

BIGLEAF MAPLE

Bigleaf maple forms a lush canopy of shade and shelter. Mosses and ferns cover older trunks and branches, making it appear soft, green, and bountiful. Insects, birds, squirrels, and other creatures build homes, forage food, and find refuge among the branches of this hospitable tree.



Other Names: *Acer macrophyllum*, Oregon maple, čuṡac (Northern Lushootseed), scúṡčč (Klallam)

Identifying Bigleaf Maple: The bark of a young bigleaf maple is green and smooth, while mature bark is furrowed and grayish-brown in color. Bigleaf maple trees have a multi-branching trunk and grow very tall (up to 150 feet) with hefty branches that are often covered in mosses, lichens, and licorice ferns, giving them a soft verdant look. Sometimes the trees are so heavily covered that the bark is not visible anywhere on the trunk or on its main branches.

Massive leaves grow opposite on branches, have five tips like a hand, and can grow over a foot in diameter. Flowers first bloom in March and continue through April before leaves emerge. They are greenish-yellow and hang in elongated clusters. Each flower is bowl-shaped, cupping a pistil surrounded by many anthers that have downy fur at their base. Bees and other insects harvest the sweet nectar. Fruits emerge from the flowers looking like bunny ears popping out of a hole or a downy nest and are shaped like wings in a V-pattern. Once fully developed, the seeds break apart and travel like helicopters in the wind.

In autumn, bigleaf maple leaves fall in great quantities, creating plenty of hiding places for insects, and eventually break down into compost that contributes to healthy soil. Each spring, thousands of seeds germinate but only a few survive through the summer. Bigleaf maple can grow nine feet in a single year and may live as long as 300 years. If cut or damaged by fire, the tree will re-sprout from the root crown.

Where it Grows: Bigleaf maple thrives in wet forests and open fields all the way from British Columbia to southern California. It can grow at sea level up to elevations of 5,500 feet.

Season: Harvest flowers in spring when they are budding on the tip and are fully open at the base of the flower cluster. Harvest branch sprouts when they are growing fast in spring, but are still tender enough to easily pinch off.



How to Harvest: Flowers can be gathered from low branches or from the forest floor after a windstorm. When in full bloom, maple flowers have a subtle yet pleasant fragrance, and a sweet taste from their prolific nectar. They are easily stripped off the flower stem and will last for a couple of days if stored in the refrigerator in a glass

or plastic container. New branch growth is tender in early-to-mid spring and can be peeled and eaten as a vegetable. Look for shoots that can be pruned while still maintaining the health of the tree and cut with clean clippers or scissors.

Eating Bigleaf Maple: Try eating bigleaf maple flowers straight, using them as a garnish on salads or soups, or add them to pancakes, quiche, and other baked goods. They are best when they have just opened, but become dry and slightly bitter when they become fuzzy and mature. The tasty, young, sprouting branch tips can



be peeled and eaten straight or added to salads. They become increasingly bitter and tough as they get larger. You can also eat the green seeds, but they are difficult to remove from their seed coat. The seed coat, which is hairy, is irritating to the skin so wear gloves when processing. Bigleaf maple leaves are traditionally used for pit roasting and for wrapping food. In early spring, bigleaf maple trees can be tapped to gather sap which can then be heated and reduced into maple syrup.

Medicine: Bigleaf maple is a highly valued tree among Northwest Coastal Native communities. The Klallam People infuse the bark for sore throats and tuberculosis. The raw sap is used as a tonic.

Traditional Technologies: Bigleaf maple wood burns clean and does not spark making it a preferred firewood in the summertime to prevent forest fires. It is also good for smoking salmon. The inner bark of the branches can be harvested in the springtime and used to make strong cordage for rope and basketry materials. Bigleaf maple is called the “paddle tree” by many Northwest Native American tribes and is traditionally used for canoe paddles, basketry, house construction, cradleboards, bowls, spoons, and other implements. The large leaves are traditionally used by many tribes in food preparation including covering food, in baking pits, and to lay fish on while cleaning it.

Ecological Relationships: Bigleaf maple is a hospitable tree that willingly hosts many different species. It is important to the larger forest community for many reasons. Its bark is full of water, sugary sap, and nutritious calcium, supporting plants that grow on trees called epiphytes. Bigleaf maple has the largest epiphyte load of any tree in the Pacific Northwest (average of 78 lbs per tree). Overtime, these epiphytes form a layer of soil on top of the branches, which the tree then taps into through branch-top roots absorbing needed water and minerals. This is a great example of mutualism: a symbiotic relationship that is beneficial to all species involved. Some of the specific species that grow on bigleaf maple include lichens (*Cladonia*, *Nephroma*, and *Crocynia* spp.), club moss, other mosses (*Hylocomium splendens*, *Leucolepis menziesii*, *Isoetecium stoloniferum*, and *Neckera menziesii*), and licorice fern.



