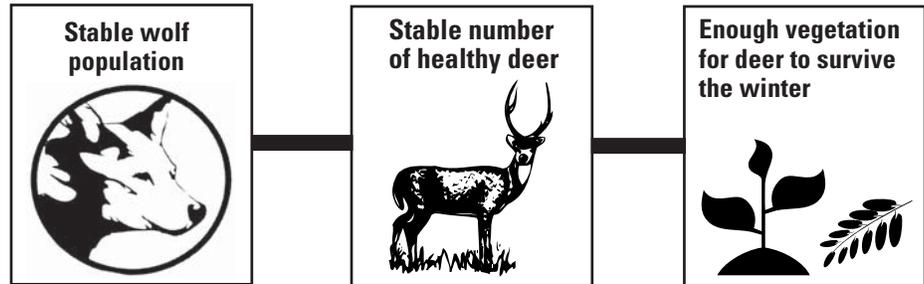


The Web of Life

The Role of the Top Predator

Red wolves are important to the health of an ecosystem. The natural prey of red wolves are white-tailed deer and other small to medium sized mammals. Wolves help limit the number of prey animals in their territory. For example, by helping to keep the deer population under control, wolves also help keep the vegetation healthy by preventing overgrazing and overbrowsing. The flowchart will illustrate this for you.



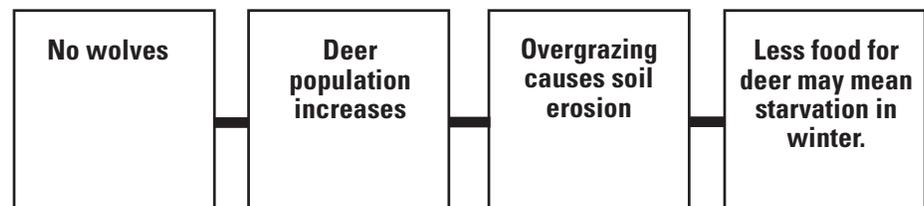
Aldo Leopold, the great naturalist, wrote the following description in his famous essay "Thinking Like a Mountain." Leopold is remembering an experience in his youth when he shot a wolf.

Read this selection aloud as a whole class with the teacher and discuss it, or read it in small groups and speculate about what you think Leopold is saying. Combine your ideas with the whole class.

"We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes-something known only to her and to the mountain. I was young then....I thought that because fewer wolves meant more deer, that no wolves would mean hunters' paradise. But after seeing the green fire die, I sensed that neither the wolf nor the mountain agreed with such a view.

Since then I have lived to see state after state extirpate its wolves. I have watched the face of many a newly wolfless mountain, and seen the south-facing slopes wrinkle with a maze of new deer trails. I have seen every edible bush and seedling browsed...to death. I have seen every edible tree defoliated to the height of a saddlehorn....In the end the starved bones of the hoped-for deer herd, dead of its own too-much, bleach with the bones of the dead sage....

I now suspect that just as a deer herd lives in mortal fear of its wolves, so does a mountain live in mortal fear of its deer."





The Web of Life

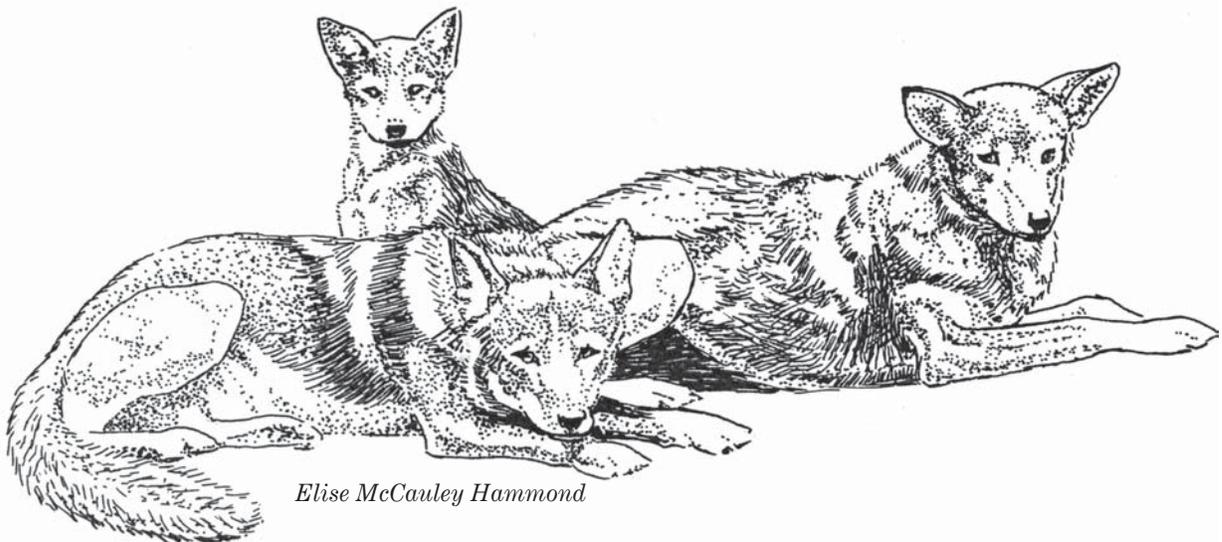
Red wolves and other top predators must kill to live. Their bodies are designed for predation (see "Designed for Hunting"), and their digestive systems are specially adapted to process their diet of meat. Being a predator can be a dangerous job. For example, the sharp hooves of a deer can kill or severely injure a wolf. It makes sense for a wolf to select the prey that is easiest to catch and kill. If the prey is an ungulate, or hoofed animal such as a deer, the wolf may often select one that is vulnerable - old, sick, or young.

