

Wolf Words!

Look in the **textboxes** for lots of *ACTIVITY* suggestions!

- **active submission** – when one animal actively or intentionally acknowledges another pack member’s higher status (as opposed to being forced to submit by a higher-ranking individual). The animal does this by wagging its tail rapidly in a low position and by flattening its ears and placing its body at a lower level than the higher-ranking animal.

Observe your dog’s behavior when it is greeting you or when it is begging for food or when you have scolded it for raiding the trash can. If the dog accepts you as having the “higher status”, what does it do? Watch the dog’s body language carefully and record your observations.

- **adaptation** – a change in an animal’s behavior or body that allows it to better live in its surroundings. Some adaptations in wolves include having large feet with toes that spread out. The wolf’s feet and legs are marvelous examples of adaptations which enable the animal to travel long distances. The red wolf’s long ears help it to regulate its body temperature in the extreme summer heat of its southeastern **habitat**.
- **agonistic pucker** – the horizontal contraction of the lips showing aggression.

Observe a dog warning another dog to stay away. What does the dog do? Record all observations. What does the fur or hair between the shoulders do? What about the dog’s eyes? Its lips and teeth? What sounds does it make?

- **alpha** – the top-ranking or most **dominant** animal in the **pack**. In wolf packs there is usually an alpha male and an alpha female. Most often the alpha male and female are the only pair in the pack that breeds. The alpha pair produces one **litter** of pups a year. The alphas assert their authority by body posture (they carry their tails high and their bodies are erect), facial expression (direct stares, retraction of lips, ears forward) and by disciplining any member of the pack who challenges them.

Your dog is a modified wolf. Whom does your dog regard as the “alpha” of its “pack?”

- **behavior** – what an animal does; its reactions or actions under specific conditions.

Once you learn about wolf behavior, your teacher can suggest several activities in which you can observe a dog’s behavior under specific conditions and compare these behaviors to a wolf. One example is communication. Wolves communicate through vocalizations, body posture, and facial expression. Watch a dog interacting with another dog. What do you observe?

- **big game (large game)** – term used to designate larger **species** that are **hunted** by humans. Examples are bear, moose, deer, elk, caribou, and bighorn sheep. **SMALL GAME** includes squirrels, rabbits, and game birds such a pheasant and grouse. **NON-GAME** animals include songbirds and birds of **prey**.

Hunting is a controversial issue. There are several ways you can research different points of view on this subject. After you have examined these viewpoints, you can come to a conclusion of your own and share it in writing and discussion. Think about WHY people hunt? Is there a difference between subsistence hunting and recreational hunting? How does the issue of humans-as-hunters impact on red wolf recovery? Do all hunters oppose the reintroduction of wolves? Do some research on that one! You may be surprised!

- **biological diversity (biodiversity)** – the variety of insects, fish, animals, plants, and other living things that share our planet. The essential interdependence of all living things.

Some Native Americans make a distinction between “interdependence” and “interrelatedness.” They believe that not only are living things dependent upon one another, but that they are related to one another as well. They also believe that this link to one another, this bond, is not a burden but a blessing for which we should be grateful. React in your writing logs to this idea. Think about the ways you can encourage biodiversity. Be creative with this! You can make posters! If you have computers available, you could create a slide show.

- **biologist** – a person who studies living **organisms**, life processes, and/or the animal or plant life of a particular place. Biologists also study the relationship of living things to one another.

Are you having a career unit? Interview a biologist! Maybe you could invite a wildlife biologist to talk to the class.

- **bounty** – a payment or other reward for removing certain **species** of animals designated as harmful. In the past, bounties were paid to people who killed wolves, thus helping to **extirpate** them from most of the lower 48 states.

For you researchers: Are bounties still paid on wolves in some parts of the world? If so, where?

- **breed** – to reproduce; to produce **offspring**. Many wolf offspring (pups) never reach maturity because they die of starvation or disease or they are killed by other **predators**.
- **buffer zone** – an area between wolf **pack territories** that are occupied by established packs. **Prey species** often flourish in these buffer zones. Wolves that have **dispersed** and who are alone often find relative safety and food in buffer zones with less risk of being attacked and killed by members of established packs. Buffer zones are not, however, necessarily neutral areas and, therefore, safe havens. These zones are contested by **resident packs**, and supremacy shifts back and forth.
- **cache** – a hiding place used for storing food if there is an abundance of meat.
- **canids** – the family of **mammals** that includes dogs, wolves, coyotes, and foxes.
- **canines** – the sharp pointed teeth (fangs) that carnivores use to pierce and tear the flesh of their prey. The canine teeth of a wolf may be as long as 1 _ inches!

Examine the teeth of a friendly dog. How are they similar to a wolf’s teeth (see the activity “**Picking Teeth**”). What about your teeth? How are they adapted to what you eat?

- **Canis lupus** – the scientific name for the gray wolf.
- **Canis lupus familiaris** – the scientific name for the domestic dog.

Dogs and wolves are genetically identical. Some scientists believe, therefore, that they both should have the same scientific name --Canis lupus. Other disagree, arguing that although a dog and a wolf are genetically identical, a wolf is not a dog and a dog is not a wolf. What’s YOUR opinion?