In spring, bigleaf maple's budding flowers feed pollinators such as bees and butterflies. In the fall, bigleaf maple seeds feed birds and small animals including chipmunks, salamanders, and other amphibians. When bigleaf maple grows near salmon spawning streams, the shade provides much needed shelter for salmon and their eggs. Larger animals, like elk and deer, also forage on bigleaf maple. Even dead bigleaf maple is hospitable. Fallen trunks form nurse logs and branches rot quickly and send nutrients rapidly back into the forest or streams.

Additional Resources

Pierce Conservation District. <https://pierced.org/464/Big-Leaf-Maple>

Fire Effects System. <https://www.fs.fed.us/database/feis/plants/tree/acemac/all.html>

Oregon Wood Innovation Center. <http://owic.oregonstate.edu/bigleaf-maple-acer-macrophyllum>

<http://myhealthygreenfamily.com/blog/wordpress/maple-sugaring-tapping-bigleaf-maples-on-the-west-coast/>

Abe Lloyd's blog on tapping big leaf maple. <http://arcadianabe.blogspot.com/2013/02/bigleaf-maple-syrup.html>.

Bigleaf maple decline report from Department of natural Resources:

https://dntreelink.wordpress.com/2021/10/08/bigleaf-maple-decline-tied-to-hotter-drier-summers-in-washington/?fbclid=IwAR1_YCobWy63ufcJyQZ6riPdanH-p5kRXxh4kJcBzQiZjNj_I9szqWNU-eA

Videos:

Big Leaf Maple Video with Sable Bruce: <https://vimeo.com/571847692>

Truth Trees: Bigleaf Maple Portrait: 4-minute video about bigleaf maple canopy filmed in Quinault forest, featuring forest canopy scientists including Nalini Nadkarni (2010)

<https://www.youtube.com/watch?v=uo5RA3uLSlc>

The Nerdy about Nature Tree Guide: Bigleaf Maple: 3-minute video with a nice introduction to bigleaf maple, epiphytes, and seed dispersal. (2020) <https://www.youtube.com/watch?v=oQpJCgylEyQ>

Children's Books:

Next Time You See a Maple Seed by Emily Morgan

From Seed to Maple Tree: Following the Life Cycle by Laura Purdie Salas

References

Anderson, K. *Tending the Wild*. (2005). University of California Press.

Arno, S. and Hammerly, R. (2007). *Northwest Trees*. The Mountaineers Books.

Gunther, E. (1973). *Ethnobotany of Western Washington*. University of Washington Press.

Hahn, J. (2007). *Pacific Feast*. Skipstone.

Lloyd, Abe. Wild Harvests Blog. <http://arcadianabe.blogspot.com/2013/02/bigleaf-maple-syrup.html>

Pojar, J. and MacKinnon, A. (1994). *Plants of the Pacific Northwest Coast*. Lone Pine.

Turner, N. and Hebda, R. (2012). *Saanich Ethnobotany*. Royal BC Museum Publishing.

Photos: Elise Krohn

BIGLEAF MAPLE HOTEL

Time: 50 minutes
Season: Any season
Age: Grades K-12
Setting: Indoor or Outdoor



Overview: In this lesson, students are introduced to bigleaf maple trees. They practice the art of noticing by using their senses to investigate species that live on or interact with the tree including lichens, mosses, birds, and insects. Students imagine the lifecycle of a bigleaf maple tree throughout the seasons in a guided activity, and then explore the social/emotional skill of willingness, including “trying on” new ways of thinking and being, through an art activity.

Student Wondering: *How is bigleaf maple like a forest hotel? What can it teach me about being more willing?*

Learning Objectives	
<p style="text-align: center;">Understandings <i>Student will understand that...</i></p> <ul style="list-style-type: none"> • bigleaf maples host many other species • mutualism is a symbiotic relationship where both species benefit • the social/emotional skill of ‘willingness’ can help us deal with new situations or challenging circumstances 	<p style="text-align: center;">Knowledge and Skills <i>Student will be able to...</i></p> <ul style="list-style-type: none"> • identify and describe life cycle of bigleaf maple • make a maple leaf rubbing • “try on” new ideas and situations

NGS Standards: Performance Expectations		
<ul style="list-style-type: none"> • MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy 		
Scientific and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<ul style="list-style-type: none"> • Constructing Explanations and Designing Solutions 	<ul style="list-style-type: none"> • LS2.A: Interdependent Relationships in Ecosystems • LS2.B: Cycle of Matter and Energy Transfer in Ecosystems 	<ul style="list-style-type: none"> • Energy and Matter

Vocabulary: epiphyte, mutualism, symbiotic relationship, willingness, willfulness

Background knowledge: Review the *Bigleaf Maple Overview* and adapt the information to your students' knowledge level.

