SACRAMENTO TREE FOUNDATION

SEED TO SEEDLING

A CURRICULUM ABOUT TREES & TREE STEWARDSHIP

Welcome

The Sacramento Tree Foundation is a national leader in education and advocacy for urban forests. We know that trees and urban forests can improve the health and quality of life in our neighborhoods. By participating in Seed to Seedling, you are helping your students understand and appreciate the importance of trees.

Since 1985, tens of thousands of acorns have been planted and nurtured by school groups. After they are returned to us, the seedlings raised by your students will be cared for until they are ready to be planted in the ground through our reforestation program. They will join the thousands of other oaks that students and teachers have nurtured during the past 35+ years — oaks that improve our urban forest, regenerate oak woodland habitat and make the Sacramento region a more wonderful place to live.

Thank you for helping to inspire the next generation of tree advocates and helping to raise the next generation of trees. We could not do it without you.

The Sacramento Tree Foundation thanks the wonderful contributions of Barbara Murchison who oversaw the revision of this revised edition of Seed to Seedling.

Let's get started

Seed to Seedling has been organized into 7 branches. Each branch explores a different tree-related topic and contains:

- A series of activities presented in standard lesson plan format.
- One or more student reading selections that can be used to build reading comprehension skills, teach the features of expository text, or simply be sent home as a supplementary reading assignment. Challenging vocabulary is printed in bold and may be pre-taught for English language development or used for dictionary work.
- Journal/discussion questions designed to help students synthesize their learning and develop skills in written and oral language.
- Extension activities to help differentiate instruction and engage every student.

Special features and management tips

Seed to Seedling goes beyond the basics to provide your students with hands-on science and stewardship activities. Here are some of the special features of the curriculum, and a few tips designed to make management easy.

Planting and tending an oak seedling

If your class is fostering seedlings for the Sacramento Tree Foundation, everything you need to know can be found in Branch 3. If you are collecting acorns and planting them on your own, additional information is included in Appendix 2.

Tree steward fieldwork

Throughout Seed to Seedling, students will be in the field observing, identifying and collecting data about trees. Before starting, identify suitable locations for the study of trees (referred to as "the study area" in the activities). Optimally, you'll have all the trees you need in your immediate school community. Otherwise, you will need to locate an oak tree; most parks in the region have at least one. See the resource branch for field trip destination ideas. You will also need a study area, preferably on or near school grounds, for students to assess their urban forest.

- Management Tip: Students will need to have clipboards, writing and drawing materials available while working in the field. Organize a box of these materials and keep it by the door.
- Management Tip: Before leaving the classroom for the study area, discuss the objectives of the fieldwork and appropriate and expected behaviors. In the field, the class should be respectful of the area and the creatures who inhabit it by being quiet and leaving no trace of their visit.

The tree deck

Seed to Seedling includes blackline masters for a set of tree identification cards. Tree decks can be used in the field to help identify local trees, and can also be used in the classroom to play games like concentration and go fish. Use card stock to run off one set for each student, and make at least four additional sets for the classroom. Make a set to use on the overhead projector, as well.

- Management tip: There are many good field guides available to help you and your students identify trees. See what's available from your school and local public libraries and bookmark these two sites on your classroom computers:
    - Arbor Day Foundation
    - SelecTree

The journal

Students maintain and add to a journal throughout the course of this curriculum. The journal will help them review and evaluate their own understanding of the concepts developed by the activities and will also serve as an assessment of student learning.

- Management Tip: Plan a journal management system that will work for you and your students before starting the activities. It is best for students to collect all of their field notes, activity and data sheets, sketches, reflections and any related artwork, artifacts and photos in a folder during the course of each branch and bind it at the end. Alternately, prepare simple journals for students to write, sketch and tape in their work as they move through the project.

Branch 1: Introduction to Trees and Oaks

Branch 1 lays the groundwork for learning about trees. Students will review the needs and parts of trees and start to become familiar with the different trees in their study area.

Complete these activities from September through November when the acorns start to fall. Watch the local wildlife for signs that they have begun collecting. If there are no oaks in your study area, collect oak leaves and acorns for Activity 7 elsewhere.

Activity 1: What do we know about trees?

Learning Objectives:

Students will be able to:

- Discuss the basic needs of trees.
- Discuss some of the benefits of trees to humans and other living things.

Time: 30 minutes

Materials:

Chart paper and markers

Procedure:

Prepare a chart with three columns. Label the columns: Tree Facts, Questions About Trees, and Tree Facts We've Learned. Ask students what they already know about trees and what they would like to learn about trees. Record the information on the chart.

Be sure the following topics are discussed:

- What do trees need to survive? (sun, soil, water, air)
- How are trees useful to people? (food, wood, air, shade)
- How are trees useful to other living things? (shelter, food, air)

Keep the chart posted throughout the unit and add questions and learned information in the appropriate columns as you progress through the activities. Also encourage students to record their own questions and discoveries to share with the class as they arise.

Going deeper:

- Set up a class wiki for students to add to their collective knowledge of trees as you progress through the unit.
- Learn a tree song. The Banana Slug String Band has several great songs about plants and trees on their Singing in our Garden CD.
- Explore one or more of the books listed below to learn more about trees.

Resources:

The Gift of the Tree by Alvin R. Tresselt
Are Trees Alive? by Debbie S. Miller
Outside and Inside Trees by Sandra Markle
The Life Cycle of a Tree by Bobbie Kalman
Usborne First Nature: Trees by Ruth Thomson

Eyewitness: Tree (Eyewitness Books)

Activity 2: What is tree stewardship?

Learning Objectives:

Students will be able to:

- Define stewardship.
- Discuss the possible activities of a tree steward.

Time: 30 minutes

Materials:

A book about tree stewardship:

- *The Lorax* by Dr. Seuss
- *Maya and the Town that Loved a Tree* by Kiki and Katherine Shaw
- *Johnny Appleseed*
- *The Great Kapok Tree* by Lynne Cherry

Procedure:

Write the definition of stewardship (the careful and responsible management of something entrusted to one's care) on the board. After a brief discussion of the definition, ask students what it might mean to be a tree steward. Ask the class for examples of things they could do to be good tree stewards (learn about trees, care for trees, plant trees, tell others about the importance of trees).

Read one of your books about stewardship to the class and discuss how the character(s) exhibited stewardship. Tell students that henceforth they are Tree Stewards and will be learning to appreciate and care for trees this year.

Going deeper:

- Read and discuss additional books about tree stewardship.
- Set up a blog for students to record and share their experiences as Tree Stewards.

Activity 3: Parts of trees

Learning Objectives:

Students will be able to:

- Identify the parts of a tree and label a sketch of a tree accurately.
- Discuss the functions of a tree's various parts.

Time: 45 minutes

Materials:

For each student:

- Journal materials

For the class:

- Chart paper and markers for tree sketch

Procedure:

Set objectives and expectations before leaving the classroom. Students will be making sketches of trees in their notebooks. Tell students that the quieter they are, the more likely they are to observe wildlife. Students may collect leaves and seeds they find on the ground for closer observation in the classroom, but may not pull leaves off the trees or disturb other living things.

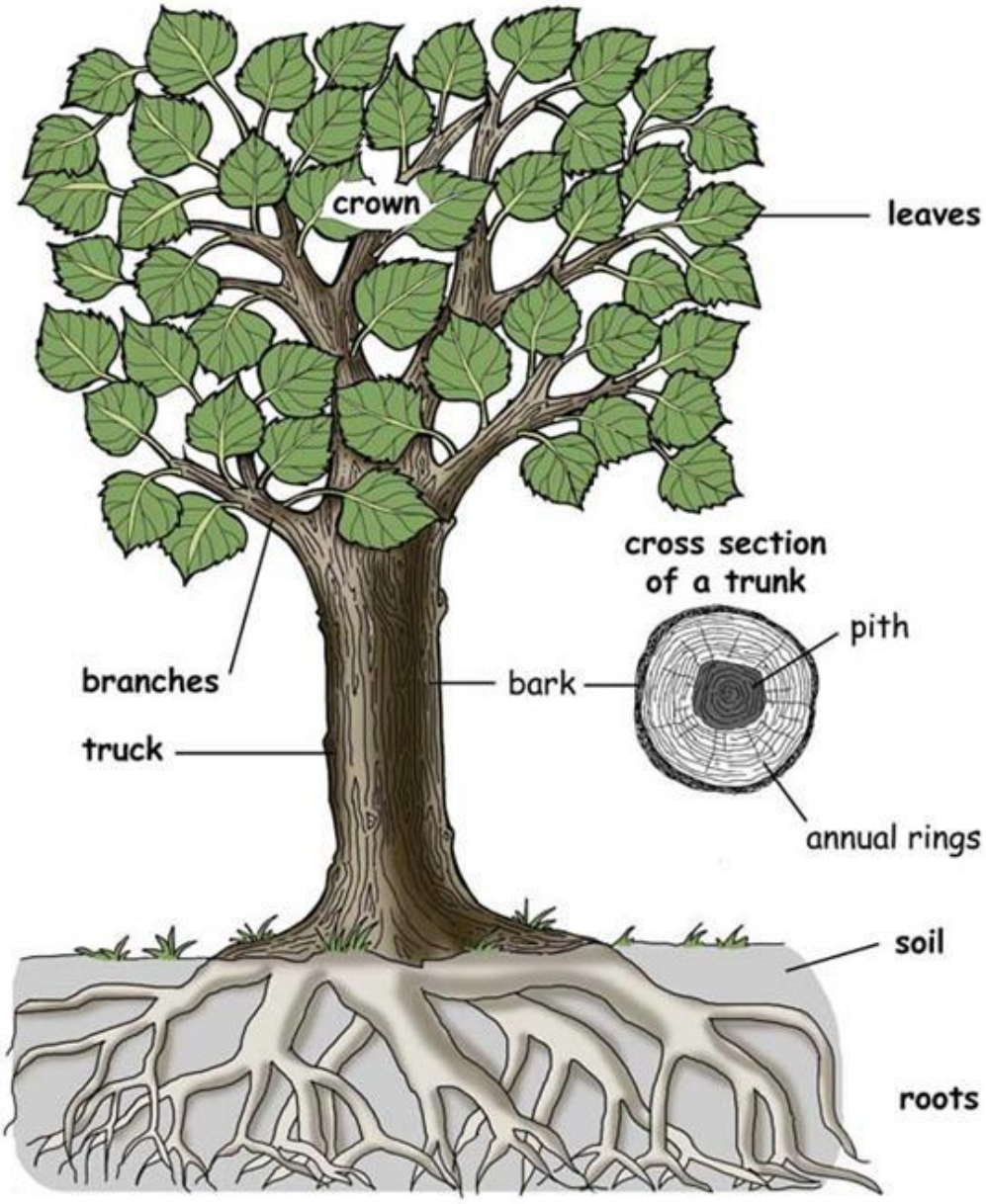
Take students to the tree study area. Encourage them to look for different types of trees, to think about how to distinguish different trees, and to sketch at least one tree.

When you return to the classroom, sketch a tree on chart paper. With assistance from the class, label the parts of the tree and discuss the function of each part in the tree's survival. Students should label the sketches in their journals as you label the sketch on the chart. This may be review for many students, but will support English learners and ensure that everyone is spelling key vocabulary correctly. Leave this labeled chart posted for the duration of the unit.

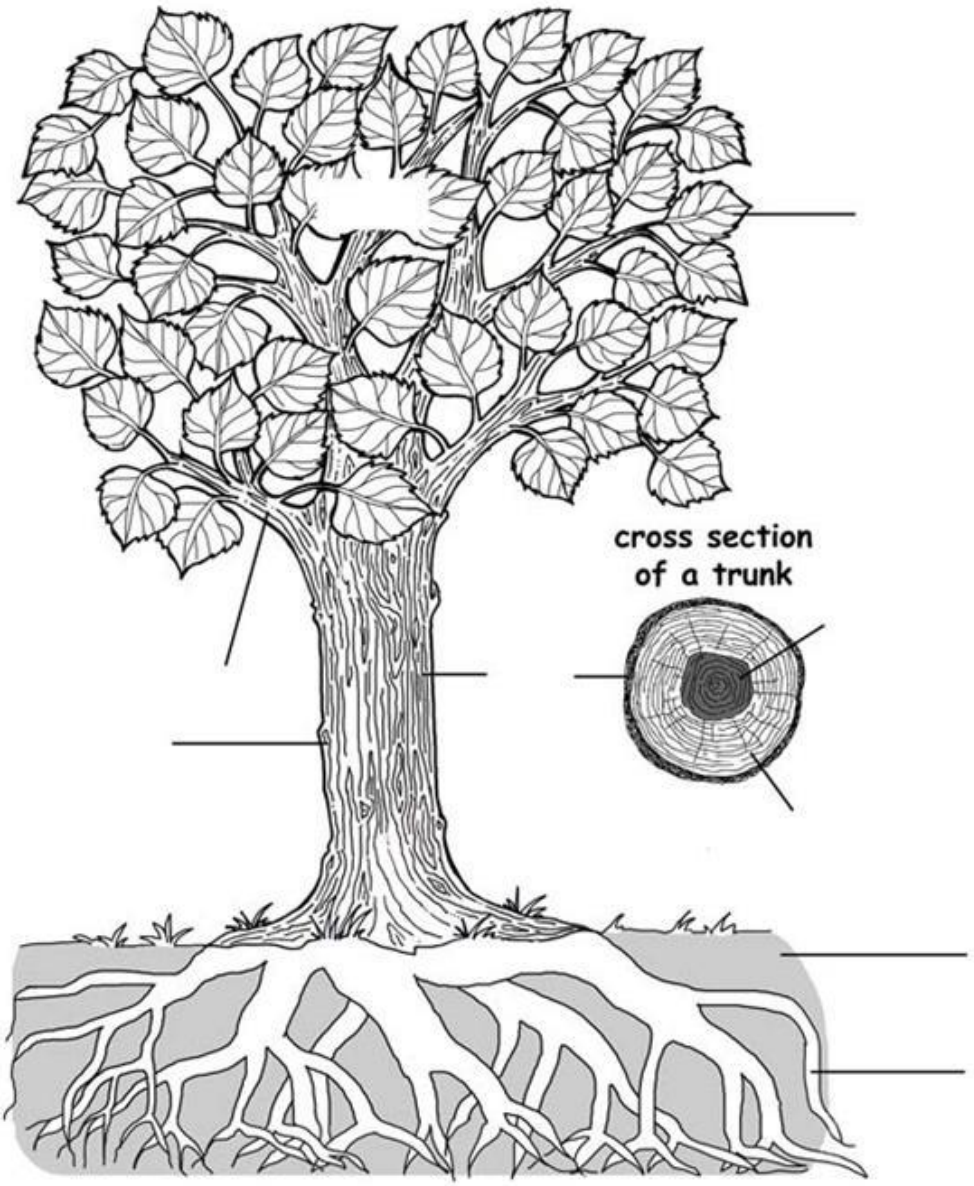
Going deeper:

- Make a class leaf collection from the trees in your study area, or have students make individual collections from trees around their homes.
- Have students adopt a tree in the study area, either individually or as a class. Visit the adopted tree(s) regularly, observing and recording changes to the tree and the area throughout the year. At year's end, students may make books documenting a year in the life of their tree.

