ACTIVITY

Habitat Web

Summary:
Participants explore the web of connections among living and non-living things.

Grade Level:
K-6

Time Needed:
45 minutes

Learning Objectives:
Participants will be able to:
- Create a web that connects various living and non-living things within a habitat.
- Understand how many living things are connected.
- Observe the effect of a broken habitat web (e.g., through pesticide introduction).

Materials Needed:
- Ball of yarn
- Large index cards or construction paper
- String or pins

Background:

All plants and animals have a particular place or area where they live called their **habitat**. While the term habitat generally focuses on a particular organism and its needs, the term **ecosystem** encompasses a whole community of living things, non-living elements, and their interrelationships. An ecosystem, on some level, can be thought of as a complex, shared habitat.

Plants and animals have many important interactions within their community and depend on different factors in their environment. Animals depend on plants or other animals for food and may use different plants for cover. Many plants need insects to pollinate them and earthworms to tunnel about so they move air into the soil. Decomposers, including earthworms, fungus and bacteria, live off dead plant and animal matter. They break down this material and make nutrients more available for plants. Environmental factors such as climate, the amount of sunlight, the amount and type of water available (e.g., clean, moving, stagnant), and the type and condition of soil in the area determine how different plants and animals will fare in a given area.

In this activity, participants will have an opportunity to think about many different interactions within an ecosystem. In addition, this activity illustrates the interconnections of all living things. This is an important concept to learn in order to understand more complex issues, such as the effects of drought, exotic species, pesticides and habitat loss.

What to Do:

1. Explain to participants that for this activity, they will have a chance to create a web of connections between many different living and non-living things found in a habitat.

2. Have participants help prepare habitat web cards ahead of time. These cards will indicate a particular plant, animal, or non-living element and will each serve as a player's identity for each round. Cut out the cards created for the Forest Habitat (found at the end of this activity) or have the group help create new ones with index cards and markers or crayons. If possible, laminate the cards. Punch a hole in the top of the finished card and attach a string so that participants can hang the cards from their necks (alternately, pin them on participants' clothing). If the group

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creates new cards, see Steps 3 and 4 below. Otherwise, skip to Step 5.

3. On each index card, write the name of a plant, animal, decomposer, or non-living element found in a particular ecosystem. If possible, include a picture or drawing of the element on the card. You may wish to color-code the cards for their roles as producers, consumers, decomposers, or non-living elements.

4. You may wish to use a local field guide to create a web directly related to your area. When making the cards, create a good mix of living and non-living elements. Make sure to include a good distribution of carnivorous (meat-eating), herbivorous (mainly plant-eating), and omnivorous (plant- and meat-eating) animals. Also, a set of cards should have the potential to meet the basic needs (i.e., food, water, cover, and places to raise young) of the animals. Some sample habitat webs are given below.

5. After the cards are complete, discuss the concept of habitat and the fact that animals need to find food, water, cover, and places to raise young in their habitat. If they have already done "Have to Have a Habitat" (p. 34), this is an excellent time to review the concepts.

6. Have participants sit or stand in a circle. Hand out habitat web cards to each participant. Run the activity in one big group or divide participants into groups of eight to ten. With small groups, help one group begin while the others watch, and then have them all try it. Make sure that with small groups all the major groups (e.g., non-living elements, plants, invertebrates, fish, birds, reptiles/amphibians, mammals, and decomposers) are represented at least once, and that there is a good mix of herbivores and carnivores (or omnivores). Participants should understand what their card represents and what role they would play in their ecosystem. If necessary, have participants say a few words about their cards before beginning, have other participants help out, or review some of these concepts. If possible, have volunteers oversee small groups.

7. Any participant may start the web by holding on to one end of the ball of yarn and passing the ball to another member of the circle. Before participants pass the ball on, however, they should think about the connection between their habitat web card and that of the person to whom they are passing the yarn. When the participants pass the ball, they should explain this connection. For example, a participant who has a woodpecker card might throw the ball to a person with a tree card and say, "The woodpecker lives in a tree.'' The next person holds onto the yarn and throws the ball to someone else, also explaining the connection; "The tree is cover for a deer.'' Assist participants in coming up with accurate connections, while at the same time encouraging them to be creative. Each time the yarn is thrown, the person throwing it holds onto a piece of it so that eventually, the participants create a web of yarn. The connections go on until everyone has a piece of the yarn. Make sure the tension is tight enough so that participants can feel the interconnectedness of all the different elements.

