

Schoolyard Trees in Winter

Investigative Question: Can trees be homes for organisms in winter? What are some of the ways trees can be damaged?

Goal: Students examine trees in their schoolyard and explore tree adaptations to winter, responses to damages, and trees' roles as important winter habitat for other organisms.

Objectives

Knowledge- Students gain an understanding of the role of trees as habitats and food sources in ecosystems, identify damage on trees and observe physical adaptations trees (dormancy, deciduous broad leaves, thick bark for protection).

Skills- Students select and use appropriate tools for honing observation skills (hand lenses, measurement) while examining trees for evidence of habitats and tree damage.

Values- Students appreciate the role of trees in the environment as they learn that living things may appear dead but are quite alive!

Materials:

- Measuring tools (rulers, meter sticks)
- Data sheets
- Clipboards
- Large dry erase board and markers

Virginia Standards of Learning: Science (2018) 3.1, 3.4, 3.5, 3.8. English 3.1, 3.2. Social Studies 3.6

Special Safety: Examine schoolyard a day or two prior to the day of the lesson to check for any tripping hazards or other safety concerns.

Instructional Strategy:

1. Begin with an inquiry discussion with students. Ask students, 'What are some tree needs?' OR 'What do trees need to survive?' (Example answers: *sun, CO₂, water, temperature, make seeds, to be protected*).
2. Review: which part of the plant takes in CO₂ to make food? (*Leaves*) What type of food does a tree make? (*sugar*) What part takes in water? (*roots*) Sunlight? (It is all around unless there is competition due to overcrowding.)
3. If leaves absorb sunlight to make the food, can a tree make food in winter? What is the tree missing to make food in winter? Trees have many special adaptations that help them to survive through the winter to make new leaves in the spring. Leaves absorb sunlight which is used to make food. Leaves also can lose water through the tiny holes in the leaves used to take in air (CO₂). What happens to water when it gets really cold? *It freezes*. Can a leaf freeze and still work? Make food?
4. Using the Trees as Habitats data sheet, ask: How is a tree used by other organisms in winter? Model investigation by sharing with students a moss or lichen, a woodpecker hole or animal evidence on "your" tree. Inform students that they will be going to their tree to look for evidence of the tree as a habitat (review habitat if needed).
5. Break students into small groups and assign trees to investigate. Instruct each group to carefully examine the tree and look for evidence that an organism uses the tree for habitat. Students record their evidence on data sheets. Teachers circulate through the groups to help with investigations.
6. Bring students back together as a class and ask students to share-out their observations.
7. Then, ask if the students noticed any evidence that the tree has been hurt. Trees in yards, like your schoolyard, can get damaged (hurt) by many things. Show students tree evidence of damage and how to record observations of damage. Some damage is caused by organisms using the tree as a resource (for food, shelter, and other needs) and some is made by humans. Use the data sheet with the bandage to record tree damage.
8. As they observe, students should record the location of the damage on their data



sheet. Encourage students to use descriptive words and take measurements using rulers and other tools. You might also ask some students to make a prediction as to how the tree was damaged.

9. Bring group back together to share what they observed. Ask: What evidence of damage did you observe? What is a response the tree used to try to fix the damage? (Examples: limbs cut- made scar tissue. Roots damaged with lawnmower- scar tissue over the exposed area. Sapsucker/bird holes- thick bark protects. And so on.) Make a connection between the trees' scar tissue and a scab on a wound.
10. Review tree needs and ask students: What adaptations do trees have to meet these needs? Make a chart of adaptations on a large white board.