- **Canis rufus** – the scientific name for the **red** wolf.
- **captive breeding** – breeding animals in such places as zoos. Captive breeding is a tool used to save critically **endangered species** such as the **red** wolf and the Mexican wolf. These captive **populations** are often used for **reintroduction** of wolves to portions of their former **range**.
- **carnivore** – an animal that eats meat as its main source of food. (Note: Carnivores like the **red** wolf will occasionally supplement their diets with plant matter such as fruit. Meat, however, is the main staple of the red wolf's diet. It could not survive on plant matter. Without meat, the **red** wolf would starve.)

The word carnivore is a noun. The word carnivorous is an adjective. How many carnivorous animals can you name? Work in small groups. See who can compile the longest list in 5 minutes. Review the terms **omnivore** (omnivorous) and **herbivore** (herbivorous). How many omnivores can you name? How many herbivores?

- **carrion** – dead and decaying animal flesh. Not “fresh” meat. Wolves will eat carrion if no fresh meat is available. **Scavengers** depend on carrion for survival.
- **carrying capacity** – the total number of animals that a given area of a **habitat** will support at any given time; the ability of a given area to supply water, food and shelter to an animal.
- **class** – part of the classification system scientists use to help identify plants and animals. Wolves and humans are in the class Mammalia.
- **conservation** – preservation of natural resources from loss, waste, or harm. The wise and intelligent use of natural resources so they will be available for future generations.

Have you begun to form an opinion about the conservation of top predators like wolves, grizzlies and mountain lions? What are the advantages? What are the difficulties?

- **consumer** – In an **ecosystem**, this is an **organism** that feeds on other organisms. An **herbivore** is a **primary consumer** because it gets its food directly from plants. **Carnivores** are **secondary consumers** because they get their nutrition from eating herbivores!

Here is something to discuss! Which has an easier time finding food – an herbivore or a carnivore? Does that depend on certain circumstances? What? Make a list of which animals are primary consumers and which are secondary consumers. What about a rabbit? A fox? A wolf? A mountain goat? How about you?

- **courtship** – the behaviors animals use to attract a mate. The bond between a mated pair of wolves is very strong. In many cases, wolves remain together year after year, raising their pups and staying steadfastly loyal to one another. The wolf pack is a family, and that family attempts to remain intact. The wolf pack is, in fact, an example of how coordinated teamwork, sharing of responsibilities, and taking time for fun and play can solidify family members. The number one priority in the wolf family is the pups. Parenting is the most important job, and all of the adults put the protection and the education of the youngsters first.

What comparisons can you find between the wolf family and the human family?

- **data** – factual information used as a basis for reasoning, discussion or calculation.
- **delisting** – removing a plant or animal from the **endangered species** list when it is no longer in danger of **extinction**.
- **den** – the shelter wolves use to give birth and raise their pups. A den is often a hole dug in the ground by the mother. Sometimes, especially in warmer climates such as the southeastern United States where the red wolf lives, the den is a shallow hole or a hollowed-out place under fallen trees. Since newborn pups cannot regulate their body temperature, the mother remains with them constantly. For this reason, dens are located near water since a nursing mother needs plenty of water to drink.
- **depredation** – refers to the damage done by **wildlife** to people’s crops and animals. Livestock depredation by wolves means the killing of domestic animals raised for food.
- **digitigrade** – walking so that the toes touch the ground and the heel is raised. Animals that use this form of **locomotion** include wolves, deer, horses and cats.
- **disperser** – a wolf that leaves the **pack** and strikes out on its own. Some of these “lone wolves” have no social **territory**, and they live on the fringes of established packs or in the areas where several territories come together. Their solo status makes them more vulnerable to attack by other wolves and to malnutrition. Some dispersers are **subordinates** who leave when food becomes scarce. Some dispersers are seeking a mate and unoccupied territory. These wolves will travel sometimes hundreds of miles from where they were born. Males and females will sometimes meet and form new packs if they find an unoccupied area with sufficient **prey**.

One of the challenges of **red** wolf recovery in the Southeast is the potential for dispersing **red** wolves breeding with coyotes. When **red** wolves were at the edge of extinction, the few that remained in the wild along the Texas and Louisiana coast had hybridized with coyotes in a phenomenon known as “hybrid swarm.” One of the difficulties encountered in the Captive Breeding Program was finding enough pure **red** wolves to ensure the survival of the species. Since there are coyotes almost everywhere in the Southeast, how can we prevent interbreeding of **red** wolves and coyotes? Are there any coyote-free areas where **red** wolves could be reintroduced? Can you help find the answers to these questions?

- **domesticated** – refers to animals that people have tamed, kept in captivity and used for special purposes for many generations. Domestic animals have lived among people long enough to have adapted to humans and to human environments.

Look up the word **TAME** in the glossary. Many people use “**domestic**” and “**tame**” interchangeably. They are not the same thing. Discuss these two words in class. Divide a piece of paper into two columns. Head one DOMESTIC and the other TAME. Brainstorm first with a list of animals (horse, monkey, Holstein cow, donkey ferret, raccoon, lion - make a long list). Write the name of each animal in one column or the other. Are there wild animals that cannot be tamed - that is, easily managed or controlled by humans? If so, what are they? Can wolves be domesticated? Can they be tamed?