8. Point to one of the participants and announce that his or her organism has been wiped out. The cause can include human impacts, such as pesticides or habitat removal, and natural events, such as flooding or disease. When an organism dies, he or she should give a tug to the web, and then the next person who feels the tug should give a (small) tug back and raise his/her hand. This can continue as different people feel the tug. Point to each person who is affected by this creature. You can repeat this procedure several times with different examples.

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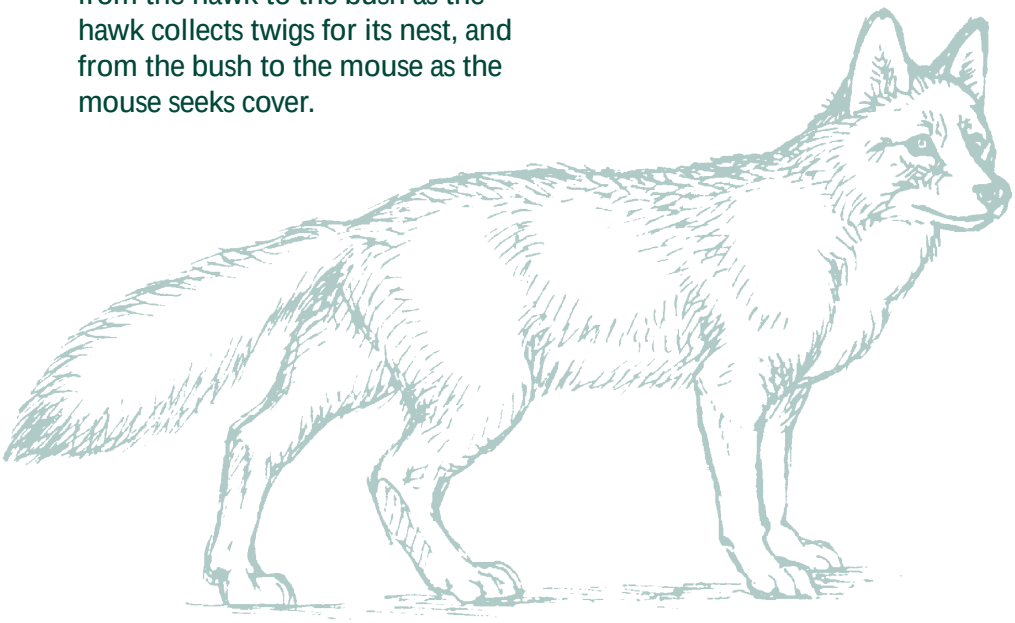
9. This activity will be different every time, since plants and animals interact with each other and their environment in many different ways. If they wish, participants may try the activity several times. One way to do this in the same round is to have more than one ball of yarn, each a different color. When participants finish creating one web, they would then begin another one with a different color. Each color would indicate a different set of interrelationships in one ecosystem. For example, one color might involve passing food energy along a chain, and it might look like this: the sun gives energy to a blueberry bush, a mouse eats a blueberry, and a hawk eats the mouse. The next color might represent other important roles of habitat; it would reach from the sun to the hawk as the hawk warms itself, from the hawk to the bush as the hawk collects twigs for its nest, and from the bush to the mouse as the mouse seeks cover.

10. Discuss different events that can affect an ecosystem. Ask the group what would happen if two organisms died out at the same time. Discuss different scenarios. Some examples of questions might include the following: *What might happen if all the trees were removed? When might this happen in real life? What can we do to help? What if we just remove all the dead trees? What would happen if we kill all the mosquitoes with pesticides?* As you have this discussion, have the person who was left with the ball of yarn give a tug and then pass the ball back to the person who felt the tug. As each person feels the tug, he/she can drop their arm and help to roll up the yarn.



Questions:

- What are some ways that plants, animals, and non-living things are connected?
- How are we as humans connected to our own ecosystem?
- What happens to an ecosystem if organisms die out or a non-living element is altered?

Adaptations:

Please refer to the general adaptations on pages 11-16.