Parts of the Tree



Name the Parts of the Tree



Activity 4: The tree deck

Learning Objective:

Students will be able to:

- Recognize that there are many different types of trees.

Time: 30 minutes

Materials:

For each student:

- a set of tree deck masters, run off on card stock scissors
- a rubber band, sandwich bag or binder ring to manage the tree deck

Procedure:

Distribute copies of the tree deck. Tell the class that they will be using these cards to help identify trees when they are out in the field, and that several decks will be stored in the classroom for games.

Students cut along the dotted lines to make 8 cards per page. When not in use, cards may be secured with a rubber band or stored in a small sandwich bag, but it is recommended that a hole punch be used to create a hole in the corner of each card and a binder ring used to keep them together. (If students will be using the hole punch, make a small x in the top left corner of each card on the black-line masters before making copies on cardstock.)

Once the student tree decks are assembled, use the overhead set to discuss the features of the cards (picture of leaf and seed, common name, Latin name) and some of the ways they can be used (to identify trees around the school and at home, to play games in the classroom).

Going deeper:

- Put different types of leaves on the overhead projector to observe edges and veins. Challenge students to identify the leaves using their tree decks.
- Leaves lend themselves to any number of art activities. Make leaf rubbings with crayons. Use an iron to press leaves between two pieces of wax paper, then use these pressed leaves to make leaf mobiles. Make leaf impressions in salt dough.
- Have a leaf scavenger hunt. Can anyone in the class find a leaf from each of the trees in the tree deck?

Activity 5: California oaks

Learning Objectives:

Students will be able to:

- Recognize that there are many different types of oak trees.
- Identify an oak tree by its leaves and acorns.
- Recognize the acorn as the seed of an oak.

Time: 30 minutes

Materials:

For each student:

- tree deck masters

Reading selection: California oaks

Procedure:

Distribute, read and discuss California Oaks.

Ask students to identify the oak trees in their tree decks. What do the oaks have in common? (Acorns!) How are they the same as or different from the other trees in the deck and each other? (All have leaves and seeds, but there is a great deal of variation in shape and size amongst different trees.)

Going deeper:

- Explore one or more of the books listed below to learn more about oaks.

Resources:

The Oak Tree by Laura Jane Coats
The Oak Tree by Gordon Morrison
Grandmother Oak by Rosi Dagit

California oaks

Oak trees have been giving us shade and beautifying our California landscape for a very long time. They can be found on rolling hills, along rivers, creeks and in valleys of 52 of the state's 58 counties. With a life span of up to 400 years, some oaks can grow to be enormous! They provide shelter and food for thousands of insects, birds and animals.

Oak trees do very well with the hot, dry summers and cool, wet winters characteristic of the Sacramento Valley. There are 20 species of oak trees native to California and more than 20 hybrids, but most of Sacramento County's oaks are one of three species: valley oak, interior live oak, or blue oak.

The valley oak is the largest oak tree found in California. It can grow to be over 100 feet tall and can live for almost 300 years. The valley oak is found growing by creeks and rivers in valleys near the California coast and in the Central Valley. It is a **deciduous** tree with pale green-yellow leaves. The acorns are long and narrow.

The interior live oak grows in hilly or mountainous areas as well as near creeks and streams. It grows between 25 and 80 feet tall and forms a round crown of branches at the top. It has **evergreen** leaves, which means they stay on the tree all year. They are dark green, nearly flat and leathery looking. The interior live oak's acorns are small and thin.

The blue oak grows in the hot, dry foothills. It grows to be 20 to 60 feet tall. The blue oak is deciduous. Its leaves are blue-green and they vary in size and shape. Some of the leaves have smooth edges and some are uneven. The blue oak's acorns are fat and stubby.

Today, oak trees face many dangers. Many young oak trees are stepped on by pasture animals, run over by lawn mowers or crushed by bulldozers. Full-grown trees are often damaged or killed when new homes, roads or shopping malls are built. In order to keep native oaks in California, we all need to help by planting new oak trees.

To maintain a forest or woodland, each oak tree needs to produce just one replacement tree in its lifetime, but disease, drought, fire, and grazing wildlife can all destroy oak seedlings. Fortunately, each oak tree produces thousands of acorns during its life span. You can help regenerate California oak habitat by caring for a seedling and protecting it from harm.

Activity 6: Oak explorations

Learning Objectives:

Students will be able to:

- Identify an oak tree by its leaves and acorns.
- Recognize the acorn as the seed of an oak.

Time: 45 minutes

Materials:

For each student:

- journal
- tree deck

For the class:

- Regional field guides and other reference materials

Procedure:

Set objectives and expectations before leaving the classroom. Today, students will be using their tree decks and field guides to try to identify oak trees in the study area. They will also be collecting several acorns and oak leaves for Activity 7.

California has 20 different native oak species and at least 20 known hybrids. Do not allow students to become discouraged if identification is a challenge.

When you return to the classroom, discuss your findings. Encourage students to write about what they have learned in their journals and add to the class chart as necessary. Collect the leaves and acorns for further study in Activity 7.

Going deeper:

- Have students develop a geo-caching activity. Ask them to identify a tree in the study area and, using a GPS device, to develop a series of coordinate clues to successfully lead others to the target tree.

Activity 7: Acorn and leaf investigations

Learning Objectives:

Students will be able to:

- Recognize that there are many different types of oak trees.
- Identify an oak tree by its leaves and acorns.
- Recognize the acorn as the seed of an oak.

Time: 30 minutes

Materials:

For each student:

- tree deck
- sketching and drawing materials

For the class:

- Regional field guides and other reference materials
- Acorns and oak leaves
- Hand lenses (optional)

Procedure:

Divide the class into small groups of three or four students. Give each group an assortment of leaves and acorns and ask them to work together, using their tree decks, to determine which type of oak each leaf and acorn fell from.

Guide students to notice the difference in acorn caps. Some are “warty,” while others are scaly like “shingles” on a roof. These are useful characteristics that can be used to identify oak species. If you have them, distribute hand lenses to the students for closer examination of leaf edges and surfaces. Students may sketch the leaves and acorns in their journals.

Discuss the characteristics of oaks from your region. Can you successfully identify the oaks in your study area? Create a list of adjectives that describe the characteristics of the leaves and acorns you collect and post it in the classroom. This will support students in their efforts to accurately describe tree attributes orally and in writing.

When finished, keep the leaves and several acorns for future activities, but return the majority of the acorns to the study area.

Activity 8: Introduction to trees and oaks: Summarize and reflect

Learning Objectives:

Students will be able to:

- Discuss the basic needs of trees.
- Discuss some of the benefits of trees to humans and other living things.
- Define stewardship.
- Discuss the possible activities of a tree steward.
- Identify the parts of a tree and label a sketch of a tree accurately.
- Discuss the functions of a tree's various parts.
- Recognize that there are many different types of trees.
- Recognize that there are many different types of oak trees.
- Identify an oak tree by its leaves and acorns.
- Recognize the acorn as the seed of an oak.

Time: 45 minutes

Materials:

- Student journals
- Class tree chart
- Drawing, coloring materials

Procedure:

Students review and organize the journal materials from this branch. Record any new learning or questions on the class tree chart and address the following questions either in their journals or as a class discussion:

Journal/discussion questions:

- What are the three oaks you are most likely to find in Sacramento County?
- What would you do to distinguish between two different trees?
- Why is it important to plant new oak trees?

Branch 2: Oaks and wildlife

This branch focuses on oak trees and their relationship with animals living in and around them, and can be useful in developing student understanding of the oak woodland habitat. Clarify and deepen student understanding of the important science concepts of **ecosystem**, **environment** and **habitat** by defining and discussing these terms beforehand.

The activities in this branch can be conducted at any time, but the fall season provides opportunities to watch wildlife collecting acorns.

Activity 1: Wildlife Observations

Learning Objective:

Students will be able to:

- Name animals typically found in an oak woodland habitat and describe each organism's relationship to the oak.

Time: 45 minutes

Materials:

- Student journals
- Sketching and drawing materials

Procedure:

Ask students what types of wildlife they might expect to find around an oak tree. Create a list.

Before heading out to observe your study tree, stress the importance of being quiet and still when trying to observe wildlife. Ask students to bring their journals and encourage them to record careful notes and make sketches of what they observe.

At the study area, students should sit quietly near a tree and listen for squirrels moving or birds singing. After a few quiet minutes, encourage them to look for animal footprints, scat, feathers or other evidence of wildlife and to carefully examine the soil and leaf litter under the tree to see what lives there. Remind the class of the importance of leaving the area as they found it.

Return to class, share observations and add new wildlife to the list.

Going deeper:

- Visit your study oak several times during the year and note changes in wildlife activity as well as types of wildlife observed.

Activity 2: Photosynthesis

Learning Objectives:

Students will be able to:

- Understand that plants use light energy to create food energy.
- Describe the inputs and products of photosynthesis.

Time: 45 minutes

Materials:

For each student:

- Reading selection: Photosynthesis and Food Chains

For the class:

- Aluminum foil, plastic bag and a straw, and/or young bean seedlings

Procedure:

Distribute, read and discuss Photosynthesis and Food Chains.

Set up one or more of these photosynthesis investigations:

- Cover a leaf with aluminum foil. Remove the foil after several days. What's happened? Why? (The leaf, unable to photosynthesize, will turn yellow and eventually die.)
- Grow two bean seedlings. Put one in a cupboard and leave the other in the sun. Compare the seedlings after a few days.
- Cover a branch of a plant with a plastic bag. Close the bag, use a straw to get the air out and seal the bag with tape. Observe the branch for several days. What is happening to the bag? (It should expand as the plant produces oxygen.)

Students record observations about these investigations in their journals. Add findings to the class chart.

Photosynthesis and food chains

All living things need energy to survive. Animals have to hunt or gather food to get the energy they need, but plants can make their own food using light energy from the sun. This process is called **photosynthesis**, and it takes place in the chloroplasts, tiny green structures found in the green parts of plants.

It is a complicated process, but basically, carbon dioxide and water are converted to glucose (a simple sugar) and oxygen.

In this way, plants make, or produce, the beginnings of most of the food energy on Earth. This is why plants are called **producers**. They use some of the food energy to carry out their own functions, and store the rest of the energy in their leaves, stems, roots and other parts.

When an animal eats part of a plant, the animal takes the plant's stored food energy into its body. Creatures that eat food energy are called **consumers**. Animals that eat plants directly are called **primary consumers**. Animals that get their food energy by eating other animals are called **secondary consumers** since the plant's energy has been consumed a second time. The relationships between producers and consumers can be represented by food chains and webs.

Eventually, all living things die. Then it is time for the **decomposers** to use the energy. Decomposers break down and take the energy from dead things into their bodies. They also enrich the soil, which helps plants to grow and create more food energy for all of us.

Activity 3: Peek and seek construction

Learning Objectives:

Students will be able to:

- Name animals typically found in an oak woodland habitat and describe each organism's relationship to the oak.

Time: 45 minutes

Materials:

For each student:

- Peek and seek reproducible pages (must be attached)
- Scissors
- Reading selection: Oaks and wildlife

For the class:

- Drawing, coloring materials

Procedure:

Distribute, read and discuss Oaks and Wildlife.

Distribute the Peek and Seek reproducible pages and scissors. Demonstrate the safe way to cut along the dotted lines (gently fold the paper to bisect the horizontal dotted line and make that cut first).

Students color and construct Peek and Seek.

Going deeper:

- Dissect a gall. What is inside? See *Investigating the Oak Community*, published by the California Oak Foundation, more in-depth exploration of galls.

Oaks and wildlife

Oaks provide food, homes and shelter for animals, both large and small. Hundreds of **vertebrates** and thousands of insects are associated with the oak woodlands of California.

Many creatures make meals of acorns and oak leaves. Bears, mule deer, and about two dozen species of birds eat acorns. Scrub jay, magpies, wood ducks, wild turkeys, mountain quail, flickers and acorn woodpeckers all depend on oaks for food. Insects also feed on leaves, twigs, acorns, bark and wood of oak trees. Many of these six-legged creatures become meals themselves. Warblers, vireos and orioles are among the many **insectivorous** birds that feed in oaks.