WOLVES AS PETS

Unfortunately, some people attempt to keep wolves as pets. There are many reasons why wolves do not make successful pets. Can you think of some? What often happens to wolves that people have tried unsuccessfully to keep as pets? How can you discourage people from “owning” wolves? Wolf-dog **hybrids** can be an unpredictable and dangerous mix. Dogs are generally protective and can have aggressive natures. Wolves, on the other hand, are shy and predatory. What is the possible danger in that combination?

- **dominant** – one animal having a higher position or status than another. **Alpha** wolves are dominant to all other animals in the pack.
- **dominance hierarchy** – a **social** order in which high-ranking individuals are at the top of the pyramid, and the **submissive** animals are ranked beneath. Dominant wolves express their rank through body language, facial expressions, vocalizations, and posture. Since wolves are social animals, and since the **pack** is critical to their survival and to the successful raising of the pups, the ranking system is important. Bonds among pack members are solidified through expressions of dominance and submission.
- **ecological niche** – the role or “job” of a **species** in its **environment**. The wolf fills the niche of **top predator** in its **ecosystem**.
- **ecology** – the science of the relationships between plants, animals and the **environment**.
- **ecosystem** – an area defined by its physical characteristics and also by the complex links and relationships between the plants and animals that live there. Ecosystems are always undergoing change and alteration as a result of many factors.

Get into groups and compile lists of factors that impact on ecosystems. What factors are “natural?” Which are “artificial?” What changes occurred in the red wolf’s ecosystem when this animal was eliminated?

- **encounter** – when a wolf meets its **prey**. Much has been learned about how wolves select a specific prey animal, but much is still a mystery. Wolves are opportunistic – that is, they look for opportunities to get a meal at the least amount of risk to themselves. This means they usually select vulnerable animals – the weak, the old, and the young. No one is really sure how a wolf detects weakness in a prey animal. Sometimes it is obvious – if the animal is lame, for example. Often, however, weakness is not obvious to a human observer. Wolves pick up cues that are too subtle for humans to discern.
- **endangered** – an **endangered species** is one that is in danger of **extinction** throughout all or most of its **range**.
- **environment** – the external conditions, including sun, air, water, soil, and plants that make up an area where an animal lives.
- **extinct** – no longer in existence. An animal or plant facing extinction is one in danger of vanishing forever from our world.
- **extirpate** – to exterminate or wholly destroy a **species** in an area.

The effort to extirpate the wolf in the United States is a sad chapter in the nation’s history. Wolves were trapped, shot and poisoned for decades. Bounties were paid by the U.S. government to people who killed wolves. There are still people who think wolves should be eliminated.

REACTIONS and THOUGHTS

1. Name some specific animals that arouse strong NEGATIVE reactions in many people. Why? Name some animals that arouse strong POSITIVE reactions. Why? Make a class list of negative and positive expressions we use comparing animals to humans. Example: sly as a fox, lion-hearted, a bear hug, strong as an ox, worming your way into a conversation, badgering someone. How many can you come up with?!

Continued on the next page!

React to each of the following quotations. What does each writer mean? Do you agree? Do you disagree? **Support your opinion.**

“The last word in ignorance is the man who says of an animal or a plant,
‘What good is it?’ ”

Aldo Leopold - A Sand County Almanac

“For all things share the same breath - the beast, the trees, the man,
they all share the same breath. What is man without the beasts? If all
the beasts were gone, man would die from a great loneliness of the spirit.
For whatever happens to the beasts soon happens to man. All things are
connected. . .Whatever befalls the earth befalls the sons of the earth.

Chief Seattle, 1854

- **fact** – something that is supported by evidence; a truth
- **family** – part of the classification system scientists use to identify plants and animals. Wolves are in the family Canidae along with coyotes, foxes and domestic dogs.
- **feral** – domesticated animals that have gone **wild** - e.g., burros, goats, cats, dogs, and pigs. Red wolves prey on feral pigs. There is an important distinction between, for example, a feral dog and a wild dog. Sometimes **livestock depredations** are blamed on wolves when, in fact, the killing was done by feral dogs or **hybrids**.
- **fiction** – something invented; a literary work whose content is based on the imagination and not necessarily on fact.
- **food begging** – a behavior which **pups** and **subordinate** wolves use to get food from **dominant** members of the pack. The pup or subordinate lowers its body posture and licks around the muzzle of the wolf who has the food. It may even whine. Sometimes the dominant wolf can be enticed to give up some food to the subordinate. Pups induce the adults to give them food by this behavior. Pups also induce the adults to **regurgitate** food by engaging in food begging.
- **food chain** – the transfer of food energy from one **organism** to another as each consumes a lower member and in turn is **preyed** upon by a higher member.

Where is the wolf on the food chain? Where are humans? What other animals can you name that are in the same position on the food chain as humans and wolves?

- **food web** – an interlocking pattern of food chains. For instance, a green plant, a leaf-eating insect, and an insect-eating bird would represent a simple food chain.