Hearing Disabilities:

- Create a poster of a habitat web you will not be creating in the activity to help illustrate the concept.
- Include both the names and pictures on habitat web cards.
- Have participants signal to a participant who is deaf or hard of hearing before they toss the ball of yarn to him or her.
- If working with a large group, break participants into groups of 8-10 so participants can be closer together to accommodate lip readers.
- Have the sign language interpreter narrate the game for the participants as needed.

Learning/Cognitive Disabilities:

- Create a poster of a habitat web you will not be creating in the activity to help illustrate the concept.
- Create large habitat web cards

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with both the name and pictures on them.
- Have everyone go around the circle and state their symbol and one way they are connected to the web (e.g., "I am a squirrel and I live in a tree.'').
- Have all participants toss the yarn underhanded for better control. If desired, sit on the ground to play the game.
- Narrate the game to decrease confusion as needed.

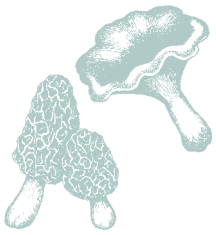
Motor Disabilities:
- Use a large ball of yarn or wrap yarn around a foam ball for those with limited upper extremity motor control.
- If there is a participant who uses a wheelchair in the group, have all participants sit in chairs to play the game.
- Wrap the string around the arm of the participant's wheelchair or other assistive device, or gently around his/her wrist if he/she are unable to hold the string. If wrapping the yarn around the wrist, check throughout the game to make sure it is not too tight.
- Assist participants with throwing and catching as needed. Have all participants toss the yarn underhanded for better control.

Visual Disabilities:
- Make large habitat web cards on white paper. Print names in large block letters with a thick black marker. Put Braille labels on each of the cards for participants who are blind.
- If desired, use items to help illustrate the cards while explaining the habitat web. For example, a ball for the sun, representative plastic animals, a feather for a bird, a soil sample for dirt, etc. If possible, use real items such as a snake skin, leaves, etc.
- Consider creating a tactile poster of a habitat web, with items such as bark for a tree, a feather for a bird, etc. Label the poster in both large print and Braille. Draw arrows to connect the items with thick black lines and raised lines of glue or yarn.
- Have everyone go around the circle and state their symbol and their location in the circle to help with orientation during the game.
- Narrate the activity as it progresses.
- Have participants call out each other's symbols/names before they toss the yarn. Make sure that participants have the attention of participants who are blind or have low vision before tossing or rolling the yarn to him/her.
- Have someone ring a bell behind the participant who will be on the receiving end of the ball of yarn to increase orientation.
- Consider playing the game seated and rolling the ball of yarn.
- Assist participants with throwing and catching as needed. Have all participants toss the ball underhanded for better control.
- Give good orientation directions to participants throughout the game, such as, "The oak tree is five feet in front of you.''

WORKSHEET

Habitat Web

Forest Habitat Web



- Sun
- Five plants e.g., grass, wildflower, poison ivy, oak tree, pine tree
- Five insects/spiders e.g., ladybug, bumblebee, wasp, earwig, potato bug, spider, butterfly
- Three reptiles or amphibians e.g., lizard, frog, snake, turtle, salamander
- Two fish e.g., trout, salmon, minnow
- Three songbirds e.g., robin, mockingbird, sparrow, warbler, finch
- Two raptors e.g., kestrel, hawk, eagle, kite, vulture
- Three small mammals e.g., mole, mouse, chipmunk, squirrel, bat, rabbit
- Two medium-sized mammals e.g., woodchuck, badger, raccoon, coyote, bobcat
- Two large mammals e.g., mountain lion, bear, deer, moose
- Three decomposers e.g., fungus, bacteria, earthworm, dung beetle

- Three non-living components e.g., water, soil (and/or rocks), air

Habitat Web

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Wetland Habitat Web

- Sun
- Five plants e.g., skunk cabbage, swamp lily, Venus flytrap, blueberry bush, cypress tree
- Five insects/spiders e.g., black fly, dragonfly, diving beetle, fishing spider, butterfly
- Three amphibians or reptiles e.g., salamander, newt, frog, snake, turtle
- Three fish e.g., sunfish, bass, perch, eel, minnow
- Three water birds e.g., Canada goose, wood duck, blue heron
- Two raptors e.g., eagle, osprey, hawk, owl
- Three small mammals e.g., mouse, shrew, muskrat, mink
- Two medium mammals e.g., beaver, otter, raccoon, bobcat
- Two large mammals e.g., deer, moose, black bear
- Three decomposers e.g., fungus, bacteria, aquatic worm, scavenger beetle
- Three non-living components of habitat web e.g., water, soil (and/or rocks), air