Materials

- Notebooks (or loose paper and clipboards)
- Pens or crayons for drawing (peeled crayons for leaf rubbings)
- Hand lenses or magnifying glasses

Preparation: Locate a bigleaf maple tree with ample seating space beneath or, if inside, collect parts of bigleaf maple to show and consider sharing one of the videos listed in the resource section of the overview at the beginning of the lesson.

LESSON: BIGLEAF MAPLE HOTEL

INTRODUCTION

15 MINUTES

If you are doing this activity inside, begin by showing one of the videos listed in the overview. Have samples from bigleaf maple (flowers, seeds, leaves, stems, moss from the trunk) available for students to look at. You can also print or project a copy of the Bigleaf Maple Lifecycle Page (see end of document).

If you are doing this lesson outside, go over outdoor safety guidelines with students. At the beginning of your walk or time outside, encourage students to wake up all their senses so they can fully notice their surroundings. You can lead them through waking up each sense by teaching/guiding/practicing the following activities:

- Owl eyes: Owls have both binocular vision, meaning they can focus ahead on a specific object. They also have a wide field of side vision where they can perceive movement. Have students make binoculars with their hands, then invite them to see how wide their vision can be by spreading their arms and seeing how far their peripheral vision extends.
- Deer ears: Deer have very good hearing that is aided by their large ears. Invite students to cup their hands around their ears and notice how their hearing improves. They can also change the direction of their hands if they want to hear behind them.
- Salmon nose: Salmon are able to smell their way from hundreds of miles to their homes. Invite students to close their eyes and notice what they smell.
- Fox feet: Foxes walk very softly and quietly to sneak up on their prey. Their feet are so sensitive that they can feel vibrations in the ground. Have students walk heel-to-toe setting their foot down very carefully and quietly.
- Raccoon fingers: Raccoons have very sensitive fingers to feel texture, temperature, and moisture. Invite students to use their sense of touch to explore the tree.

Identifying Bigleaf Maple: If you are inside, project the bigleaf maple lifecycle page or pass out printed copies. If you are outside, gather around a bigleaf maple tree.

Ask: *How do we know that this tree is a bigleaf maple?* Give students a chance to respond. Supplement what students share from the overview including: Massive leaves have five tips like a hand and can grow over a foot in diameter. Flowers are golden and grow in drooping clusters. Stamens are fuzzy at the base. Seeds are attached in a V-pattern and have wings. Trees have a multi-branching trunk and grow very tall (up to 150 feet) with hefty branches that are often covered in mosses and licorice ferns, giving them a soft green look.

Ask: *How is bigleaf maple like a hotel? How does it contribute to the health of a forest community?* Give students a chance to respond. Supplement what students share from the overview including: bigleaf maple willingly hosts many different plants and animals year-round. Its bark is full of water, nutritious calcium, and sugary sap that feeds plants and animals. Pollinators drink the flower nectar and gather pollen. Insects live in the plants that grow on the trunk and branches, and birds and other creatures eat these insects. Birds and squirrels can be seen nesting or eating in bigleaf maple trees. Squirrels use bigleaf maple branches as highways to travel through the forest canopy. In autumn, bigleaf maple leaves fall and blanket the forest floor, creating plenty of hiding places for insects and small animals. The leaves eventually decompose and add nutrients to the soil. Fallen bigleaf maple trees even offer a place for plants and fungi to grow, and eventually decompose to make soil.

Share: Plants that grow on trees are called **epiphytes**. Bigleaf maple has the largest epiphyte load of any tree in the Pacific Northwest. Overtime, these epiphytes form a layer of soil on top of the maple's branches, which the maple then taps into through branch-top roots, absorbing needed water and minerals. This is a great example of **mutualism**: a **symbiotic relationship** in which both plants benefit. Some of the species that grow on bigleaf maple bark include lichens, club moss, other mosses and licorice fern. (Students can try to identify specific species in guide books).

Investigate Bigleaf Maple: Have students look at the tree up close. They can use hand lenses or magnifying glasses. Ask them to document the species of plants and animals they see through writing and/or drawing. You may ask them to draw the tree, a specific part of the tree, or a species living on the tree.

MINDFULNESS AND ART ACTIVITY

20 MINUTES

Lead a bigleaf maple mindfulness activity. Invite students to find a comfortable position and close their eyes. Read the following visualization:

Younger Students: Read this meditation from Rebeca Porter, 3rd grade teacher

I close my eyes and wonder...What would it be like to be a giant, towering bigleaf maple tree with thick, twisted branches reaching high into the sky? I bask in my strength and beauty, admiring my massive leaves and how they seem to fill the sky with an emerald glow.

