

Trees Work for Our Backyard Friends

Objectives

1. Identify Missouri wildlife species that live in Missouri forests.
2. Identify the five essential components of habitat.
3. Describe how trees provide all necessary habitat elements for wildlife.
4. Describe the importance of all organisms in a food web.
5. Describe how humans play a role in food webs.
6. Identify how trees are part of food webs.
7. Create a food web, using their backyard tree and wildlife species.

Time Considerations

Activity 1: 30-40 minutes

Activity 2: 40-50 minutes

Activity 3: 3-5 days for observations, plus one day to finish and discuss

Additional Resources

Habitat Photos, MDC Forests: Layers of Leaves Poster found on website—
www.mocommunitytrees.com

References

MDC Free Publications
<https://mdc.mo.gov/sites/default/files/downloads/Free-information-Form.pdf>

Possible Topics of interest by Category: Backyard Nature Know How; Animals and Plants; Improving Your Acres—Wildlife

Missouri Learning Standards

Science

5. LS2.B.1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. [Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food.]

Resources Needed

Activity 1: Habitat Photo 1 (raccoon); Habitat Photo 2 (deer)

Activity 2: Two balls of yarn—green and orange
Print out copies of Modified Food Web Activity wildlife and tree pictures

Forests: Layers of Leaves (Missouri Department of Conservation-MDC) poster—poster copies available, as well as PDF version.

Paper to draw their own food webs

Activity 3: Half sheet of paper for Field Notebook (or use classroom notebook or journal), pencils, and paper to draw backyard or schoolyard food web

Activity 1: Who Lives in our Backyard?

Objectives

1. Identify Missouri wildlife species who live in Missouri forests.
2. Identify the five essential components of habitat.
3. Describe how trees provide all necessary habitat elements for wildlife.



Background Information for Teacher and Preparing for the Activity

Students will develop a working understanding of Missouri wildlife species and habitat before doing a food web activity (Activity 2). The five elements of habitat needed by all species are 1) food 2) water 3) air 4) shelter, and 5) space. Trees play an important role in providing shelter and space (two elements of habitat), but also provide food through nuts, berries, leaves and twigs. Omnivores, or animals who eat both meat and plants, may rely on tree products for food. Indirectly, trees help provide water and air, by a tree's role in evapotranspiration (as part of the water cycle) and by using animal's carbon dioxide and releasing oxygen back into the air through photosynthesis (which also provides food for the trees).

This activity focuses most on how both shelter and space are used by wildlife in Missouri forests or in urban backyards. It also helps students know which animals they may find in their own backyards.


Trees Work for our Backyard Friends | Activity 1

Steps for Activity 1: Who Lives in our Backyard?

1. Students will need a sheet of paper for them to make a list. Ask students to list as many animals from Missouri that they can think of who might use a wooded area or forest as their home. Give students about 3 minutes to create their list, or a couple more minutes, if needed.
2. Ask students to work with their closest neighbor (shoulder partner is next to them or face partner is across from them). After students have paired up, have them compare their list of wildlife animals with their partner. They can add something that they discussed or remove an animal, if they decide that it isn't found in a forest or in Missouri.
3. Wildlife such as bats, insects, moths, caterpillars, toads and frogs, lizards, etc. may not come up in conversation (larger wildlife and mammals will likely be mentioned—deer, birds, squirrels, raccoons, opossum, rabbits, etc.), so if the smaller forest wildlife aren't mentioned or other larger wildlife species of interest, please remind them that there are other animals who use our forests too.
4. Show students the two pictures—Habitat Photo 1 is the raccoon in a tree and Habitat Photo 2 is the deer next to a mailbox. Students can work with their partners one more time and ask them to both to write down on their papers all of the items they know that wildlife need to survive. Just give them a couple of minutes to create their list, or less time, if all get their lists done quickly. (Answers to look for--air, food, water, shelter and space).
5. Students have just described **Habitat**—includes both living and non-living things that all wildlife need to survive—air, food, water, shelter and space.
6. Wildlife need all of these habitat elements and so do trees! Trees need **air**, but use the carbon dioxide in air to make their own **food (photosynthesis)**. Trees use **water** to also help make **food (photosynthesis)**. Some larger trees provide **shelter** for smaller trees, that need to grow in shady areas. And, all trees need enough **space** to grow! When trees grow too close together, they compete with each other for all of these habitat elements, and some smaller trees may not be able to grow as large or as fast as they might if that had enough space.
7. Where do these wildlife (the raccoon and deer) live in the forests? Do you see them in urban areas? If so, why would raccoons and deer live in town?

Activity 2: Forest Food Webs

Objectives

1. Describe the importance of all organisms in a food web.
 2. Describe how humans play a role in food webs.
 3. Identify how trees are part of food webs.
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Background Information for Teacher and Preparing for the Activity

Students will find how all people, wildlife and forests are connected in the Modified Food Web activity, using Missouri forests as the middle of the food web (as the producer) and Missouri wildlife species as the consumers (primary and secondary consumers). Humans are part of this food web, as consumers of Missouri wildlife species such as deer and turkey, and also when eating products from trees such as walnuts or elderberries (from a shrub). Humans may also play a role in disrupting food webs when they feed wild animals or when deer populations are high and deer and car interactions occur. Negative human interactions with wildlife can disrupt the natural flow of a food web—artificial feeding in urban environments like feeding ducks, geese, etc. is problematic when it encourages species to rely on humans for food or when the human food source doesn't provide the necessary nutrients for animals. Deer are browsers in feeding. Too many deer in an area is detrimental to trees since they eat young trees or saplings in an area.

