

Nature's Network

Nebraska
Rare Species
Educator Packet
grades K-4

OBJECTIVES

Students will (1) learn about threatened and endangered species and how these species are important to the ecosystem and (2) students will learn that all species - endangered or not - rely on each other in some way for survival.

METHOD

Students will create a web connecting numerous Nebraska native species (including endangered species). They will then use this web to determine how each species is connected in the ecosystem.

MATERIALS

- ball of yarn or string (a true, *round* ball of yarn works best)
- copies of the animal cards included in the activity
- tape

BACKGROUND

You may have heard of the web of life. This is the concept that all species are connected and rely on other species, either directly or indirectly, to survive. A plant relies on a ground beetle or worm to decompose dead material and add nutrients

back into the soil. A deer relies on a plant for food. A mountain lion relies on the deer for food (and, indirectly on the plant to feed the deer). A vulture may feed on the un-eaten parts of the deer, thus relying on the deer, the mountain lion, and the plant. It is an amazing circle - or web!

Ecology is the study of the interrelationships of living things and their environment. Ecological concepts can often be complex, but at their very basic level, they simply look at how living and non-living things rely on each other.

If one aspect of an environment is disrupted, many other things will be effected. If one living organism in an habitat is removed, numerous other organisms would be effects. From our example above, if the worm is removed, the nutrients from dead material will not be returned to the soil, thus effecting the plant. This, in turn, would effect the deer... the mountain lion... and the vulture.

Or, if plants are displaced by an invasive species, there will also be disruptions in the ecosystem. For example, in eastern Nebraska, an invasive species called Garlic Mustard displaced many native wildflowers. Not only did this effect many insect species, it also effected the deer in the area. Deer do not like to eat Garlic Mustard, so they had fewer plants to choose from. They turned to eating many young saplings. Because of this, many eastern deciduous forests in eastern Nebraska have only old trees. When these trees die, there will be no younger trees to take their place. The entire ecosystem will become more open and less forested because of the invasion of Garlic Mustard.

In another example, when a non-living things

Subject Areas: Science, Environmental Education, Social Studies

Duration: Procedure (Parts 1 & 2): 50 minutes; Procedure (Part 2): 30-40 minutes

Group Size: any (10 or more works best)

Setting: indoors

Vocabulary: threatened, endangered, Endangered Species List



is removed, there is also an effect on the living organisms. If rain is removed (i.e. a drought), the plant will not grow. This would obviously effect the deer, the mountain lion, and the vulture.

In the end, all species are effected by both living and non-living aspects of their ecosystem. Exactly how there are effected depends on the species, the change, and the ecosystem.

PROCEDURE, PART I

1. Begin the activity with a classroom discussion on ecosystems. What is an ecosystem? What things are part of an ecosystem (both living and non-living)? What happens when a part of the ecosystem is changed or removed? What happens when something new is added to the ecosystem?

2. Tell students that together you will be learning about a prairie ecosystem. Spend some time talking about prairies and what makes a prairie a prairie. Prairies often have very few, if any, trees. They are filled with both grasses and wildflowers. Prairies also have lots of insects, birds, small mammals, reptiles, amphibians. Larger mammals may also be found in prairies, but in smaller numbers.

Prairies are often described by the types of plants found in them. A Tallgrass Prairie has taller plants such as Indian grass, Big Bluestem, Maximillian Sunflower, and Compass Plant. Shortgrass Prairies have shorter plants such as buffalo grass, Gay Feather, and Yucca.)

3. Ask students to brainstorm some animals they think would be found in the prairie.

4. Invite students to choose one prairie plant or animal to research (for younger students, this can be a class project). Alternatively, you can use the images provided at the end of this activity. Either way, each student should have a picture of one prairie plant or animal. NOTE: have one student be the sun. The sun provides the energy for plants to grow and thus,

provide the starting point for the food web. For each plant or animal, students will need some understanding of:

- what eats or preys on this plant or animal?
- what does this plant or animal eat (for plants, its nutrients are taken from the soil and energy is provided by the sun).
- how does this plant or animal defend itself?

PROCEDURE, PART II

1. Once students have a basic understanding of their prairie plant or animal, have them "put on" their species card. Students can either tape their card to their chest, or punch holes in their card and tie string in each hole to hang it around their neck.

2. Have students get in a circle. Explain to the student that the energy for all animals starts with the sun. For this activity, students will need to think about what plant or animal they would pass their energy on to. For example, a plant would pass its energy on to a deer (the deer eats the plant thus gaining the energy from the plant). Continuing on, the deer would pass its energy onto a mountain lion (the mountain lion eats the deer thus gaining the energy from the deer's body).

