

Diversity of Life Field Trip Guide

Student

ARIZONA-SONORA
DESERT
MUSEUM



This field trip was designed as an exploratory activity with a slight emphasis on content development and should be utilized at the beginning of the Diversity of Life unit. It is recommended that students complete the first part of Investigation 1 from the Diversity of Life Unit: "What is Life" (through sorting the living/non-living cards) prior to visiting the Desert Museum.

Activities during the visit

All Students will do the following, in any order, located in the Southeast quadrant of the Museum:

1. Tour the Saguaro Cactus Exhibit adjacent to the Big Horn sheep exhibit; when you return to the Museum exit, complete a sketch of a 75 + year old Saguaro from the Museum steps.
2. Investigate the Life Zones exhibit outside the walk-in Aviary;
3. Visit the Thornscrub Community, located along the walkway between the Ironwood Restaurant and the walk-in Aviary

Each chaperone/student group will be assigned to become experts in one of the following:

1. Cat Canyon
2. Riparian Corridor
3. Mountain Woodlands
4. Desert Grasslands
5. Aviary/Hummingbird
6. AZ Upland (Desert Loop) -- Requires lots of walking in open desert --- Best done in a.m.!

Upon completion of 1, 2, 3 & 4 and one Expert assignment, chaperone/student groups may choose to visit any of the Expert locations 1 through 6 and/or other Museum exhibits and interpretive stations. (Due to class size variances and/or teacher preferences, some of the topics may not be assigned to an expert group and they can be investigated during choice time.)

Mandatory Stop 1: Saguaro Cactus Exhibit

(Located in the wall adjacent to the Big Horn Sheep exhibit)

1. What 'needs' of the saguaro cactus are met by the following:

a.) Growing near a nurse plant? _____

b.) Germinating and growing in rocky soil? _____

c.) Only growing in the Sonoran Desert? _____

2. How does each of the following structures of a Saguaro help it meet its needs to maintain life?

| Structure | Function (How helps saguaro maintain life) |
|-----------|--|
| Roots | |
| Exterior | |
| Framework | |

3. Explain the inter-relationship between the woodpeckers and the saguaro. _____

4. How does the structure of a woodpecker's beak relate to its function(s)? _____

5. How is the abandoned woodpecker nest further utilized? _____

6. Complete the timeline below with the name and date of the three parks established to protect and preserve the saguaro cactus.