Predators are essential ingredients of a healthy ecosystem. They feed the scavengers that visit wolf kills no matter what the prey the wolves have selected. In a process called "resource partitioning," various animals, depending on the time of day, divide up the leftovers. This eating in shifts means that different species take turns at the kill, and competition is thus reduced. Crows and vultures dine at a wolf kill; blue jays, nuthatches, chickadees and woodpeckers search for morsels just as they do at the suet feeder in your backyard. Foxes and coyotes watch for their chance. Others who search for wolf leftovers are weasels and skunks who pick at bones. Small rodents make nocturnal visits at a kill to search for bits of food. Beetles and other invertebrates benefit from carrion - and many birds come to devour the bugs! Ticks, fleas, flies and other parasites also buzz and crawl around a rotting carcass. Larvae produced by flies attract more birds and often bears. The process of decomposition provides fertilizer for the plant life around the carcass. This vegetation will provide food for the herbivores such as deer, thus ensuring the continuation of the cycle of life.

(Resource: "Wolves: Engineers of Biodiversity" by Nancy Gibson - International Wolf, Summer, 1999)

Your Turn!

Design a graphic to illustrate the role of the red wolf as a top predator in strengthening the biodiversity of an ecosystem. See how many different animals and plants you can include that benefit from the presence of a dominant predator like the red wolf. Important food items in the red wolf diet are nutria, raccoons, and deer. Nutria destroy wetland, aquatic plants. Deer can damage crops and cause hazards on roads. Raccoons prey on eggs of ground nesting birds such as quail and turkey. You can create a web or a pyramid using a variety of art materials. You might want to work independently or with a partner.



Elise McCauley Hammond

Becoming Part of the Web of Life (Lesson Plan and Activity)

Materials

- ball of yarn
- name cards (see below)
- list of organisms from which to choose
- list of survival needs.

Preparation

- Review the definition of the word organism. Simply defined, an organism is a plant or an animal. It might be microscopic, or it may be huge.
- Ask students to make a list of what organisms **need** in order to survive. If you do the Conflict Resolution Activity, this will provide background.
- Compile the list on the overhead or the chalkboard. Students should have listed needs as food, shelter, and water.
- Next have students compile individual lists of organisms. Limit this list to organisms that live in your area and about which students have at least some knowledge.
- Write the list on the overhead or the chalkboard. Encourage variety. Be sure you have a balanced list.
- Write the names of the organisms on pieces of colored construction paper. The names should be written in large letters. Children can illustrate these name tags. Decide whether the organisms will be assigned or whether the students will choose them from the pile of name tags placed face down.
- Students should sit in a circle, close together. On a nice day, this could be done outside!
- Students should pin the name tags to their clothing or place the name tags in front of them for easy reading. If the class is large, you might want to divide them into two groups.
- Remind students of what organisms need to survive.
- Hand the ball of yarn to a student. Tell the student to wrap the ball of yarn around his or her hand so that it remains secure.
- Tell that student to look around the circle. Choose an organism with which his or her organism interacts. **Have the student consider these things: What does my organism eat? What, if anything, eats it? What does my organism use for shelter or for protection? What other organisms does it need in order to survive? What organisms need it in order for THEM to survive?**
- When a student has chosen an organism with which it interacts in some way, have the student say, for example, “I am a worm. I am going to toss the yarn over to the robin because a robin is a bird that depends on worms and grubs for food.” Then the student will toss the ball of yarn to the student who represents the bird, meanwhile keeping the strand wrapped securely around his or her own hand. The student who receives the yarn wraps it once around his or her hand, and the process is repeated.

“Each extinction is a unique voice silenced in a universal conversation of which we are only one participant.”

Mark Jerome Walters

“For one species to mourn the death of another is a new thing under the sun.”