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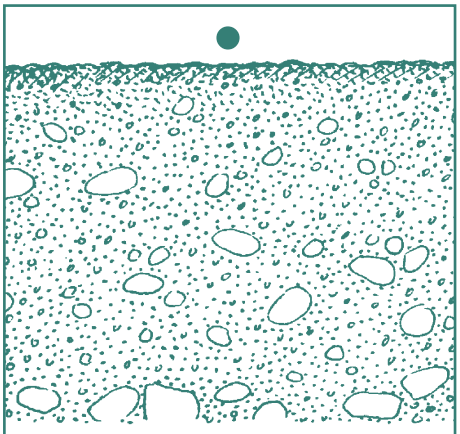
Habitat Web

Coastal Habitat Web

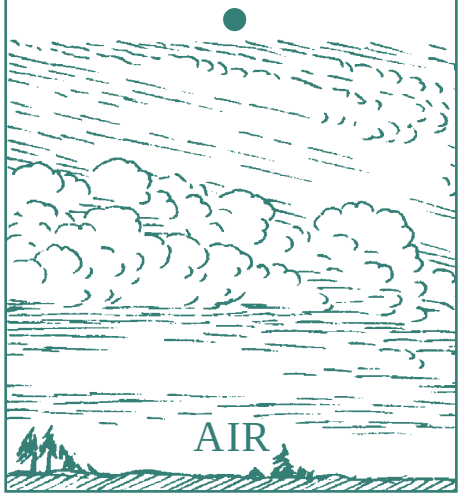
- Sun
- Five plants e.g., marshland grass, seaweed, cypress tree, beach grass, dune wildflower
- Five seashore animals e.g., crab, shrimp, jellyfish, sponge, mollusk
- Five small to medium-sized fish e.g., mackerel, herring, mullet, salmon, flounder
- Three large fish e.g., shark, ray, eel
- Three reptiles e.g., sea turtle, lizard, snake
- Three birds (non-raptors) e.g., duck, pelican, heron, gull, sandpiper
- Two raptors e.g., eagle, osprey
- Two coastal-dwelling mammals e.g., sea lion, sea otter
- Two sea-dwelling mammals e.g., whale, dolphin
- Three decomposers or filtering animals e.g., bacteria, sea worm, oyster
- Three non-living components of habitat web e.g., water, soil (and/or rocks), air