Animals help oak trees by planting their seeds. Left above ground, acorns dry out and fail to grow. Squirrels and scrub jays hide acorns for later **consumption**. Well-hidden seeds are protected from freezing and drying. Many of these seeds grow into new trees.

Some animals depend on oaks to keep them safe from predators, while others use the trees as a home. Barn owls, wood ducks and many other **cavity**-nesting birds make their homes in oaks. In winter, ring-tail cats and squirrels sleep in oak tree cavities; in summer, squirrels make nests in oaks. Bees build beehives in hollowed-out oak trunks.

You may find galls on oaks, especially during summer and fall. These interesting formations are developed when the insect eggs (usually from a wasp) are inserted into oak leaves or branches. Oak tissue serves as an “insect nursery” by growing around the eggs. These coverings protect **larval** and adult forms. Most research shows that galls do not harm the oaks in any way.

Other creatures, such as spiders and centipedes, can be found on oak bark or hiding beneath it. Nematodes (tiny round worms) and earthworms live within the root system. Look in the leaf litter at the base of the tree to find slugs, snails, wood lice, beetles, millipedes, centipedes, caterpillars, earwigs, ants and spiders.

Oaks continue to be useful to wildlife even after they die. Salamanders, worms, snails, termites and ants live in decomposing logs and help turn wood into humus, which enriches soil.

An oak tree is truly a “community” of living organisms. Loss of oak habitat has a big **impact** on the survival of many types of wildlife.

Activity 4: Treecycle

Learning Objectives:

Students will be able to:

- Name animals typically found in an oak woodland habitat and describe each organism's relationship to the oak.
- Identify the producers, consumers and decomposers in the habitat.
- Discuss the role of the oak in its habitat throughout its existence.

Time: 45 minutes

Materials:

For each student:

- Treecycle reproducible page
- Reading selection: Oaks and Wildlife

For the class:

- Highlighters — 3 different colors

Procedure

Return to the Oaks and Wildlife reading selection and have students use different colored highlighters to identify producers, consumers and decomposers. (You may want to create charts that summarize the producers, consumers and decomposers mentioned in the reading.) Using this information and additional information gathered during field work, students construct food chains and webs that one might find in an oak woodland habitat.

Distribute copies of the Treecycle. Ask students to think about how the wildlife they have observed and read about uses the oak tree at different times of the cycle and to record the names of the wildlife that uses the oak at different times on the worksheet.

Going deeper:

The Banana Slug String Band perform songs about food chains, decomposers and other plant and tree related topics.

Resources:

A Log's Life by E. Wendy Pfeffer

The Life Cycle of a Tree by Bobbie Kalman

Activity 5: Oak habitat paper sculpture construction

Learning Objectives:

Students will be able to:

- Name animals typically found in an oak woodland habitat and describe each organism's relationship to the oak.
- Identify the producers, consumers and decomposers in the habitat.

Time: 60 minutes

Materials:

- Brown paper
- Green paper
- Masking and invisible tape
- Pushpins, a stapler
- Drawing, coloring materials

Procedure:

Review the parts of an oak tree and creatures that have relationships with the tree.

In a corner of the classroom, create a large tree sculpture, stapling crumpled brown paper to shape a trunk and branches and crumpled green paper to make foliage. Use tape to attach tree artifacts (leaves, galls, acorns) that you have collected to the paper sculpture.

Have students sketch, color, cut out and add the different types of wildlife in the appropriate places on the tree sculpture. After discussing the finished sculpture, ask students what would happen to all the wildlife if the tree was missing.

Going deeper:

- Students may conduct research about wildlife found in the oak woodland community and create reports on their findings.

Activity 6: Food chains and webs

Learning Objectives:

Students will be able to:

- Name animals typically found in an oak woodland habitat and describe each organism's relationship to the oak.
- Identify the producers, consumers and decomposers in the habitat.
- Create a simple food chain based on the relationships between organisms in an oak woodland habitat.

Time: 45 minutes

Materials:

- Tree sculpture
- Masking and invisible tape
- Pushpins, a stapler
- Index cards, cut in half
- Yarn

Procedure:

Return to the tree sculpture and label the different organisms with index cards.

Use lengths of yarn to create food chains and webs between the organisms on the tree. (Depending on the wall, use tape, staples or pushpins to attach the cards and yarn to the tree.)

Discuss the roles of the producers, primary consumers, secondary consumers and decomposers and the connections between the organisms in the oak habitat.

Some organisms have more than one role. Add the role of each organism to its index card.

Activity 7: Oaks and wildlife: Summarize and reflect

Learning Objectives:

Students will be able to:

- Name animals typically found in an oak woodland habitat and describe each organism's relationship to the oak.
- Identify the producers, consumers and decomposers in the habitat.
- Discuss the role of the oak in its habitat throughout its existence.
- Create a simple food chain based on the relationships between organisms in an oak woodland habitat.

Time: 45 minutes

Materials:

- Student journals
- Class tree chart
- Drawing, coloring materials

Procedure:

Students review and organize the journal materials from this branch. Record any new learning or questions on the class tree chart and address the following questions either in their journals or as a class discussion:

Journal/Discussion Questions:

1. Which birds and mammals collect acorns? Where do they store them? How does this affect the oak tree?
2. Think about the acorns the class collected and dissected in October. What wildlife may have been affected by the collecting of acorns? Explain your thinking.
3. What did you have for dinner last night? Make a list of everything you consumed and try to create a food chain that shows the path of your food, from the sun to your mouth.
4. Describe a food chain you might find in an oak woodland habitat. Illustrate the members of the food chain.
5. Tell how wildlife is important to you and your community.
6. As a tree steward, what can you do to protect and promote oak woodland habitat?

Branch 3: Planting and caring for seedlings

Plant your acorns as soon as possible! They have been refrigerated since October and will begin to grow as soon as they encounter warmer temperatures and moist soil.

Activity 1: Planting your acorns

Learning Objectives:

Students will be able to:

- Describe the steps in planting an acorn.
- Assume responsibility for the care of an acorn.

Time: 30 minutes

Materials:

For each student:

- Deepot filled with soil
- Acorn
- Wooden craft stick
- Oak Seedling Adoption Certificate

For the class:

- Permanent marking pen for labeling
- Plastic tray

Procedure:

Distribute acorns. Have students make observations of the acorns (color, length of sprout, size) and record/sketch information in their journals. Demonstrate how to plant an acorn. Distribute deepots and assist as students plant their acorns.

If the acorns have not begun to sprout, have each student poke a hole in the soil of the deepot with his/her finger. The hole should begin at the edge of the pot and end near the middle. Help students identify the pointy end of the acorn. Explain that both the root and shoot grow from this end. Instruct students to place the acorns in the holes, pointy side first, and to push the acorns into the dirt until they are just below the surface.

If the acorns have begun to sprout, be careful not to damage their roots. Instruct students to remove an inch of soil from their deepots, and to use their fingers (or a pencil if the root is very long) to make a narrow hole for the root. Tell students to carefully place the acorns into their pots with the root extending down into the hole, and to gently refill their pots with the removed soil so that the acorn is fully covered.

Use a permanent marker to write student names on the craft sticks and insert them into the pots. Gather pots on the tray and take the tray outside for watering.

To water, put the pots outside on a grassy or mulched area. This will absorb the runoff which will contain traces of fertilizer. Add water until it flows out of the bottoms of the pots and the soil looks evenly wet. Let the pots drain for 10-15 minutes. Place the pots on the plastic tray to contain additional drips.

Back in the classroom, place the tray on a sunny windowsill in the classroom.

Distribute the Oak Seedling Adoption Certificates. Read and discuss the responsibility involved in caring for the seedlings. You may want to read the pledge together and then have each student sign his certificate.

Activity 2: Caring for your seedlings

Learning Objectives:

Students will be able to:

- Accurately describe the proper care of an oak seedling.
- Describe the elements that plants need in order to grow.

Time: 30 minutes weekly

Materials:

For each student:

- Student reading selection: Caring for your seedling
- Seedling Growth Sheet

For the class:

- Poster making materials

Procedure:

Distribute, read and discuss Caring for your Seedling. Check to make sure that your seedlings are in a good location in the classroom (adequate light, no drafts).

Time permitting, have students work in groups to create posters with the seedling care reminders (as outlined in the reading selection) to reinforce care procedures.

Students should monitor and graph the rate of stem growth each week. It may take 14 weeks for the stem to appear. Tell students that this is normal and to be patient.

In addition to collecting data about the growth of their seedlings, students may record the growth of their plants by sketching and labeling their structures in their journals weekly.

Going deeper:

- Collect and analyze class data on seedling growth each week. Create a class graph that shows the growth of each seedling, discuss the range of the data, and calculate average growth of the seedlings each week.

Please review the Frequently Asked Questions for more detailed information about the care of your seedlings.

Caring for your Seedling

Caring for oak seedlings requires an understanding of how young trees grow.

All plants need light in order to grow. If oak seedlings are grown indoors, place them near a window or skylight. Artificial light can be used if natural light is not available, but heat from lights can dry out the soil. If artificial lights are used, limit the light period to 12 hours.

Plants also need water to grow, but be careful when watering your seedling. The soil should never be soggy. Allow excess water to drain out of the container or soil fungi and bacteria will spread and damage or kill the seedling. Water gently to avoid washing soil away from the young, tender roots. When it starts to warm up outside you will need to water more often.

Oak seedlings grow best in temperatures between 65 –75 degrees F. Night temperatures should not drop below 60 degrees F. Never place seedlings in a location where they receive a constant flow of air from the furnace air ducts or their leaves will dehydrate. Seedlings will benefit from occasional gentle misting.

The seedlings should be taken outdoors during the day when they start to sprout leaves (for photosynthesis) and taken in at night so animals or people can't harm them.

You may want to make a poster for the classroom with these reminders:

- Saturate the seedlings with water.
- Wait until the soil almost dries out before watering again.
- Do not allow the seedlings to sit in excess water.
- Keep the soil temperatures steady and not too hot.

If you take good care of your seedling, it might grow to be a giant oak tree!

Activity 3: Returning your seedlings

Learning Objectives:

Students will be able to:

- Accurately describe the proper care of an oak seedling.
- Describe the elements that plants need in order to grow.

Time: 30 minutes

Materials:

For each student:

- Letter writing materials

Procedure:

Have students write letters to the next person who will be caring for the tree (many of the seedlings are transferred to our nursery). They should describe how they have cared for the seedling, and give instructions about its future care.

Going deeper:

- Students may write wishes for the future success of their seedlings on small strips of paper, fold them up and insert them into the planting soil.
- Encourage students and their families to participate in community tree plantings. See sactree.org/events for more information about tree planting activities in the area.

Frequently asked questions

Some of the acorns are very small. Should I plant only the big ones?

Acorns, much like people, come in many different shapes and sizes. In order to contain the broadest possible genetic diversity, we sort our acorns for health regardless of size. Your bag should contain a variety of sizes. Please plant every acorn we give you. This can be an interesting starting point to investigate if bigger acorns produce bigger seedlings.

How often should I water?

Don't let your potting soil dry out! Watering must occur when you first plant your acorns. Frequency will need to increase with warmer temperatures and as your seedlings grow. Pay attention to how the soil at the top of your pots looks. When it looks dry, poke your finger into the soil from the bottom of the pot. As long as it isn't soggy down there, water.

How do I water?

Put your pots outside on a grassy or mulched area. This will absorb the runoff which will contain traces of fertilizer. Add water until it flows out of the bottoms of the pots and the soil looks evenly wet. Let drain for 10-15 minutes. In the classroom, keep your seedlings on the plastic tray to contain additional drips.

How long does it take for the seedlings to sprout?

The most difficult time for the Seed to Seedling project is the time between when the acorns are planted and when you see the first shoot break the soil surface. Acorns grow roots first, long before they grow shoots. Acorns will germinate 2-4 weeks after planting (if they haven't already done so in the refrigerator!) Roots will be substantial and some shoots will appear 8-10 weeks after planting. Most shoots should be visible by week 14.

If you have more planted acorns than students, feel free to designate one to check on periodically by gently dumping out the pot. Do this prior to watering when the soil is at its driest. Reserve all the soil and return the acorn gently to its pot after investigating the roots. If you do this gently, it won't affect the growth of the seedling.

When should my pots go outside?

Begin placing your seedlings outside in the sun once you see shoots appear. Remember to bring them back in at night and protect them from hungry squirrels and scrub jays. If you have big sunny windows (full sun), you may be able to keep your seedlings inside all the time. Seedlings need lots of light to grow.

How often should I take my pots out and for how long?

It depends on how much light they get inside. If your classroom is very dark, take them out each morning and bring them in at the end of the day. If your classroom is moderately bright, take the seedlings out at least two days each week. If your classroom has large windows and full sun, you may never need to take them out. It is difficult to give oak seedlings too much sun.

Do I need to fertilize?

No. Slow-release fertilizer is already in the potting soil. Because of this, please be cautious about what you do with the water runoff.

My seedling has a white powdery substance growing on the leaves. Is this bad?

Powdery mildew is a symptom of overwatering and poor air circulation. Monitor your watering closely and increase the amount of time your seedlings spend outside in the sun.

Should my seedlings be tall and spindly and unable to hold themselves up?

If your seedlings are growing rapidly and seem unable to support themselves, increase the amount of time they spend outside in the sun. This rapid growth is a sign that they are not receiving enough light.

The leaves on my seedling are very pale and/or yellow.

Very light green or yellow leaves are a sign of too little sun or too much fertilizer. Please give them more time outside in the sun. If the problem persists, call the Tree Foundation for assistance. This can also be a sign of poor water quality or over-fertilization.