Aldo Leopold

■ If students get stuck, you may have to prompt their thinking. If, for instance, the student representing the robin is genuinely confused, have him or her think about what the robin needs. Where does it nest. What materials does it use to build nests? Is there any organism that eats birds? What about the eggs of birds? Are scavengers in the circle who would eat a dead robin? What about the feathers of the robin? Would any organism utilize those? What about bird droppings? Do they fertilize plants, carry seeds? Students must expand their thinking beyond “eat and be eaten.”

■ The process of passing the ball of yarn continues until all the organisms have been included.

■ Important! Tell students that an organism may be chosen more than once! This will help them to see that the elimination of some organisms may cause subtle changes, while the elimination of others causes major and immediate changes. Be sure to have students announce what organism they represent and why they are passing the yarn to another particular organism representative.

Follow-up Discussion

Pose the following questions:

■ What does it mean to be attached to so many organisms?

■ Why do some organisms have more than one connection?

■ What would happen if some of the organisms were to disappear, become extinct?

Ask one student at a time to tug gently but firmly on the yarn. Have them notice how many other students feel the tug. Tell students that if they feel a tug on the yarn, they should tug the yarn in return. Each additional tug should generate more tugs from the group until everyone is tugging on the yarn. This can be a bit rowdy, but the activity reinforces the concept that all organisms are interrelated.

Ask students if they think one of the organisms in the circle is less important than another. Have them select one, or a student can volunteer if he or she can justify the claim. Ask that student to drop the yarn and move back from the circle. Ask any student who was attached to that organism to drop the yarn and move back also. Eventually all of the students will have dropped their yarn and moved back.

Talk about the outcome of extinction. How does the elimination of one species affect the web of life? What if isolated populations such as the Florida key deer were eliminated by natural disaster? What about the red wolf? Does the red wolf risk extinction through natural disaster or disease or development or hybridization with coyotes?

Further Exploration

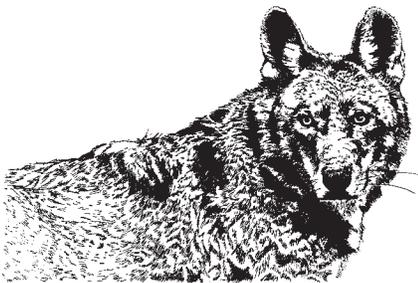
■ Ask students to interview a grandparent, another older relative, or an older person in the community. Ask this person if he or she remembers plants or animals that no longer exist in the area or which have declined in population so that they are rarely seen. Share these interviews.

■ **Reflective Writing:**

Ask students to write about a particular plant or animal they enjoy seeing in the world. This can be an essay or a first-person narrative in which the student tells about the experience of seeing an animal he or she had never seen before. Ask students to reflect about what would happen if this plant or animal ceased to exist. What would be the damage to the web of life? Would there be economic damage? Is there something in the human spirit that responds to the existence of other life?

“We owe it to the wolf to try one more time to work out a relationship that protects legitimate human interests while allowing living space for wolves. Further. . .we owe it to ourselves to try again to manage wolves wisely. . . .The true measure of the morality of a political society is how justly it treats its least powerful and popular citizens. In much the same sense, the ecological decency of a society can be measured by how it treats the most troublesome and notorious animal species. When our society proves it has learned to live with wolves, we can begin to like ourselves a little better. It will then be time to ponder how we can improve our relations with several hundred other species.”

Steve Grooms



Jane Rohling

Designed for Hunting

Eyes

- Binocular vision
- Can see to hunt in darkness as well as in daylight

Ears

- Long ears that can detect the slightest of sounds
- Long ears help body get rid of heat in summer

Nose

- Sense of smell is strongest of all the senses
- Can smell prey from long distances

Mouth and Jaws

- 42 teeth
- Long canine teeth for piercing and gripping
- Incisors for nibbling and cleaning bones
- Carnassials for shearing and cutting meat
- Powerful jaws for crushing bones

Feet and Legs

- Long slender legs enabling wolf to trot tirelessly for long distances or to sprint when chasing prey
- Elbows that turn inward so that feet track in a straight line underneath body

- Runs on toes for speed - review activity on plantigrade and digitigrade
- Large round feet for traveling on snow and mud
- Long flexible toes that spread out for gripping on rock

Did You Know...?

- Wolves don't "kill for the fun of it!" It's a hard enough job just to find enough to eat in order to survive.
- Wolves sometimes kill more than they can eat at one time. They may cache extra food, or they may leave it for scavengers to consume.
- Wolves must drink a lot of water because of their meat diet in order to digest their food.
- Wolves don't chew their food; they gulp it down in chunks. That's where the expression "wolfing your food" comes from.
- Wolves often go several days - sometimes a week or more - without eating. Life is truly "feast and famine."
- Wolves carry food to the den or the rendezvous site in their stomachs. They regurgitate food for the pups or for the nursing mother who cannot leave the den to hunt.

