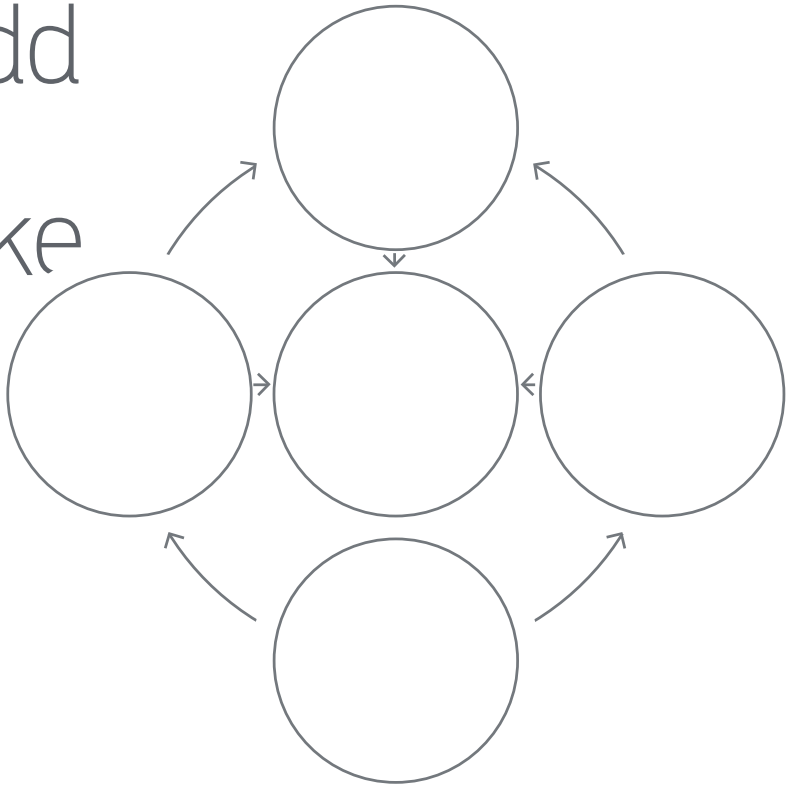
4. Lift the flap on which the question is written and check the answer.

5. Continue playing in the same way until all eight questions have been answered.

food chains
An organism that makes its own food
producer
This is usually the beginning of a food chain
sun
food chains
The first consumer in food chains
primary consumer
An animal that hunts another for food
predator
food web
multiple food chains connect to create this
decomposer
An organism that breaks down other organisms
food chains
This is usually the beginning of a food chain
prey
An organism that consumers plants or other animals to survive
consumer
food chains

Fill in the food web

What organisms could you add to this food chain to make a food web?



You explored several different ecosystems throughout the Museum. Describe the ecosystem within the Corkrell Butterfly Center.

The ecosystem in the Corkrell Butterfly Center is man-made. What types of things would you need to include in an artificial ecosystem that could support sea life such as oysters and sharks?

The fossils you saw in the Morian Hall of Paleontology all went through a process to become fossilized. Number the steps in the correct order for the fossilization of a fish.

_____ Minerals contained within the water replace the minerals within the fish's skeleton in a process known as permineralization. It leaves a copy of the original skeletal remains.

