## Lesson Plan: Umbrella Species- Greater Sage Grouse

**Standards: 5th Grade Science (ST, ET) 8.1.5. & .6**

**Objective: Students will:**

* describe what animals need to survive and the ways in which animals depend on other animals and plants
* learn ecological vocabulary terms
* understand why one species is important to the rest of the ecosystem
* perform an experiment to demonstrate interdependency within an ecosystem
* explore sage grouse and how they are used as umbrella species
* explain what they think might happen to other animals and plants if sage grouse became extinct

**Pre-lesson**: Lesson Plan: Greater Sage Grouse Habitat- Werner Wildlife Online

**Teacher Background**: So why does it matter if this one species of bird survives or not? It’s just one species, and there are so many other species in the world. The reason that it matters ultimately is that all species of life on our planet, including humans, are interconnected. Basically, the web of life shows that we, along with all the plants and animals, rely on the same resources, the same land, water, air and sunlight, for our survival. If one species goes extinct, it might not seem like a big deal, but it has huge impacts on all the other species that may prey on that plant or animal. Let’s say the aspen tree disappears from our planet. All the animals that eat the leaves or bark of the aspen tree will die, and beavers may be among them. If the beavers die, that means that they won’t build dams and create reservoirs. That means that many species of fish and ducks that rely on the beavers’ reservoirs will have to look for another place to live. And it goes on and on. If the web of life is broken, it affects much more than that single species. Ultimately, it will affect us directly. <http://www.nps.gov/blca/forteachers/sagegrouse.htm>

**Vocabulary:** umbrella species, interdependence, ecology, food chain, primary consumer, secondary consumer, scavenger, prey, predator, environment

**Materials:** Vocabulary Worksheet (attached), paper and markers

**Anticipatory Set:** Class discussion regarding the following questions.

* What do the sage grouse eat?
* Where do they live?
* How do they depend on the plants and other animals around them?
* How do other plants and animals depend on them?
* What would happen to these animals if their main food source no longer existed?

**Procedure:**

1. Give the students the vocabulary list and have them define terms
2. Assign each student one role of: sagebrush, forbs (plants), sage grouse, pygmy rabbit, coyotes, cougars, eagles. Ask everyone to stand on one side of the classroom. Then ask one "plant" or "animal" to step out of the picture. For example, you could say, "Will all the sagebrush please sit down?" The children taking their seats would represent the dying sagebrush.
3. Ask students if any other species depend on the sagebrush. Give them a hint if they are unsure (e.g., the sage grouse and pygmy rabbits need sagebrush for habitat). If any of the species depend on the species you have asked to sit down, those students will have to sit as well. For example, eagles prey on sage grouse and coyotes prey on sage grouse eggs. Continue until there are no (or very few) students left standing.
4. **Debrief:** Discuss the implications of the experiment with the class with these questions.
* What happens to the plants and animals in an area when one type of plant or animal dies out? (Ensuring that students understand that all plants and animals in an ecosystem depend on one another).
* Ask students: why does it matter if this one species of bird survives or not?
* Ask students if they can think of other examples of interdependence, such as in their families and friends.
* Ask students what they think might happen to other plants and animals if these animals become extinct.
* Ask students if they can think of any species that have been protected. If so, did the protection help their survival

**Extending the Lesson:**

Have students draw pictures of healthy ecosystems in which many plant and animal species coexist. Ask them to write a description of what would happen if the trees/plants or another species were to die off on the back of the drawing and share with the class.

**Enrichment Follow-up:** Plan a field trip to the Werner Wildlife Museum in Casper, Wyoming.

Source: <http://education.nationalgeographic.com/archive/xpeditions/lessons/08/gk2/ecosystem.html?ar_a=1>

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Ecosystem Vocabulary Sheet

Research and write the definition for the following terms.

Umbrella species-

 Interdependence-

 Ecology-

Food chain-

Primary consumer-

Secondary consumer-

Scavenger-

 Prey-

Predator-

Environment-