Learning about Forests (LEAF) Monthly Planning Guide for LINKS Chapters

September 2023

Overview

Monthly Theme	Environmental Awareness Days	Cultural and Identity Awareness Days
Learning about Forests: Adopt a Tree	National Estuaries Week (16-23) World Water Monitoring Day (18) National Public Lands Day (23)	Hispanic Heritage Month
Elementary	1. Activity 1: Adopt a Tree	
Middle and High School	1. Activity 1: Adopt a Tree	

Mentoring Moment Suggestions

Seek out passionate volunteers, activists, elders, and Indigenous members of the community, consider accessing the expertise of arborists, foresters, dendrologists, environmental educators, community gardeners, landscape architects, parks staff, or urban designers.

Adopt a Tree

ELEMENTARY ACTIVITIES

SUMMARY

In the first activity related to this year's forestry theme—Learning about Forests, students will "adopt" a tree and visit it over the course of the year to make observations, collect data, and conduct stewardship activities. The Adopt a Tree activities will continue in subsequent monthly activities, related to additional forestry studies and deepening students' awareness of individual trees and forest ecosystems.

MATERIALS

- Adopt a Tree packet (attached)
- Tree Field Guides or Dichotomous Keys (if available, use guides that are specific to your region; see additional resources below for options)

BACKGROUND[1]

What Is a Tree?

Trees, similar to all living things, grow, reproduce, and respond to their environment. Trees, like all plants, manufacture their food through *photosynthesis*. Trees are in the family of woody plants which have *cambium*, a special layer of cells that allow the tree to increase in girth and are self-supporting with a single stem. Like some plants, trees are perennials and can live for many years.

The food for tree is produced through complex system starting with the leaves. Leaves produce sugar as a result of photosynthesis which combines carbon dioxide and sunlight. As a result of the process to create sugar the by-product that the trees produce is oxygen—a vital resource for other living organisms, including humans. That sugar that is produced runs down through the tree, under the bark down the trunk and to the roots of the tree. The sugar combines at the roots with minerals and water in the ground to move back up the tree trunk and under the bark back to the leaves to which starts the cycle of photosynthesis again. Along the way the minerals, water and sugar stimulate the growth and development of the tree or assist in its reproduction.

The roots gather minerals and water which are needed in the process of photosynthesis and for feeding the tree's growth and development. The tree has one tap root and many lateral roots which help to keep it stable in wind and snow.
Parts of a Tree
The **crown** of the tree is made up of the leaves and branches.

The **trunk** of the tree supports the crown and serves as a highway for food made in the leaves to travel to the roots and for water and nutrients from the roots to travel to the leaves.

The **heartwood** of the tree develops as the tree gets older. It is old sapwood that no longer carries sap, and gives the trunk support and stiffness. In many kinds of trees, the heartwood is a darker color than the sapwood, since its water carrying tubes get clogged up.

The **cambium** is a layer or zone of cells, one cell thick, inside the inner bark. The cambium produces both the xylem and phloem cells. This is where diameter growth occurs, and where rings and inner bark are formed. In the xylem (sapwood) layer, tree sap (water plus nitrogen and mineral nutrients) is carried back up from the roots to the leaves. In the phloem (inner bark) layer, sugar that is made in the leaves or needles, is carried down to the branches, trunks, and roots, where it is converted into the food (starch) the tree needs for growth. The bark layer protects the tree from insects and disease, excessive heat and cold, and other

[1] https://www.nwf.org/Trees-for-Wildlife/About/Trees-101

injuries.

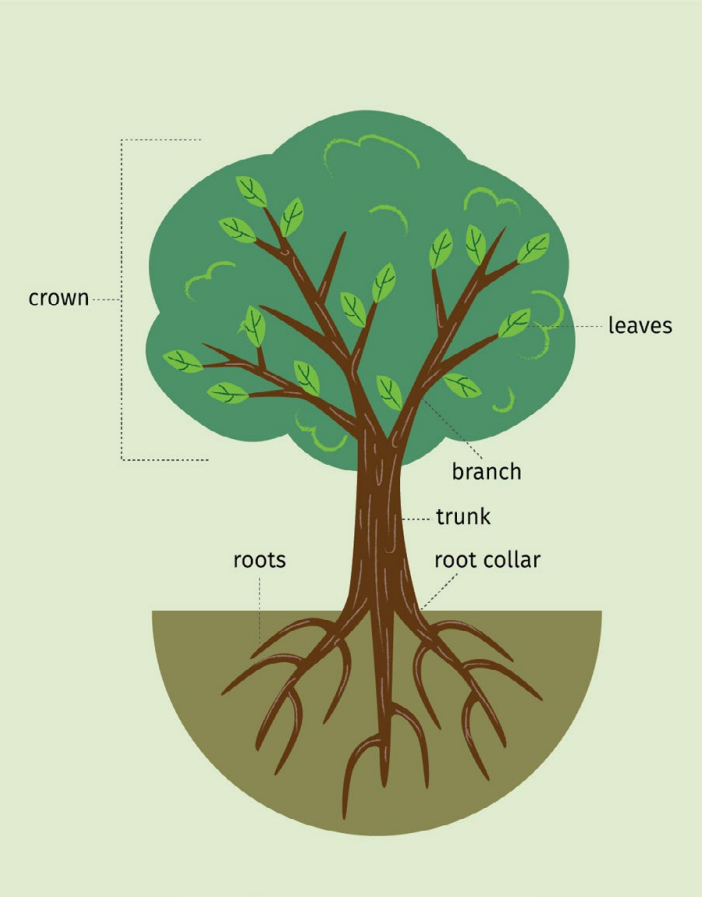
The **roots** of the tree support the trunk and crown, and also anchor the tree in the soil. They serve as a storage facility during the winter for the food produced by the leaves during the growing season. The roots also absorb water and nutrients from the soil for use by the tree.