Habitat Web

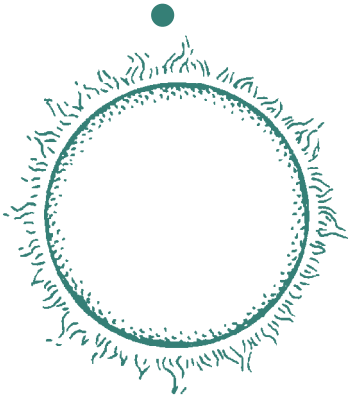
WORKSHEET



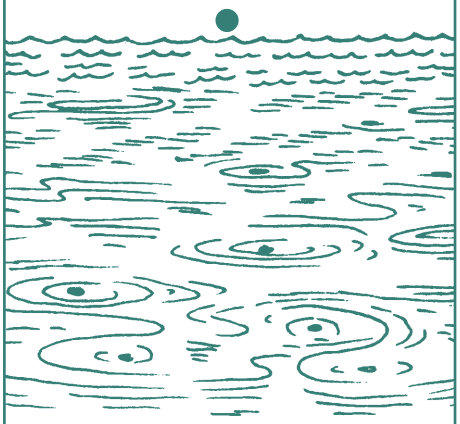
SOIL



AIR



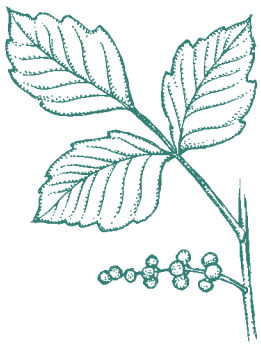
SUN



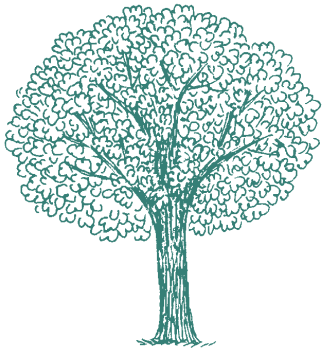
WATER

GRASS

WILDFLOWER



POISON IVY



OAK TREE

PINE TREE

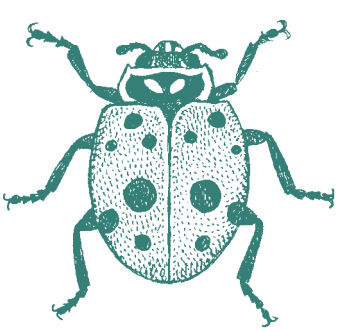
WORKSHEET

Habitat Web

Non-Living Element	Non-Living Element	Non-Living Element
Plant	Plant	Non-Living Element
Plant	Plant	Plant

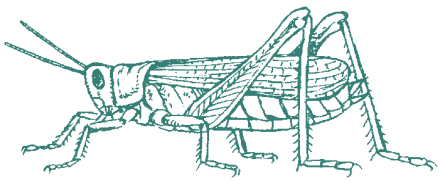
Habitat Web

WORKSHEET



LADYBUG

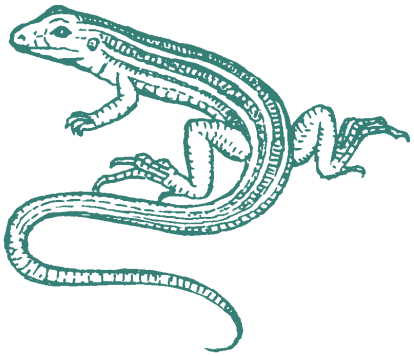
BEE



GRASSHOPPER

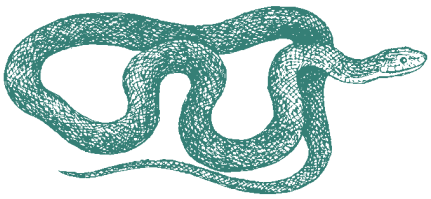
SPIDER

BUTTERFLY



LIZARD

FROG



SNAKE

SALAMANDER

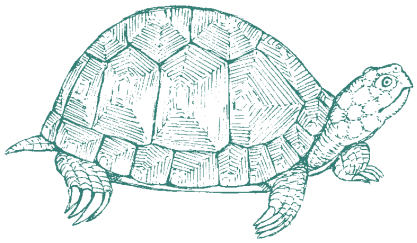
WORKSHEET

Habitat Web

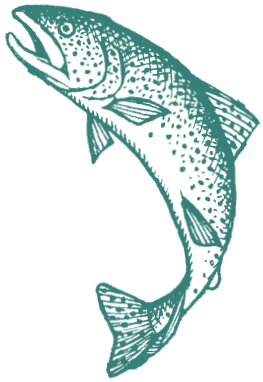
Insects and Spiders	Insects and Spiders	Insects and Spiders
Reptiles and Amphibians	Insects and Spiders	Insects and Spiders
Reptiles and Amphibians	Reptiles and Amphibians	Reptiles and Amphibians