Can we keep our trees at the end of the project?

We would love to get you trees for your school! Unfortunately, we can't give you the seedlings we are growing. These acorns have been specially selected from specific project locations. Once they are grown to seedling size, we will be returning them to their families. We often use the field trip analogy to make the students understand this concept. The acorns are on a very important trip away from their families. They really appreciate the care provided by the students but at the end of the project they need to go back to their own homes.

Please email seedtoseedling@sactree.org or call us at 916-924-8733 if you have questions or concerns.

Branch 4: California history and the oak

If you are fortunate enough to have a big, old oak tree nearby, take your tree stewards to visit it and tell them that their own seedlings may grow to be that big someday.

The activities in this branch may be completed at any time of the year.

Activity 1: Introduction to heritage oaks

Learning Objectives:

Students will be able to:

- Understand that some oaks are very old.
- Understand that oaks have been important to Californians throughout California history.

Time: 30 minutes

Materials:

For each student:

- Student reading selection: Heritage oaks

Procedure:

Distribute, read and discuss Heritage oaks.

An old oak tree may have a circumference of 252 inches! Have students measure the distance from finger to finger with arms outstretched (for most people this distance is equal to height) and do the math to determine how many students will need to join hands to approximate the circumference of an old oak. Similarly, oaks may grow to be 100 feet tall! Measure out 100 feet and have students line up to approximate the height of an old oak.

Going deeper:

- Use the internet to research the height and circumference of other tree species (try redwood) and use students to approximate those measurements.

Heritage oaks

Throughout California's cultural history, oaks have provided the scenery for many dramatic events. Standing beneath the **canopy** of an old oak – going back in time – we can begin to imagine these changes.

The large, old oaks that still stand in small groves or alone in our neighborhoods are often called **heritage oaks** or **landmark oaks**. A heritage oak is often defined as a living **native** oak tree, several hundred years old that is in good health. Some heritage oaks have trunks with a **circumference** of more than 100 inches, but some have smaller trunks. Some very old oaks are tall, and some are quite short. The **correlation** between size and age is not straight forward when it comes to trees.

Many California cities, towns, streets, schools, parks and buildings use the word "oak" in their name. This again suggests the **significant** role oaks have played in shaping California's character. Many communities register old oaks. This helps provide an **inventory** of significant trees, assists decision makers with evaluating and protecting them and creates public interest in oak issues.

Activity 2: Oak place names

Learning Objective:

Students will be able to:

- Identify local streets, towns and other places that are named after trees.

Time: 30 minutes

Materials:

For each student:

- Heritage oaks worksheet

For the class:

- Maps and/or the internet to investigate place names

Procedure:

Distribute the heritage oaks worksheets. Tell students that many towns, cities and streets are named after oaks and that this is an indication of the importance of oaks in people's lives. Use the internet, along with state or local maps, to locate place names that include the word "oak." Introduce the two Spanish words for oak; *encino* (live oak) and *roble* (deciduous oak) to expand the list.

Going deeper:

- Challenge students to locate place names that include the names of other types of trees, e.g. maple, pine, walnut.

Activity 3: What the old oak saw composition

Learning Objectives:

Students will be able to:

- Apply their knowledge of California history to a creative writing experience that reinforces the understanding that some oak trees are very old.

Time: 60 minutes

Materials:

For each student:

- Writing materials

For the class:

- Chart paper and markers for timeline

Procedure:

Create a timeline for your city or town that goes back 300 years or so. Brainstorm with the class the important things to include, but be sure to include student birthday years, the year the school was built, the year your town was incorporated, Gold Rush, California statehood and the American Revolution. Talk about who was living in your city or town during each period. Then, tell students that a heritage oak would have been alive before all of these events, and draw a small oak tree at the start of your timeline.

Have students write a story or biography about a real or fictional oak in your community. Say it is 300 years old. What has the tree witnessed? Challenge students to write their compositions from the tree's perspective.

Going deeper:

- If you can locate a cross-section of a tree trunk, bring it into class and count the number of rings to determine how old the tree was. (Each year a tree makes a light ring during a time of rapid growth and a dark ring when less water is available. Count either the dark or light rings, not both.) Working from the outside in, use small sticky notes to label the years of importance to your class and the larger community. Relate this activity to the timeline.
- Ask students to create a skit or play based on their What the old oak saw compositions.

Branch 5: Tree products and benefits to people

In this branch, students will explore some of the many benefits that trees provide. The activities in this branch may be completed at any time of the year.

Activity 1: Tree foods

Learning Objectives:

Students will be able to:

- Name fruits and nuts that grow on trees.
- Discuss the health benefits of eating fruits and nuts.
- Recognize trees as a source of highly nutritious food.

Time: 30 minutes

Materials:

- MyPlate coloring sheet

Procedure:

Discuss the health benefits of eating fruits (low in fat and calories, high in fiber, vitamins and minerals) and nuts (high in "good" fats, protein source).

Locate fruits and nuts on MyPlate. Review recommended daily intake of fruits and nuts.

Brainstorm a list of fruits and nuts.

Put a star next to each item on the list that grows on trees.

Going deeper:

- Make tree food trail mix with various tree nuts and fruits.
- Have students log their food intake for a day and identify the tree foods they have consumed.
- Plan a field trip to an orchard.
- Plan a field trip to a farmer's market to identify tree foods and talk to farmers about the foods they grow.
- If you have a school garden, consider planting a fruit tree.
- Explore some of the resources in the Educators' Corner at Harvest of the Month.

Activity 2: How do we use tree products?

Learning Objectives:

Students will be able to:

- Identify tree products in their classroom and home.
- Describe the importance and use of tree products in their lives.

Time: 30 minutes

Materials:

For each student:

- Around the House Worksheet (2 pages run-off double-sided)

For the class:

- Chart paper and markers for tree product chart.

Procedure:

Ask students to work in collaborative groups to survey the classroom for products made from trees (paper, toys, furniture, pencils, possibly the room itself) and to make a list of all of the tree products, both in the classroom and elsewhere, that they use regularly. After a few minutes, reconvene the class and create a class chart of tree products.

Distribute, read and discuss the Around the House Worksheet. Tell students that they will be exploring their households for tree-based products for homework.

The next day, review the homework and add additional items to the class list.

Going deeper:

- Read *The Giving Tree* by Shel Silverstein.

Activity 3: Health benefits of trees: Temperature and ultraviolet effects

Learning Objectives:

Students will be able to:

- Describe the effect of trees on temperature and exposure to ultraviolet rays
- Discuss the health benefits of trees related to temperature and ultraviolet exposure

Time: 45 minutes

Materials:

- Ice cubes, thermometers and/or ultraviolet beads

Procedure:

Conduct a discussion about the dangers of high heat and excessive exposure to the sun (heatstroke, sunburn, dehydration) and the importance of staying cool during hot weather and protected from the sun year-round.

Tell students trees help protect them from the harmful effects of sun and hot weather.

Outside, students work in pairs to conduct the following investigations:

1. Measure the time it takes for an ice cube to melt in the shade of a tree versus the time it takes for one to melt in the sun.
2. Use thermometers to measure the temperature in the shade of a tree versus the temperature in an unshaded area.
3. Use ultraviolet beads to evaluate exposure to ultraviolet rays in the shade of a tree versus exposure in the sun.

Back in the classroom, discuss and record findings in journals and on the class tree chart.

Going deeper:

- Determine the percentage of your study area that is shaded by trees. Use Google Earth to obtain an image of your study area. Create a grid with 100 squares (use a blank 100 chart) on clear acetate. Lay the grid on top of the image of your study area and count the boxes that include tree cover.

Activity 4: Tree products and benefits to people: Summarize and reflect

Learning Objectives:

Students will be able to:

- Name fruits and nuts that grow on trees.
- Discuss the health benefits of eating fruits and nuts.
- Recognize trees as a source of highly nutritious food.
- Describe the importance and use of tree products in their own lives.
- Describe the effect of trees on temperature and exposure to ultraviolet rays.
- Discuss the health benefits of trees related to temperature and ultraviolet exposure.

Time: 45 minutes

Materials:

- Student journals
- Class tree chart
- Drawing, coloring materials

Procedure:

Students review and organize the journal materials from this branch. Record any new learning or questions on the class tree chart and address the following questions either in their journals or as a class discussion:

Journal/Discussion Questions:

1. List your five favorite fruits and nuts. Put a star next to each one that grows on a tree.
2. List six tree products that are important to you. Put a star next to the product that is most important to you and write a few sentences that explain your choice.
3. Describe several ways that trees improve your life.
4. How do trees impact the air conditioning needs of a home?

Branch 6: Your urban forest

In this branch of Seed to Seedling, students will discover the many benefits of their urban forest and consider some of the psychological benefits of trees.

Before beginning, define the boundaries of your urban forest study area (the school yard is optimal, but a nearby park will do). Remember, students will be advocating for the planting of additional trees in their study area, so take this into consideration.

These activities are best done in the spring when leaves are on the trees.

Activity 1: Introduction to the urban forest

Learning Objective:

Students will be able to:

- Describe the benefits of urban forests.

Time: 45 minutes

Materials:

For each student:

- Student reading selection: Urban forests

For the class:

- Photos for preference activity

Procedure:

Show students pictures of urban landscapes with and without trees. Don't call attention to the differences between the pictures. Instead, facilitate a discussion about which area seems more attractive. Where would students rather be? Why? Guide the discussion so that students are able to conclude that the trees make urban landscapes more appealing. Ask students to talk about how trees make them feel.

Distribute the Urban Forests reading selection. After students have completed the reading selection, hold a group discussion to describe and discuss the benefits of their urban forest.

Visit the study area to begin to evaluate your urban forest. Talk about how the area would appear viewed from the air. (If available, use Google Earth to provide aerial views of the area when you return to the classroom.) Help to develop an understanding of how the community of trees planted in and around the school, the plants, the wildlife and any nearby water sources make up your immediate urban forest.

Going deeper:

- Prepare a map of the study area and show where the trees are located. If the study area is large, break it into smaller areas and assign different areas to smaller groups of students.

Urban forests

The **urban forest** is a complex community of plants and animals that surround and form a canopy over buildings, homes, parkland and streets. The most **conspicuous** members of this forest are the trees. Many kinds of native trees, such as oaks and sycamores, can be found in our urban forest, along with trees from other areas introduced for their adaptability, usefulness and beauty.

Trees make our neighborhoods healthier by filtering the air we breathe and cleaning the water we drink. They play an important role in water **conservation** and summer energy savings. They offer shade, protecting us from the sun's harmful rays and helping us to stay cool. They also provide food and shelter for the many insects, birds and mammals that live in urban areas.

Air pollution can be a problem in urban areas. Trees of the urban forest help clean the air that we breathe. They make the air around them healthier for all living creatures by filtering dust and other particles from the air. Carbon dioxide, produced from cars and **industry**, is used by the tree in the process of photosynthesis.

Trees planted along busy roadways, near schools or next to parks, can help reduce noise and screen views. Tree-lined streets serve to slow traffic speeds and make sidewalks more attractive and safer for walkers and bicyclists.

Perhaps most important, trees make our neighborhoods more beautiful. Some research has shown that trees can reduce stress and make people feel happier. Trees of the urban forest are of great value to city-dwellers.

Activity 2: Tree inventory

Learning Objectives:

Students will be able to:

- Apply their growing knowledge of tree diversity to a tree inventory project.
- Assess the value of the urban forest in their school community.

Time: 60 minutes

Materials:

For each student:

- Tree inventory checklist
- Tree deck

For the class:

- Graphing materials
- Regional field guides, reference materials to assist in tree identification

Procedure:

Tell students that they will be assessing the diversity of trees in their study area. Conduct a brief discussion about the importance of tree diversity in an urban forest. (If all the trees in an area are the same species, they will all be susceptible to the same diseases and pests. If all of the trees in an area are the same age, they will experience aging effects simultaneously.)

Distribute the tree inventory checklists. In pairs, students use their tree decks and other reference materials to identify and inventory the trees in the study area. If there is a large number of trees in the study area, you may want to break the class into small groups and have them gather data for specific types of trees.

Back in the classroom, use the collected data to create a simple graph that shows the number and type of trees in your study area. Evaluate the diversity of trees in your study area.

Going deeper:

- Make a field guide for the trees and wildlife found in your urban forest. Create a page for each type of tree in the study area and include information about its leaves and seeds. Make pages for the wildlife found in the study area.

Tree inventory checklist

Use tally marks to record the number and types of trees in your study area. Use your tree deck and other field guides to identify the trees.

_____ Crape myrtle

_____ Blue oak

_____ Hackberry

_____ Gingko

_____ Mulberry

_____ Chinese pistache

_____ Plane

_____ Valley oak

_____ Zelkova

_____ Pine

_____ Willow

_____ Eucalyptus

_____ Coast redwood

_____ Interior live oak

_____ Flowering pear

_____ Maple

Activity 3: Urban forest stewardship

Learning Objectives:

Students will be able to:

- Describe the benefits of urban forests.
- Assess the value of the urban forest in their school community.
- Advocate for the further development of the urban forest in their school community.

Time: 60 minutes

Materials:

For each student:

- Materials for letter writing

For the class:

- Internet, local phone books to locate addresses of letter recipients

Procedure:

1. Decide which type of tree you would like to have planted in your study area.
    - Discuss and synthesize the findings from your inventory and prior investigations into the many benefits of trees.
    - Think about the trees that you have studied during the course of these activities and consider the trees that seem to be thriving in the area.
    - Use the tree guide at sactree.org/shady80 to learn more about the trees that do best in your region.
2. Determine who needs to be contacted to add a tree to your study area.
    - Depending on your study area, this may be your school administrator, district administration, or a department of local government.
    - Use the internet to locate addresses of letter recipients.
    - Potential tree planting contacts could include:
        - Your city's urban forest or parks department
        - Local urban forest nonprofits such as the Sacramento Tree Foundation, Woodland Tree Foundation and Roseville Urban Forest Foundation
        - California Department of Forestry and Fire Department
3. Write letters.
    - Discuss and model appropriate letter writing format.
    - Review information that should be included in each letter (the research you have conducted regarding the value of trees, the reasons you would like to plant another tree and why you have chosen a specific type of tree).

