

# Third Grade

## Pre and Post Field Trip Teacher Resources

### TEKS Objectives:

- 3.b.1.A - Demonstrate safe practices during field and laboratory investigations
- 3.b.2.C - Analyze and interpret information to construct reasonable explanations from direct and indirect evidence
- 3.b.2.D - Communicate valid conclusions
- 3.b.3.C - Represent the natural world using models and identify their limitations
- 3.b.8.A - Observe and describe the habitats of organisms within an ecosystem
- 3.b.8.C - Describe environment changes in which some organisms would thrive, become ill, or perish

### HISD Objectives:

- SCI.3.1A - Demonstrate safe practices during field and laboratory investigations using appropriate equipment such as safety goggles.
- SCI.3.2B - Collect information by observing and using metric measurements
- SCI.3.2B - Plan and implement descriptive investigations including asking well-defined questions, formulating testable hypothesis, and selecting and using equipment and technology
- SCI.3.2C - Analyze and interpret information to construct reasonable explanations from direct and indirect evidence
- SCI.3.3C - Represent the natural world using models and identify their limitations
- SCI.3.8C - Predict environmental changes in which some organisms would thrive, become ill, or perish
- SCI.3.5A - Observe and identify simple systems such as the solar system, food chains, or a moving toy car
- SCI.3.5B - Observe a simple system and describe the roles of various parts such as the sun, the moon, and the plants in the solar system, herbivores and carnivores in a food chain or different surfaces in the slowing of a moving toy car

### Program Overview:

Producers, consumers and decomposers are interconnected in an ecosystem.



### Key Vocabulary Terms:

herbivore, carnivore, omnivore, food chain, food web, ecosystem, predator, prey

### Objectives:

Classify organisms as Producers, Consumers, and Decomposers. Further classify Consumers as Herbivores, Carnivores, and Omnivores. Discuss food chains and food webs.

### Time Allocation:

30-45 minutes for each activity.

## Background Information:

Energy travels through an ecosystem along a path called a food chain. Energy begins with plants because they can capture energy from the sun to produce their food. (This is why we call plants producers.) That energy then flows to the consumers that eat the plants. Consumers that only eat plants are called Herbivores. Carnivores and Omnivores receive energy when they eat other consumers or producers. Carnivores eat other consumers, while Omnivores eat both producers and consumers. When plants and animals die, then the decomposers get to work by breaking down complex materials into simpler ones. They get energy for themselves and release nutrients back into the soil. The complex interconnection of the energy is called a food web.

# Pre-Field Trip Activities:

## Activity One (Web of Life Game)

This activity provides students with a better understanding of how all organisms are interdependent. Producers, consumers, and decomposers and all interconnected through food webs.

### Materials Needed:

- 1 Spool of Yarn
- Pictures of various plants, insects, reptiles, mammals, decomposers, and the sun.

Label a set of cards with parts of the food chain. Examples: sun, plants, insects, bear, tiger, rabbit, spider, songbird, hawk, water, snails, fish, turtle, alligator, frog, antelope, etc. Make sure there are more plants and small critters than large ones. Use some of yarn to make a necklace with each card.

1. Pass out these necklace cards to all students.
2. Everyone stand in a circle. Think about which card represents what all life needs to grow (the sun). Hand the end of the yarn to the "sun" card.
3. What would be next in the chain? It would be plants, so everyone with "plant" cards would take a section of the yarn. The sun person still needs to hold tight to the end of the yarn.
4. Continue through the list in the same manner. Ask the question, what happens when one of the producers or consumers die? What benefits? The decomposers now hold onto the yarn. When matter is decomposed, what benefits? The producers do, so again, they can hold onto the yarn. Play until all the labeled cards have been used.
5. When all the cards have been used discuss what would happen if one of the items were removed from the environment. Start removing things from their environment. If something will not survive with another thing, another critter must be taken out of the web. As the chain collapses, discuss the importance of each living thing in every habitat.

## Activity Two (Food Chains)

This activity reinforces the concept of food chains. Students will construct linked paper chains that depict a food chain.

