Delaware Water Gap National Recreation Area

Three-Touch Field Trip Model

Topic: Ecology

Background:

- This three-touch model is designed for educators to use in the classroom pre and post visit to the Delaware Water Gap National Recreation Area.

Students Will Be Able To (SWBAT):

- Identify animals as herbivores, omnivores, carnivores, or producers (pre-visit activity)
- Role-play predator/prey interactions (field trip activity)
- Identify plants and animals native to the Delaware Water Gap (field trip activity)
- Construct food chains with organisms that are native to Delaware Water Gap (post visit activity)
- Interpret and create a food webs showing how energy is transferred throughout an ecosystem (post visit activity)

NGSS:

- 5-PS3-1 Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.
- 5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

Time:

- Classroom pre-activity - 50 minutes to be completed prior to attending the guided field trip at Delaware Water Gap
- Guided Field Trip with a Ranger - 90 minutes
- Classroom post activity - 50 minutes class period with optional extensions to be completed after visiting Delaware Water Gap

Location in Park:

- Smithfield/Milford Beach for intro and ranger-led activity
- McDade Hiking trail for scavenger hunt hike (can be ranger guided or self-guided)

Targeted Grade Level:

3rd – 8th grade

Attached you will find the pre and post activities. Contact us to schedule your visit to Delaware Water Gap National Recreation Area.

Phone: (570) 426-2452
Email: dewa_interpretation@nps.gov

Pre-visit Classroom Activity for Teacher - What's for Dinner?

Teacher Background:

Complete this activity with your students prior to visiting the Delaware Water Gap National Recreation Area.

Time:

50 minutes

Materials:

- DEWA Trading Cards (1 set per group of students)
- Animal Skull Handout
- Animal Skull Handout Key
- Sample Notebook Page

Pre Lesson-Setup:

- Print, cut and glue (option to laminate) DEWA Trading Cards
- Print (option to laminate) Animal Skull handout

Prior Knowledge/ Words to know:

- **Ecology**- the study of the relations of organisms to one another and to their physical surroundings.
- **Ecologist**- a scientist who studies the connections between living and non-living things and their surroundings.
- **Herbivores**- an animal that only eats plants.
- **Omnivore**- an animal that eats both plants and meat.
- **Carnivore**- an animal that only eats meat.
- **Food Chain**- shows the movement of energy from one organism to another. All energy comes from the Sun and is then transferred to other organisms.
- **Food Web**- in an ecosystem there are many food chains, and generally most plants and animals are part of several chains. When you draw all the chains together, you end up with a food web!
- **Producers**- plants are called producers because they produce their own food! They do this through the process of photosynthesis and are the base of all food chains and webs.
- **Diurnal**- animals that are active during the day.
- **Crepuscular**- an animal that is active at dawn and dusk, meaning that the animals come out when the Sun starts to rise and set.
- **Nocturnal**- animals that are active during the night.

Part 1: Teacher-Led DEWA Animal Card Sort

Objective:

SWBAT identify and sort animals as herbivores, omnivores, and carnivores based on what they eat.

Directions:

1. Look at the 9 animal cards in front of you. Flip them over to learn a little about each animal.
2. Have students sort the cards into groups using the information on the back. They can first choose the number of groups and reasoning.
3. Have students share how they grouped them and why.
4. Instruct students to sort them into 3 categories based on what they eat: herbivores, omnivores, and carnivores.

Teacher prompt/explanation:

An important part of an ecologist's job is to classify living things. Animals can be grouped, based on what they eat, into three categories: herbivores, omnivores, or carnivores. They each have specific teeth that influence what they can and cannot eat. Next you will think like an ecologist to figure out which animal skull belongs to the herbivore, the omnivore, and the carnivore.

Part 2: Skull Identification

Objective:

SWBAT identify and sort animals as herbivores, omnivores, or carnivores based on their physical features.

Directions:

1. Look at the 3 animal skulls on the paper. One is an herbivore (a deer), one is a carnivore (a bobcat), and one is an omnivore (an opossum). Option to have students record their observations. Refer to the sample notebook for tips on setting up the notebook page.
2. Make a hypothesis (an educated prediction) about which skull belongs to which animal and the diet of each animal.

Reflection:

Option to have students record responses in their notebook or discuss as a whole class.

1. Which skull was the herbivore? Were you correct?
2. Which skull was the carnivore? Were you correct?
3. Which skull was the omnivore? Were you correct?
4. What similarities did the skulls have? What differences did the skulls have?
5. Humans can be vegetarian but we can also eat meat. Think about your own teeth, which skull is your's most like?

Teacher prompt/explanation/closure:

Herbivores, like deer, have teeth designed for grinding plants. Deer like to eat grass shrubs and other plants. Carnivores, like bobcats, have teeth designed for tearing and cutting meat. Bobcats like to eat birds, rodents, and small mammals. Lastly, omnivores, like opossums, have a combination of teeth that allow them to eat both animals (insects, mice, and other small rodents) as well as plants like fruits, nuts, and grains.