1900

1950

2000

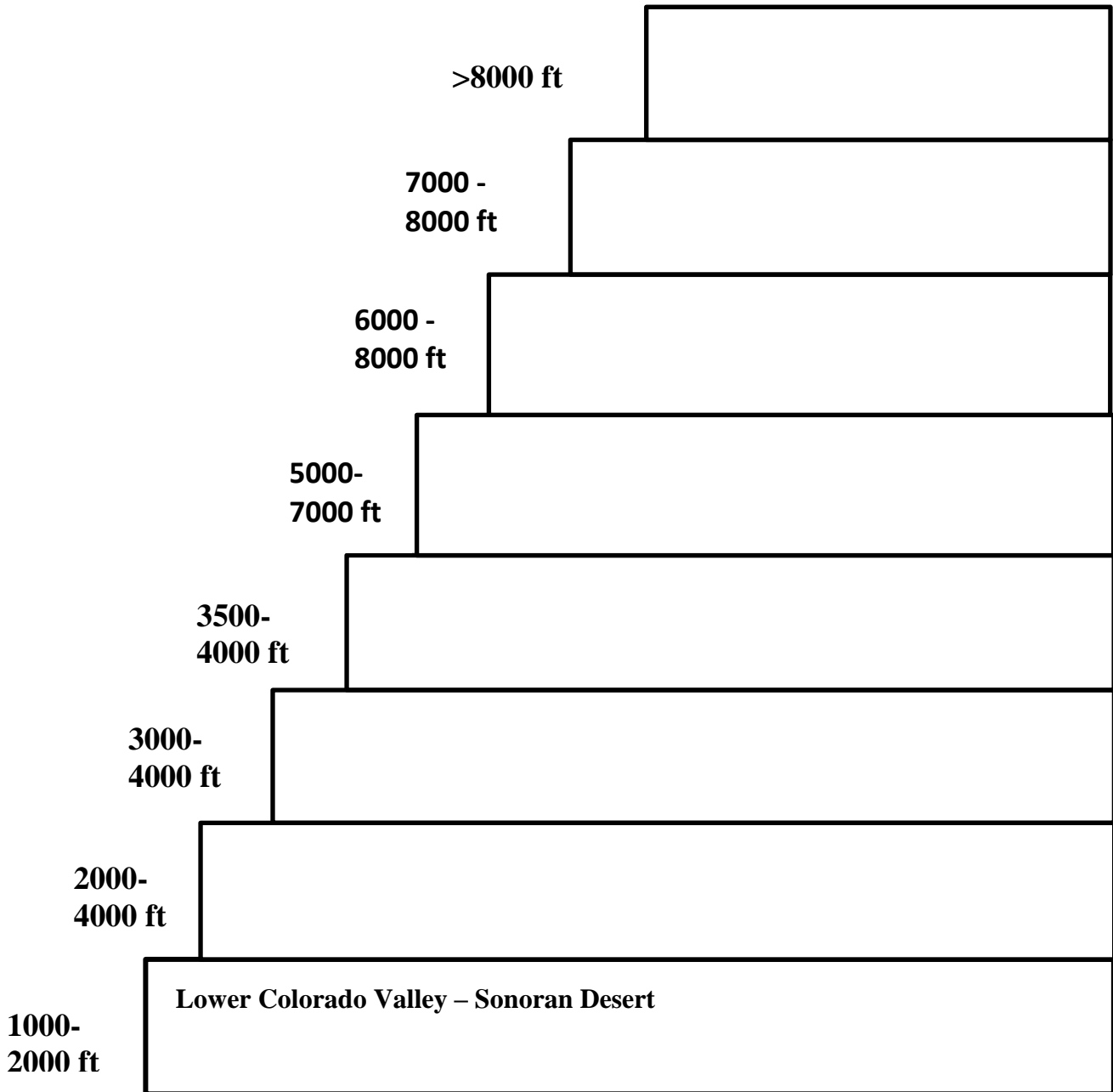
7. Assess the value of preserving and protecting the saguaro and describe 2 reasons why it is important. _____

8. When you return to the Museum Entrance/Exit steps, look out at the desert landscape.

Locate and sketch of a 75 + year old Saguaro (use what you have learned regarding saguaro age)

Mandatory Stop 2: Life Zones (adjacent to walk-in aviary – facing aviary door, look behind you and over your right shoulder for first sign)

In 200 feet of this exhibit, you can imagine that you are walking to the top of a 9000-foot mountain. Compare/contrast the different biotic regions or life zones. Using the exhibit signs, label each ascending life zone, list an interesting fact, note precipitation, and identify at least one plant and one animal found in each region. Please note: the zones are approximate, and have been moving up in elevation since this exhibit was constructed.



Using what you have learned, describe the relationship between elevation, temperature, and the types of plants found as you ascended the 'mountain'

Why do you think the life zones have moved up the mountain over the last decades?

Mandatory Stop 3: Thornscrub Community

(located along the walkway between the Ironwood Restaurant and the walk-in Aviary)

Observe the plants. Make notations as you discover patterns and the diversity.

Describe a pattern you see with the barrel cactus. What direction do you think they are pointing? The closest mountains (Tucson mountains) are to the East. You can also use a compass if you have one, and your knowledge of the Sun's movement in the sky_____.

Hypothesize why they have directionality _____

Locate the crested saguaro (cactus with a crown). Make a quick sketch of the crested saguaro.

Locate the nurse plant that is protecting the greatest number of saguaros. What type of tree or shrub is it _____ ; and how many saguaros are under its protection? _____

EXPERT GROUP INVESTIGATION: Hummingbird and Walk-In Aviaries

Prior to entering the Hummingbird Aviary (along the path leading to the Hummingbird Aviary), locate and read the information about the Ocotillo and the Hummingbird.

1. Describe the relationship between the Ocotillo and the Hummingbird. _____

2. As you enter the hummingbird aviary, stop and notice the physical surroundings. Describe the physical environment and predict its importance to the hummingbird's survival:

3. For the season you are visiting the Desert Museum, list the hummingbirds that are present in the aviary. _____

4. Locate and record the following data for a hummingbird:

| | | | |
|-------------------|--|----------------------------|--|
| Heart rate | | Energy Requirements | |
| Weight | | How conserve Energy | |
| Wing beats | | Eggs | |

5. If a hummingbird were as big as you, what would it have to do to stay alive? _____

6. Sit and observe the hummingbirds. What are some of the various feather colorings and behaviors that you see? _____

7. Make a hypothesis about why their colorings are different. _____

8. What analogy can you make: a) for the hummingbird's beak: _____
b) for the hummingbird in flight _____

9. See if you can locate a hummingbird nest. If you can, sketch it and/or make observations about how it is constructed.

10. Choose one hummingbird to sketch noting its special colorings. Then find the ID charts and see if you can identify it by name.

The name of my hummingbird is: _____

Interesting facts about my hummingbird are: _____

11. Would you say that hummingbirds are aggressive? Defend your answer. _____

12. Prior to entering the Walk-In Aviary, view the variety of birds pictured on the wall. How many species migrate/reside in the Tucson area? _____

13. Make a prediction about how birds sleep (not hanging upside down)? _____

14. Observe several birds in flight. Compare their flight patterns with that of the hummingbird. _____

15. Sit and observe different birds. What are some of the various feather colorings, beak shapes and behaviors that you observe? _____

16. How would you explain the differences in the shapes of the beaks and feet of birds? _____

17. See if you can find a bird's nest. Sketch and/or make observations about its construction

EXPERT GROUP INVESTIGATION: Bighorn Sheep/Cat Canyon

As you observe the animals in these exhibits, compare/contrast their typical diets and habitats (homes), note interesting facts, and describe interesting features of their exterior, body characteristics. Make inferences as to why their exterior bodies have these body characteristics (how do they help them meet their needs to stay alive).

| Animal | Typical diet | Describe Physical environment | Den Y/N | Interesting fact (s) | Exterior Body characteristics | Inferences |
|---------------|--------------|-------------------------------|---------|----------------------|-------------------------------|------------|
| Bighorn Sheep | | | | | | |
| Ocelot | | | | | | |
| Bobcat | | | | | | |
| Gray fox | | | | | | |
| Coati | | | | | | |
| Porcupine | | | | | | |

1. Locate and summarize the definition of Ecology: _____

2. Hypothesize why all of these animals are able to co-exist in the same area. _____

3. Using what you have learned, bust a myth pertaining to porcupines.

4. Describe how the structure of the cat 'claws' are related to their function (how used).

5. Predict why some of these animals have dens.

6. Make a sketch of one of the animals. Optional

EXPERT GROUP INVESTIGATION: Desert Loop (AZ Uplands)

(This is a half-mile trail, with part of the trail uphill. It takes about ½ to 1 hour to tour.)

You will pass the Saguaro Ramada and alongside the trail will be a sign for the Ocotillo.

1. Compare the water conserving features of the Ocotillo with its Human uses.

| Ocotillo feature | Human use |
|------------------|-----------|
|------------------|-----------|

2. If you encounter the Chuckwalla and the Eastern Collared Lizard at the same time, what characteristics would you use to identify each of them?

3. The Chuckwalla and the Eastern Collared Lizard have different ways of surviving in the desert. Describe 2-3 of these differences:

4. Explain 3 or 4 main differences between a javelina and a pig:

Javelina

Pig

5. How does the structure of the javelina’s canine teeth correlate to their function?

6. After reading about the javelina's senses, assess which sense will help the javelina detect your presence first.

7. Javelinas travel in groups; why is this to their advantage?

If you are lucky enough to view the Javelina, record your observations about its appearance and/or behavior.