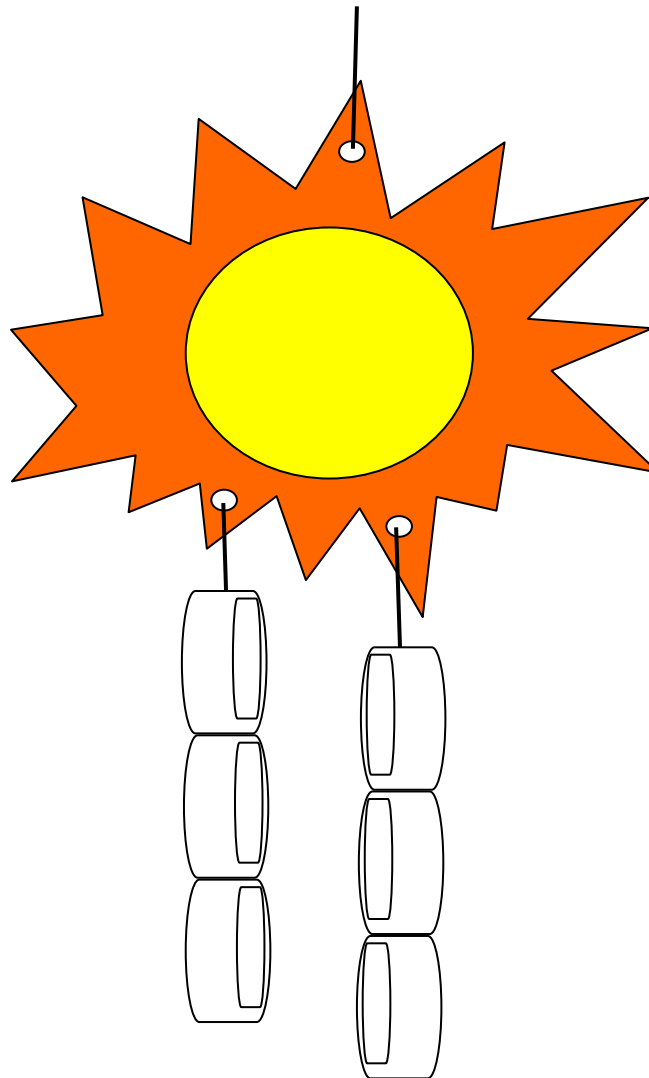
### Materials:

- Various books on animals
- Paper bag or other bag

- Pictures of various animals - enough for one per student
- paper plates
- strips of paper measuring 7 by 1  $\frac{1}{2}$  inches each - 4 strips/child
- glue
- yarn

Fill the bag with pictures of various animals such as elephant, octopus, snake, lion, etc. Instruct each child to reach in the bag and take one picture. Each student should look in books to find out what his animal eats. After research is complete, instruct the student to construct a food chain using the paper strips linked together like a paper chain. Each student should label and illustrate on each strip of paper the link in the food chain. For example if the student's animal is an owl the paper chain would look like this:

grass ~ mouse ~ owl with each paper strip representing each link in the food chain. Further label each strip as herbivore, carnivore, or omnivore. Instruct students to create suns out of the paper plates. Since all energy begins with the sun, it is important that the chains are connected to the sun.



## Activity Three (Play "Go Pick")

Print out the "Go Pick" cards onto cardstock and cut out the cards. The rules of "Go Pick" game are exactly like the card game, "Go Fish" except the cards are pictures of producers, herbivores, carnivores, and omnivores instead. Students play in groups of 3 or 4. Each student is dealt 7 cards and the remainder of the deck lays face down in the middle. Each student takes turns and asks the person to their right if they have any producers, herbivores, carnivores, omnivores, or decomposers. If the student does he or she gives student number 1 the card. If the other student does not have the card he or she says "go pick" and the first student draws one card from the center pile. When a student gets 4 of a kind, then he has that hand. The winner is the one with the most hands.

## Post Field Trip Activities:

### Activity One (Is this Pond Polluted?)

Some pond animals are very sensitive to pollution and can only live in clean unpolluted water. Some animals are not only sensitive to pollution but also sensitive to poor habitat conditions. Scientists use these aquatic animals as indicators to determine the health of the water. Using three imaginary ponds with various aquatic animals, students will analyze and determine which of the ponds is polluted and which are healthy.

#### Materials:

- 3 sheets of blue bulletin board paper - approximately 1 square yard each
- Pond Animal Diagrams (Ponds #1-3) - [click here](#)
- Pond Animal Analysis Guide - One per student - [click here](#)

Cut out the blue bulletin board paper into 3 large circles to represent ponds. Label each pond as Pond One, Pond Two, and Pond Three. Enlarge and make one copy of each of the pond animal diagram sheets. Cut and glue the animals onto each corresponding pond.

Tell students that they are going to pretend to visit three different ponds and capture some of the organisms that live in the ponds. Give each student a pond animal analysis guide and instruct them to look at their catch at each pond. By analyzing the life in each pond, they will be able to distinguish which of the ponds is in **excellent condition**, **good condition**, and **poor condition**. Be sure students understand that tolerant animals can live in any condition but the intolerant animals can only live in clean water.

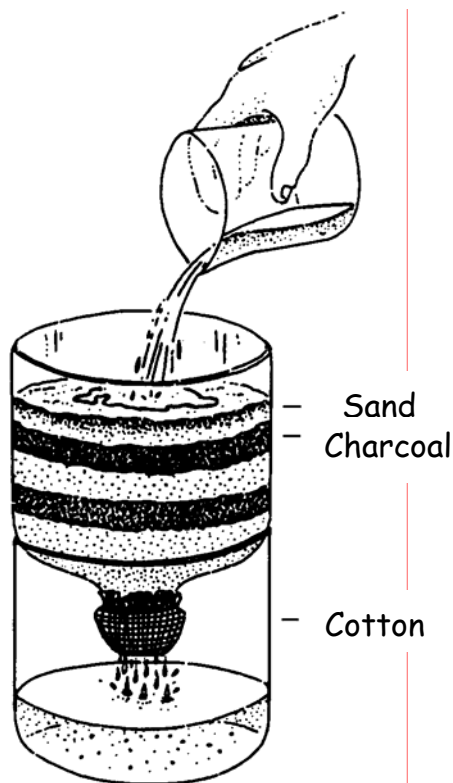
## Activity Two (Creating a Water Treatment Plant)

The water that we drink everyday has been treated to clean and purify it. Collect a gallon of water from a pond, ditch or bayou. Examine the water with a magnifying lens or a microscope. Do you see any living things in the water? What else could be in the water? Make a filtering device filter that imitates nature's filtering system to clean up your water sample. Be sure to save a sample of the water just as it is so you can compare your filtered water to the original sample.

