Animal Study Activity

Lesson Summary:
Students will research an animal they could see while at Mission Springs Outdoor Education. The goal of this activity is to introduce students to some of the animals they may see at Mission Springs and learn about their basic needs.

Background for Teachers:
All animals need food, water, shelter, and space (which includes oxygen, sun, etc.) to survive. These components make up an animal's habitat. All animals have slightly different needs and will often fulfill a different niche (job) in the ecosystem (community). A food chain is a simple diagram that shows how energy flows through an ecosystem. A food web combines these chains together forming a more intricate diagram of energy flow. All food chains or webs start with energy from the sun. The sun's energy is captured by green plants and turned into food. We call these green plants producers and they are the base of any food chain or web. Consumers make up the middle of the food chain/web in many different layers (primary consumer, secondary consumer, etc). Herbivores (eat plants) are primary consumers. Carnivores (eat animals) fall into a couple of groups; carnivores that eat herbivores are called secondary consumers, while carnivores that eat other carnivores are called tertiary consumers. Omnivores are those animals that eat both plants and animals. Decomposers are an important part of the food chain/web as they breakdown dead producers and consumers returning nutrients to the soil for producers to use.

Materials
Each student will need:

- Animal Study Worksheet
- Mission Springs Plant & Animal List
- Books or computers to research their animals with

Procedure:

1. Review food webs with your students and discuss what animals need to survive.
    a. All animals need food, water, shelter, and space (which includes oxygen, sun, etc.) to survive.
    b. A food chain is a simple diagram that shows how energy flows through an ecosystem. A food web combines these chains together forming a more intricate diagram of energy flow.
2. Distribute the Mission Springs Plant & Animal List and discuss some of the things you might see while at Mission Springs Outdoor Education.
    a. Ask each student to select an animal that they would like to learn more about. You could choose to have students work in partners for this or assign animals so that each student is doing a different one.
    b. Students will be researching their animal and answering the questions on the Animal Study Worksheet.
3. Distribute Animal Study Worksheet.
    a. Ask students to complete the worksheet and be prepared to discuss it.
4. Have students introduce their animal to the group.

Extension:
When you return from Mission Springs, have students research an animal that they might find near their home. Are there any that they could find at Mission Springs as well?

Animal Study Worksheet

Name of the animal you are researching: _____

1. What does your animal need in its environment to survive?

2. Where does your animal usually live? (e.g. on the ground, in the ground, in the water)

3. What shelter or cover does your animal require?

4. Is your animal a (circle one): Carnivore Omnivore Herbivore

5. What might your animal eat?

6. What might eat your animal?

7. What other animals might you find where your animal lives?

8. What plants are found where your animal lives?

9. How are these plants important to your animal?

10. Using the information you have just learned, draw a food web (on the back of this sheet) consisting of at least 5 organisms (living things) including your animal. Then add in the essential non-living things these organisms need to survive.

Mission Springs Plant and Animal List

This list provides a sampling of what you might see during your trip to Mission Springs Outdoor Education. What you see will depend on the season, location, weather and your keen observational skills.

Common Trees

Coast Redwood
Tan Oak
Coast Live Oak
Douglas Fir
Madrone
California Bay Laurel
Big Leaf Maple
California Buckeye

Common Birds

Steller's Jay
Scrub Jay
Band-tailed Pigeon
Red-tailed Hawk
Red-shouldered Hawk
California Quail
Dark-eyed Junco
California Towhee
American Robin
Chestnut-backed Chickadee
Spotted Towhee
Acorn Woodpecker
Wild Turkey

Mammals

Gray Squirrel
Mule Deer
Raccoon
Striped Skunk
Bush Rabbit

Reptiles & Amphibians

Alligator Lizard
Western Fence Lizard
Gopher Snake
Garter Snake
California Newt
Ensatina Salamander
Pacific Giant Salamander

Other Plants

Poison Oak
California Hazel
Coyote Brush
Sticky Monkey Flower
Wild Lilac
Redwood Sorrel
Sword Fern
Brachen Fern
Chamise
Black Sage
Manzanita
French Broom (Non-native)

Fungi

Carbon Balls
Witches Butter
Turkey Tail
Orange Peel

Interview a Tree Activity

Lesson Summary:
Students will make and record observations of a tree. This activity will provide an opportunity for students to practice using their senses and record scientific observations.

Background for Teachers:
Careful observation allows us to appreciate, respect, and learn more about the world in which we live. Developing our senses can promote inquiry and understanding concerning our surroundings. Keep in mind that looking can be different from understanding what we are seeing depending on who we are, where we are, what we are concerned about, and why we are looking. The first steps of the scientific method include careful observation and the formulation of questions based on what is observed.

Materials:
Each student will need.

- Interview a Tree Worksheet
- Something to write on (clipboard, book)
- Pen or pencil

Preparing the Students:
Tell students that they will be interviewing a tree today in class. Read the group this quote from George Washington Carver: *"If you love it enough, anything will talk with you."* Each student will be finding their own tree or plant to spend 10-20 minutes observing and interviewing. Remind students that this is an individual and silent activity.