Habitat Web

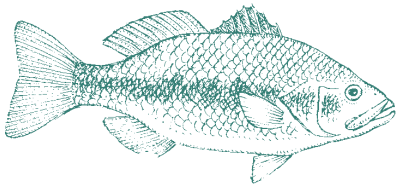
WORKSHEET



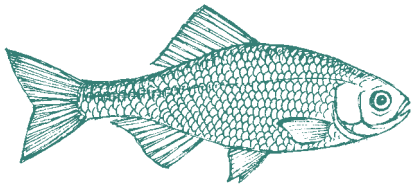
TURTLE



TROUT

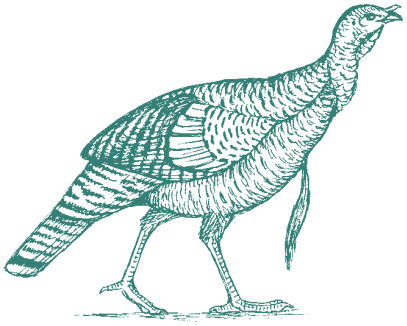


BASS



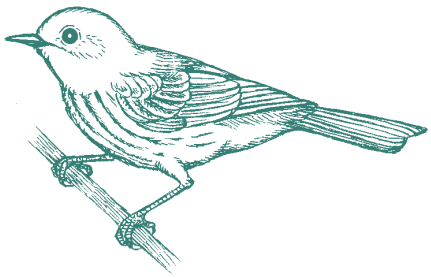
MINNOW

ROBIN

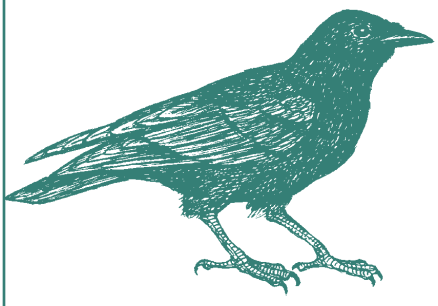


TURKEY

SPARROW



WARBLER



CROW

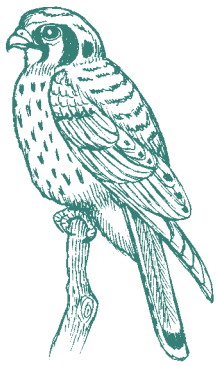
WORKSHEET

Habitat Web

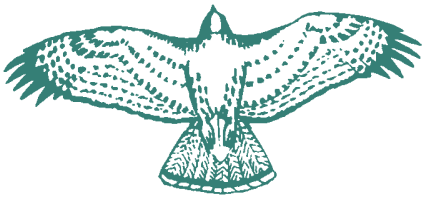
Fish	Fish	Reptiles and Amphibians
Birds	Birds	Fish
Birds	Birds	Birds

Habitat Web

WORKSHEET



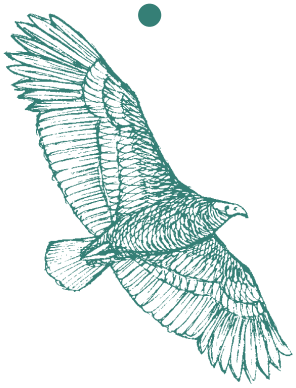
KESTREL



HAWK

EAGLE

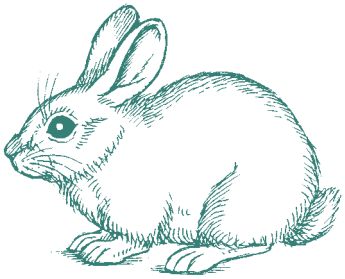
KITE



VULTURE

CHIPMUNK

SQUIRREL



RABBIT

WOODRAT

WORKSHEET

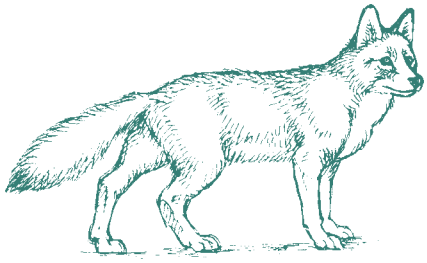
Habitat Web

Birds of Prey	Birds of Prey	Birds of Prey
Small Mammals	Birds of Prey	Birds of Prey
Small Mammals	Small Mammals	Small Mammals