Draw some other food chains and create a **food web**. You could do this on poster board, or if you have a computer to design multi-media presentations, you could create some slides! See also “**web of life**.”

- **game animal** – legal name for animals that may be regulated and hunted under regulations and laws.

Name the game animals in North Carolina. Are wolves designated as game animals in any state or country? Find out!

- **genus** – part of the classification system used to identify plants and animals. Wolves are of the genus *Canis* along with domestic dogs and coyotes.
- **gestation** – the time from fertilization of the egg to the birth of the young; the period of pregnancy. Wolves have a gestation period of approximately 63 days.
- **guard hairs** – the long outer hairs of an animal's coat which keep the downy **underfur** from getting wet or dirty. The underfur keeps the animal warm by preventing heat loss from the body. **Red** wolves, because they live in relatively warm climates, do not have to be as well insulated as the the wolves of the north.
- **habitat** – the type of **environment** in which a plant or animal lives. Forests, deserts and marshes are examples of habitats.
- **hackles** – the **guard hairs** along the back of an animal, especially on the neck and shoulders. The hackles are often raised as a form of communication, especially to indicate aggression.
- **heartworm disease** – a disease caused by a **parasitic** worm tht lives in the hearts of **carnivores**. These worms can reach up to 30 cm in length.
- **hierarchy (or dominance hierarchy)** – the **ranking** system among wolf **pack** members in which some are higher ranking, or **dominant**, and others are lower ranking or **submissive**.
- **home range (or range)** – the area an animal like a wolf or a wolf **pack** uses to find food, shelter and water to survive. The area over which the animal travels in the scope of normal activities. Ranges vary depending largely on the type and number of **prey**.
- **howl** – a form of communication among wolves. Scientists aren't entirely sure why wolves howl, but this form of communication seems: to help wolves locate one another when they have become separated; to warn **pack** members of intruders or other possible danger; to aid in the demarcation of **territory**; to unify the pack - kind of like a "sing-along"; to announce or to defend a kill; to announce the beginning of a **hunt**; to assemble pack members. It has been observed that **prey species** often seem to ignore wolves howling. Many observers think that the howl of the **red** wolf is different from the howl of the gray wolf!
- **hunt** – to stalk or chase a prey animal, such as a deer, for food.

One of the persistent myths about wolves is that they "kill for the fun of it." What stories do you know in which the wolf is portrayed as killing for reasons other than survival? The truth is that wolves must kill to live. They are carnivores with no other means to survive. That is hard for some humans to accept, but it is reality. Many humans are omnivores; they eat meat, too, but in many cultures it is no longer necessary to hunt animals for food. Hunting for a wolf is hard work. Most of the time, the wolf is not successful. The prey is too fast or too strong, and the wolf has to give up and try again. Most wolves are injured at least once in their lifetime. They suffer broken bones and fractured skulls from being kicked and stepped on.

- **hunter** – a person or animal who searches for another animal with the intention of killing it.
- **hybrid** – the **offspring** produced by breeding plants or animals of different varieties or **species**. Since dogs and wolves and wolves and coyotes can **breed** and produce **pups**, these offspring are referred to as hybrids.

WOLF- DOG HYBRIDS

A controversy rages on the subject of wolf-dog hybrids. Many people believe that if they obtain a hybrid, they will get an animal that looks like wolf and acts like a dog. This is often not the case, however. Hybrids sometimes have a dog's aggressive nature combined with the wolf's fear of humans and predatory nature. That combination can be dangerous. Do you know anyone who owns a hybrid? Look up the law in your county or state about owning hybrids. Can these animals be vaccinated against rabies and licensed? What is your opinion about breeding hybrids?

WOLF- COYOTE HYBRIDS

This is the largest challenge facing **red** wolf recovery. Researchers have determined that some of the **red** wolves in eastern North Carolina have bred with coyotes. The question is what to do about this. The coyote is what is known as an exotic species in North Carolina. That is, coyotes are not native to the state; they moved in when the wolf was eliminated. Coyotes adapt easily to living near humans. **Can you think of a solution to this problem?**

- **kingdom** – part of the classification system scientists use to identify plants and animals. Wolves are in the animal kingdom. So are humans.
- **legend** – a story, often one that cannot be verified, that is passed down from one generation to the next.
- **litter** – a group of wolf **pups** born at the same time. Wolf litters can range in size from 1 to 9 pups. The average is 4 or 5.
- **livestock** – cows, sheep and other farm animals.
- **locomotion** – the act of moving from place to place. Wolves depend on their feet and long legs for locomotion. The wolf may indeed kill with its teeth and powerful jaws, but the wolf hunts with its feet. The feet and legs of wolves are uniquely adapted to their lives as hunters and “**far travelers**.” When they are trotting or loping along, their feet are compact in order to reduce friction and to increase speed. If the terrain is uneven or rocky, the toes of the wolf spread out, enabling it to cling, much as your fingers do. The long legs of the wolf are ideal for traveling in snow and for carrying it tirelessly over the miles of their **ranges** and beyond. Long legs also help wolves to leap over fallen and tangled trees and brush and to wade through streams and bogs. Wolves are, by the way, excellent swimmers!
- **mammals** – animals that are warm-blooded, have hair on their bodies and produce milk for their young with special glands called mammary glands.
- **mange** – a skin disease caused by a **parasitic** mite. Mange is characterized by intense itching and hair loss.
- **mate** – one of a pair of animals that associates for breeding.