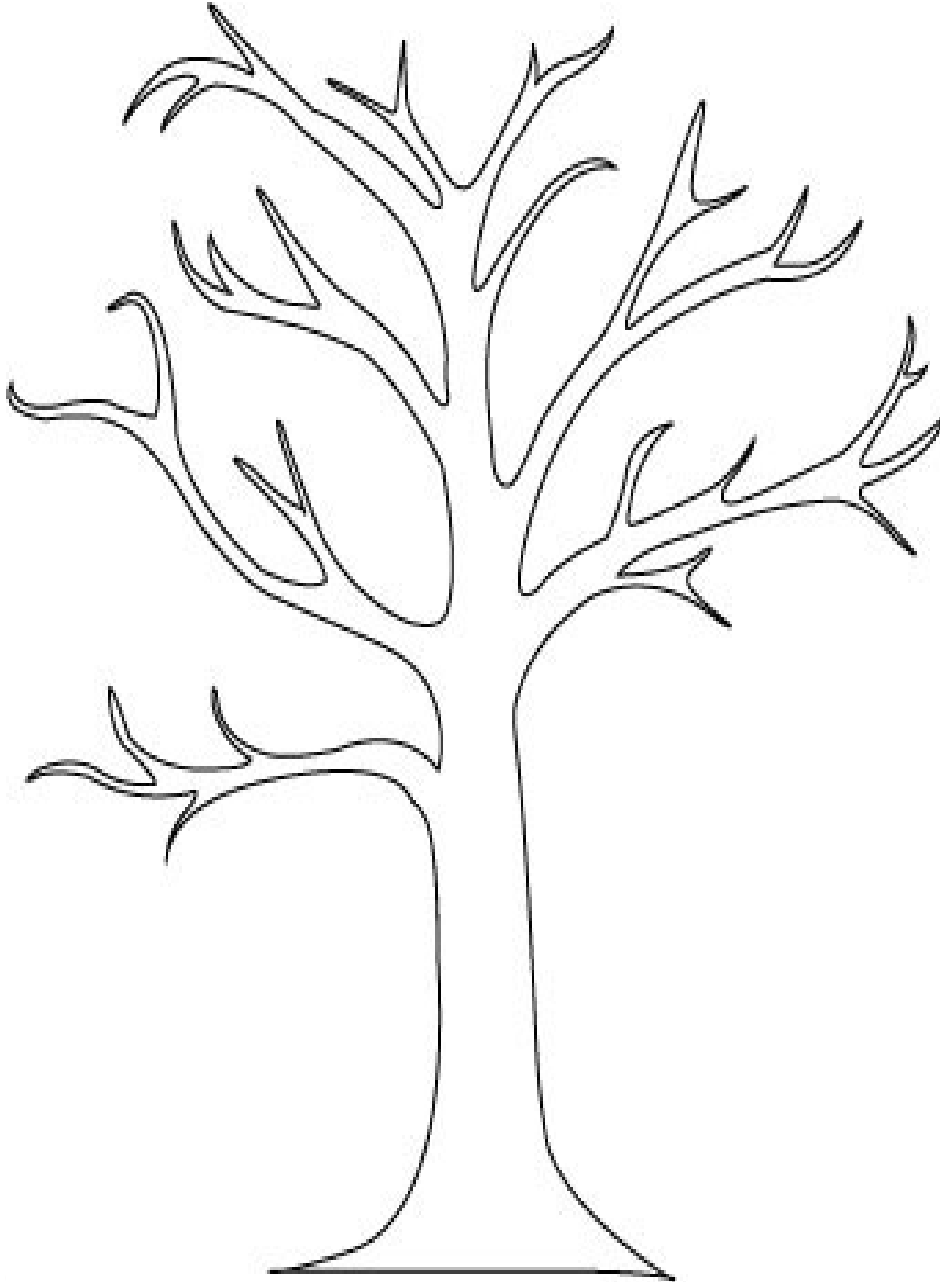
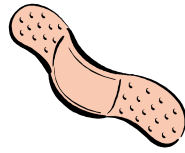
	Protection	Food	Water	Growth/reproduction
Deciduous Maple	Bark		Lateral roots	
	Drops leaves			
Conifer- Pine	Bark		Long roots	Many seeds found in one cone
	Sticky sap			
	Leaves shed snow			

Possible Extensions:

- Students use observation tools and data sheet to record observations and make a drawing (and label) or a chart of the adaptations the tree has to live in this temperate climate habitat. Read aloud a book similar to “[Around One Log](#)” (written either from the perspective of a tree or including close observation of a tree), and have students use their observations (datasheets can serve as reminders) to complete a similar writing experience.



