



TaHome Nature Education: Conifer Trees

Grades 3-5



Reading: Pines, Firs, Junipers, Cedars, and Spruces

In Tahoe we live in a forest of **conifer** trees. Conifer trees have cones instead of flowers and needles instead of leaves. Conifers in Tahoe also stay green all year round, instead of losing all of their needles in the fall. There are more than 500 species of conifers. Most of Tahoe's conifers belong to one of these five main types: pine, fir, cedar, hemlock, or juniper.

One of the best ways to tell conifer trees apart is to look at their needles. Most pine needles come in bundles, meaning two or more needles will grow in a cluster from one point. One pine tree that breaks this rule is the Single-leaf Pinyon Pine, with singular needles. Pine needles are often longer than other conifer needles. The most common pine trees in Tahoe are Jeffrey, Sugar, Lodgepole, and Whitebark pines.

Fir needles are flat and often have two white stripes on the underside of each needle. Fir needles are solo and directly connect to the stem. Firs that are found in Tahoe include White Fir and Red Fir. Spruce trees are not naturally found in Tahoe, but you might find some that people have planted in their yards. Spruce needles have spikey points, are easy to roll in your fingers, and are stiff, square, and often short. Other ways to figure out if a conifer is a spruce, pine, or fir is by looking at their cones, their bark, or their habitat.



Jeffrey Pine needles in their bundles of three

Cedars are easier to tell apart from other conifers. Their needles look a bit like overlapping scales fanning out and they have strong smells. Their bark peels in long strands and their cones can sometimes look like berries. Cedars found in Tahoe are called the California Incense Cedar. This cedar looks similar to the Sierra Juniper tree, another conifer found in Tahoe. Sierra Juniper often look more like a shrub than tree, especially when compared with cedars. They have small bluish-gray cones that look like berries. One other conifer called Mountain Hemlock is found in Tahoe.



Sierra Juniper needles



Sugar Pine cone

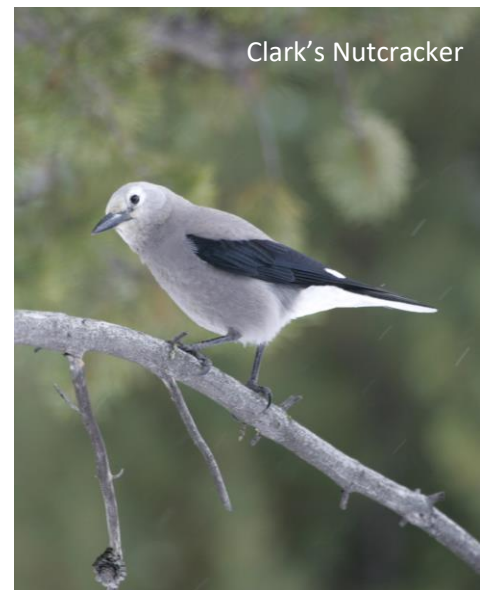


In Tahoe, we have three kinds of white pines, including Whitebark, Sugar, and Western White, all of which have bundles of five needles together. Whitebark Pine trees are often seen in tight groups, with several trees growing out of the same spot. This happens because of a **sympiotic relationship** that these trees have with a local bird, the Clark's Nutcracker. These birds like to eat the seeds of Whitebark Pine and the trees rely on the bird to spread their difficult to reach seeds. As Clark's Nutcrackers get ready for winter, they bury the seeds in the ground to eat later. If the bird forgets one of its buried piles of seeds, or doesn't end up needing those seeds, the seeds grow into trees.

Another white pine, Sugar Pines are the largest pine tree in the world. They grow over 100 ft tall and are easy to identify because of their huge, long cones. Sugar Pines, as well as other white pines, are in danger in Tahoe because of a **parasitic** fungus that gives the trees a disease called White Pine Blister Rust. This disease often kills the trees, especially when they are young **saplings**.