- **myth** – a traditional story that serve to unfold a world view of a people or to explain a practice, belief, or natural phenomenon. Wolves are the subject of many of the myths of the Cherokee. A good place to read about the place of the **red** wolf in Cherokee mythology and **legend** is a book called Another Country by Christopher Camuto.
- **niche** – (ecological niche) an ecological term used to describe a place or a position occupied by a plant or animal with reference to other **organisms**. The things that determine the niche, or place in society of an organism, are: where it lives, where it finds shelter, who its friends are, who its enemies are, where it gathers food, what it takes from the community where it lives, what it gives to the community, and how the community is affected by the organism.

Where is YOUR ecological niche? Where do you live, where do you find shelter, who are you friends, who are your enemies? Where do you get your food? What do you take from the community where you live? What do you give to the community? How is the community affected by you?

- **offspring** – the babies, the **pups**, the “children” that an animal has. The primary focus of adult wolves is the raising and nurturing of the pups. Responsibility for feeding the pups is shared by the adults in the **pack**. Since the **social** ties between **pack** members are very strong, wolf pups raised without the bonding system of the pack have a difficult time **adapting** to life in the **wild**.
- **olfactory communication** – Many **species** of animals communicate with one another by “reading” **scents**. For example, an animal **scent marks** to designate a **territory**. Wolves and other dog species sniff certain parts of another individual’s body when they are reunited or meet for the first time. A good deal of information is exchanged between two animals in this manner. Wolves rely on their noses more than anything else to find **prey**. Wolves can smell prey 1.6 km away. They also have keen hearing. Wolves can hear one another **howling** several miles away. By turning their ears from side to side, they can easily tell from which direction the sound is coming.
- **omega** – the lowest-ranking animal in a wolf **pack**. These **subordinate** wolves may become **dispersers**, especially if food is limited.
- **oral tradition** – the tradition of telling stories and passing along information to new generations. This system of verbally reciting history has been practiced for many centuries by many indigenous cultures around the world. The Cherokee and other Native American cultures in the United states used this method of recording and reciting history.

Do you know anyone in your family who is a good storyteller? Perhaps you could interview an older member of your family and ask him or her to tell you a story from the past. What stories from your life will you save as memories to tell you own children and grandchildren?

- **pack** – a family of wolves. Packs usually consist of the **breeding** or **alpha pair** and their recent **offspring** - **pups** and juveniles from the previous year. Pack sizes can be as small as two or three and as large as twenty or more. The size of the pack may depend on **prey** density and size. For example, wolves that prey on moose may form larger packs because moose are so large that they are easier to kill if the pack is composed of several

wolves. On the other hand, the more wolves, the more quickly a kill is consumed and the sooner it is necessary to **hunt** again. In general, wolf packs number between five and eight animals. Because they hunt smaller prey, many **biologists** assumed that **red** wolves are more solitary than gray wolves. Observations in the **wild** have been limited, but there is evidence that **red** wolves do, indeed, live in packs but often hunt as individuals or pairs. Order within the pack is maintained by a functional **dominance hierarchy**. Roles are expressed and reinforced through body language, vocalizations and facial expressions.

- **parasite** – an often harmful **organism** that lives in or on another organism. For examples, fleas are parasites. So are ticks.
- **passive submission** – expressed when a low-ranking wolf is threatened by a **dominant** wolf who is expressing its authority by baring its teeth and growling. In this **behavior**, the low-ranking wolf tucks its tail between its legs, lies on the ground and exposes its belly to the dominant wolf. The lower-ranking wolf may also demonstrate subordinate affection such as face licks and mouth nuzzling.

Have you ever seen a dog demonstrate these behaviors? Passive submission should not be interpreted by humans as weakness. The strict dominance hierarchy of the pack structure is necessary to the survival of the pack, and it reinforces the bonds that hold wolves together. Dominant wolves rarely hurt subordinate wolves. Wolves do not waste precious energy needed for hunting by fighting and inflicting injury on one another.

- **pelage** – the hairy coat of an animal. The pelage does not include the skin. In their natural **habitats**, the pelage of the wolf is an **adaptation** that helps it blend into its surroundings. **Red** wolves are hard to see, but you might get lucky if you are persistent!
- **pelt** – the skin and fur of an animal.
- **perspective** – a point of view. People have varying perspectives about wolves.

Think about this: Where does your point of view on a particular subject come from? Experience? Direct teaching? Investigation and research? The experiences of others? All of these? Think of a subject about which you have a strong opinion. Your task here is NOT to defend your point of view but to CONSIDER ITS ORIGIN. Where did it come from? Humans have, for example, very rigid and highly emotional perspectives about wolves. Why? Pick a subject about which you have a strong subjective evaluation (in other words, you react strongly to the subject), and write about its “roots.” You may be surprised at “where you are coming from.”