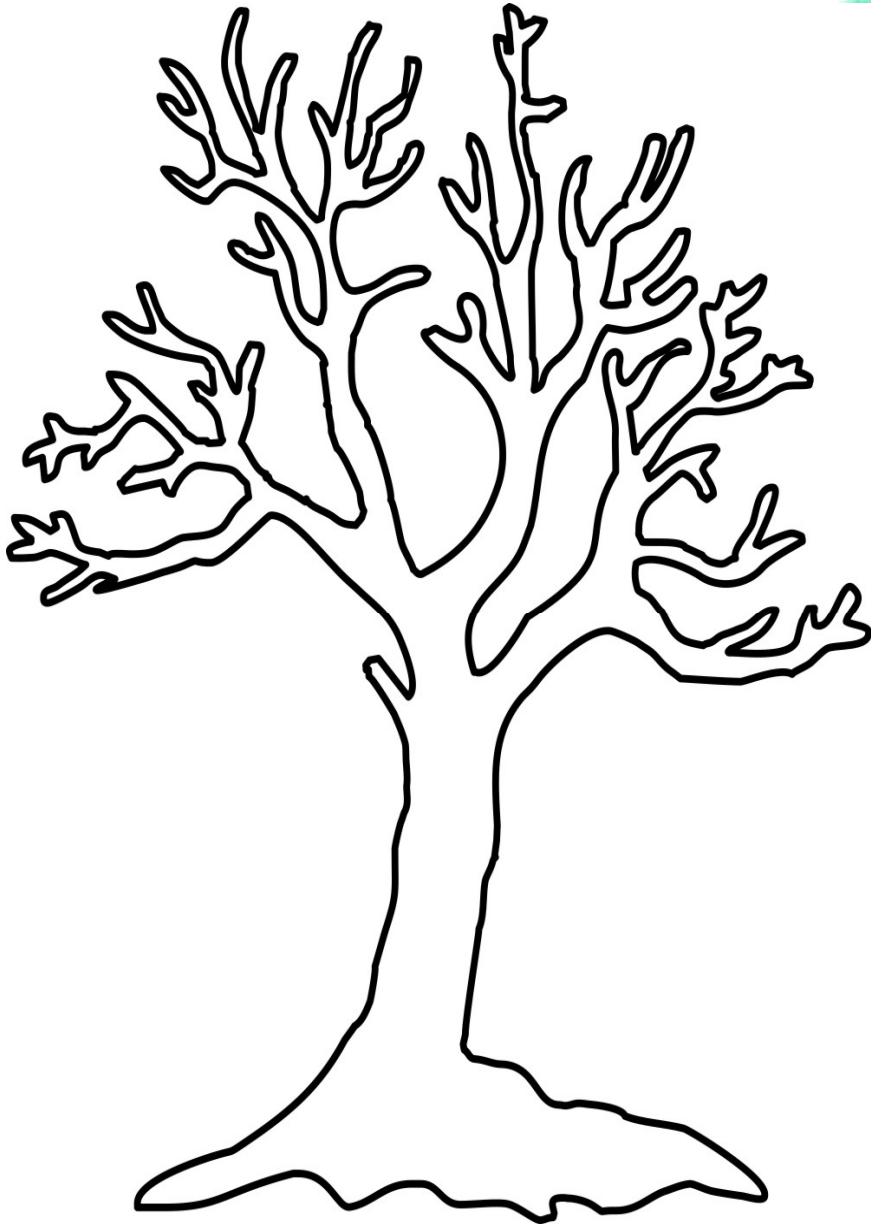
Observe a tree.
Draw and label any damage you see.
Use descriptive words and measurements.



Describe the damage.	How big is the damaged area?	Where on the tree is the damage located?



A Tree is a Habitat



Describe evidence of something living on the tree.	Draw and label where this evidence is.	What do you think made this evidence?