Procedure:

1. Take students to an outdoor location where there are enough trees for each student to select their own. If your school doesn't have a lot of trees on campus, allow students to select another type of plant on campus.
2. Distribute Interview a Tree Worksheet.
3. Allow each student to select a tree and begin recording their observations. Tell everyone to find a tree and sit down next to it**,** and then remind the group that this is an individual, silent activity.
4. After 10-20 minutes have passed, call the students back together. Allow students to share about their experience and parts of their interview.

Discussion Questions:
What did you learn about your tree that you didn't know before?

In what ways are observation skills important to scientists?

Do you have any questions of your own that you would like to learn about your tree? What are they?

Extension:
Have students write a short story introducing their tree to the other students. Take a tour of the campus and allow the students to read their stories and introduce their trees to each other.

Interview a Tree Worksheet

1. Is your tree alive? How can you tell?

2. Is your tree healthy? How can you tell?

3. In what ways are people helping or hurting it?

4. Draw a picture of your tree from far away. Draw yourself in the picture so that you get an idea of its size.

5. Get a leaf from your tree off of the ground. How does it smell? How does it feel? What color is it? Bring your leaf back to class with you and tape it in the space below.

6. Are any animals on or near your tree? Don't forget to look for insects, spiders, and other small animals. List them here.

7. Are there any signs that animals have used your tree in the past? Look for holes, nests, trails, scat, and other animal signs. Why do you think those animals come to your tree? Do they harm or help it?

ANIMAL SIGN AND WHAT YOU THINK MADE IT	WHY DOES THAT ANIMAL COME TO YOUR TREE?	DO YOU THINK THE ANIMAL HARMS OR HELPS THE TREE?
1.		
2.		
3.		

8. Make a rubbing of your tree's bark in the space below. How does the bark feel? How does it smell? What color is it?

9. Do you know what kind of tree yours is? Does your tree have any fruits, nuts, or seeds that help identify it? What is the overall shape of your tree? (Triangular, oval, circular, etc.)

10. What did you discover about your tree that you didn't know before?

Expectations of Outdoor Education Activity

Lesson Summary:
This activity will help students identify their expectations of their week at Mission Springs Outdoor Education. The goal of this activity is to provide an opportunity for students to evaluate their thoughts and feelings about their upcoming trip.

Background for Teachers:
Review the Teacher Information Manual so you can give the students an overview of what to expect. Make sure to familiarize yourself with the Student Guidelines & Expectations, Behavior Policy and Procedures, point system, and the classes you have selected for the students to participate in. All of these are found in the Teacher Information Manual.

Materials:
Each student will need:

- Outdoor Education Expectations Worksheet
- Behavior Contract

Procedure:
1. Discuss some of the things students might learn and do while at Mission Springs, for example:
    a. Observe and study plants, animals, and nonliving things (air, water, soil, rocks, etc.) and their relationships.
    b. Use your senses to explore nature.
    c. Learn about natural resources and explore ways we can be good stewards of the earth.
    d. Participate in conservation practices (saving water, electricity, food, etc.).
    e. Assume the duties of a member of the outdoor education community (keeping room clean, helping during meals, staying on the trails, treating others with respect, etc.).
    f. Have opportunities to make new friends from other classes and/or schools.
    g. Have fun!

2. Distribute Outdoor Education Expectations Worksheet.
    a. Ask students to complete the worksheet and be prepared to discuss it.
    b. Have students discuss their answers in small groups or with the entire class.

3. Review Behavior Contract with your students.
    a. As a group, ask student to think of an example of positive behavior that models each expectation.
    b. Distribute Behavior Contract and have each student fill it out and sign the bottom.

Discussion Questions:
How could your experience at Mission Springs Outdoor Education provide experiences to help you develop appropriate citizenship skills (sportsmanship, fair play, problem solving, respecting others)?

What do you plan to do to make sure your outdoor education experience will be worthwhile for you?

Extension:
Have students write a letter home to their parents telling them about the upcoming Outdoor Education trip and what they are most excited about.

Outdoor Education Expectations Worksheet

1. What are some things that are easier to study outside than inside?

2. What two things do you hope to learn while at Mission Springs Outdoor Education?

3. What two things do you hope to see while at Mission Springs Outdoor Education?

4. What are you most excited about concerning the upcoming trip?

5. What do you personally plan to do to make your experience at Mission Springs Outdoor Education a positive one for you and all participants?

6. What concerns or worries do you have about going to Mission Springs Outdoor Education?

Behavior Contract

Student Guidelines & Expectations

To ensure the safety of every participant, Mission Springs Outdoor Education has set the following behavioral guidelines and expectations.