This activity focuses on Missouri forests for food for wildlife as the base of a food web. Both air and water are also important to trees when they make their own food through photosynthesis.

For this activity, use the modified food web pictures available for this activity. There are 13 parts to the food web, so make additional copies of humans for the activity and/or ask students to think of additional Missouri wildlife species that can be found in our area, both rural and urban areas. Since many humans can live in any area, it is fine to make additional humans for the food web. Additional examples that might be found both in rural and urban area include more bird species,

The last part of the activity asks students to make their own diagram of a food web, using the Forests: Layers of Leaves poster to first identify producers and consumers in a forest. The activity is a model of a food web and asking students to create their own diagrams, acts as another model and also can help assess their understanding.

Trees Work for our Backyard Friends | Activity 2

Steps for Activity: Forest Food Webs

1. Give all students one picture of an animal, tree, sun or humans to tape to their shirts. If students have identified other Missouri wildlife, they can write the name of the animal or draw a quick picture on paper to use for the activity.
2. Start the green ball of yarn with the sun. Allow the students to decide which organism should or could go next...pass the green yarn ball to the tree and repeat with consumers in the food web. Be sure to keep the yarn taut as it is passed from student to student.
3. Use the food web diagram with arrows as a basic guide. Green arrows represent the natural flow of the food web and orange arrows represent human interaction/intervention that might be seen in urban areas or in rural areas with a concentration of people.
4. Use the orange ball of yarn to show how humans can alter the food web. A few examples to consider: unintentional or intentional feeding of bear, raccoons (in trash cans) geese and deer can increase population numbers, while cars hit wildlife that can remove them from food web. Birds can be eaten by both domestic animals like cats, but also by wildlife too.
5. Compare the patterns of the green and orange yarn—what observations can be made? What is happening to the food web?
6. Have each student gently tug on their yarn to demonstrate how each organism is connected at many points on the food web.
7. Have the student who was given the tree drop his or her string. Have the other students drop their strings as they feel it go slack. Again, this will show how everything is connected and that both wildlife and people need trees!
8. Ask students the following questions: What backyard plants and wildlife have you seen? Was the interaction positive or negative? What would you *like* to see in your backyard? What do trees provide? What do trees do to create positive interactions between wildlife and people? How can we use trees to encourage people and wildlife to live together?
9. Students can now return to their seats. This activity is a model to show how food webs work. Now, use the Forests: Layers of Leaves poster (real poster or PDF format) for students to draw their own food web, using the wildlife and trees in the poster as examples.
10. What are the producers in the poster? What are the consumers? What consumers will feed on other consumers (if they know primary and secondary consumers, they can be more specific—primary consumers would eat producers or plants, while secondary consumers would eat primary consumers)?
11. Students may share their food web diagrams with a partner or small group before asking for a couple of volunteers to share their diagrams with the whole group.

Activity 3: Backyard Friends at Home or School

Objectives

1. Collect data for 3-5 days at home or school.
2. Create a food web, using their backyard tree and wildlife species.

Background Information for Teacher and Families - Preparing the Activity

Trees play an important role in the food web of a forest or a backyard! Trees provide not only habitat components like food for wildlife, but provide shelter and improve the air by releasing oxygen needed by wildlife and humans back into the atmosphere. This activity helps students see the connections between trees and wildlife in their own backyard, school yard or natural area nearby.

Students will keep a field notebook for 3-5 days with their observations and then compare and contrast what they find with other students or at home at the end of their observing time. They are then asked to draw their own food web diagram, using the observations made in their own backyards, and think about their own impact on the food web. Even feeding birds with feeders or feeding domestic pets like cats and dogs outside may provide food for other wildlife and impact their backyard food web.

Does anything they do at their house impact their backyard trees? That may be something considered over a longer period of time than the 3-5 days. Did they ever trim tree branches? Remember a wind or ice storm that brought down limbs? How does that impact wildlife?

Trees Work for our Backyard Friends | Activity 3

Steps for Activity 3: Backyard Friends at Home or School

1. Students need to make a field notebook: Use a half sheet of paper each and make two hamburger folds so they have a small “book” that they may carry easily and write notes on while outside. Pencils are preferred for outdoor work over pens, since they will not run, even in wet weather. If students already keep a classroom notebook or journal, then this may be used instead.
2. For 3 to 5 days in a row, keep track of all trees and wildlife you see in your backyard, school or nearby natural area. In your field notebook, make the following observations:
 - a. Date and Time of day
 - b. Weather—is it cloudy? Rainy? Sunny?
 - c. Temperature (if possible to use a thermometer, or make a best estimate)
 - d. Any other interesting observations related to air or water
 - e. What trees are in your area? You may draw the general shape of the trees, or a leaf from each tree. Do the trees change in any way during the days you are observing?
 - f. What wildlife do you see in your area? You may draw what you see or list names of the wildlife seen. If you don’t see any wildlife, do you see evidence that they were there when you weren’t observing?
 - g. What do wildlife in your area gain from the trees in your area? How are they related?
3. Share the results of your observations at home or with other students in your class at school. If you compare your results with others, did you observe similar conditions, trees and wildlife? How were your observations the same as someone else? How were your observations different than someone else?
4. Draw a food web of your own backyard, school or natural area by using your observations about trees and wildlife to find the connections.
5. How do you, as a human, impact your own backyard food web? Do other humans impact your backyard food web?