I take a deep, slow breath, noticing how my being fills with joy. As I inhale, I focus on my beauty and my strength until the joy is overflowing and cannot be contained. As I exhale, I give this joy to the creatures of the forest. I am willing to share my gifts with mosses, ferns, insects, birds, and squirrels.

I continue to breath in strength and beauty, then share it as I exhale. As I open myself to this joy and then offer it to the forest community, I feel more and more amazing. Somehow, even as I give my gifts away, more room for freedom and happiness blossoms inside me.

Older Students: Read this bigleaf maple meditation from Sable Bruce, Mental Health Counselor
Imagine an old bigleaf maple tree that is firmly planted in the ground and reaching high into the forest canopy. All along the trunk and branches, you will see a variety of mosses, lichens, and ferns. If you get up close, you might find insects living in the plants growing on the tree. Golden spring blossoms feed bees and other insects. Squirrels sprint up the trunk for safety and hop through the branches. Birds sing and chirp down at you.

Bigleaf maple is a reminder of willingness. Notice how it invites a community to grow on its trunk and branches—showing us how we can be with others in an open and generous way. We can also “try on” new experiences and perspectives with an open mind.

Bigleaf maple also teaches us to be willing to let go—as it releases little helicoptering seeds and then leaves in autumn, which blanket the forest floor. In winter, the leaves decompose and release nutrients into the soil. This process feeds the next growth of leaves and buds in spring. In contrast to being willing, notice a time or situation when you feel willful. Are you denying, pushing away, or ignoring something that might be helpful to you? Can letting go of willfulness allow for growth, change, and new opportunities in your life?

Share: Bigleaf maple shows us how to practice willingness including “trying on” new experiences, perspectives, or relationships. We can put aside our assumptions long enough to be open to new ways of thinking, being, and doing, and to deeply listen to others’ ideas, feelings, and worldviews. This helps us to be open-minded, move into some discomfort, and listen for understanding. After fully experiencing something new, we can feel free to keep those things that “fit” and to leave behind those things that don’t fit. Being willful means that we are denying, pushing away, or ignoring something. While there are appropriate times to be willful, sometimes willfulness keeps us from growing or moving forward in our lives.

Art Activity

Ask students to collect a fallen maple leaf. Place paper over the leaf and use the side of a peeled crayon to make a leaf rubbing, or trace the leaf using a pen or crayon. Students can write or draw their thoughts/answers to the following question(s):

- *How does bigleaf maple show willingness?*
- *What is a situation where I feel willful?*
- *In what ways can I become more willing in my life right now?*

TYING IT TOGETHER

10 MINUTES

Option 1: Have students share their art activity with a partner and debrief with the whole group.

Option 2: Form a group circle. **Ask:** *What is one thing you learned from bigleaf maple today?* Have students answer and pass it along to the next person in the circle, or answer popcorn style.

DIGGING DEEPER

Maple Flower Fritters (Spring)

These fritters are delicious with maple syrup and cinnamon on top! You can also use pancake or biscuit mix and dip the flower clusters into the batter.

- 10–15 maple flower clusters
- ½ cup flour
- ½ teaspoon baking powder
- A pinch of salt
- 2 eggs
- ¼ cup milk
- ¼ cup oil (sunflower, coconut, or another oil for high-heat)
- Herbs and spices of your choice



Mix flour, baking powder, salt, and herbs or spices in a bowl. In another bowl, whisk eggs with milk. Turn a medium-sized sauté pan on medium-high heat and add oil. Once heated, dip the maple flower clusters in the egg mixture, dust them with the flour mixture, and place them in the pan. When fritters are golden, flip, and let them brown on the other side. Drain on paper towels. Serve hot.

Research Project

Through watching videos and reading articles (see below) and conducting their own research, older students can explore the die-back of bigleaf maples on the west coast possibly linked to climate change. How might this dieback affect the Pacific Northwest ecosystems and economies?

- Video: Big Leaf Maple Die-back up and down Westcoast. Kiro News 2018 Coverage (in Olympia)
<https://www.youtube.com/watch?v=H2xplsE97Ng>
- Article: Scienceline: The Curious Case of the Disappearing Maple <https://scienceline.org/2018/12/the-curious-case-of-the-disappearing-maple/>
- University of Washington research: https://dnrtreelink.wordpress.com/2021/10/08/bigleaf-maple-decline-tied-to-hotter-drier-summertime-in-washington/?fbclid=IwAR1_YCobWy63ufcJyQZ6riPdanH-p5kRXxh4kJcBzQiZjNj_l9szqWNU-eA