- **plantigrade** – walking so that the back part of the foot (the heel) touches the ground. Examples of animals that use the form of **locomotion** include humans, raccoons and bears. Wolves and dogs, on the other hand, walk on their toes.
- **play bow** – the wolf extends its front legs, raises its hindquarters, cocks its ears forward and puts on a big grin. Often it will pant and wag its tail. How many times have you seen your dog do this?
- **play face** – an expression used to elicit play. Basically, it is a big open-mouthed smile. The mouth is open, and the teeth are bared, but the lips are not retracted in an

agonistic pucker. This is a friendly face and can be paired with other actions such as rolling on the ground to show others that play is intended. And, of course, the play bow often accompanies the grin!

- **pinch period** – the period in the annual cycle when the conditions for living are least favorable. Humans often automatically assume that winter presents hardships for wolves. Not necessarily!

Can you think of any reason why winter is often “prime time” for wolves?

- **poaching** – taking **game** illegally.
- **population** – all of the individuals from the same **species** or subspecies (or closely-related species or subspecies) that are closely associated and that occupy a certain area.
- **predation** – the act of preying upon other animals. Predation means hunting with the intent of killing. The word often has a negative connotation, but for wolves, predation is the only means of survival.
- **predator** – an animal that kills and eats other animals for survival.

Make a list of all the predators you can think of. Are humans predators? What is the difference between a predator and a scavenger? How do they benefit one another?

- **preservation** – protection of **wildlife** and **habitat** which emphasizes non-consumptive values and uses such as no direct use by humans. **Conservation**, on the other hand, emphasizes both consumptive and non-consumptive use of resources.

Are you confused? Cutting timber in a national forest would be **conservation**. The forest would be designated for future generations to use, so trees would be replanted, and the forest would be conserved. In a wilderness where **preservation** is the goal, no timbering would be permitted. The wilderness would be preserved.

- **prey** – animals that are killed and eaten by other animals.
- **public lands** – land owned by the general public and managed by local, state or federal agencies such as the National Park Service or the United States Fish and Wildlife Service.
- **pup** – a baby wolf. Pups are born in the **den** in the spring. They weigh about a pound and are blind and deaf at birth. When their eyes open at about two weeks of age, they are blue. Later they will turn the distinctive yellow or yellow-green that makes the wolf's direct stare so mesmerizing. Wolf pups grow rapidly. They have to so they can travel with the **pack** and learn the **hunting** skills that will enable them to survive. In addition, they must soon grow strong in order to get through their first winter. Wolf “childhood” is long. Learning to hunt takes practice, and the adults are persistent and patient. Pups play almost constantly; embedded in this play, however, is the “stuff of survival.” Through play, the pups establish **rank** and learn **social** roles. In addition,

exercise improves muscle tone and strength. All adults in the pack assist in nurturing and teaching the pups.

- **rally** – to gather in a group. Wolves may rally for various reasons – before a **hunt** and to greet other **pack** members, for example.
- **range** – the land upon which animals live. See “home range.”
- **rank** – the relative **social** positions of animals in a **pack**. The more **dominant** animals are higher in rank.
- **rare** – **wildlife species** not presently **endangered** but with numbers so low that there is concern.
- **recovery plan** – a guide that identifies actions necessary for restoring an **endangered** or **threatened species** to being a self-sustaining member of its **ecosystem**. It is a structure or framework to guide **biologists** toward the objective of species recovery. A good recovery plan is critical to the success of species restoration.
- **regurgitate** – to throw up food shortly after consuming it. Wolves will eat at a kill site and then return to their pups and regurgitate the food which the **pups** eat.

Before you react with the conclusion that eating regurgitated food is the most disgusting thing you can think of, STOP and THINK! When and why is regurgitation necessary for wolves to survive? Work it out through these questions. Can pups join in the hunt when they are very young? How far away from the den or the rendezvous site can a kill take place? Twenty miles? Could be. Farther? Sometimes. What's the most efficient means for “bringing home the groceries” if you are a wolf – carrying a big hunk of meat in your mouth when you have to travel five miles or more after a hunt – or carrying the groceries in your stomach? What about the mother wolf who cannot leave the young pups to hunt? Fresh meat would be preferable for her – but what if the kill is miles away? The survival of the wolf pack depends upon teamwork, cooperation and working in harmony with one another. This includes regurgitation as a means of feeding one another and ensuring that the pups are well-nourished during the weaning period.

- **reintroduction of species** – a **wildlife management** strategy whereby a **species** is returned to its historic **range**.

Where in the lower 48 states have wolves been reintroduced? How successful have these efforts been? Do some research on one of the wolf web sites listed in the directory! Reintroduction is a hot topic. Is it a good idea? The answer is, it all depends. Success depends on the prey base, on the number of humans that will be directly impacted, on the attitudes of those humans, on the amount of “space” available for wolves to establish territories and to disperse, on what management plan has been worked out, and on how this management plan will be funded. Species reintroduction is costly! Many people are working on saving endangered species and on restoring damaged ecosystems. Many people view this restoration as a legacy for the future. **What do YOU think?**

- **rendezvous site** – the area to which wolves move their **pups** when they are 8 to 10 weeks old. The rendezvous site is a gathering place for the **pack**, and the pups are left at the site while the adults **hunt** for food. The rendezvous site must meet certain criteria. 1) It must provide security from harm for the pups by having shelter where

the pups can play and exercise without being seen. 2) It must provide shelter from bad weather. 3) It must be located near water. 4) It must be able to be easily patrolled by the adult wolves who will bark (yes, wolves can bark!) at the first sign of danger. The pups will scramble instantly to shelter! 5) The pups can begin to learn the most essential life lesson of all: **how to hunt**.

- **scat** – animal poop – to put it simply and plainly! Scientists often identify the animals that have been in an area by looking at their scat. Wolf scat often looks like a hairy cocoon. Since wolves consume nearly every part of the carcass, scat is encased in hair so that bone fragments do not puncture the intestines.
- **scavenger** – an animal that eats animals it did not kill directly but that die from other causes such as disease, starvation or **predation**.

Work alone or with a group. Set a time limit for brainstorming. Make a list of scavengers – birds, insects, mammals. What is the effect of wolf predation on the scavenger population in an ecosystem? Here's an interesting idea. Some biologists speculate that wolves might even help bears in late summer by killing deer and leaving carcasses for them to scavenge. This could prove especially helpful at the end of long dry summers where there are few berries for bears to eat. Also, winter kills might provide bears with food when they are emerging from dens in spring.

- **scent marking** – leaving a mark such as urine to establish **territory** and to communicate with other animals. When you see a **domestic dog** urinating on a tree, it is scent marking. Both male and female wolves mark their territory. “Lone wolves” do not usually scent mark because they do not wish their presence to be revealed to established **packs**.
- **scent post** – an object or area an animal uses through **scent marking** to establish **territory**. Examples include trees, fence posts and rocks. You can think of scent marking as “invisible graffiti.” Graffiti, after all, say, “I was here.” Sometimes it’s used as a warning for others to stay away. (Trivia question; What is the singular form of graffiti?)
- **small game** – term designating smaller **hunted species**. Examples are rabbits, squirrels, pheasant, quail, and groundhogs. See **big game** and **nongame**.
- **social animal** – an animal that lives in a group with its own kind. Wolves are highly social animals because they live in a **pack** or family according to strict cooperative rules. The pack members are dependent upon one another for survival, and they all participate in the care and raising of the young.

How many social animals can you name? What animals tend to be solitary? Some animals band together according to gender. What animals band together in “matriarchal” (female) groups to raise their young? Which are the “herd” animals?

- **soft release** – a **reintroduction** strategy whereby the animal is brought to the release area and kept in a “holding area” in order to become acclimated or accustomed to its surroundings. Soft release was used with the **red wolves** at Alligator River.

The key to success is, however, to keep the wolves from bonding in any way with humans. Food is provided with minimum contact between wolves and the caretakers. In fact, the caretakers try to keep the wolves wary and afraid of humans. This is so that they will avoid humans and the danger that could present once they are released into the wild. **HARD RELEASE**, on the other hand, is simply releasing the **captive-bred** animals into a new area with no opportunity to acclimate to the surroundings. The gray wolves that were brought from Canada in 1995 and 1996 to central Idaho were **reintroduced** using the **hard release** method. Those wolves and their **offspring** are doing well.

- **species** – Part of the classification system scientists use to identify plants and animals. There are two species of wolves in the United States: **Canis lupus** (gray wolf) and **Canis rufus** (red wolf). The proper name of a species is made up of two words: the genus name (Canis) and the specific name (lupus or rufus).
- **Species Survival Plan (SSP)** – organized breeding of **endangered** species in captivity to help increase their **populations** and ensure species survival. Managed by the American Zoo and Aquarium Association (AZA), there is an SSP for Mexican wolves and one for **red** wolves.
- **stalk** – to follow, track, and eventually sneak up on an animal.

Do wolves stalk their prey? Perhaps that perception is one of the things that gives wolves a sinister reputation. Wolves do locate and track prey. Many people, however, when they think of wolves hunting, visualize them hiding, waiting to ambush their unsuspecting victims and succeeding purely because of the element of surprise. If you can, view a video that shows wolves hunting. YOU may be the one that is surprised! The method of hunting depends on the prey. **Red** wolves feed on many small mammals and even insects. With their long ears (which help them hear tiny rustling sounds), their agility and their speed, they can catch mice and rabbits and squirrels. This means they must get as close as possible before attempting to catch their equally speedy and agile prey! Larger prey present a different challenge, however. When hunting deer, the wolves must carefully select the animal they intend to kill, and this means assessing the herd. Who is weak, who is lame, who is arthritic, which young animal can be separated from the safety of its mother? In order to make this assessment, wolves often try to get a herd running so they can read the cues that help them select an animal that appears to be vulnerable. White-tail deer may appear delicate and fragile, but a well-placed kick with their sharp hooves can kill or seriously injure a **red** wolf.

- **stereotype** – a conventional, oversimplified opinion, belief or conception. A group or person or animal that is thought to be “typical” or to conform to a formula or fixed pattern, lacking any individuality.

Expressions we use have their origins in stereotypes. Why do we say. . . ?