Going deeper:

- Prepare a newsletter that tells the school community about your research and urban forest stewardship activities. Include information about who to contact regarding the planting of additional trees.

Activity 4: Home tree assessment

Learning Objectives:

Students will be able to:

- Assess the value of the urban forest in their home community.
- Advocate for the further development of the urban forest in their home community.

Time: Homework assignment, allow for several days

Materials:

For each student:

- Home tree assessment (2 pages)

Procedure:

Distribute and discuss the Home Tree Assessment. Students will be evaluating the trees around their homes. Tell students that they will need to talk to their families before starting the assignment to address any safety issues involved with working outside of the house.

Direct families who are interested in planting trees in their communities to sactree.org.

Going deeper:

- Encourage students to go beyond their home study areas to assess the value of the trees in their larger communities. Have them evaluate various streets and areas around community and shopping centers in their neighborhoods, and to talk to the people in their communities about the benefits of planting additional trees.

Home tree assessment

On the back of this sheet, draw a simple map of your home study area. Include your house, sidewalks and streets, and the trees in front, in back, and on the sides of your house.

1. How many trees are in your home study area?

2. Use your tree deck to identify the trees in your home study area. Write the names of trees you are able to identify here:

3. Are trees providing shade for your house? Circle one:

   Yes No

4. Think about where you play in your home study area. Are there trees providing shade and protection from ultraviolet rays in your play area? Circle one:

   Yes No

5. Do you see any wildlife, or evidence of wildlife in the trees? Look for nests. Do you hear any wildlife? Circle one:

   No wildlife Some wildlife Lots of wildlife

6. Are any of the trees providing food for you, your family, or wildlife that lives in the area? Circle one:

   No food Some food Lots of food

7. Think about your responses to numbers 1-7. Would your home study area be improved with the addition of more trees?

   Yes No

8. What types of trees would you like to add? Explain your thinking.

9. Talk to an adult in your family about this home tree assessment. Ask the adult to sign below.

Your Name: _____ Signature of Adult: _____

10. Bonus: Draw a picture of a tree in your home study area.

11. Now draw a picture of yourself sitting, playing or reading under the tree. Are you smiling in the picture? Why or why not?

Activity 5: Your urban forest: Summarize and reflect

Learning Objectives:

Students will be able to:

- Describe the benefits of urban forests.
- Assess the value of the urban forest in their school community.
- Advocate for the further development of the urban forest in their school community.
- Advocate for the further development of the urban forest in their home community.

Time: 45 minutes

Materials:

- Student journals
- Class tree chart
- Drawing, coloring materials

Procedure:

Students review and organize the journal materials from this branch. Record any new learning or questions on the class tree chart and address the following questions either in their journals or as a class discussion:

Journal/Discussion Questions:

1. Describe six ways that trees improve the lives of people.
2. Would you prefer to live in an area with many trees, a few trees, or no trees at all? Explain your thinking.
3. Is it good to have an urban forest with a lot of large, old trees? Why or why not?
4. Why is a diversity of tree species important?

Branch 7: Final projects and celebrations

Organizing projects and preparing for the celebration gives students additional opportunities to synthesize and apply their learning, and teaching others about the value of trees will cement their role as community tree stewards. Since students select and design their projects, the activity is fully differentiated and should be relevant, engaging and accessible to every member of the class.

In addition to creating a rich and vibrant learning environment for your community celebration, the final projects provide a valuable, authentic assessment of student learning.

Activity 1: Final projects

Learning Objective:

Students will be able to:

- Design and present a project that demonstrates their knowledge about the value and importance of trees.

Time: Homework assignment

- several days to consult and plan with family
- one additional week to complete the project

Materials:

- Various, depending on projects selected

Procedure:

Students will work on their final projects at home. A sample project planning sheet is included. Discuss the project possibilities and create an evaluation rubric with students.

Here are a few ideas:

- Paint an informational poster about trees, tree stewardship, urban forests, etc.
- Design and make an educational brochure or pamphlet.
- Write and illustrate a book detailing the life cycle of a tree.
- Construct a diorama of a tree habitat.
- Write a newspaper article about the importance of trees.
- Script a play or puppet show about a “heritage” tree and its history.
- Compose a poem, song or rap about trees.
- Conduct an inventory of the trees in your neighborhood.
- Create a game about trees.
- Draw a tree map of your neighborhood.
- Locate a heritage tree. Research and write a report about its importance to the community.
- Prepare a recipe that incorporates tree products, write it up and bring in samples to share.

It's time for your final project!

Here's a chance for you to show what you've learned about trees and help to educate others about the importance of trees, tree stewardship and caring for our urban forest. Projects will be shared in class and during our tree festival.

What can you do? Here are some ideas:

Make a poster, brochure or pamphlet about trees, tree stewardship or our urban forest. Write a story, a book, a newspaper article, a comic strip, a poem, a play, a rap or a song about trees. Make a puppet, a sculpture, a painting, a mobile, a diorama, or a model about an oak tree or our urban forest. Inventory or map the trees in your neighborhood or find and research a heritage tree and write a report about it. Cook or bake something using tree products and bring it in to share along with the recipe.

It's up to you, so do something really great.

The plan is due:

The project is due:

I plan to:

I will need these materials:

I will need help with:

Name:

Activity 2: Tree celebration

Learning Objective:

Students will be able to:

- Serve as community tree stewards by teaching others about trees.

Time: Depends on scope of celebration

Materials:

- Various, depending on celebration

Procedure:

Each celebration is as unique as its participants. Involve students in the planning. Here are a few considerations and ideas:

- Think about where the event will be staged. Will you have it in the classroom, a multipurpose room, or outdoors?
- Decide who will be invited to the event. You may want to invite other classes, parents, or the entire school community. Consider inviting a "tree expert" to the celebration to speak, answer questions and provide additional information about tree stewardship. Consider inviting local media.
- Set up the area with tables for students to display and discuss their final projects. Students who have composed plays, songs, poems or raps should be able to perform them at some point during the celebration. Make a schedule and post it so everyone knows when he/she will be performing.
- Make tree hats, especially if younger students are attending. Before the event, have students make trees out of green and brown construction paper (or draw and color a tree shape). Cut wide strips of construction paper to make bands. Attach the tree to the headband. During the celebration, measure each child's head and staple the ends together to fit.
- Use construction paper or white contact paper to make badges or stickers in the shape of a tree, leaf or acorn. Ask students to create an original slogan stating why trees are important. Wear these or give them away on celebration day.
- Decorate the area with banners and posters that celebrate trees.
- Select favorite books about trees or poems to be read during the celebration (see Resources). Make a display of books about trees and related topics for participants to browse.

Activity 3: Seed to seedling: Summarize and reflect

Learning Objectives:

Students will be able to:

- Synthesize and reflect upon their Seed to Seedling experiences.

Time: 45 minutes

Materials:

- Student journals
- Class tree chart
- Drawing, coloring materials

Procedure:

Students review and organize the journal materials from their experiences. Check that each of the questions on the class tree chart has been addressed and take a moment to reflect on all that the class has learned. Then, have students respond to the following questions in their journals.

Journal/Discussion Questions:

1. Draw an outline of a leaf from your favorite tree onto a sheet of white paper. Inside the outline, write words that describe the tree. Outside of the outline, write words that describe your feelings about the tree.
2. Has keeping this journal helped you to become a better scientist? Why or why not?
3. Have your observation skills improved? If yes, give an example. If no, why not?
4. What do you like best about your journal? What would you do differently?
5. Complete this sentence: The three best things about trees are…
6. What was your favorite part of Seed to Seedling?
7. What will you do to continue to be a Tree Steward in the future?

Appendix 1: Resources

Trade Books for students

Learning about Trees and Oaks

The Oak Tree by Laura Jane Coats

The Oak Tree by Gordon Morrison

Grandmother Oak by Rosi Dagit

In a Nutshell by Joeseph Anthony

A Log's Life by E. Wendy Pfeffer

The Gift of the Tree by Alvin R. Tresselt

Are Trees Alive? by Debbie S. Miller

Outside and Inside Trees by Sandra Markle

The Life Cycle of a Tree by Bobbie Kalman

Usborne First Nature: Trees by Ruth Thomson

Eyewitness: Tree (Eyewitness Books)

Tree Stewardship

The Lorax by Dr. Seuss
Maya and the Town that Loved a Tree by Kiki and Katherine Shaw
Johnny Appleseed

Trees and Ecosystems

The Great Kapok Tree by Lynne Cherry
In the Heart of the Village (The World of the Indian Banyan Tree) by Barbara Bash
Ancient Ones (The World of the Old-Growth Douglas Fir) by Barbara Bash
Tree of Life (The World of the African Baobab) by Barbara Bash
Desert Giant (The World of the Saguaro Cactus) by Barbara Bash
The Tree in the Ancient Forest by Carol Reed-Jones

Tree Products

The Giving Tree by Shel Silverstein

Reference and additional reading for adults

Oak: The Frame of Civilization by William Bryant Logan
Oaks of California by Bruce Pavlik, Pamela Muick and Sharon Johnson
The Natural History of the Oak Tree by Richard Lewington and David Streeter
The Man Who Planted Trees by Jean Giono
The Life of an Oak by Glenn Keator

Materials

Acorn Naturalists
Outdoor education resources, field guides, books about oaks

Music

Banana Slug String Band
Wide variety of environmental education songs-CDs and songbooks

Online sites for students

Sacramento Tree Foundation
Online guide (with photos) to trees in the Sacramento region

Arbor Day Foundation
Games, puzzles, activities, online tree identification guide

Treetures
Activities, songs, coloring pages

National Wildlife Federation

Online curriculum resources

OBIS (Outdoor Biology Instructional Strategies)
Free outdoor education activities from the Lawrence Hall of Science

California Oak Foundation
Oak tree curriculum for 4-8 grade students by author of the original Seed to Seedling.

Project Learning Tree
PreK-8 Environmental Education Activity Guide for all attending a free/low-cost professional development.

Project WILD
K-12 Curriculum and Activity Guide available to those attending low-cost workshop

California Institute for Biodiversity
Standards-aligned interactive CD-ROM curriculum about California habitats

Field Trips

UC Davis Arboretum
Standards-aligned environmental education school programs for grades 2-4.

California Department of Parks and Recreation
Find state parks in your region.

Sacramento Department of Youth, Parks, and Community Enrichment
Find parks, and the amenities they provide, in the city of Sacramento.

Check your local college campus. Many state university and community college campuses have developed arboreta and nature areas with a wide variety of trees.

Appendix 2: Additional Information About Growing Oak Trees Collecting and Storing Acorns

Acorns mature and drop during late summer and early fall, from September to December. Watch for wildlife gathering acorns as a clue to seed maturity.

Where to gather acorns

Oak trees use the wind to spread their pollen. Because of this, trees can only pollinate other trees within about a 60-meter area. The best place to collect acorns is an area with a big group of oak trees of the same species. Individual heritage oaks, such as those you see in parking lots and new developments, often don't produce acorns due to a lack of pollination and other factors.

Select a park, national or state forest or other public area with lots of oaks. Check with park managers about regulations or restrictions that may prohibit collecting acorns. If you collect on private property, be sure to obtain the owner's permission before entering to collect seeds. California has explicit laws about gathering plant materials and it is important to remember that these regulations are designed to protect both plants and wildlife species.

Try to collect acorns from trees growing close to where you intend to plant the new trees. This will ensure that the oak stand will have new members that are genetically related to each other and are adapted to the environmental conditions of that site. Gathering acorns from an area with both native and not native oaks is not recommended because your acorns may produce hybrid trees. There is no way to tell if your acorns are hybrids by looking at them. Hybrids can have unexpected and negative impacts on wildlife and native tree populations.

Once you have identified a location for gathering acorns, plan a Tree Steward fieldwork trip to collect enough seeds to carry out this project. Providing students with a first-hand experience to view oaks, gather and test acorns and conduct other investigations will help build their knowledge, understanding and appreciation of oaks.

Gathering acorns

Pick the acorns directly from the trees or gather them from beneath the tree's canopy. Place a tarp below the tree's canopy to catch acorns as they fall. Use a long, slender stick or branch to "beat" ripe acorns from high above. Alternately, you may throw a rope over a branch and pull on it carefully to shake the branch. These are easy methods for gathering acorns and will not harm either the tree or the acorns.

Choose firm, plump acorns without cracks or holes. Healthy acorns will look shiny, not dried out and won't rattle if you shake them. Ripe acorns will fall easily out of their caps.

Take only a small portion of what you find. Leave enough for the wildlife to use. In many cases, jays, woodpeckers, and squirrels are also busy gathering acorns. Some of these seeds become new oaks, too.

Assessing acorn viability

Not all acorns will be healthy. Some may not be completely formed or may have insect damage. Visually inspect the acorns for holes. Pinholes may indicate insect activity inside. These acorns may still grow, but may not be as healthy or have as much stored energy to help them sprout. Squeeze the acorns to make sure they are solid and shake them to ensure they don't rattle. Squishy and rattling acorns may be dissected to explore what is wrong with them.

Acorn "sink & float"

The acorn "sink & float" test can be an easy way to sort a large quantity of acorns quickly. Be cautious about using this test prior to storage as it may stimulate early germination and increase mold problems. Hand sorting is preferred for acorns that will be stored in the refrigerator for several months.