8. There are 3 main types of Palo Verde trees common in the Tucson desert area. Name and briefly sketch a branch of each type, making sure differences are notable.

| | | |
|--|--|--|
| | | |
|--|--|--|

9. Coyotes exhibit opportunism. Describe what this means:

10. What characteristic(s) of the coyote were used to make the conclusion that the coyote exhibits opportunism?

11. If you were to observe a coyote, what characteristics contribute to its success as a predator?

EXPERT GROUP INVESTIGATION: Grasslands

1. (This animal is on exhibit during warm seasons only) It's not a box! It's a _____.

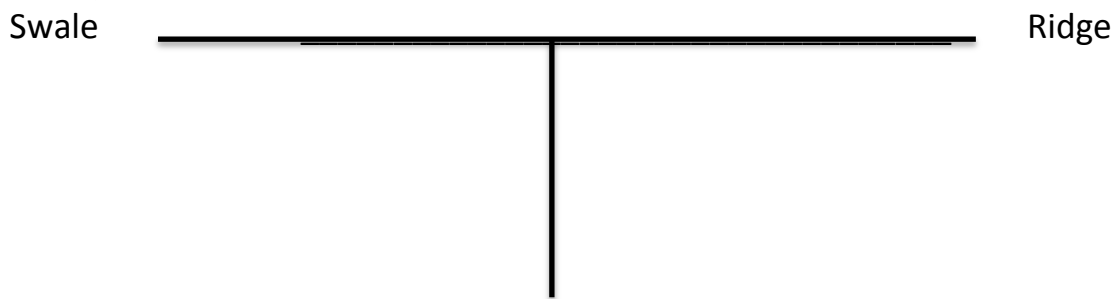
2. How does the structure of the shell function to provide protection? _____

3. Identify the animal that was common to the Grasslands prior to domestication for man's work and pleasure: _____

4. Grasses feed the world. Do you agree _____ Support your response with data. _____

5. Identify the main, physical differences between a swale community and a ridge community: _____

6. Compare and Contrast one of the 4 swale community snakes with one of the 3 ridge community snakes. Identify each snake used.



7. Which grassland animals are geniuses at running mazes? _____

8. How does this animal obtain its water? _____

9. Describe commensalism _____

10. Who borrows burrows from the prairie dog? _____
And why? _____

11. Who was last seen in Arizona in the 1930's! _____

12. Describe a coterie and why it is beneficial? _____

13. View the prairie dogs for 5 minutes. Identify 5 observable personification behaviors (animals exhibiting human-like emotions/actions).

1. _____
2. _____
3. _____
4. _____
5. _____

14. Describe how some of the Grassland, living organisms obtain the necessary nutrients/resources to maintain life.

15. Prairie dog sketches - Optional

EXPERT GROUP INVESTIGATION: Tortoise & Riparian Corridor

(The tortoise will not be on exhibit from about October – April, but students can read the exhibit signs)

1. Describe how a tortoise is different from a turtle.

2. Compare the shape of the tortoise front legs to its hind legs.

3. Hypothesize why there is a difference.

4. How does the tortoise meet its needs for nutrients and water

5. The Riparian Corridor is a very distinct biotic community within the Sonoran Desert. What is the major defining characteristic of the physical environment of the Riparian Corridor?

6. Make 4-5 **scientific** observations about the Riparian physical environment:

7. Suppose this area undergoes a drought for several years. Hypothesize what would happen to the Riparian community and justify your answer.

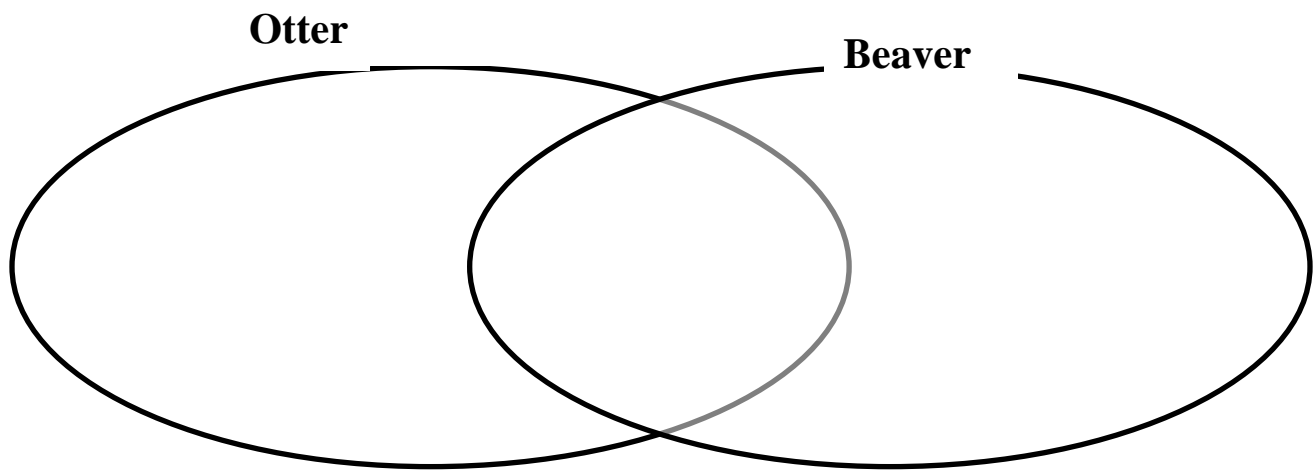
8. Would you consider our 'washes' during Monsoon season to be Riparian areas?

Why or why not?

9. Find and list 3 species of fish native to the Sonoran Desert region:

10. Fish is the food source for which animal(s) shown in the exhibit:

11. Observe, then compare/contrast the beaver and the otter (list at least 5)



12. Hypothesize how the structure (shape) of these animals allow them to function under-water.

13. Make a detailed sketch below of either the beaver or the otter, your choice.

EXPERT GROUP: Mountain Woodlands

1. View the Mountain Lion from both the upper and lower observation stations. As you walk from one station to the other, observe and listen to your surroundings. Describe the physical features and vegetation (type, height, etc.) that you see and the natural sound you hear.

2. Describe the typical weather conditions of the Mountain Woodlands _____

3. The mountain lion has a hunting range of _____.

4. Identify the four physical characteristics that allow the mountain lion to be a successful hunter:

1. _____ 2. _____

3. _____ 4. _____

5. Black Bears have a weight range of _____.

6. Are all black bears black? _____ Hypothesize why this would be _____

7. The Mexican Grey Wolf has a hunting range of up to _____.

8. What caused the Mexican Grey Wolf to become endangered? _____

9. White-tail deer are herbivores that consume _____.

Explain why the white-tail deer 'hides' during the day. _____

10. What are the common characteristics of the Mountain Woodlands habitats of the mountain lion, black bear, Mexican grey wolf and white-tail deer? _____

11. Identify 3 birds common to the Mountain Woodlands: 1. _____

2. _____ 3. _____

12. Discuss how the animals obtain the resources they require for survival within the Mountain Woodlands:

13. Sketch an animal from this region - Optional

DOCENT INTERPRETATION

Be sure to listen to a docent interpretation. Docents are found throughout the Museum and have interesting desert artifacts, and sometimes live animals to show you! With your chaperone, check the events schedule at the Orientation Ramada and decide which interpretations you want to see. Write down the time and location so you don't forget!

Use the space below to take some notes. When you return to your classroom, write a paragraph about what you learned.

Docent interpretation subject: _____

Notes: _____



FAVORITE EXHIBITS



1) Which exhibit or part of the Museum did you enjoy the most? _____

2) Why did you find this so interesting? _____
