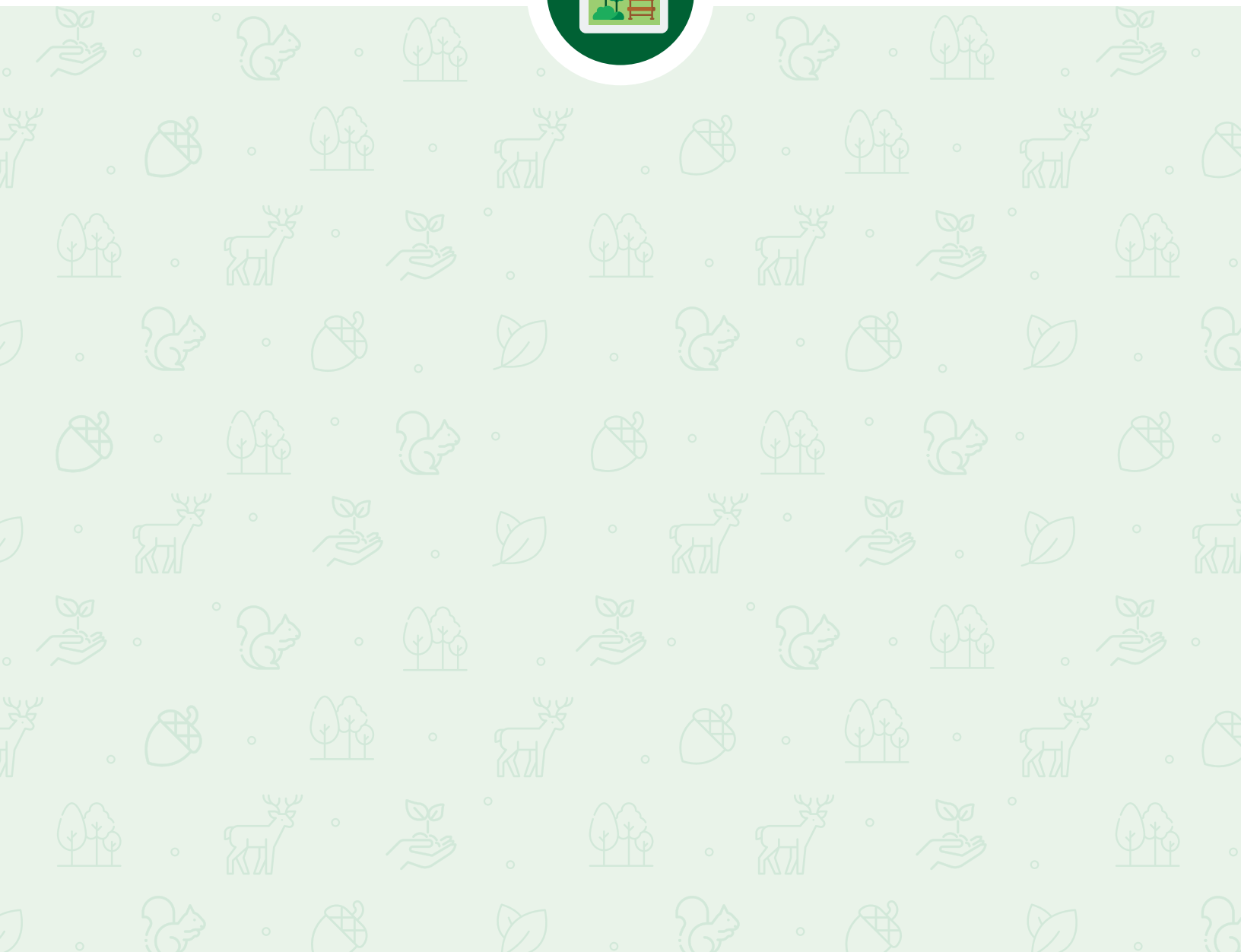


Appendix





Trees That Are Tops



General Sherman: Giant Sequoia in Sequoia National Park, California

2,100 to 2,200 years old. It's the biggest living thing on Earth by volume. Its trunk measures 26 feet across (diameter).