Tree Types

Trees can be divided into two categories: deciduous and coniferous.

Deciduous trees are also known as broadleaf trees because the leaves are generally larger and wider than those of conifers. The larger leaf size means a greater surface area for photosynthesis, but it also mean the leaf is too fragile to withstand winter conditions. Therefore, most deciduous trees drop their leaves in autumn.

Coniferous trees keep their leaves throughout the year, shedding only the oldest leaves. Usually these leaves are lower down on the tree and do not receive as much sunlight as newly developed leaves higher up. Some of the best-known members of the conifer family are pines, spruces, firs, and hemlocks. The cones of the conifers are its flowers.



Benefits of Trees

Trees are invaluable assets to our communities. They give us flowers, fall colors, and lovely scents. They provide habitat for birds, squirrels, butterflies, and other wildlife. Their branches create beautiful shapes that soften the landscape. They shade and cool our streets and buildings and insulate our homes from cold winds. The infographic below outlines many of the benefits of trees.

WHAT TO DO

1. Begin the activity by asking students what they know about trees, how they feel about trees, or how they may interact with trees. If time allows, encourage a broad range of discussion that may include facts or science related content to social emotional connections.

2. Explain that, as part of this activity, students will "adopt" a tree. They will visit the tree over many months to observe changes, collect data, and to take care of it. Students can adopt a tree near their homes or, if there will be time throughout the year to devote time to this activity, they can adopt a tree near where the group meets. If the group meets together regularly, the class can adopt a tree and complete the activities together.

3. If time allows, take a walk outside with the group to observe trees. Ask students to share their observations. Use these guiding questions as prompts:

- Use your senses, what do you notice about this tree, the shape of the canopy, its size, the color of its leaves, etc.? Is the tree making any sounds?
- What are the parts of a tree? What are the leaves shaped like? Describe the texture of the bark.
- What do trees need to survive?
- How can we identify this tree or find out what species it is? (If available, use a field guide or dichotomous key to identify the tree).
- What questions do you have about this tree?

4. Pass out copies of the **"Adopt a Tree"** packet. Ask students to think about where they might be able to find a tree for the activity—is there a tree on their street, in their yard, in a park. Of, if students will be completing the activities together, give them time to choose a tree at your site.

5. If taking home, students can begin the activities on their own time. Schedule time in upcoming meetings to allow students to share about their trees. Additional activities will be added to the packets during upcoming monthly learning guides.

ADDITIONAL RESOURCES

- **What Tree is That?** Arbor Day Tree Identification Field Guide
- **Tree Finder: A Manual of Identification of Trees by Their Leaves**
- **The Sibley Guide to Trees**
- A Petersen Field Guide to Trees: **Eastern U.S.** or **Western U.S.**
- Book: **The Lifecycle of a Tree** by Bobbie Kalman

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Middle and High School	2. Activity 1: Adopt a Tree	

Mentoring Moment Suggestions

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Adopt a Tree

MIDDLE AND HIGH SCHOOL ACTIVITIES

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MATERIALS

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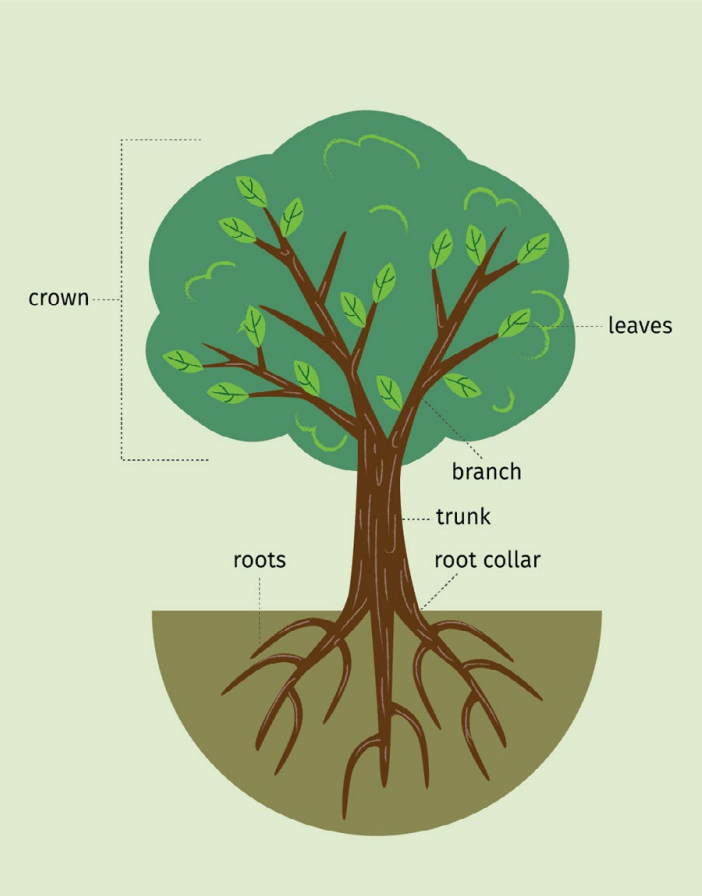

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- What are the parts of a tree? What are the leaves shaped like? Describe the texture of the bark.
- How can we identify this tree or find out what species it is? (If available, use a field guide or dichotomous key to identify the tree).
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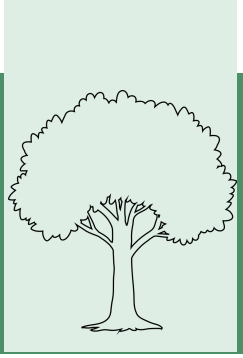


Adopt a Tree

For this activity, you will "adopt" a tree and visit it to make observations, collect data, and take care of it. Along the way, you will learn about the tree's biology, its role in ecosystems, and how it makes our communities healthier.

Choose a Tree

Select a tree that you will be able to safely visit multiple times over the year. It can be in your yard, next to the street, in a park, or any location that you visit often.

Where is your tree growing? Describe the setting or space. Is it growing near a street? In a yard? In a park? Are there other plants growing near your tree?

_____

_____

_____

Why did you choose this tree?

_____

_____

_____

What questions you have about this tree? ***I wonder....***

_____

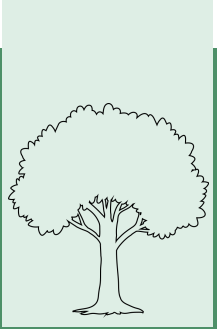
_____

_____

Identify your tree. Its leaves, fruits, nuts, seeds, and bark can help you find out what kind of tree it is. Use a field guide, dichotomous key, or other reference to identify the species.

Tree Species: _____

Adapted from Project Learning Tree, "Adopt a Tree" activity.



Adopt a Tree

Observe

Find a place to stand or sit beneath the tree for a few minutes.

Look up at the branches. What do you feel while standing beneath the tree?

Does the tree have any scents that you notice? (Leaves, twigs, and flowers of certain trees may have scents).

Close your eyes and listen. Do you hear any sounds coming from the tree?

List ten words to describe the tree.

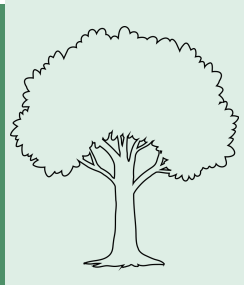
Reflect

Think about how you felt before you started.
How are you feeling now?

Adopt a Tree

Sketch

Make a sketch of your tree. Draw the shape of its trunk, branches, and canopy (treetop).



Adopt a Tree

Parts of a Tree

Look closely at the different parts of the tree. Sketch or write descriptions of the parts below.

Leaves

Bark

Twigs

Fruit or Seeds

Adopt a Tree

Seasonal Changes

Visit your tree during each season. How has it changed? Record your observations: Sketch, write, or attach photos below.

Fall

Winter

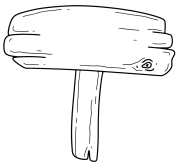
Spring

Summer

Adopt a Tree

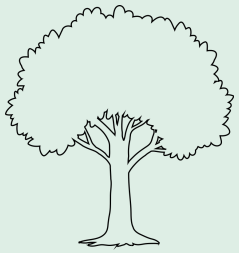
Stewardship

Keep your tree healthy and strong with some of these tree care activities.

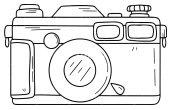
Water	Mulch	Plant	Weed	Clean	Educate
					
Water your tree, especially during dry weather.	Add a layer of mulch or compost to suppress weeds and improve soil.	Plant groundcovers (small grasses, flowers, or bulbs) under your tree.	Remove weeds or unwanted plants growing under the tree.	Remove litter near the tree and its surroundings.	Make signs to educate or engage people as they pass by the tree.

Record the actions you take to support your tree.

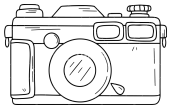
Date	Activity



Adopt a Tree



Photograph



Smile and say TREEEEES! Take a picture of you and your tree and paste it below. Take additional photos with your tree throughout the year.

Me & My Tree

Date of photograph: _____

Adopt a Tree

NOTES

Use this page to record notes, observations, or questions that arise during visits to your adopted tree.