Delaware Water Gap Visit - McDade Hike Scavenger Hunt

Notes:

This can be ranger led or self/teacher guided

Time:

30-60 minutes

Materials:

- Pencils
- Copies of scavenger hunt - 2 versions are available, a printable and digital version
- Optional clipboards for printable version

Pre-Set Up:

Print Delaware Water Gap National Recreation Area Scavenger Hunt papers (1 per student)
Remind students of LNT principles (recite with motions).

Scavenger Hunt Background/Intro:

The Delaware Water Gap is home to many plants and animals and natural resources. From tall mountains to small pebbles, from red eft newts to white tailed deer, nature is all around us in all shapes, sizes, and forms. What will you observe on your hike? Observing nature is kind of like being a detective. As you explore the trail, keep your eyes open for the natural wonders both big and small. Use your sense of sight, sound, smell, and touch (without damaging nature).

As we hike, remember the 7 Leave No Trace Principles:

-1. Plan ahead
-2. Travel on durable surfaces
-3. Dispose of waste properly
-4. Leave the environment how you found it (take only pictures)
-5. Minimize fire impacts
-6. Respect wildlife
-7. Respect other visitors

Scavenger Hunt Directions:

Grab a pencil, clipboard, and scavenger hunt bingo board. As you walk along the trail fill in the scavenger hunt (digital option available too).

Debrief and Share:

Depending on time, this can be done at the end of the hike, on the bus or back at the classroom.

Post-visit Classroom Activity for Teacher - DEWA Food Chains & Webs

Time:

50 minutes with additional optional art/writing enhancements

Materials:

- DEWA Trading Cards (1 set per group of students)
- Printed arrows (10+ per group)
- DEWA Food Web (1 per student or group)
- Scissors / Markers and Poster-sized paper for arrows

Pre Lesson-Setup:

- Print copies of DEWA Trading Cards (If you completed the pre-visit activity you can use the same set of cards. No need to reprint, cut and glue together!)
- Print out and cut 10+ arrows for each group to create the food chains. (Option to use markers on poster paper)
- Print copies of DEWA Food Web - one per group

Teacher prompt/explanation:

Have you ever thought about how to power a person? We don't plug ourselves into an outlet on the wall. We get our energy from the food that we eat. What about the animals at the Delaware Water Gap? All energy is created by the Sun. Then, plants convert and store that energy in their leaves which act like a battery. When an herbivore, like a squirrel, comes along and eats the leaves, the squirrel gains the energy that was stored in the plant. Next, comes an omnivore or carnivore, like a bobcat, who eats the squirrel and gains the energy stored in the squirrel. This is an example of a food chain. Food chains are an important tool for ecologists to study the energy transfer from one organism to another.

Part 1 - Creating DEWA Food Chains Directions:

1. Using the cards, create at least 2 different food chains. Remember that all energy starts with the Sun. Optional - have students record the food chains they created in their notebook or have them share with the class. Teachers can record on the board for all students to see and share.
2. Review the food web and see if you can identify your food chain in it.
3. How many different food chains can you count in this food web?

Part 2 - Human Impact on the Food Web

Teacher prompt/explanation:

Can you think of another organism that could fit into this ecosystem? It's you! And me! Humans are part of ecosystems too. Over 100 years ago, the population of American Shad heavily declined due to humans overfishing and pollution creating a dead zone of low oxygenated water, which had ripple effects throughout the food web. Use the Delaware Water Gap food web to create a hypothesis about what happened to the species connected to the American Shad.

Reflection Questions:

Option to have students record responses in their notebook or discuss as a whole class.

1. What changes do you think the Bald Eagles needed to make to their diet when the American Shad population decreased?
2. What do you think happened to the population of Seaweed as the American Shad decreased?
3. What other organisms in the food web do you think were impacted?

Optional closure prompts:

1. What are 3 things you learned at the Delaware Water Gap?
2. What was your favorite part of the visit to the park?
3. What questions do you still have?

Post Visit Classroom Activity for Teacher - Optional Writing Enhancement: A Day in the Life of Journal Prompt

Teacher Prompt/Explanation:

Have you ever wished you could fly high above the trees like a hawk? Or swim up the Delaware River like an otter? While this may sound enticing, a day in the life of an otter or hawk is not always easy. Much of their time and energy is focused on finding food and not becoming food! Use what you learned about food webs to help you imagine what your day would be like as an animal here at Delaware Water Gap.

Directions:

Choose an animal from the Delaware Water Gap food web to embody for a journal entry. Write in your notebook about what it's like to live a day in the life of this animal. In your journal entry, include as many vocabulary terms as you can.

Things to consider in your writing:

- What other animals might you have interacted with?
- What kind of foods do you need to survive?
- Are there predators you need to watch out for?
- Are you competing with other animals for food?
- What time of day are you awake?
- Where is your home in Delaware Water Gap?
- Do you have tasks you need to accomplish today?
- Did you see any humans? Did they interact with you?
- Option to draw a picture to go along with your story

Post Visit Classroom Activity for Teacher - Optional Art Enhancement: Design a Predator

Teacher prompt/background:

When we visited the Delaware Water Gap, we learned all about predators and prey. Think back to what the predator's skull looked like (carnivore). It had sharp teeth for eating meat.

Directions:

1. Create and name a predator. Draw what your predator would look like.
2. Write about what your predator would eat. How would it get its food? Would it fly like the eagle? Sneak up and pounce on its prey like the bobcat?