nps.gov/places/000/general-sherman-tree.htm



Hyperion: Coastal Redwood in California

700-800 years old. It is the world's tallest tree at 380 feet.

onetreepanted.org/blogs/stories/oldest-tallest-biggest-trees



Jackfruit Trees: Evergreens in tropical regions and rainforests

The fruit, which grows on the trunk and branches, is the largest fruit from a tree. It can be two feet long and weigh 40 pounds.

fairchildgarden.org/visit/jackfruit-the-largest-fruit-in-the-world



The Major Oak: English Oak Tree in Sherwood Forest, England

800-1,000 years old. Robin Hood is said to have met with his Merry Men beneath this tree.

visitsherwood.co.uk/explore-the-forest/the-major-oak



Methuselah: Bristlecone Pine in Inyo National Forest, California

Around 4,800 years old. It's the oldest known single living organism on Earth.

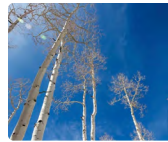
onetreepanted.org/blogs/stories/oldest-tallest-biggest-trees



NASA Moon Trees: Different species living all over the world

Less than 50 years old. Astronaut Stuart Roosa took tree seeds to space to see if that would affect how they grew. When he returned, the seeds were germinated and some grew into saplings that were planted all over the world.

nasa.gov/history/moon-trees-stand-as-living-testaments-to-first-voyages-to-moon



Pando: A colony of Quaking Aspen trees in Fishlake National Forest in Utah

80,000 years old. The colony is made up of more than 40,000 stems that look like individual trees, but they are all connected to the same root system, making it one organism. Together, the group is the heaviest living thing on Earth, weighing as much as 33 blue whales.

onetreepanted.org/blogs/stories/oldest-tallest-biggest-trees



Tree of Life: Persian Mesquite in the Arabian Desert in Bahrain

Around 400 years old, this tree is only 32 feet tall but survives in an area with barely any rainfall and no fresh water. Its roots are thought to be 164 feet deep.

youtu.be/9PZzDgt79Kg



Tule Tree: Montezuma Bald Cypress in Tule, Mexico

1,400 years old. It is the world's widest tree measuring more than 31 feet in diameter.

onetreepanted.org/blogs/stories/oldest-tallest-biggest-trees



Tree Vocabulary

Atmosphere: A mix of gases held in place around the planet by gravity

Bark: The outer covering of a tree's trunk and branches that helps protect the tree

Biodiversity: The variety of animal and plant life in any environment

Biome: A large region of Earth that has a certain climate and certain types of living things

Bough: A large, main branch of a tree

Branch: A part of a tree that grows out from the trunk and holds twigs, leaves, flowers, or fruit

Bonsai tree: A small tree or shrub that has been trained to grow in a container

Bud: A small, undeveloped part of a tree or plant that stores energy which the tree uses to create new branches, leaves, and flowers

Carbon dioxide: A molecule found in our atmosphere with two atoms of oxygen and one of carbon; a greenhouse gas. Carbon is a chemical element found in all living things

Carbon sequestration: Removing carbon dioxide from the air and storing it somewhere

Carbon sink: Anything that absorbs more carbon dioxide from the atmosphere than it releases

Chlorophyll: A green pigment found in plants that helps them make their own food using sunlight, air, and water through a process called photosynthesis

Climate: The average weather conditions in a place over a long period of time, such as 30 years

Climate change: When the typical weather in a region changes over a long period of time

Compound leaves: Leaves made up of several smaller leaflets attached to a central stem

Cone: The part of some trees, like pine trees, that holds seeds

Coniferous: A kind of evergreen tree with needle-shaped or scalelike leaves and sometimes pinecones

Conserve: Keep and protect something from damage, change, or waste

Crown: Part of the tree that contains the tree's leaves and branches and where photosynthesis takes place

Deciduous: A kind of tree with leaves that fall off seasonally

Deforestation: When trees are cut down permanently to clear land and make room for something other than forests, like farmland for animals or crops, mining, roads, or construction