3. Have the student with the sun picture hold the ball of yarn. Ask this student to hold onto the end of the string and toss the ball to another student who would likely receive energy from the sun (a student with a plant card).

4. Then, the student who catches the yarn, should again hold onto the string while tossing the ball of yarn to another student who would likely receive energy from them. Continue this until all students have a hold of the yarn web.

5. While still holding the yarn, have all students take a small step back allowing the web to become tight.

6. Ask a student who has an endangered species picture to raise their hand. Discuss with the students



what would happen to the web if this student were removed? Would another other species be effected?

7. Ask students with endangered species pictures to let go of their string. What happened to the web?

8. Now, any student who was immediately linked to the endangered species should also let go of the string. Now, what happened to the web? Continue on this process of letting go of the string until the yarn is laying on the ground.

9. Discuss with students how each species - plant or animal, endangered or common - is an important part of the ecosystem. Without each species, other species will suffer.

EXTENSIONS

1. Have students cut images of plants and animals from old magazines or calendars to create a food web. Ask students to link the sun, plants, herbivores, carnivores, omnivores, and decomposers.

2. Help students make a collage of threatened and endangered species. The collage could include threatened and endangered species found in Nebraska, the United States, or the world.

3. Have a penny drive to raise funds for organizations dedicated to helping endangered species. Use funds raise to have a math lesson in counting or currency.

4. Explain to young students that they, too can help protect wildlife species. Using less water, recycling, turning off lights, walking to school are all ways of conserving our natural resources which, in turn, helps wildlife species. Start a recycling program in your classroom for paper, cardboard, and plastic.

EVALUATIONS

1. Evaluate student's responses to the classroom discussions, or the food webs they created as part of the extensions.

2. Have students draw their favorite animal and tell

whether or not it is threatened or endangered. Ask students to explain how they can help conserve this species.

RELATED WEBSITES

Rare Species Nebraska

www.rarespecies.nebraska.gov

Nebraska Game and Parks Commission

www.ngpc.state.ne.us/wildlife/programs/nongame

U.S. Fish & Wildlife Service, Educator and Kids

www.fws.gov/endangered/kids/index.html

U.S. Fish & Wildlife Service, Nebraska Field Office

www.fws.gov/nebraskaes

BOOKS & PRINTED MATERIAL

Will We Miss Them? Endangered Species by

Alexandra Wright , ISBN-13: 978-0881064889

Can We Save Them? Endangered Species of North

America by David Dobson. ISBN-13: 978-0881068221

The Atlas of Endangered Species: Revised & Updated

by Richard Mackay. ISBN-13: 978-0520258624

Gone Wild (Caldecott Honor Book) by David

McLimans, ISBN-13: 978-0802795632

Almost Gone: The World's Rarest Animals (Let's-Read-and-Find-Out Science 2) by Steve Jenkins

ISBN-13: 978-0060536008

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Badger



Bobcat



Bison



Sunflower



Bullsnake



Centipede

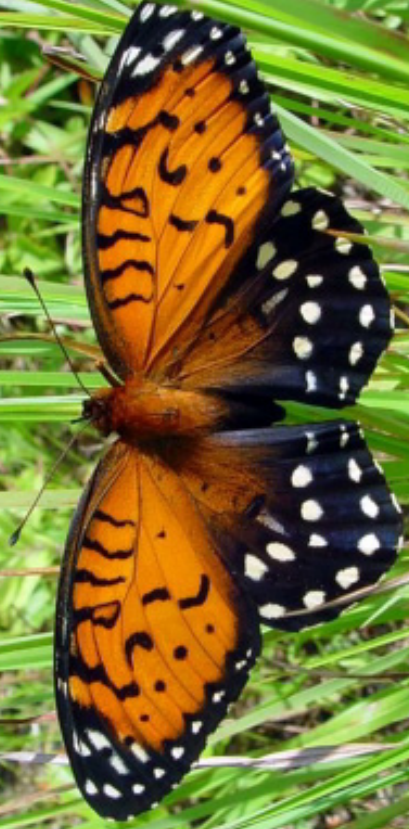


Mouse



Spider

AT RISK SPECIES



Regal Fritillary

ENDANGERED



American Burying Beetle



Mountain Lion



Mole

ENDANGERED



Black-footed Ferret

ENDANGERED



Prairie Fringed Orchid



Box Turtle



Toad



Worm



Songbird



Big Bluestem grass



Hawk



Milkweed



Prairie Clover



Bumble Bee



Grasshopper