Materials for each team of students:

- one 2 liter plastic bottle cut in half
- one rubber band
- one -8 cm (or 3 in.) square of mesh, nylon netting or panty hose
- 500 ml (or 2 cups) of sand
- a crushed charcoal briquette
- 2 cotton balls
- three 250 ml graduated beakers (or 1-cup measuring cups)
- food coloring, any color
- magnifying lenses
- clear containers for storing samples of filtered water.

1. Cut the plastic bottle in half. Place the mesh over the neck of the bottle and fasten it with a rubber band.



2. Place the cotton balls on top of the mesh, then layer sand, and charcoal into the funnel half of the plastic bottle.

3. Set the 'funnel' on top of the lower half of the bottle.

4. Pour 250 ml of the water sample through the filter.

5. Measure the small amount of liquid that filters through (5-10 ml.) and save a small sample for comparison.

6. Add several drops of food coloring to the water. Pour the colored water through the filter and check for color.

7. Save a sample of the filtered water. Filter the remaining water 2 more times, saving a sample each time to compare color and against your original sample.

**DON'T DRINK YOUR EXPERIMENT!** Your filter will not remove bacteria or viruses.

What materials were you able to remove with your filters? How does the water treatment plant deal with unseen substances such as viruses and bacteria?

## **Cross-Curricular Activities:**

### **Math:**

#### "Be a Bear" Activity

Black Bears are omnivores that gain a tremendous amount of weight in the fall to prepare for hibernation. They typically gain as much as 3-4 pounds a day or 25-35% of their body weight. Students will pretend they are bears preparing for winter hibernation. They will visit food stations and collect "food" from each station. Once they have collected the food, students will compare their pre and post weight gain.

#### Materials Needed:

- 10 tall buckets filled with sand. A five gallon bucket works best.
- Sand to fill each bucket
- Plastic grocery store sacks to give each student
- 10 measuring cups
- Signs for each of the 10 Stations: 1 Meat sign, 2 nut signs, 2 berry signs, 1 fruit sign, 1 insect sign, 3 plant signs.
- A bathroom scale

Each child takes a turn on the scale and records his/her weight. Go outside to the food stations. At each station there will be a sign with the picture of food and how much they need to "eat" (how much to scoop). Each child will carry a bag that represents their stomachs. Instruct children to measure the amount needed and pour the sand in the buckets into their bags. Students will visit each of the 10 stations filling their "stomachs" with the correct amount which is posted on the sign. Teachers can adjust the amounts to scoop based on the difficulty level. For example, the sign can say to measure  $\frac{1}{4}$  cup,  $\frac{1}{2}$  cup,  $\frac{1}{3}$  cup, 1 cup,  $1\frac{1}{2}$  cups, etc at each of the stations. If students don't know how to measure then Dixie cups can be used instead. Once students have visited all 10 stations, weigh them again holding the sack of sand. How much weight did they gain? Is it 25% of their body weight?

### **Language Arts:**

Write a thank you letter to the naturalist or docent who led your walk during your field trip. Ask students to describe a favorite plant or animal and its habitat. The address for the Houston Arboretum is 4501 Woodway Drive , Houston , TX 77024

## List of Suggested Readings:

Cole, Joanna. "The Magic Schoolbus at the Waterworks". New York . Scholastic Press, Inc. 1986

Lauber, Patricia. "Who Eats What?" Harper Collins. 1995

McKeever, Susan. "Freshwater Life of North America: Science Nature Guides" Thunder Bay Press. 1995

McKinney , Barbara Shaw. "Pass the Energy Please" Dawn Publication. 2000

Reif, Patricia. "The Magic School Bus Gets Eaten: A Book About Food Chains" Scholastic 1996

## List of Suggested Websites:

National Wildlife Federation -

<http://www.nwf.org>

The Children & Nature Network -

<http://www.cnaturenet.org/>

Acorn Naturalists-

<http://www.acornnaturalists.com/>

Specializes in nature-related educational materials for kids.

Texas Park and Wildlife-

<http://www.tpwd.state.tx.us/learning>

Hooker Oak Elementary School-

<http://www.csuchico.edu/%7Epmaslin/nature/honature.html>

Here is a wonderful example of what one group of parents and teachers did at their school! It's truly turned into a community project. The page has links at the bottom to some other very useful information and teaching materials, all hosted by California State University at Chico .