The Bio/Diversity Project

Lesson2
Sonoran Desert Food Webs

Grade Level: 4th-6th
Time Teaching: 120 minutes

This lesson has been adapted from: Weaving the Web; Food Webs and Desert Landscape Painting

AZ Science Standard:	6.L2U3.12 Engage in argument from evidence to support a claim about the factors that cause species to change and how humans can impact those factors 8.L4U1.11 Develop and use a model to explain how natural selection may lead to increases and decreases of specific traits in populations over time.
Learning Objective:	Students will be able to describe predator-prey relationships.
Scientist of the Week:	• Dr. Earyn Mcgee  • Conservation Biologist who recently completed her PhD at the University of Arizona and now works at the LA Zoo in a position created especially for her. • Los Angeles, CA • Dr. McGee is a science communicator (someone who aims to inform others about the world of science in a more simplified manner) that advocates for the rights of all people to be able to love and care for the natural world. With her efforts, people can enjoy and care for our world, nature, and the environment with less restrictions.

Vocabulary	Materials

• Producer • Predator • Prey	• Powerpoint • Worksheet • Butcher Paper • Markers/Pencils • Lego Spike Essentials Kit • Incentive Items •

Guiding Questions

- Why is it important to have many different animals, plants, and humans?
- How do animals interact with each other in nature?

Engagement Activity (10 minutes):

- Ask students "How are we feeling today?"(thumbs up, thumbs middle, thumbs down)
- Ask students, "What did you have for lunch today?"
    - Allow students to respond by raising their hands
- Choose one meal discussed by the students and pick out one ingredient from that meal (would be easiest if it were some sort of meat), and ask where that ingredient comes from. Draw/write the original form of the ingredient on the whiteboard.
    - ex. hamburger → burger comes from a cow → draw a cow on the board
- Ask students where this ingredient gets its energy to grow from and what provides its nutrition. Draw/write their answers on the board next to the first ingredient. Draw an arrow between the two.
    - ex. cow eats grass to grow
- Ask students how the grass grows.
    - Draw answers on the board and draw an arrow between the answer and the nutrition. ○ ex. grass gets it energy from the sun
    - Briefly explain photosynthesis, if needed (plants take sunlight and turn it into energy)!
    - This section can be shortened or lengthened depending on the meal/initial ingredient chosen on the day of teaching. In the end, all things should lead back to the sun.
- Explain to students what we've created was a food chain, which is what we'll be learning about today. ●Ask students what they already know about food chains

Exploratory Activity (10 minutes):

- Introduce the idea of a food chain and incorporate the terms producer, predators, and prey. The sun is the primary source of energy for our planet, plants take in sunlight, then animals eat plants, and other animals eat those animals, etc. This is how energy moves from organism to organism. ○ Producers = get energy from the sun (ie: grass)

- 0 Predators = get energy from eating other living things (ie: coyotes)
- ○ Prey = get eaten by predators to give them energy and eat producers (ie: rabbits) ●

Show an example of a food chain.

- ○ A food chain is the order in which living things give energy to other living things ■

Show an example of a food chain with Sonoran Desert plants and animals.

- Show short clips of plants growing, bunnies eating grass, and coyotes hunting bunnies to demonstrate how the food chain can move from organism to organism. Select from the following:

0 Plant and Sunlight Video (0:30-1:00)

- ○ Bunny Eating Plants Video (0:00-0:10)
- ○ Wolves Hunting a Bunny (4:00-4:30)
- ○ Ask students which is the producer, prey, and predator in these videos
- Ask students, "So, how are predators and prey different?"
- Showcase physical differences between predators and prey in food chains with images of predators vs. prey on PPT
  - 0 ex. teeth shape/size/number, size, placement of their eyes

Explain Activity (40 Minutes):

- Have students get into pairs, each pair needs a worksheet and computer.
- Hand out a worksheet with a table, with the first column as organism names, the second column labeled "Where do they get their energy?"
- Show a list of various predators, prey, and producers that live in the desert.
- Give an example on how to research and put data into the table using two organisms (grass and cottontail rabbit. Get their energy from sun and grass.)
- Allow them to pick 5-10 animals from the list and complete the table using their computers to research each animal.
- Have each pair join with another pair to create groups of four. Give each group butcher paper and markers.
- Allow students to make connections about how different animals get their energy, they will use these connections to make a food chain
- Have data from animals in a different region that we can use to display how to make a food chain. create a food chain on board for students to see the format of it.
- Allow students to create their own food chain with animals they have researched, following the format that was shown on board.
- Give students time to add details (color and drawings) to their food chain.
- Allow students to share their food web with the class. Use incentive if no one volunteers.

Extension Activity (50 minutes):

- Start a discussion about how different animals might live alone, might live in herds/packs

- Ask students if they can think of any animals that survive alone. (black bear, pygmy owls, gila monsters, rattlesnakes, mountain lions, hawks, jack rabbits, woodrats, grasshoppers)
- Ask students if they can think of animals that live in packs. (coyote, deer, white winged doves, quail)
- Ask what benefits come with living alone? living in herds?
- Get to prey safety where some can watch for predators while others can eat or sleep. That is what the next part of the lesson will focus on.
- Have students get into groups of 2-3. Each group needs a laptop and lego spike kit.
- Follow the lego spike essentials lesson on animals that live in herds in order to protect themselves from predators. Link to lesson attached here.
- The lesson plan represents buffalo, tell the students we are thinking of javelinas instead to make it more relevant.

Discussion

- Ask students how prey living in herds have benefits to survival.
- Ask students about other ways prey animals have adapted to survive.
- Ask students who selected javelinas from the last activity to look at their food web and find what predators are being represented by the yellow block. (mountain lions, bobcats, jaguars, coyotes).
- Ask students what the javelinas could be eating to make them distracted.(prickly pear cactus, agave, shrubs, grasses, roots, lizards, dead birds, or rodents if available).

Evaluation Activity (5 minutes)

- Ask students how having the food web helped to see relationships between organisms better?
- How does this connect back to biodiversity?
- Until Next Lesson: Have students consider the food chain of a pet that they have or know of and how it is similar or different to a similar animal that lives in the wild.