- Respect each others' personal space and property. Students may only enter their assigned cabin/room. Treat your rooms like you would treat your home.
- Be considerate of others. Quiet hours are from 10:00 pm to 7:00 am. All students should be in bed with lights out by 10:00 pm.
- Treat others as you would like to be treated. Show respect to each other and encourage one another.
- Respect teachers, chaperones, and naturalists. When a leader raises a hand or claps, please quietly direct your attention to the leader for information.
- Respect the natural world around you by not littering or disturbing plant or animal life. Do not handle equipment or animals when you have not been given permission to do so.
- Stay with your group. Remain on trails and in designated areas for all activities. Soda, snack and ice machines are off limits.
- Come to classes and activities prepared. You should have a full water bottle, journal, writing utensil, and appropriate clothing for all classes.

If these guidelines are not followed, the 3 Step Behavioral System will be used. Steps can be given by teachers, chaperones, and Mission Springs staff for behavioral problems. Fighting is not tolerated on Mission Springs' campus. Students fighting will be given a Step 2 or 3, depending on the circumstances.

Step 1 – Warning: Student receives a warning and name is recorded in Step Binder.
Step 2 – Phone Call Home: Student must call home and report their behavior to their parent(s).
Step 3 – Expulsion: Student will be asked to leave Mission Springs Outdoor Education.

I understand the Student Guidelines & Expectations and the 3-Step Behavioral System described above. I agree to follow these guidelines during my time at Mission Springs Outdoor Education. If I need help following any of these guidelines, I agree to talk to a teacher, chaperone, or naturalist.

One thing I will do to ensure that my experience at Mission Springs Outdoor Education is a positive one is….

_____ _____

Student's Signature Date

Mission Springs Outdoor Education Vocabulary List

Abiotic: Nonliving things such as minerals, weather, water, and soil.

Biotic: Living things such as animals, plants, fungi, bacteria and algae.

Biodegradable: Anything that is able to be broken down and absorbed into the ecosystem. Wood, for example, is biodegradable, while plastics are not.

Biodiversity: A large number and big variety of animals, plants, fungi, and microorganisms. Biodiversity is good for all species living in an ecosystem.

Community: A group of living things within a particular type of area *(forest, stream, chaparral, etc.).*

Condensation: Formation of drops of water from water vapor.

Decomposition: The breaking down of dead organic matter by *(mostly)* bacteria and fungi that recycles life energy back through an environment.

Ecology: The study of the relationships between organisms and their environment.

Ecosystem: Group of animals, plants, fungi, and microorganisms that interact with their non-living environment.

Energy: The capacity to do work. *(i.e. To change the physical state or motion of an object)*

Erosion: The wearing away of land by wind, water, organisms, and other forces.

Evaporation: The process of changing liquid water into water vapor.

Food Chains: A food chain is a simple diagram that shows how energy flows through an ecosystem. A food web combines these chains together.

Habitat: The place where an organism naturally lives and grows.

Igneous Rock: Rocks created from the cooling of magma or lava. If molten rock cools slowly beneath the surface of the earth, it forms coarse grained rocks like granite. Rapid cooling magma above the surface produces fine-grained rocks like basalt, or glassy rocks like obsidian.

Infiltration: The process of water seeping into the soil, pores and hollows of rocks.

Invertebrate: An animal that does not have a backbone.

Landfill: A place where waste is dumped, compacted, and covered with dirt. The energy and natural resources needed to produce the items in the landfill cannot be recovered. Compaction of the products makes it very difficult for decomposition because there is little oxygen.

Metamorphic Rock: Rocks created when pre-existing rocks are exposed to intense heat and/or pressure.

Metamorphosis: Rapid change from larva to adult. There are two types of metamorphosis; complete with four stages and incomplete that is only three stages.

Nonrenewable Resource: A resource that exists in a fixed amount in various places in the Earth's crust. We classify these resources as nonrenewable because we are using them much faster than the earth can replenish them.

Organic farming: Farming that is free of chemical use including pesticides, herbicides, and fertilizers. As alternatives, crop rotation and natural pest control are some methods that are used.

Phloem: The part of a plant that transports food down from the leaves to the rest of the plant.

Photosynthesis: The process whereby plants capture light energy from the Sun and use it to produce glucose by combining carbon dioxide and water and giving off oxygen.

Precipitation: Rain, snow, sleet or any other form of water that falls from the clouds in the sky.

Reduce: Using less of a particular item or simply not buying an item anymore because it can not be recycled or reused.

Renewable Resource: Energy sources that can be used without depletion if carefully managed.

Resource: Environmental building block used by a living organism.

Respiration: The process of "burning" food, in which bound energy is released for use by an organism.

Run-Off: That part of precipitation, snow melt, or irrigation water that runs off the land into streams or other surface water.

Sedimentary Rock: Rocks created by the compaction or and cementation of sediment.

Transpiration: The evaporation of water from plant surfaces, especially through the microscopic holes on the underside of the leaf *(stomata).*

Xylem: The part of the plant that moves water up from the roots to the leaves.