Habitat Web

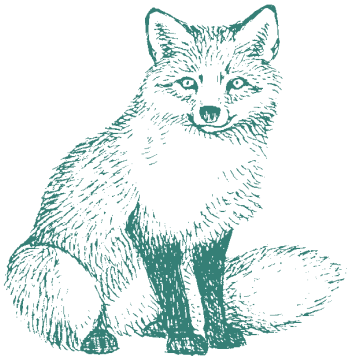
WORKSHEET

VOLE

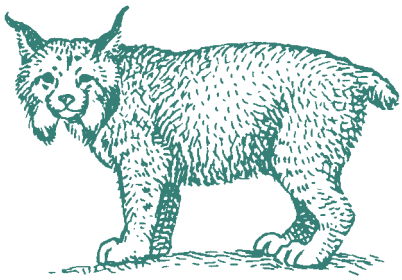


COYOTE

BADGER

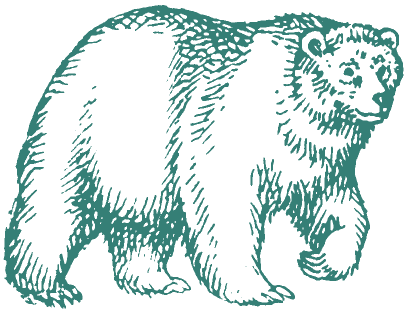


FOX



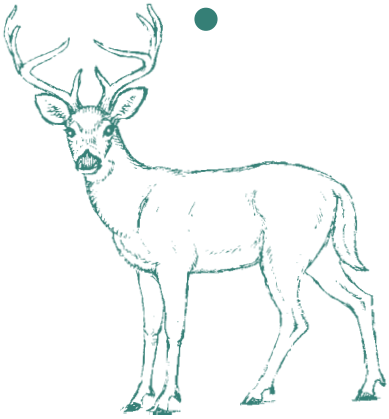
BOBCAT

RACCOON



BEAR

MOOSE



DEER

WORKSHEET

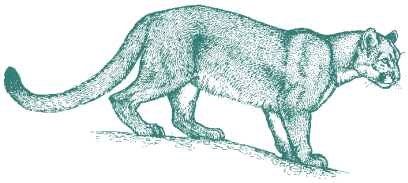
Habitat Web

Medium-Sized Mammals	Medium-Sized Mammals	Small Mammals
Medium-Sized Mammals	Medium-Sized Mammals	Medium-Sized Mammals
Large Mammals	Large Mammals	Large Mammals

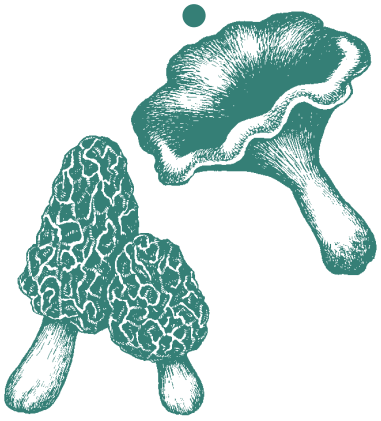
Habitat Web

WORKSHEET

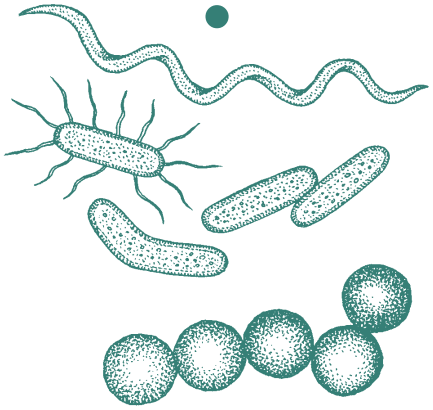
HUMANS



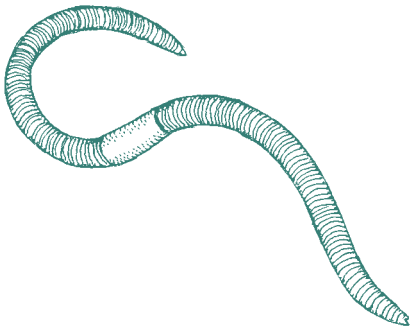
MOUNTAIN LION



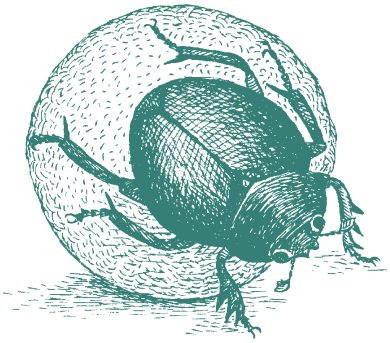
FUNGUS



BACTERIA



EARTHWORM



DUNGBEETLE

WORKSHEET

Habitat Web

Decomposers

Large Mammals

Large Mammals

Decomposers

Decomposers

Decomposers