_____ Over time the skeleton is buried deeper and deeper by accumulating sediments.

_____ Erosion strips away the exposed rock, leaving the fish's skull exposed.

_____ An underwater earthquake causes the fish's body to be covered by a deep layer of sediment.

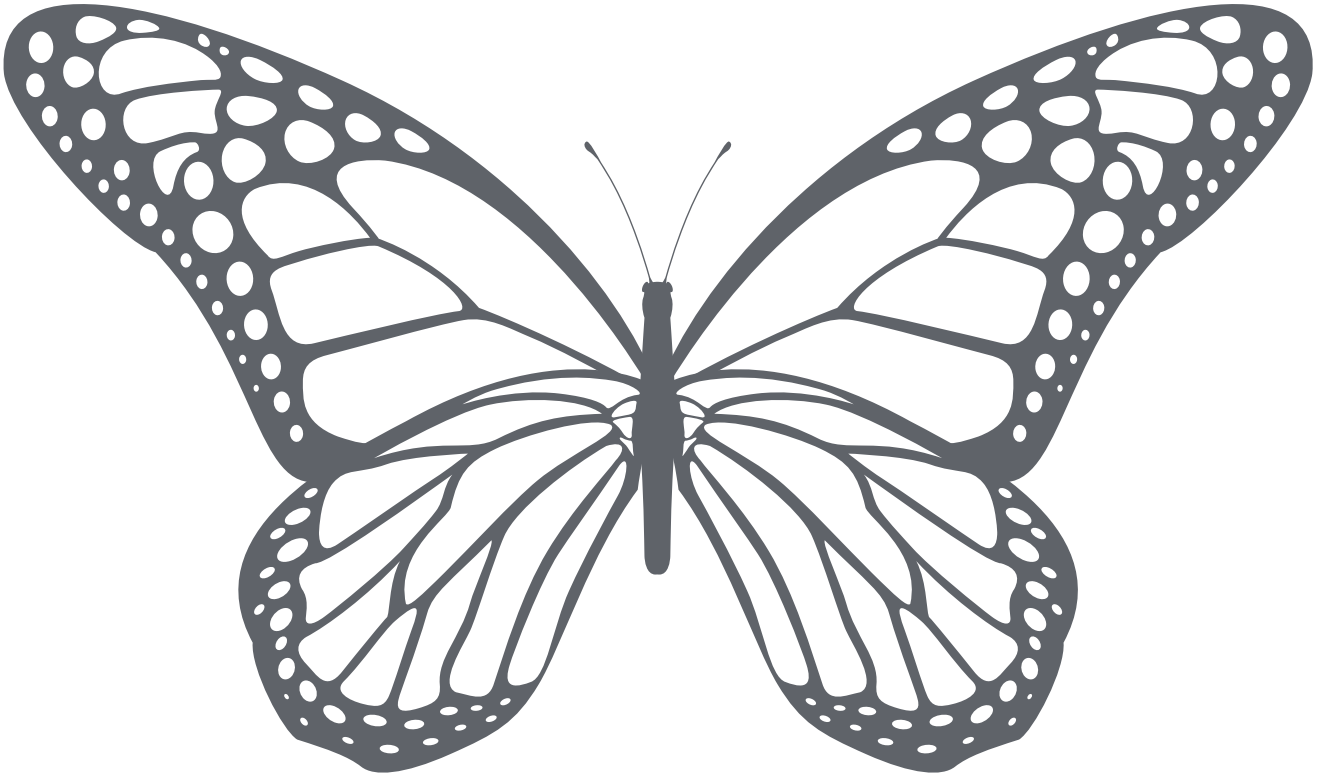
_____ Continental plates collide and lift the bedrock where the fish was buried above sea level.

_____ A fish dies after returning to its birthplace to spawn.

_____ The fish begins to decay.

_____ As more sediment accumulates and compaction occurs, sedimentary rock is formed.

_____ The partially exposed fossil is discovered and excavated from the rock by a paleontologist.



Color and return to your teacher. Your artwork will be sent to the Houston Museum of Natural Science.

Name

School

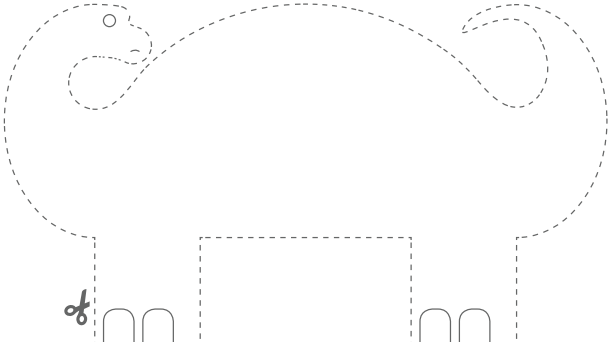
Grade

What I liked best about the Museum...

Sincerely, _____

Print you name on the line

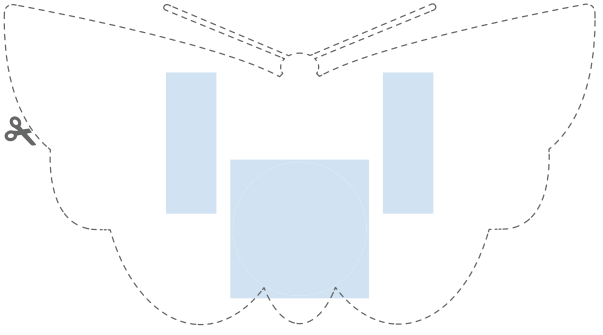
Turn this cut out into a **balancing dino**!



For instructions go to hmns.org/outreach.

Show us your final product at #hmnsoutreach.

Turn this cut out into a **flying butterfly!**



For instructions go to hmns.org/outreach.

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