Place acorns in a large container and cover them with water. Immediately remove any acorns that float. Save the "floater" acorns for further investigation.

Allow the seeds to soak for at least 12 hours. Remove seeds that have floated to the top of the container.

Drain off the water and plant the "sinker" acorns in containers or directly outdoors.

Using the "floater" acorns, ask students to propose hypotheses about what may have caused these seeds to float. Allow students to dissect the seeds to investigate their contents. Ask them to record their observations about the squishy, rattling and "floater" acorns in their journals.

Storing acorns

After collecting and assessing the viability of the acorns, either plant them in growing containers or in their natural habitat. You may delay planting and keep the seeds in cold storage for several months. Acorns may be stored for up to four months as long as there is stable moisture and cool temperatures. A Ziploc plastic bag makes a great storage container. Store only healthy acorns.

Follow these steps:

1. Separate different species into separate storage bags.
2. Label each bag with the date, specific collection location, and type of oak.

3. Fill the bag no more than halfway with acorns and add 2-3 cups of vermiculite. Potting soil may be used if vermiculite is not available, but should have 2-5 tablespoons of water added prior to storage.
4. Check your acorns every few weeks. If it is wet inside the bags and mold begins to form, wash your acorns with water and repackage in fresh, dry vermiculite.

Planting acorns outdoors

Plant your acorns from late October to the end of February.

When students participate in the decision-making about the acorn planting, they will want to take a greater role in the care and stewardship of the trees, so the class should participate in the site selection process. Choose a sunny spot where the soil is loose and puddles don't form when it rains. Do not plant your seedlings close to buildings, the sidewalk, driveways or other immovable objects. Also be sure your trees won't touch any power lines when they grow up. Think back to the size of the oak trees where you gathered your acorns to get an idea of their eventual size.

Take the students to visit the proposed tree-planting site before the event. Review the benefits trees provide, especially to urban environments. Encourage students to imagine how the new trees will change the site. You may want to choose names for the tree (or the grove of trees) planted.

Help your tree stewards to make pledges to take part in caring for the new trees. Write tree care pledges on paper cut in the shape of a tree, leaf or acorn. These can be buried when the acorn is planted or worn by the tree planters.

Materials:

- Shovels
- Water
- Acorns (2 per student)
- Milk carton (1/2 gallon) or wire screen and string (one per student)
- Wood chips or straw mulch
- Scissors or garden clippers
- Oak seedling adoption certificate for each student

Procedure:

For each student:

1. Dig a hole about 10 inches deep and 6 inches wide, setting aside the removed soil to reuse. Use either a milk carton, with the top and bottom cut off, or the wire screen to make a little house for your acorns. This will help protect them from hungry animals. The wire or carton should touch the bottom of your hole and will be below ground level when you are finished planting.
2. Fill the hole almost to the top with the soil you set aside. Make sure to keep big rocks and grass out of your acorn house. Gently place two acorns on top of the soft dirt floor of your acorn house. If they already have roots, be careful not to break them.

3. Cover the acorns with ¾ inch of soil. Carefully water the inside of your house two times. Make sure the acorns stay buried after watering. If you used wire screen for your enclosure, tie the top closed with string.
4. If your acorns are planted in a busy area or a place where lawnmowers are used, make them more noticeable by marking them with stakes 3 to 5 feet tall or use bright marking tape.
5. Distribute the oak seedling adoption certificates. Read and discuss the responsibility involved in caring for the seedlings. You may want to read the pledge together and then have each student sign his/her certificate.
6. Check your acorns often. Within 1 to 6 months, you will be able to see your seedlings pushing up through the soil. Acorns spend a lot of time growing roots before they send up a shoot, so be patient. If you have more than one tree growing in each house, wait for them to get 6 inches tall, and then carefully remove the smaller of the two seedlings. Make sure to clip it just below the soil level so it won't sprout again.
7. Keep competing vegetation, especially grasses, away from young seedlings. These and other plants rob soil moisture and nutrients. Pull any weeds within 2-4 feet of your acorn house and cover the area with mulch. Make sure the mulch does not actually touch your seedling. If you used a wire screen, keep the enclosure tied until the seedling reaches the top. Once it reaches the top, leave it untied.
8. Water young trees once a month during the dry season. Begin watering one month after the last rain in spring and finish at the first good rain in the fall. Give your seedling 5 gallons of water at each watering. After 3 years, your seedling will not need to be watered anymore.

Planting your seedlings

October through February is the best time to plant your seedlings.

When students participate in the decision-making about the tree planting, they will want to take a greater role in the care and stewardship of the trees, so the class should participate in the site selection process. Choose a sunny spot where the soil is loose and puddles don't form when it rains. Do not plant your seedlings close to buildings, the sidewalk, driveways or other immovable objects. Also be sure your trees won't touch any power lines when they grow up. Think back to the size of the oak trees where you gathered your acorns to get an idea of their eventual size.

Take students to visit the proposed tree-planting site before the event. Review the environmental values trees provide, especially to urban environments. Encourage students to imagine how the new trees will change the site. You may want to choose names for the tree (or the grove of trees) planted

Help your tree stewards to make pledges to take part in caring for the new trees. Write tree care pledges on paper cut in the shape of a tree, leaf or acorn. These can be tied to the new tree, buried when the tree is planted or worn by the tree planters.

Materials:

- Shovels
- Water
- Seedlings
- Wood chips or straw mulch
- Materials to mark the planting sites-stakes, ribbons

Procedure:

For each seedling:

1. Dig a hole four times as wide as the container and just as deep. Do not plant trees in holes where the tree will be lower than the soil level. Trees planted lower collect too much moisture around the trunk, which encourages the crown to rot.
2. Roughen the sides of the hole to allow for root growth.
3. Carefully remove the seedling tree from the growing container. Take care not to harm the delicate root system. If trees have been kept in containers for more than one year, the roots need to be carefully loosened before being placed into the hole. Carefully straighten or cut a circling taproot. If the taproot has been severely damaged, the tree may take several months to recover from the shock of planting and side roots will take on the function of supplying the moisture to the young tree.

4. Position the tree in the hole and refill the hole with the original soil. Carefully tamp the soil down to prevent large air pockets from drying out the roots.
5. Cover the soil layer around the tree's base with 4-6 inches of mulch and water the tree thoroughly so that the soil will settle around the roots. Make sure that the mulch does not actually touch your seedling. Do not plant trees in very dry or soggy soil. Roots grow well in moist soil where adequate oxygen is present.
6. Mark the tree once it has been planted using three stakes placed around the outside of the rootball. Have students make stakes or protective devices for the new tree. Add ribbons or streamers to call attention to the tree. Most trees will establish the correct growth pattern without additional help.
7. Keep competing vegetation, especially grasses, away from young seedlings. These and other plants rob soil moisture and nutrients. Pull any weeds within 2-4 feet of your planting hole and cover the area with mulch. Make sure the mulch does not actually touch your seedling.
8. Water young trees once a month during the dry season. Begin watering one month after the last rain in spring and finish at the first good rain in the fall. Give your seedling 5 gallons of water at each watering. After 3 years, your seedling will not need to be watered anymore.

Appendix 3: Reproducible worksheets and materials

1. Tree deck
2. Tree parts diagrams
3. Tree parts and what they do
4. Peek and seek activity
5. Treecycle
6. Oak seedling adoption certificate
7. Seedling growth sheet
8. Heritage oaks worksheet
9. Around-the-house worksheet
10. Tree inventory checklist
11. Home tree assessment
12. Final project

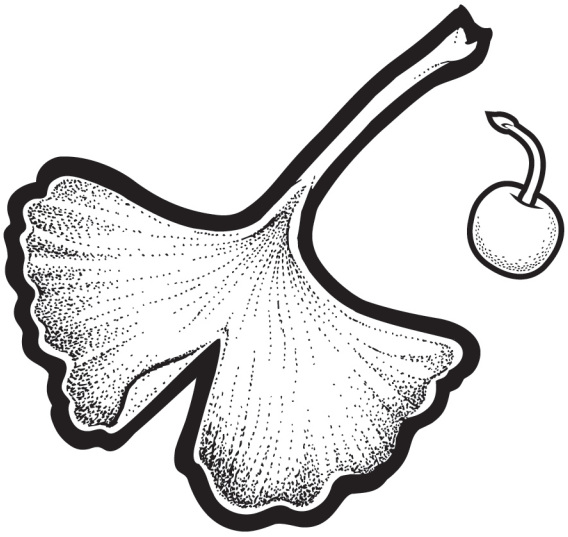
Pine

Pinus species

sactree.org

Maidenhair Tree

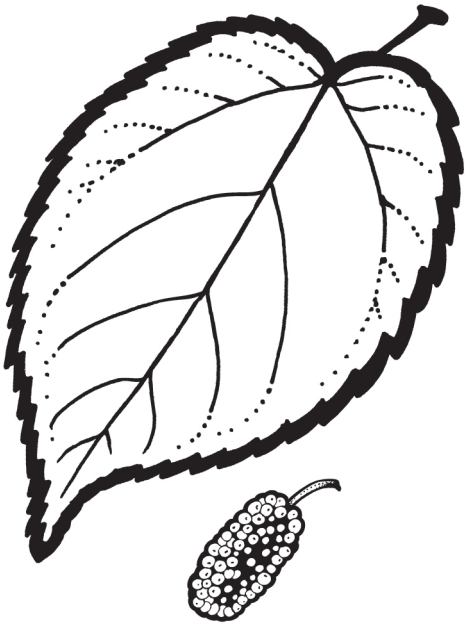
Ginkgo biloba



sactree.org

Mulberry

Morus alba



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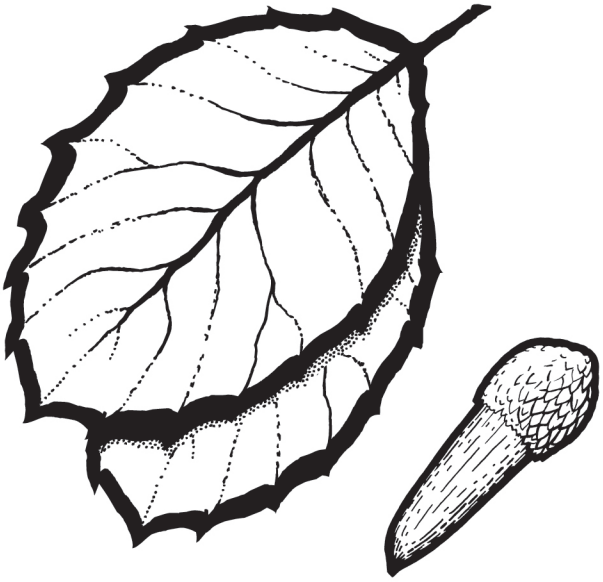
Interior Live Oak

Quercus wislizeni



sactree.org

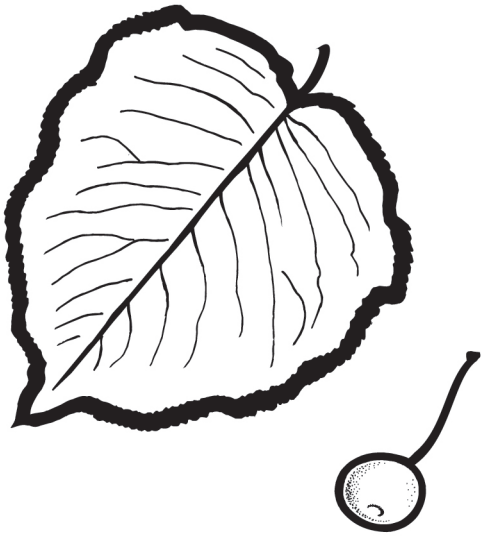
Blue Oak

Quercus douglasii

sactree.org

Flowering Pear

Pyrus calleryana



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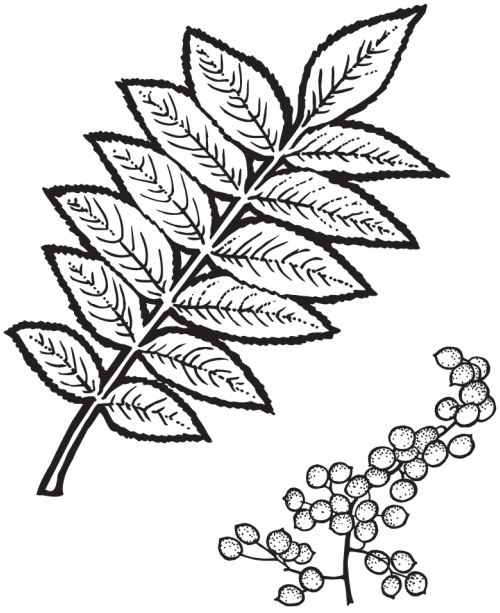
Chinese Pistache

