Name: _____ **Honors Biology Field Experience**

Arizona Sonorna Desert Museum: Journey through the Desert Ecosystem

Tucson, Arizona

MEET AT CAMELBACK HIGH SCHOOL 6:45 AM on Wednesday, November 7th

Too often, people think that there is hardly any life in the desert (conjure up the image of the lone vulture hovering over the thirsty human near a cactus, if you will). This field experience will counter that stereotype and celebrate the diversity inherent in our own local Sonoran Desert. The Arizona Sonora Desert Museum is a one-of-a-kind museum as it takes place in the natural setting of "100 acres of nearly pristine Sonoran Desert." The museum uses the natural desert landscape to almost exclusively exhibit plants, animals, minerals, and fossils native to the Sonoran Desert.

The exhibitions and collections include:

- 106 mammals of 31 taxa
- 241 birds of 72 taxa
- 361 reptiles of 86 taxa
- 122 amphibians of 23 taxa
- 10,700 fish of 9 taxa
- 840 arthropods of 78 taxa
- 40,000 plants (not counting grasses) of 1,300 species
- 14,095 specimen of regional gems, minerals, and fossils

> "We believe that a danger often accompanies the success of living museums, zoos or botanical gardens - and that is that people may be so assured and comforted by the health and vitality of the collection that they become complacent about the condition of wild environments and species. We seek to avoid this…by considering the wild and undeveloped portions of our grounds as part of our collection and by encouraging our visitors to contemplate and enjoy the whole as well as its parts." -From www.desertmuseum.org

The Camelback Montessori College Preparatory has been invited to take a stroll through the desert to appreciate the unique beauty of our Southwest landscape. I will also challenge you to make field observations and note aspects that inspire you, surprise you, and strike you as unnatural. How closely does the Museum achieve the goal of remaining true to retaining the natural origins of a desert ecosystem?

What you will need:

- ☐ A device to take photos: Camera, cell phone, iPod touch, iPad (**charged)**.
- ☐ Lightweight bag/backpack to carry materials
- ☐ Sonoran Desert Museum Photo Hunt/ Notetaking sheet
- ☐ Writing Utensil
- ☐ Money for lunch or sack lunch from school or lunch from home
- ☐ **Layered clothing, hat, sunglasses,** and **WATER**- after all, we're in the desert!
- ☐ Appropriate walking shoes: some paths are unpaved and some paths are hilly

What you will do while visiting the museum:

- During the trip, **take photos** of examples of abiotic factors, biotic factors, producers, and consumers in order to illustrate the ecosystem you observed as well as to create a food web in Powerpoint with **at least 10 organisms- see photo hunt guidelines! (**remember: anything from the kingdoms of life counts as an organism!)

- During the trip, **take notes** on things that surprise and inspire you compared to what you usually think of when you hear "the desert."
  - Some questions to consider:
    - What is missing from the environment created? Does anything appear embellished (purposely made to be extravagant for the sake of people)? What structures do you see which were designed more for humans than the organisms?
    - Did organisms have an opportunity to interact with other members of its natural community?
    - What resources are more plentiful at the Museum for organisms than expected in nature, if any?

- Take pictures for a presentation that will address how closely the Sonora Desert Museum was able to maintain (or stray from) the origins of staying true to nature

Follow-up work: DUE Wednesday, November 14th, beginning of day

- Look over your field notes and pictures to make an **9-slide presentation to explain: (**Prezi okay)

_____ Slide 1: Title page with your name and the date of the field experience and the location

_____ Slide 2: Pictures of 4 important abiotic factors, explaining why each abiotic factor is significant to the ecosystem.

_____ Slide 3: Pictures of at least 3 producers with at least one important fact about each producer as well as an explanation of the ROLE producers play in ecosystems.

_____ Slide 4: Pictures of at least 6 consumers with at least one important fact about each consumer. Label each consumer as "Primary consumer, secondary consumer, and tertiary consumer."

_____ Slide 5: Picture of at least 1 decomposer with at least one important fact about decomposers and an explanation of the ROLE decomposers play in ecosystems.

_____ Slide 6: Create a food web using at least 10 organisms (use the ones from slides 3-5!), drawing arrows to show how energy flows in your ecosystem.

_____ Slide 7: Create an energy pyramid with a minimum of 4-tiers. Assume that your producer starts with 1,253 kCal of energy. Show the appropriate amount of energy in each subsequent level and provide an explanation for any loss of energy.

_____ Slide 8: Using your same food web, either take away or add a biotic or abiotic factor that would impact your food web. Explain specifically which organism(s) would be impacted and why.

_____ Slide 9: An overall conclusion slide which includes one more photo of your choice and an explanation on how well you think the Sonoran Desert Museum preserves the natural origins of Arizona ecosystems. Your explanation should be 5-7 sentences.

Name: _____ **Photo Hunt Checklist (REQUIRED TO FILL OUT)**

Abiotic Factors

- ☐ **1. _____**
  - **Notes:**
- ☐ **2. _____**
  - **Notes:**
- ☐ **3. _____**
  - **Notes:**
- ☐ **4. _____**
  - **Notes:**

Organisms

Producers (pick at least 3; make sure they interact with your consumers!)

- ☐ **1. _____**
  - **Notes:**
- ☐ **2. _____**
  - **Notes:**
- ☐ **3. _____**
  - **Notes:**

Consumers (pick at least 6; make sure they interact with each other and the producers!)

- ☐ **1. _____**
  Type: ☐ Primary Consumer ☐ Secondary Consumer ☐ Tertiary Consumer
  - **Notes:**
- ☐ **2. _____**
  Type: ☐ Primary Consumer ☐ Secondary Consumer ☐ Tertiary Consumer
  - **Notes:**
- ☐ **3. _____**
  Type: ☐ Primary Consumer ☐ Secondary Consumer ☐ Tertiary Consumer

- **Notes:**

☐ **4. _____**

Type: ☐ Primary Consumer ☐ Secondary Consumer ☐ Tertiary Consumer

- **Notes:**

☐ **5. _____**

Type: ☐ Primary Consumer ☐ Secondary Consumer ☐ Tertiary Consumer

- **Notes:**

☐ **6. _____**

Type: ☐ Primary Consumer ☐ Secondary Consumer ☐ Tertiary Consumer

- **Notes:**

Decomposer

☐ **1. _____**

- **Notes:**

Other photos of interest:

☐ **_____**

- **Notes:**

☐ **_____**

- **Notes:**

☐ **_____**

- **Notes:**

☐ **_____**

- **Notes:**

☐ **_____**

- **Notes:**

- **Field Notes (REQUIRED): Take notes on things that inspire or surprise you. Some questions to consider:**
  - What is missing from the environment created? Does anything appear embellished (purposely made to be extravagant for the sake of people)? What structures do you see which were designed more for humans than the organisms?
  - Did organisms have an opportunity to interact with other members of its natural community?
  - What resources are more plentiful at the Museum for organisms than expected in nature, if any?

FIELD NOTES: November 7th, 2018

RUBRIC

Objective: Develop and use a model based on evidence to illustrate the relationships between systems

	4- "A"	3- "C"	2- "D"	1- "F"
Ecosystems content standards (70%)	All abiotic and biotic factors are present with the most important supporting facts Food web is complete and shows the appropriate flow of energy Food pyramid is appropriately constructed with accurate calculations and explains the loss of energy Impact of a change to the ecosystem is accurate and supported with strong reasoning Conclusion slide has a strong claim, evidence, and reasoning to compare how well the Arizona Sonoran Desert Museum models a real life desert ecosystem	Almost all abiotic and biotic factors are present with supporting facts Food web is mostly complete and accurately shows the flow of energy Food pyramid is accurately constructed with most calculations and provides some reasoning for energy loss Impact of a change to the ecosystem is included and mostly supported with reasoning Conclusion slide has a claim with reasoning or evidence to compare the Sonoran Desert Museum to real-life desert ecosystems	Most abiotic and biotic factors are present with some facts Food web contains some errors and accurately shows the flow of energy Food pyramid is mostly accurate but lacks reasoning for energy loss Impact of a change to the ecosystem is included but support is insufficient or flawed Conclusion slide makes a claim but needs more reasoning	Less than half of abiotic and biotic factors are present and/or is not supported with facts Food web contains major errors and/or incorrectly shows energy flow Food pyramid is missing or insufficient No impact included and/or no support provided for the impact Conclusion slide missing or and/or no reasoning provided
Digital Presentation (30%)	Digital presentation is aesthetically pleasing Student uses primary sources for photos from their own camera Information is organized and easy to follow Formatting is consistent throughout the presentation Information contained on the slide is specific enough without being excessive or redundant All slides are fully completed according to the requirements	Digital presentation may be overly simplistic or contains a little clutter Most of photos are primarily sourced from student's camera Information is mostly organized Minor forming inconsistencies Core information present, but may be wordy or lack minor details Almost all slides are fully completed according to the requirements	Digital presentation is too sparse and/ or cluttered Some of the photos sourced from the student's camera Information requires some effort to follow Most of the slides are completed but may lack some requirements	Digital presentation lacks visual appeal Less than half of the photos sourced from the student's camera Information requires significant effort to follow Less than half of the slides are complete and lack major requiremkents