Safety in the Desert

The desert is an AMAZING and really FUN place to explore, but we still want to stay SAFE. The following are a few things we need to do.

1. Drink Water – Fill your water bottle twice while you are in the park
2. Wear long pants and closed toe shoes
3. Watch your hands and feet – Always be able to see your fingers and toes
4. Feet on the ground, no climbing
5. Stay with your group
6. Wear your sunscreen and a hat
7. Watch out for wildlife – remember, snakes, bees, lions and bears live here too!

Leave No Trace

• Place all trash in a waste or recycle bin – if you are out in the field, pack it in, pack it out
• Take only pictures – try not to leave foot prints, take nothing but memories and field notes
• Stay on the trail
• Respect the desert and leave it wild
What is BioBlitz?

A BioBlitz is a 24-hour event in which teams of scientists, students, and community members find and identify as many local species as possible. BioBlitz events help scientists learn if biodiversity (all the different kinds of living organisms) is increasing or decreasing within a given area.

Joshua, a 10-year old from Washington D.C. was a huge help to his BioBlitz team. “I found this leaf that looked like it was up in the air. I got closer and it a was a butterfly. I swooped the net up behind it and caught it!”

Joshua’s butterfly was identified and added to a tally card.

The tally card helps keep track of the number of different species found. Healthy habitats support lots of different species.

---

Biodiversity in Saguaro National Park

Many different ecosystems exist in Saguaro National Park. As you go up the mountain, the air becomes cooler and wetter. Making the habitat at the top of the mountain very different from the habitat at the valley floor. Each habitat is home to many different species.

Down here, we find Saguaro Cactus, up there we find different natural communities including, Desert Grassland, Oak Woodlands, Mixed Conifer Forests and where there is water, Riparian Areas.

We know at least 2,490 different species live in Saguaro National Park.

- Mammals: 82
- Birds: 231
- Amphibians: 9
- Reptiles: 56
- Vascular Plants: 1682
- Invertebrates: 95 (no baseline inventory)
- Non-vascular plants: 335 (no baseline inventory)

Total # of Animals: 473  Total # of Plants: 2,017  Total: 2,490

There may be HUNDREDS more we don’t know about!
Imagining you are exploring a place no one has visited before. You find an animal. How do you describe it to people back home? What do you see? What do you hear? What do you smell?

Scientists use their senses to notice details. They make observations about a place and the species they find. They record their observations so they can be studied and shared. How do they do this?

They write in a field notebook, draw, make maps, take pictures, or make video audio recordings.

Look closely at the photograph, field notes, and sketch. Which senses did the scientist use? What details are recorded?

Try this...
Find an organism in your school yard or neighborhood. Use your senses to observe your species. Which senses did you use? How would you record those observations?
Three hundred years ago, a scientist named Carl Linnaeus invented a classification system, based on species characteristics. We still use this system today. So far, over 1.5 million animal species have been classified.

Scientists collect, study, and observe specimens. They ask questions about each species. Is it a plant, an animal, a fungus or a bacteria? If it is a plant, does it have leaves? What kind of leaves?

They record the answers to each of these questions and compare their observations to existing records.

If they find a species that has characteristics we have never seen before, it is a new species.

New species are classified according to their similarities and differences to known species and are given a unique scientific name.

We don’t know how many species have yet to be discovered. There is a very good chance we might discover one during the BioBlitz.

Think how exciting it would be if one of them was discovered, classified, and named by YOU!
Scientists who study biodiversity do research to identify species found in a specific place. Sometimes this is a challenge.

Can you think of any reasons why?

There are an estimated two million species on Earth. They include 40,000 spider, almost 5,000 frog, and over 1,000 bird species.

Millions more are undiscovered. That’s a lot of species. You usually find several species in the same habitat.

Once you find something, how do you identify it?

Look at the turtle and the tortoise. They are both part of the reptile family so they share some common traits.

A tortoise is a kind of a turtle, but not all turtles are tortoises and they have some physical characteristics that set them apart.

Turtles have flatter backs than tortoises. Tortoise shells are a rounded dome. Usually, turtles live in or near the water and have adapted to swim by holding their breath underwater and having webbed feet. Tortoises live primarily in arid regions, built for storing their own water supply and walking on sandy ground.

So, who’s the Tortoise?

Identifying Species

Trust me, I am the Tortoise

Look closely...

Which of these is not an insect?

Hint: Insects have antennae, six legs, and three body parts.
Mapping Saguaro

When preparing for a BioBlitz, it is helpful to understand the study area. How big is it? What are the different environments within it? How does elevation vary across the park? Where should we spend time observing and sampling species?

FieldScope is a tool you can use to explore park environments across the two districts, predict which species might be found, investigate elevation and change over time, and create maps to use in the field.

Saguaro National Park is a big place with two large districts. One is on the east side of Tucson, the other is on the west side. To better understand where you will be studying, answer the following questions:

1. Find the two districts of Saguaro National Park

On FieldScope, the top of the window is NORTH. The two districts of Saguaro National Park to the EAST (to the right) and WEST (to the left) of Tucson. Scroll over each to find out the names of the two major districts in the park.

- What is the name of the district west of Tucson?
- What is the name of the district to the east?

Use the FieldScope tool to answer each question.

< http://saguaro.fieldscope.org >
2. Find your school

Use the measurement tool (it looks like a ruler). Click on your school and then click on each district to answer the questions.

- How far is your school from the Tucson Mountain District?

- How far is your school from the Rincon Mountain District?

3. Display the elevation layer

In the themes library in Saguaro FieldScope, turn on the Elevation layer. Look at the map key, which you can make visible by clicking the “i” (for information) next to the layer name.

- Which district of the park has higher elevation?

Species Inventory

On the following pages, you will be adding information for each species your team finds and identifies.

Be sure to identify, measure, categorize, map and record the species and make notes about its habitat.

Use the space in the journal pages to sketch or make notes about each observation.
# Field Study

Who is your leader?  

What are you studying?  

<table>
<thead>
<tr>
<th>#</th>
<th>Common Name</th>
<th>Location (GPS)</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Field Study

Who is your leader? ________________________________

What are you studying? ________________________________

<table>
<thead>
<tr>
<th>#</th>
<th>Common Name</th>
<th>Location (GPS)</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Field Study

Who is your leader?  ______________________________________

What are you studying? ____________________________________

<table>
<thead>
<tr>
<th>#</th>
<th>Common Name</th>
<th>Location (GPS)</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Field Study

Who is your leader? ________________________________

What are you studying? ________________________________

<table>
<thead>
<tr>
<th>#</th>
<th>Common Name</th>
<th>Location (GPS)</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Species Tally Sheet

At the end of your day, add up everything you found here.

Total number of:

<table>
<thead>
<tr>
<th>Category</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammals</td>
<td></td>
</tr>
<tr>
<td>Birds</td>
<td></td>
</tr>
<tr>
<td>Reptiles</td>
<td></td>
</tr>
<tr>
<td>Amphibians</td>
<td></td>
</tr>
<tr>
<td>Insects</td>
<td></td>
</tr>
<tr>
<td>Cacti</td>
<td></td>
</tr>
<tr>
<td>Trees</td>
<td></td>
</tr>
<tr>
<td>Plants</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Total number of species found today: [ ]
Put your course credit stamps in the boxes below:

4 courses = Bachelor’s of BioDiversity Science

+ 3 more courses = Master’s of BioDiversity Science

+ 2 more courses = PhD of BioDiversity Science
How many more continuing education credits can you earn?

Inch Ruler

Content courtesy of National Geographic education and Skillbuilder.
Additional credit to Catherine Iwaki for graphic design assistance.