Teacher Instructions
for
Discovery Guide to
Hall of the Natural Wonders
for grades 9 through 12

Before Your Visit:
• This activity was developed by the Education Department to help your students focus on learning while at the museum.
• Please make copies of this activity and bring it with you to the museum. The museum does not provide copies for your students.
• Please remind your students to use pencil, not pen, when completing this Discovery Guide. Encourage your students to fold this guide in half so it will be easier to write on. Students should not place their papers on exhibit walls, cases, or labels, as this can damage them.
• Save paper! Print pages 2-3, and copy them one to two-sided, so that you have a one piece of paper with questions on both sides.

While at the Museum:
• These questions will encourage students to look closely at museum exhibits, think critically about what they are seeing, and discuss their findings with their classmates and chaperones.
• Most of the questions can be answered by reading the labels, but there are several thought and open-ended questions, and students are encouraged to give an original answer.
• Students may not always come up with the “right” answer, so if this activity is to be used for a graded assignment, we suggest that you grade more on participation and thoughtfulness than accuracy.
• Volunteers are frequently available in the galleries to answer questions.

Other Information:
• This is one of three Discovery Guides for this grade range. Discovery Guides are available for three galleries, including the Halls of Ancient Life, People of Oklahoma, and Natural Wonders.
• Have questions or suggestions? Send us your feedback at education@snomnh.ou.edu, or Education Department, Sam Noble Oklahoma Museum of Natural History, 2401 Chautauqua Ave., Norman, OK, 73072.

Answers
1. Riffle: banded sculpin, redbelly dace, green heron, crayfish, tadpole snail, dobsonfly larvae
Shallow Pool: Neosho mucket, small mouth bass, central stoneroller, longear sunfish, rockbass, redspot chub
Deep Pool: Ozark minnow, small mouth bass, stippled darter, cardinal shiner, blackspotted topminnow, mayfly larvae, midge larvae
2. They eat algae- scrape the top layer from rocks. Without them, algae would cover the stream bed, silt increases, and invertebrates decline in the stream.
3. B
4. C
5. CaCO₃
6. D
7. advantage - don’t waste energy on things that are not necessary in an area where energy is limited; disadvantage - slow movement, reduced or no vision, hard to escape a predator.
8. the warblers have different feeding and nesting habits
9. spotted salamander, box turtle, mosquito larvae, dragonfly, cricket frog
10. fewer of these animals would breed, so there would be fewer of those animals
11. the female/mother skink
12. the mother eats it
13. predators, like snakes, might smell the rotting egg and find the nest
14. chemicals, tough leaves, spines and stinging hairs, hidden growth tissue
15. C
16. B
17. a close relationship between two (or more) species.
18. A
19. brown tarantula and narrow-mouth toad
20. stir the soil; recycle nutrients; create habitat for others; make passages for air and water in the soil
21. cricket frog tadpole, stoneroller, monarch butterfly
Bonus: central stoneroller, striped skunk, beetle grub, big-eared bat, white-footed mouse
**Directions:** Questions begin at the entry of the Hall of Natural Wonders gallery by the large mural and the Upland Stream exhibit and go in sequence through the gallery. Finding the answers will be easier if you answer the questions in order. To answer the questions labeled Think, you have to use information on the label, common sense, and talk to your friends and to the volunteers to think of the answer.

**Upland Stream in the Ozark Highlands**

1. Streams have a variety of habitats that attract all kinds of animals. Observe the stream and list one animal that lives in each of these microhabitats.
   - Riffle: ________________________________
   - Shallow pool: ____________________________
   - Deep pool: ______________________________

2. Why are central stonerollers so important to an upland stream?
   ________________________________
   ________________________________

3. The Neosho Mucket is a type of:
   A) Vertebrate  B) Mollusk  C) Plant  D) Gastropod

4. The lure of a Neosho Mucket imitates a:
   A) Seaweed  B) Plant  C) Small fish  D) Roundworm

**Limestone Cave in the Ozark Highlands**

5. Limestone can also be written as a chemical compound. What is it? __________

6. Some characteristics of animals living in caves are:
   A) Little-to-no color  B) Reduced or no eyes  
   C) Slow movement  D) All of the above

7. List one advantage and one disadvantage of having these characteristics.
   ________________________________
   ________________________________

**Oak Hickory Forest in the Ozark Highlands**

8. How can five different species of warblers live in the same habitat without competing for resources?
   ________________________________
   ________________________________

9. Circle the animals you might find in or near a spring pool.
   - spotted salamander
   - tarantula
   - box turtle
   - dobsonfly larvae
   - mosquito larvae
   - dragonfly
   - sunfish
   - cricket frog

10. Spring pools are very important to many animals that depend on them. What do you think could happen to the spring pool animals in a drought year?
    ________________________________
    ________________________________
11. Find the skink nest in the log. Who is protecting the nest?

12. What happens if one skink egg goes bad and starts to rot?

13. How is this behavior beneficial to the skink?

14. Mixed-Grass Prairie

Plants have many defense mechanisms for protection against herbivores (plant eaters). List four ways prairie plants protect themselves.

1) ___________________________________________
2) ___________________________________________
3) ___________________________________________
4) ___________________________________________

15. How many bison are found in public reserves in the U.S. and Canada?
   A) 100,000    B) 50,000    C) 20,000

16. How many bison were historically present on the Great Plains?
   A) 100,000    B) Millions    C) 5,000

17. Bison and prairie dogs work together in a symbiotic relationship. What does symbiotic mean?

18. What type of symbiotic relationship do bison and prairie dogs have?
   A) Mutualism    B) Parasitism    C) Commensalism

19. Now visit the other side of the Mixed Grass Prairie to find another symbiotic relationship that is similar to the bison and prairie dog. List the two animals below.
   ______________________ and ______________________

20. List two ways that invertebrates help prairie soil.
   1) ___________________________________________
   2) ___________________________________________

21. Think About It

Answer this question after you have visited all of the Natural Wonders gallery. You will have to think to get the answer—some of the answers are not on the labels.

Which of these animals are herbivores? Circle your answers.

![Images of animals: cricket frog tadpole, dung beetle, stoneroller, dragonfly, monarch butterfly, striped skunk, eastern meadowlark]

Bonus. Fill in the missing animal in the food chains below.

Producer  Consumer    Consumer     Consumer
algae      ______________   largemouth bass   river otter
nectar     yellow jackets   _____________   great horned owl
roots      ______________   black & white warbler   grey fox
nectar     moth      _____________   black rat snake
grass seeds  ______________    loggerhead shrike     red-tailed hawk

Animals:   big eared bat   central stoneroller   beetle grub
           striped skunk   white-footed mouse

Created by Sam Noble Oklahoma Museum of Natural History Education Department, 2011