Pistacia chinensis



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Sawleaf Zelkova

Zelkova serrata

sactree.org

Eucalyptus

Eucalyptus species

sactree.org

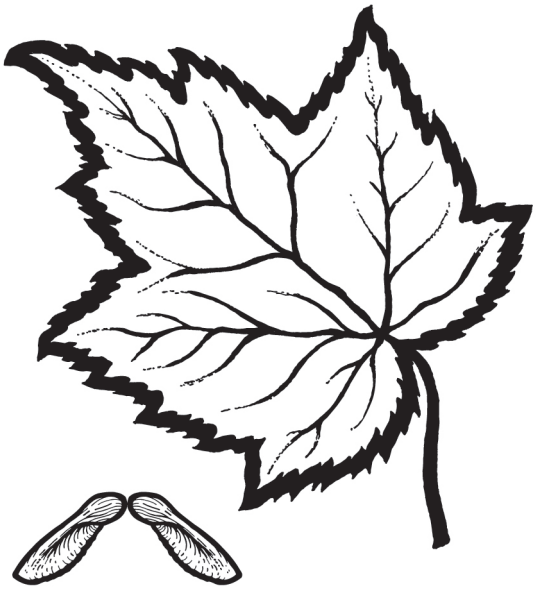
Valley Oak

Quercus lobata

sactree.org

Maple

Acer species



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Coast Redwood

Sequoia sempervirens

sactree.org

Crape Myrtle

Lagerstroemia hybrid

sactree.org

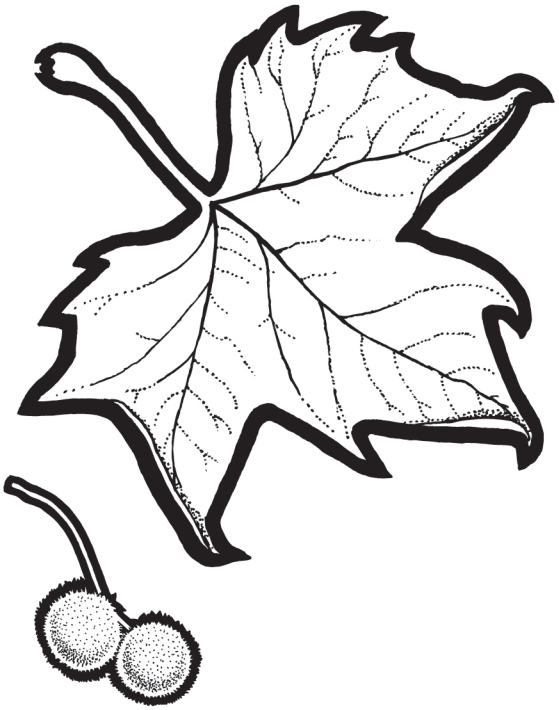
Willow

Salix species

sactree.org

California Sycamore

Platanus racemosa



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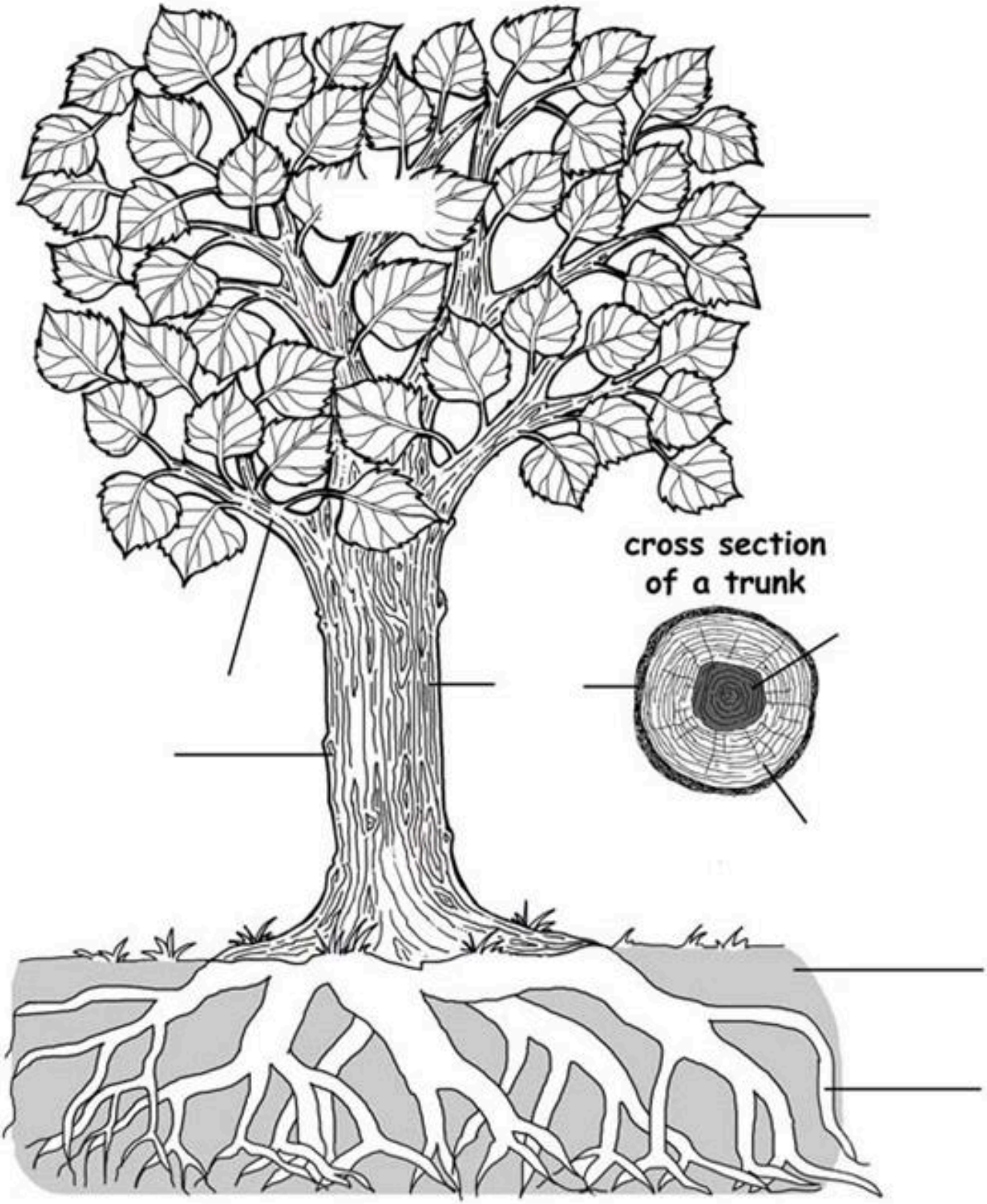
Hackberry

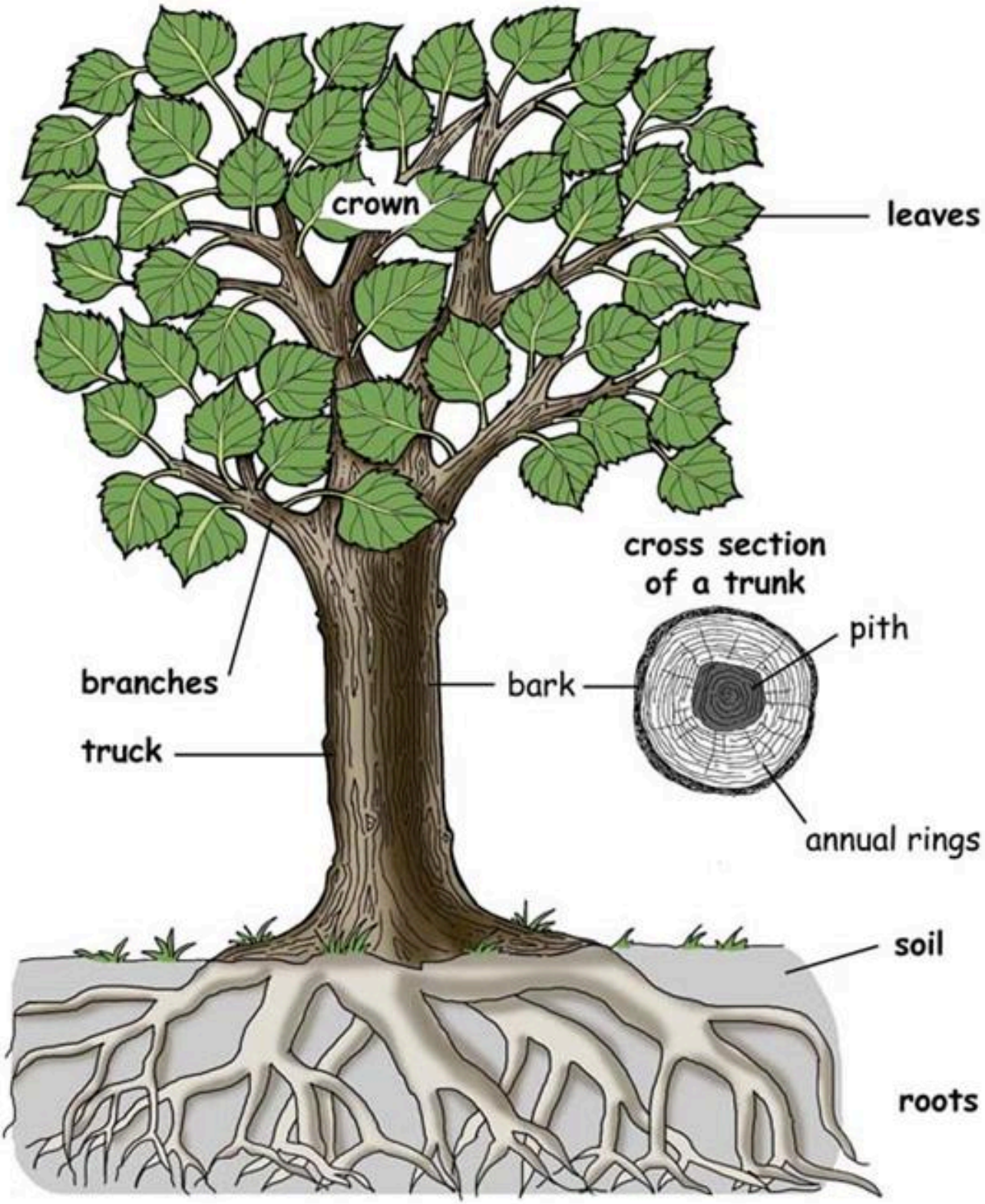
Celtis species

sactree.org

Name the Parts of the Tree



Parts of the Tree



Tree parts and what they do

Crown—part of the tree that consists of the leaves and the branches at the top of a tree.

Leaves—food factories of the tree. The leaves contain chlorophyll which gives leaves their green color and is responsible for photosynthesis. During photosynthesis, leaves use energy from the sun to convert carbon dioxide from the atmosphere and water from the soil into sugar and oxygen. The sugar (which is the tree's food) is either used or stored in the branches, in the trunk, or in the roots. The oxygen is released into the atmosphere.

Trunk (Stem) —supports the leaves and the branches of the tree and also contains the xylem, the cambium, the phloem, and the heartwood.

Heartwood—inner core of dead wood that supports the tree. As a tree grows, older xylem cells in the center of the tree become inactive and die, forming the heartwood.

Sapwood (Xylem)—the youngest layer of wood that transports water and minerals up the tree to the branches and the leaves.

Cambium—the growing layer that is only one to two cells thick. It makes new cells during the growing season that eventually become part of the phloem, part of the xylem, or more cambium. The cambium is what makes the trunk, branches, and roots grow larger in diameter.

Inner Bark (Phloem)—carries nutrients and sugar from leaves down the tree to its branches, trunk, and roots.

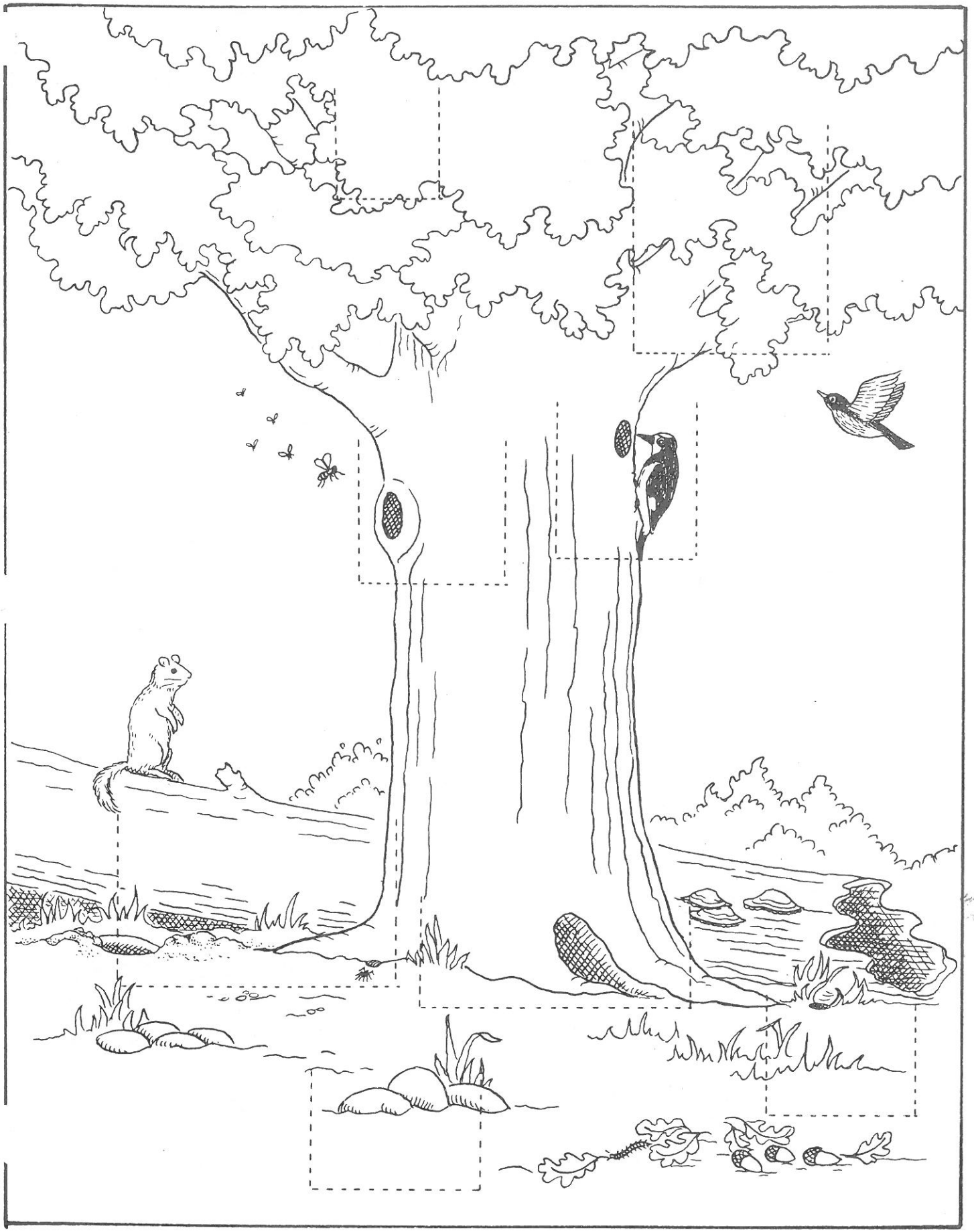
Outer Bark—protects the tree from injury, disease, insects, and weather.