So-and So is a chicken.

Sly as a fox

I'm going to squirrel away some money.

So-and-So chatters like a magpie.

Timid as a mouse?

An old goat

Fierce as a tiger.

Lion-hearted

The list is endless. How many stereotypes can you list about wolves? Which have some legitimacy? Which ones are sometimes true, sometimes not? Which ones are false? Which are positive? Which are negative? Which apply to humans as well as to wolves?

- **stewardship** –Stewardship is responsible caretaking of the **environment**, based on the premise that we are managers of natural resources and that we are responsible for **conserving** and **preserving** these resources. This is a relatively new idea in the history of the United States and one that does not have acceptance everywhere. If you study your history carefully, you will see that the expansion of America westward was based on the concept of utilitarianism. Resources were here for human use and consumption, and **wilderness** was something that should be “**tamed**.”
- **stress** – harmful pressure to an **organism** or a **population**. A good **reintroduction** management plan must take the factor of stress into careful consideration. What pressure, for instance, might be brought to bear on deer herds that would cause wolf recovery to be in jeopardy? **Red** wolves were reintroduced to the Great Smoky Mountains. This effort encountered major problems, and the wolves were eventually recaptured. **Pup** mortality rate was high, and the wolves **dispersed** out of the park and into adjacent areas.

What stresses caused this lack of success in the Great Smoky Mountains? Go to a web site or a current article, and see if you can discover the answer. What stress is now considered the greatest threat to **red** wolf recovery?

- **submission** – the act of acknowledging another animal's **dominance** or higher rank. Wolves do this in several ways including lying on their backs and exposing their bellies, tucking their tails between their legs, flattening their ears against their heads, and assuming a lower body position. Another **behavior** exhibited by submissive wolves is **food begging**. **Subordinates** learn that they can sometimes get higher ranking members of the **pack** to relinquish food. Submission should not be confused with weakness. Wolves must adhere to specific roles in order for harmony and cooperation to exist in the pack. Submissive behavior is a way of communicating an awareness of one's rank.
- **tame** – brought from wildness into a manageable or easily controlled state. Tame animals may be handled by humans and used in some cases to perform work. **Domesticated** animals, on the other hand, are animals that have, over a series of generations, become accustomed to living with humans and which have, to varying degrees, become dependent upon humans to provide for their needs. Domestic animals that live in a wild state are called **feral** animals.
- **territory** – the portion of an animal's **home range** which is defended against other animals of the same **species**. Wolves are fiercely territorial, and they will often attack and kill other wolves that intrude on their domain. Although the boundaries of **pack** territories are not visually defined, wolves announce their occupancy of an area in several ways. One is by **scent marking**, a second is by **howling** to warn others of a **resident pack's** location, and a third is by direct attack on intruders. Wolves seem to prefer to rely on the warning system of scent marking and howling. Fighting saps precious energy which is needed for **hunting** and killing **prey**. Once in awhile, a wolf pack will accept an outsider. This may happen if one of the **breeding pair** dies or is killed. Sometimes a **disperser** may return to its family. Sometimes a stranger is tolerated and accepted. This is rare as far as **biologists** know, but it proves the point that the one thing you can never say about wolves is that they NEVER do this, or they ALWAYS do that. The wolves of the far north

that following the migrating caribou herds have more fluid territories than do wolves that depend on **resident wildlife** for food.

- **threatened** – a **species** present in its **home range** but in low numbers and in danger of becoming **endangered**. On the other hand, a species that has been listed as endangered but whose numbers are increasing may be moved from endangered status to threatened.
- **top predator** – a predator, usually large in size, that is rarely killed by other predators and may kill smaller predators. Wolves are top predators and have few natural enemies. They often kill smaller predators.
- **track** – a print left by an animal. Wolf tracks are large in comparison to most domestic dogs and other Canids such as coyotes. The front feet of the wolf are larger than the back feet. Claws are usually visible. Cats walk with their claws retracted – except for one.

What cat cannot retract its claws?

ANSWER: THE CHEETAH

- **underfur** – the soft downy fur beneath the guard hairs that keeps an animal warm. It is more dense than the guard hairs and has “loft” which traps body heat much the way a down jacket does.
- **ungulate** – an animals with hooves such as deer, moose, caribou and elk.
- **United States Fish and Wildlife Service** – the branch of the federal government that is responsible for certain fish and **wildlife**, including **endangered species**.
- **web of life** – the term used to describe the interrelatedness of all forms of life.

BECOMING PART OF THE **WEB OF LIFE** (LESSON PLAN)

MATERIALS

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

“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

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!

GO TO THE NEXT PAGE!

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.
- 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?

Where is Wild?

- **wildlife management** – a term referring to the technical and scientific skills applied to protect, **conserve**, **preserve**, extend and limit the value of **wildlife** and **wildlife habitat**. Wolf management is a difficult issue. When wolves and humans come into conflict with one another, there are problems for both. One of the critical questions in wildlife management is how to manage wolves so that they and humans can coexist. Wolves are travelers, they are prolific (meaning they produce a lot of **pups**), and they compete with humans. How best to manage wolves? Your help is needed to answer this question.

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
The Return of the Wolf*