Tree Vocabulary

Ecosystem: A community of living things in a shared environment

Erosion: When wind, water, or ice breaks down and moves or wears away materials like soil and rocks

Evaporation: When a liquid, like water, turns into a gas, called water vapor, usually because of heat from the sun

Evergreen: Having leaves that remain green year-round

Field guide: A small book with words and pictures for identifying plants, animals, or natural objects that are found in nature

Flowers: Part of a tree's reproductive system that produce the seeds that can be used to produce new plants

Food chain: A series of living things that are linked to each other because each thing feeds on the one next to it in the series

Food web: The interlocking food chains within a community

Forest: A group of trees growing close together covering a large area, and the smaller trees and plants under them. Kinds of forests include:

- **Boreal (or taiga):** A northern region on Earth with mostly coniferous trees
- **Temperate:** A type of forest that tends to be in the northern hemisphere where the weather isn't too hot or too cold, with four distinct seasons, and deciduous trees
- **Tropical:** A hot, wet, and dense forest located around the equator that receives lots of rain and is home to many animals and plants

Forest bath: The Japanese practice of spending time in nature with a focused awareness of your senses

Fruit: The fleshy or dry ripened ovary of a flowering plant, enclosing the seed or seeds

Fungus: An organism that helps plant and animal remains decompose. Plural is fungi

Germination: The process when a seed starts to grow and develop into a new plant

Greenhouse effect: The warming of the Earth's surface that takes place when heat from the sun is held in by the Earth's atmosphere

Greenhouse gases: Gases in Earth's atmosphere that trap heat and contribute to the greenhouse effect. Carbon dioxide is a greenhouse gas

Heartwood: Xylem that no longer transports water. It is resistant to decay, very strong, and helps support the tree's weight

Invasive species: Plants or animals that are not originally from an area and can harm the local ecosystem by spreading quickly and taking over

Lamina (or Blade): The broad, flat part of a leaf where most photosynthesis happens

Layers of Forests

- **Emergent layer:** Tallest layer, where trees get constant sunlight and their branches poke out above the canopy
- **Canopy:** Uppermost branchy layer of a forest (and home to most of the species in a rainforest) that forms a roof that blocks most light from reaching below



Tree Vocabulary

- **Understory or Undergrowth:** Lower-light layer below the canopy with shorter plants that have broad leaves and habitat for frogs, snakes, butterflies, and birds
- **Forest floor or ground:** Lowest layer where decaying matter from the other layers feed the roots of trees and habitat for large animals and fungi

Leaf: Leaves are the part of the plant that makes food for the tree and oxygen for the planet using photosynthesis. A leaf has two parts: the flat part crossed with veins is the blade (or lamina); the part that holds the blade to the twig is the leafstalk (or petiole).

Leaflet: The leaflike structures that together make up a compound leaf

Life cycle: The stages that an organism goes through from birth to adulthood, reproduction, and eventually death

Main vein: The largest vein in a leaf that carries water and nutrients throughout the leaf

Mature trees: Fully grown trees that have the ability to reproduce

Midrib: The main vein running down the center of a leaf

Mycorrhizal network: A symbiotic relationship of plant roots and fungal mycelium that provides a dramatically larger root system for the plant to obtain water and nutrients and hospitable sites for fungi to anchor and receive sugar

Nurse log: A fallen tree that provides nutrients and a safe space for new plants to grow

Nutrient: Something in a food that is needed for growth or health. Minerals are nutrients that plants need to grow

Oxygen: A colorless, odorless gas that we breathe from the air

Petiole: The stalk that attaches the leaf blade to the stem

Phloem: Vascular tissue which carries nutrients to all parts of the plant

Photosynthate: The sugar that plants make

Photosynthesis: The process by which plants use sunlight, water, and carbon dioxide to make their own food

Poetry: A type of creative writing that uses words and structure to share a feeling, experience, or idea that can take many forms:

- **Acrostic:** A poem where the first letter of each line spells out a word, name, or phrase when read vertically
- **Concrete:** A poem in written in the shape of its subject, such as a tree or leaf
- **Diamante:** A diamond-shaped poem that compares and contrasts two different things such as tree roots and crown
- **Haiku:** A Japanese poetry form with three unrhyming lines of five, seven, and five syllables
- **Ode:** A poem expressing praise for or celebrating something
- **Visual poetry:** A poem where the position, size, and shape of words and lines add meaning, such as concrete, acrostic, and diamante poems



Tree Vocabulary

Renewable resource: A natural resource, like sunlight, water, or trees, that can be replenished quickly over time

Roots: The part of a plant that grows underground and takes in water and nutrients from the soil

Root hairs: Small, hair-like structures on roots that help the plant take in water and nutrients

Root collar: Where the below-ground roots meet the above-ground trunk

Sap: The watery fluid in trees that carries nutrients from the roots to the rest of the plant

Sapling: A young tree that is still growing but has already begun to develop a trunk and branches

Sapwood: Dead xylem that transports water upward from the roots

Seed: The small part of a plant that can grow into a new plant

Seedling: A small, young plant that has just started to grow from a seed

Silviculture: The practice of controlling forest establishment, growth, composition, health, and quality to meet various needs, including timber production, wildlife habitat, and water resources

Simple leaves: Leaves that are one single, undivided piece

Snag: A dead tree that is still standing

Sprout: A small new growth that pushes out of a seed

Stewardship: Careful and responsible management of something that has been entrusted to someone's care

Sustainable forestry: The practice of managing forests so that trees are harvested in a way that doesn't harm the environment and allows the forest to grow back for future generations

Symbiosis: A close relationship between two different living things that typically benefits both

Topiary: The art of creating sculptures by clipping trees and bushes

Trunk: The main stem of a tree that holds it up and supports branches and leaves

Twig: Grow from branches, providing support for leaves, leaf buds, and flower buds

Vein: Provides support to the leaf and carries water and food

Vascular cambium: A layer of cells in a plant that form phloem and xylem

Weather: The state or condition of the atmosphere

Wood: The hard fibrous substance in trees consisting mostly of xylem that provides structural support and is involved in the transport of water and nutrients

Xylem: Vascular tissue responsible for water movement throughout the plant



Story Seeds

Share these writing prompts with your Tree Trekkers to encourage thinking, reflecting, and engaging in fun and meaningful writing.

- Don't know a tree name? Make one up! Is there a tree where you like to sit and read? Call it a "Reading Tree!" Is there a tree that you use to see how tall you are growing? That might be a "Growth Chart Tree." Give a meaningful name to a tree you've encountered and write about why you've given it that name.
- Live here! Trees and forests are home to many plants and animals. Imagine you are a newly mature tree and want to attract plants and animals to live in or on you. Create an advertisement with your special features and what you can offer in terms of a view, food, shelter, protection from weather events and predators, and access to other resources.
- Share what you've learned about superlative or extra-special Trees That Are Tops (page 74) with an acrostic poem.
- Head outside and listen to the sounds of the trees. Put them on paper in your own words as a poem, song, or piece of descriptive writing.
- Think about books you may have read that feature trees, like the treehouse tree in the *Magic Tree House* series by Mary Pope Osborne or the Truffula trees in Dr. Seuss' *The Lorax*. Imagine and write what these trees would say about the stories going on around them if they could talk.
- Speak for the trees! If you've discovered that some trees in your community need protecting, or if a planned construction project will require tree removal, write a letter to a public official, such as a mayor, city council member, state representative, or land manager asking for protection of trees or parks. Include any historical or community importance the tree or trees have and the important role trees play in our climate and providing habitats for other living things.
- Imagine that you have an encounter with a tree that leaves you with an unusual tree-related superpower. Write about your new superpower and what you would do with it.
- If someone says "you are barking up the wrong tree," or "the apple doesn't fall far from the tree," what do they mean? Write your own explanation for how this saying came into being.



More “Tree-sources” and Activities

Use these links to activities, lesson plans, and videos about trees to help Tree Trekkers build and expand their knowledge about trees.

Activities and lesson plans



Be a Tree! Classroom & Outdoor Story Time Activities from Curious City

Art, STEM, and mindfulness activities for engaging with *Be a Tree!*

by Maria Gianferrari

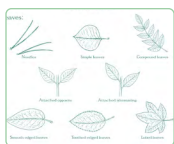
curiouscitydpw.com/2021/04/22/be-a-tree-activities



Project Learning Tree

Educator and parent resources from the award-winning environmental education program

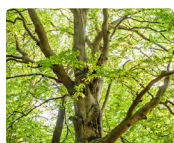
plt.org and plt.org/activities-for-families



Tree Detectives from the National Wildlife Federation

Activities (with adaptations) to help all kids identify trees by studying their different parts

nwf.org/~media/PDFs/Be%20Out%20There/Schoolyard%20Habitats/tree_detectives.ashx



Tree Hugger Challenge! from Earth Rangers Homeroom

Lesson plan for K-3 that challenges kids to identify habits and changes they can make to better take care of trees

homeroom.earthrangers.com/k-3-classroom-activities/tree-hugger-challenge



Virtual Field Trip from The Nature Conservancy

Virtual field trips for students to travel the world and explore natural environments

nature.org/en-us/about-us/who-we-are/how-we-work/youth-engagement/nature-lab/virtual-field-trips



More “Tree-sources” and Activities



GLOBE Trees Family Guide from NASA's Globe Observer Program

A tree science journey for family and friends to learn all about trees
observer.globe.gov/do-globe-observer/trees/family-guide



How Do You Make Paper From a Tree? from Wonderopolis

Multidisciplinary content for exploring how paper is made
wonderopolis.org/wonder/how-do-you-make-paper-from-a-tree



Engineers Speak for the Trees from Teach Engineering

Hands-on activity to explore how engineers protect the environment through reducing pollution, protecting natural resources, and creative city planning
teachengineering.org/activities/view/cub_lorax_activity1



Timber! from Population Connection

Instructions for a simulation model to explore what happens to a forest when trees are cut down faster than they are planted
populationeducation.org/wp-content/uploads/2017/10/timber.pdf



Bimaadiziwin Mitigoog - Trees of Life from the Million Tree Project

Read the story of the Cosmic Tree and Sky Woman from the Anishinaabe People and find links to additional resources for Giizhik, an Anishinaabe term for cedar; Wáhta, sugar maple to the Mohawk People; and the Azaadi, Ojibwe for the trembling aspen tree
sciencerendezvous.ca/million-tree-project/en/resource_type/bimaadiziwin-mitigoog-trees-of-life

Videos



Cyberchase: “Buzz and the Tree”: Acts 1, 2, & 3 and “Hacker Hugs a Tree”: Acts 1, 2, & 3 from PBS KIDS
pbskids.org/videos/cyberchase



Plum Landing: A Forest in the City from PBS KIDS
pbskids.org/plumlanding/educators/context/140_a_forest_in_the_city.html



More “Tree-sources” and Activities



Indigenous STEM Resources: Wáhta (Sugar Maple) Stories

youtube.com/playlist?list=PLu0DYWDGMD6GeYDwwSyJefBc4q7HebWkk



Storytime & Art-Making Activity: The Great Kapok Tree from the Newark Museum of Art

youtu.be/HPqo1f6a0xg



Explore U.S. National Parks to Learn About Trees from Nat Geo Kids

kids.nationalgeographic.com/videos/topic/nature-boom-time and youtu.be/e3XiEGwQxNU



6 of the World's Weirdest Trees

youtu.be/Quimx461phY



The World's Tallest Tree! from SciShow for Kids

youtu.be/UErOeqyJxFo



Tree Trekkers Name Badges

Make copies of these name badges, cut out, and distribute to your Tree Trekkers to wear when you Branch Out!













Tree Trekkers

This certificate is presented to:

To celebrate your participation in
the Tree Trekkers program!

Date

Signature