Taproot—long main root that anchors the tree and absorbs water and nutrients from deep in the soil. It helps to support the tree. (Not all types of trees have a taproot.)

Lateral Roots—underground roots that get smaller and smaller. They take in water and nutrients and help to support the tree. (All trees have lateral roots.)

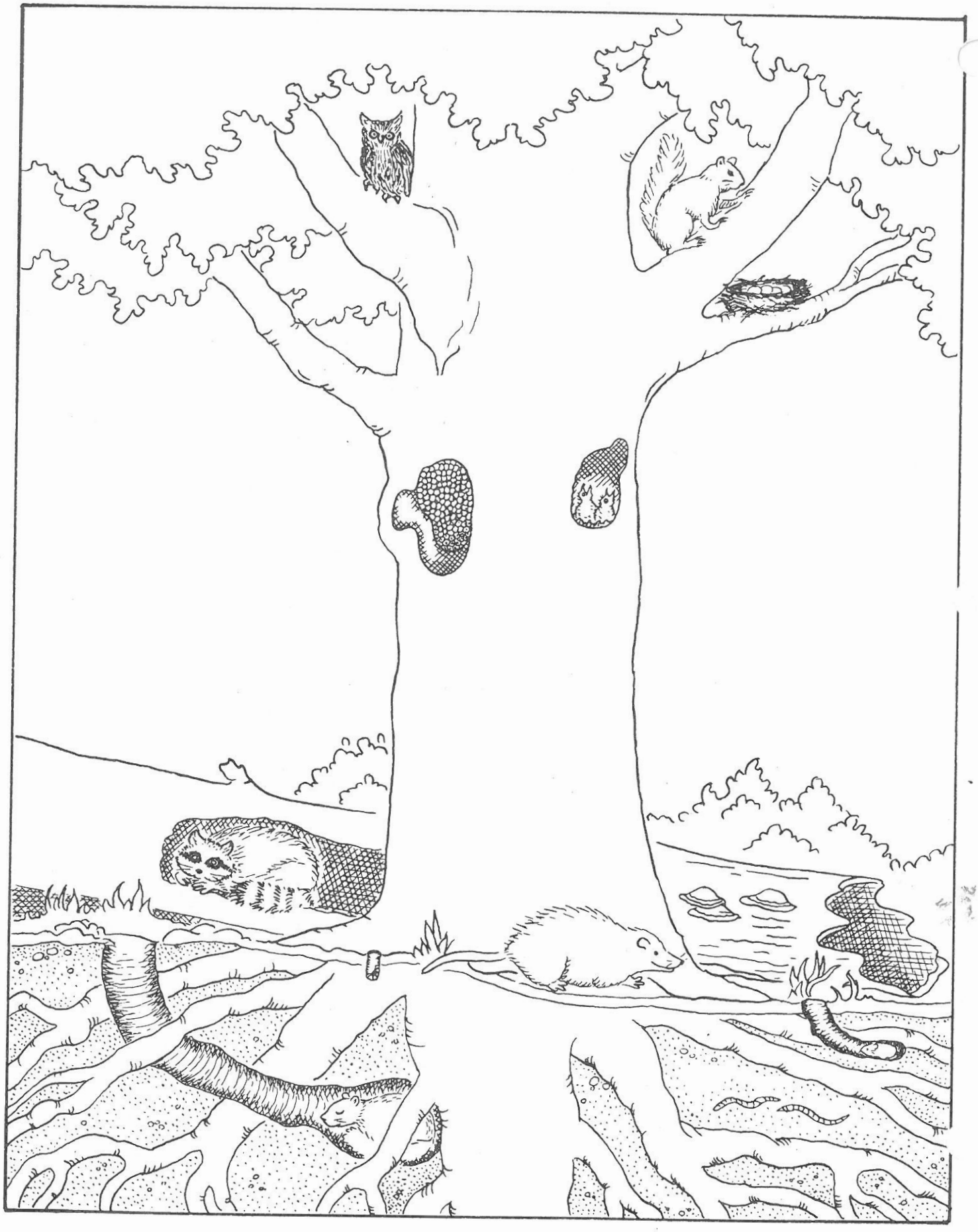
Annual Tree Rings—records the tree's age. Every year a tree grows a little more and a new tree ring is made.

SHEET A · cut on dotted lines · put sheet A on sheet B · PEEK and SEEK



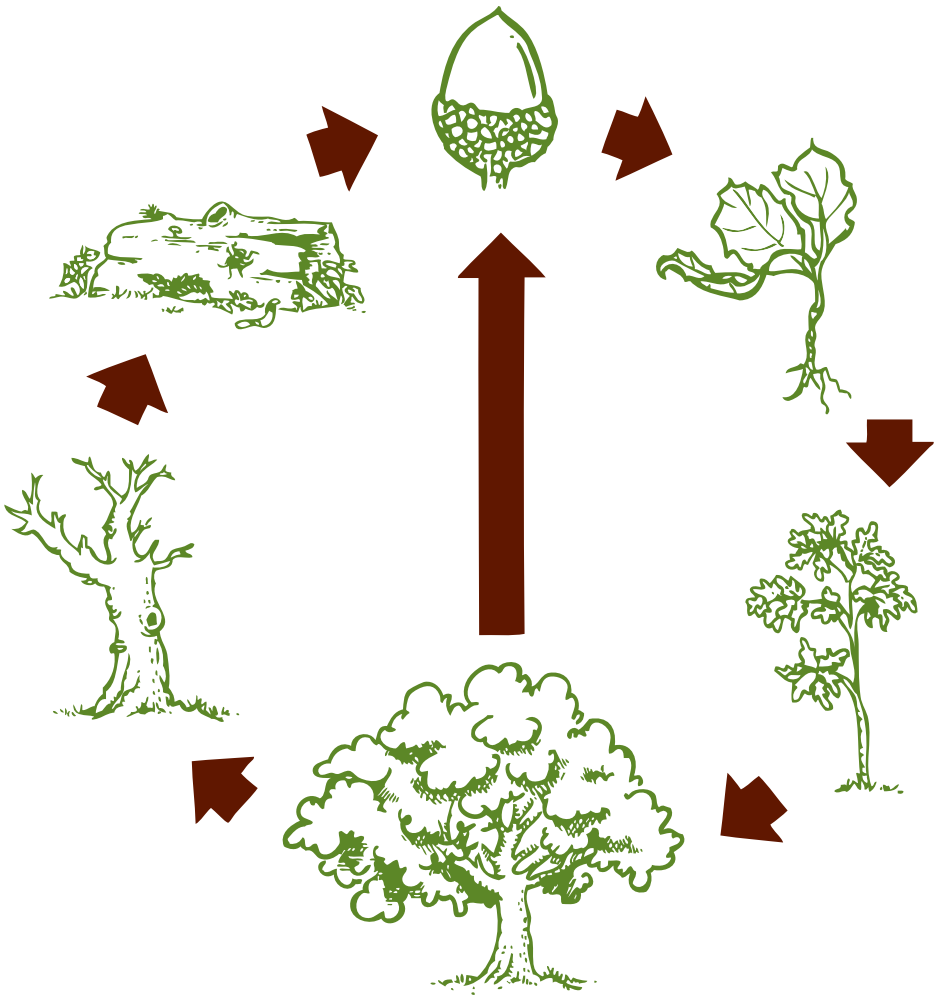
SHEET B

PEEK and SEEK



TreeCycle Worksheet

Name: _____



OFFICIAL

Oak Seedling Adoption Certificate

I, _____ promise to care for my native oak seedling.

I will plant it with the best of care and check on it regularly.

I will help it get water and sunshine so that it starts its life with a burst of growth.

I will track its growth so that I can see that it is doing well.

I will ask questions if I am concerned about my oak seedling.

Furthermore,

I will learn about trees in my community and help them to be as healthy as possible.

I will always remember how special my oak seedling is for my community.

_____

Signature

_____

Signature of a witness

_____

Date

SACRAMENTO TREE FOUNDATION

My Oak Seedling's growth

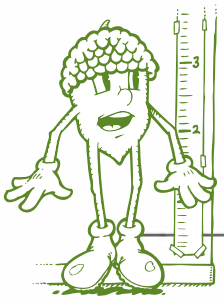
Seedling Height in inches

Tree

7
6
5
4
3
2
1

1 2 3 4 5 6 7 8 9 10 11

Time (weeks)



Heritage Oaks worksheet

Place Name	Type of Place (city, town, park, etc.)	Explanation for Name (use back if needed)

Use a separate sheet of paper to draw a map showing the locations of the places you found.

Around the House

Many products used in and around our homes began as a tree. Some are obvious like a wooden table, paper (did you know it used to be made from cotton and linen rags?), or construction materials used to build the house itself. Others, such as spices like cinnamon and medicines like aspirin, are not so obvious.

Other products that were once made from wood may now be made from other materials. These items include water pipes, wheel chairs, piano keys, and spruce gum – it was used to make chewing gum! Can you imagine chewing a spruce tree?

This activity will give you a chance to be a wood detective.

Search in and around your house for items made from wood. You will have to think beyond the obvious and do some research to get as many items as possible. Remember, not all products started out as the wood from a tree, some use the sap (maple syrup and rubber), bark (medicine and cosmetics), leaves (wax), and other parts of the tree (paint). Even some of the kitchen dishes began as wood flour and melamine resins!

Make a list of all the wood and wood-related items you find. Classify them under the part of the tree where they originated. Get your family involved in the search. You will be surprised.

Here are some hints to help get you started.

- ❍ Cough medicine
- ❍ Nuts
- ❍ Fruit
- ❍ Textiles
- ❍ Coasters
- ❍ Adhesives
- ❍ Musical instruments
- ❍ Newspapers and magazines
- ❍ Toys
- ❍ Suntan lotion
- ❍ Baskets
- ❍ Tools
- ❍ Clothing
- ❍ Vanilla flavoring (artificial)
- ❍ Vitamins
- ❍ Polishes
- ❍ Sporting goods
- ❍ Birdhouses
- ❍ Post-it notes
- ❍ Disposable diapers

Around the House

Cellulose, the material that makes up the walls of tree cells, is used as a thickener in snack foods – like Twinkies, milk shakes, and ice cream.

What I Found	Where I Found It	How It Is Used

Tree inventory checklist

Use tally marks to record the number and types of trees in your study area. Use your tree deck and other field guides to identify the trees.

_____ Crape myrtle

_____ Blue oak

_____ Hackberry

_____ Gingko

_____ Mulberry

_____ Chinese pistache

_____ Plane

_____ Valley oak

_____ Zelkova

_____ Pine

_____ Willow

_____ Eucalyptus

_____ Coast redwood

_____ Interior live oak

_____ Flowering pear

_____ Maple

Home tree assessment

1. On the back of this sheet, draw a simple map of your home study area. Include your house, sidewalks and streets, and the trees in front, in back, and on the sides ofyour house.

2. How many trees are in your home study area? _____

3. Use your tree deck to identify the trees in your home study area. Write the names of trees you are able to identify here: _____

4. Are trees providing shade for your house? Circle one:

   Yes No

5. Think about where you play in your home study area. Are there trees providingshade and protection from ultraviolet rays in your play area? Circle one:

   Yes No

6. Do you see any wildlife, or evidence of wildlife in the trees? Look for nests. Do you hear any wildlife? Circle one:

   No wildlife Some wildlife Lots of wildlife

7. Are any of the trees providing food for you, your family, or wildlife that lives in the area? Circle one:

   No food Some food Lots of food

8. Think about your responses to numbers 1-7. Would your home study area beimproved with the addition of more trees?

   Yes No

9. What types of trees would you like to add? Explain your thinking. _____

10. Talk to an adult in your family about this Home Tree Assessment. Ask the adult to sign below.

Your Name Signature of Adult

Bonus:
Draw a picture of a tree in your home study area.

Now draw a picture of yourself sitting, playing or reading under the tree. Are you smiling in the picture? Why or why not?

Final project

Name:

It's time for your final project!
Here's a chance for you to show what you've learned about trees and help to educate others about the importance of trees, tree stewardship and caring for our urban forest. Projects will be shared in class and during our tree festival.

What can you do? Here are some ideas:
Make a poster, brochure or pamphlet about trees, trees stewardship or our urban forest. Write a story, a book, a newspaper article, a comic strip, a poem, a play, a rap or a song about trees. Make a puppet, a sculpture, a painting, a mobile, a diorama, or a model about an oak tree or our urban forest. Inventory or map the trees in your neighborhood or find and research a heritage tree and write a report about it. Cook or bake something using tree products and bring it in to share along with the recipe.

It's up to you, so do something really great.
The plan is due:

The project is due:

I plan to:

I will need these materials:

I will need help with: