



Table Rocks Curriculum

Habitat Lap Sit

Objective: Through a kinesthetic activity requiring teamwork, students will identify the five basic components of a *habitat* and recognize that suitable *habitat* is necessary for the survival of all animals (including humans). They will understand the complexity of a *habitat* by demonstrating what occurs when one of the components is removed or changed.

Benchmarks Targeted: 1, 2, and 3 (Grades 1-8)

Oregon Standards:

Subject Area: Life Science

Common Curriculum Goals: Diversity/ Interdependence: Understand the relationships among living things and between living things and their environments.

Benchmark 1: Describe a habitat and the animals that live there. Identify how some animals gather and store food, defend themselves, and find shelter.

Benchmark 2: Describe the relationship between characteristics of specific habitats and the organisms that live there. Describe how adaptations help a species survive.

Benchmark 3: Identify and describe the factors that influence or change the balance of populations in their environment.

Common Curriculum Goals: Organisms: Understand the characteristics, structure, and functions of an organism.

Benchmark 1: Describe the basic needs of living things.

Subject Area: Physical Education

Common Curriculum Goals: Self-Management and Social Behavior: Understand appropriate and positive behavior management (social skills) and respect for all individual differences, including gender, ethnicity, and physical ability during physical activity.

Benchmark 1: Identify rules, procedures, and etiquette in a specified activity.

Benchmark 2: Explain and demonstrate safety, rules, procedures, and etiquette to be followed during participation in physical activities.

Benchmark 3: Apply rules, procedures, and etiquette that are safe and effective for specific activities/situations.

Length of Lesson: 25 minutes

Materials:

- ✓ Open space, indoors or outdoors, where your whole class can fit in a circle

Key Vocabulary: *endemic, habitat, interdependent, pollution*

Background:

See Chapter Introduction.

Procedure: (Adapted from Western Regional Environmental Education Council 1983, 1985)

Preparation:

Gather students in a comfortable area and lead a discussion about the concept of *habitat* (see the Ecology Chapter Introduction for information). Ask students what they think are the most basic requirements for animal survival. Guide them to an understanding that the five basic components of *habitat* are food, water, air, shelter, and space.

Ask students to consider what the impacts might be if any of the five basic components were missing or were negatively affected (for instance, if a stream running through the oak savannah were to dry up during the summer). Note that the impact may be temporary or permanent, catastrophic or mildly detrimental.

Introduce the four *habitat* types, or plant communities, present at the Table Rocks: oak savannah, chaparral, mixed woodland, and mounded prairie/vernal pools. For each one, ask students what the physical conditions (temperature, light availability, moisture, etc.) might be like there. Have them also consider what foods are available, whether water availability might be a concern, and where animals in that *habitat* might find shelter.

Grades 4-8: Prompt students to think about factors other than food, water, air, shelter, and space that may affect an animal's ability to survive in its *habitat*. For example, ecological relationships such as predation, competition, and parasitism or disease may limit a species' population. *Pollution*, invasion of nonnative species, uncharacteristic fires, development, and changing climatic conditions can all compromise a *habitat's* suitability for the animals within it. Be sure to touch on the fact that all organisms in a *habitat* are *interdependent*.

Finally, tell students they are now going to participate in an activity that will demonstrate the five basic components of *habitat*.

Activity:

This can be done in the classroom, but an outdoor setting can be more fun and spacious.

- 1) With students at their desks or standing in a line, ask the class to count off from one to five, so that each student is assigned a number. Send each of the five groups to a different area of the space being used.
- 2) As the students move to their assigned areas, clear a space in the center.
- 3) Label the students in each of the five groups:
FOOD WATER AIR SHELTER SPACE
- 4) Now it is time to form a circle. Add students to the circle in sets of five, one from each group. To save time, you may simply have all students join the circle at once, with the condition that no one may stand next to another who represents the same *habitat* component.
- 5) All students should now be standing shoulder-to-shoulder, facing the center of the circle.
- 6) Ask the students to turn to their right, at the same time taking one BIG sideways step toward the center of the circle. They should now be standing very close together, with each student looking at the back of the head of the student in front of them.

- 7) Don't panic – this WILL work! Ask the students to place their hands on the shoulders or waist of the person in front of them. At the count of three, students should sit down on the knees of the person behind them, keeping their own knees together to support the person in front of them.
- 8) Have students say in turn what they represent (food, water, air, shelter, or space). Together, these components create a suitable *habitat* when each is present in sufficient quantity.
- 9) At this point, the students may disengage (usually collapsing onto the ground in a fit of hilarity). When their laughter has subsided, talk with them about the necessary components of suitable *habitat* for people and wildlife.

Now that the students understand the process, try the lap-sit activity again. This time, as they hold their lap-sit posture, identify a student who represents water and say, "It is a drought year. The water supply in the streams and rivers surrounding Table Rocks is reduced." Have the "water" student exit the circle and watch the circle collapse or suffer some other disruption. Create a more severe disruption (as might be caused by a more severe drought) and remove several "water" students at once. Repeat this exercise, each time removing one or more students from the circle to represent a different disturbance to the *habitat* (e.g., *pollution* of water supply, soil erosion affecting food and water supplies, wildfire burning vegetation that animals use as shelter, fire suppression resulting in unnaturally dense vegetation and depriving young plants of the space they need, etc.). Use examples of local problems such as urban sprawl, *pollution*, or fire suppression that students may have heard of or experienced.

Follow-up:

Grades 5-8: Complete the activity by discussing what the lap-sit meant to the students. Ask the students who were removed to talk about what it was like to watch the impact their absence had on the rest of the circle. Ask the students next to those who were removed to discuss what it felt like to be disrupted: were they able to adjust and maintain their balance or did they fall down? How does this compare to what might happen in an actual habitat? Have the students list 5 to 10 problems that could be or are currently impacting local *habitats*. For each one, help students identify the components of *habitat* disturbed and how organisms living in that *habitat* might be affected. This is a good lead-in to the extension below.

Adaptation:

Challenge the students to create a stable community by timing how long they can hold the lap-sit circle. If a student intentionally disrupts the circle, use it as an example of some form of *habitat* destruction.

Extension:

Grades 4-8: Have students form a circle, holding hands. Name one student as an animal that lives in one of the *habitats* at the Table Rock. Name the next five students in the circle as food, water, air, shelter, and space for that animal. Repeat until all students have been included. Comment on the fact that everyone is holding hands, representing the idea that all things in an ecosystem are connected. Briefly discuss the idea of interrelationships. Then move the students into position to do the lap-sit described in the procedure above. Remind the students that when they were holding hands, they noticed that all elements of the ecosystem were interconnected. Now they are going to find out that not only are they connected, they depend on one another as well – when one is

removed, the others suffer, and must adjust to its absence. Do the lap-sit. Discuss interrelationships and *interdependence* in ecological systems.

Discussion Questions:

Do all kinds of organisms (plants, animals, and fungi, for example) need the same five basic *habitat* components?

Just like animals, plants need water, air, and space. Plants draw nutrients from soil in addition to using light energy and carbon dioxide from the air to make their own food via the process of photosynthesis. Fungi share the same five basic requirements as animals. Most fungi are decomposers (i.e. their food is dead, organic material).

Do all animals need the five basic *habitat* components in the same proportions? Explain why or why not.

Animal species vary widely in the amounts of food, water, and space they need, and in the kinds of shelter they need. For example, reptiles may be able to go for days or weeks without eating, while animals such as shrews, which have very fast metabolisms, will starve if they go for just a few hours without a meal. Likewise, some animals need to drink every day, while others, such as the kangaroo rat, get all the water they need from their food and never have to drink. Because their prey are relatively few and far between, large predators such as the mountain lion need far more space than do smaller animals. Lastly, some students may point out that fish (and other gill-breathing animals) don't need air. Like land animals, however, they do need oxygen; they use their gills to extract oxygen dissolved in the water.

What types of natural disturbances can affect a *habitat* and what would be the immediate and long-term effects of each?

*Flood, drought, hurricanes, earthquakes, erosion, and fire can all affect *habitats*. In the short-term, such disturbances might destroy food sources, pollute water, destroy shelter, pollute the air (fire), or decrease the amount of space by forcing animals to crowd together where resources remain available. In the short-term, loss of suitable *habitat* is likely, and animals might die or be forced to relocate. In the long-term, the ecological functioning of the disturbed site should return to a healthy state. Fire, in particular, has a regenerative effect on ecosystems that are adapted to it (see Fire Ecology Chapter).*

What types of unnatural disturbances can affect a *habitat* and what would be the immediate and long-term effects?

*Urban and suburban expansion, agriculture (including grazing), road building, trail building, nonnative species, pollution, climate change, off-highway vehicles, logging, and mining can all potentially affect *habitats*. If these activities are done responsibly, there can be little to no effect on an animal's *habitat*. If they are done irresponsibly, immediate effects might include **pollution**, *habitat* fragmentation, scarcity of resources, loss of *habitat*, and migration of wildlife out of the affected area. The long-term effect would likely be that some species previously found in the *habitat* would either go extinct or be forced to relocate, resulting in a permanent reduction in the number of species found in the remaining *habitat*.*

Can you think of any other resources necessary for survival that were not included in the five basic components of *habitat*?

*In order for a species to persist, individuals of that species must be able to find mates. Thus, one could argue that potential mates are as important a *habitat* component as the five necessities*

*introduced in the lesson. With older students, this is a good opportunity to discuss **habitat** fragmentation, which is one of the major problems associated with development and road building. Not only do these activities destroy **habitat**, they divide and isolate remaining patches of suitable **habitat**. In general, a species has a better chance of survival in a large patch of contiguous **habitat** than in the same area of **habitat** divided into several smaller patches. This is especially true of large predators that need lots of space. For the species to persist in an area of **habitat**, that area must be large enough to include more than just one individual; ideally, it should house a population sufficiently large so that the species does not suffer from the negative effects of inbreeding.*

References:

Table Rocks Environmental Education. 2007. USDI BLM. 16 October 2007
<<http://www.blm.gov/or/resources/recreation/tablerock/index.php>>.