White Pine Blister Rust usually starts in the needles, and grows from there into branches and then to trunks where it can spread to the whole tree. After a while, we can see evidence of the disease on tree branches. Little blisters will form on a branch and spread from there to other plants, especially currants and gooseberries. The fungus does not usually kill these other plants because they lose their leaves in the fall, and the disease drops off with the leaves. But, because conifers keep their needles all year long, the disease can spread and kill the trees.

When white pines are killed by disease, it can affect many other plants and animals in the area. Clark's Nutcrackers lose their food when Whitebark Pine trees are killed, and they may have to leave to find food somewhere else. Without pine trees, chipmunks may not be able to find a home. Fewer chipmunks may then affect their predators, like weasels who then can't find enough food. The whole food chain and ecosystem can be affected by the disease of a few trees.



Luckily, there are people in Tahoe who work hard to take care of trees that are being hurt by disease and other problems. Scientists have figured out how to take seeds from pine trees that don't get blister rust and use those seeds to grow trees that will be resistant to disease.

Take a look at the Jeffrey Pine sapling in the photo and what is around it. Do you see anything in this picture that can tell you where this young tree might have come from?

Activities for Grades 3-5



Measurement Sticks

In your neighborhood or backyard, collect 10 sticks from the ground. As you collect these sticks, look around the area you find your sticks and think about where these sticks might have come from. Line your sticks up from longest to shortest.

Predict how long your longest stick is in centimeters (cm) and how long your shortest stick is in centimeters (cm). Write down your predictions.

Using a measurement tool like a ruler or measuring tape, measure each of the sticks you found and write down the length of each stick in centimeters. If you can't find a measurement tool in your home, measure using a small object you can find, such as a teaspoon. How many teaspoon lengths is each stick? Write down what you find.

Next, discuss your answers to these questions with a family member:

1. Where do you think these sticks came from? Why do you think this?
2. What was your prediction for the length of the longest stick? What was the actual measured length?
3. What was your prediction for the length of the shortest stick? What was the actual measured length?
4. Why do you think you can find sticks of so many different lengths?

Tree Walk

Take a walk around your neighborhood to look at the trees near your home with a family member. Try to find as many of the following things as you can. If you have a camera that you can use, take pictures of what you find.

- A pack of pine needles still together
- A whole pinecone
- A pile of broken up pinecone pieces
- The white stripes on the underside of a fir needle
- A conifer tree sapling
- Sap coming out of the trunk of a tree
- A fallen tree, log, or stump
- Break off one needle from a couple trees and break the needle in half. Smell the needle and decide which tree has your favorite scent.

Call, video chat, or talk with another family member about all of the things you found on your tree walk. If you were able to take pictures, show them the pictures you took. Describe where you found different things, the best thing you found, and what you couldn't find. Ask them if they can find any of these things in their neighborhood.



Cone Stack Challenge

How tall of a tower can you build?

1. In a safe space in your neighborhood, collect a bunch of pinecones.
2. With these pinecones, stack them to build as high of a pinecone tower as you possibly can. Can you build a tower up to your knee? Up to your waist? As tall as you? If your tower falls, try again until you get it to balance.
3. Challenge a sibling or friend to build a tower too. Who can build the tallest tower? If you have a measuring tape, figure out exactly how tall your towers are.



Talk about your answers to these questions with a family member:

1. How tall was your tallest tower?
2. What was your strategy for making your tower taller?
3. Did your tower ever fall over? Why do you think it fell when it did?
4. Do you think pinecones make good building materials? Why or why not?

If you want more of a challenge, try to use other materials you find on the ground to make your tower taller and stronger. You could try using sticks, rocks, mud, or pine needles.



Your Favorite Tree

Pick one conifer tree in your yard or near your home that stands out to you. Maybe you like the way the trunk is shaped, or the place where it grows. Look at the needles closely and use what you have learned to decide if this tree is a fir, pine, juniper, spruce, or cedar. Once you have figured that out, come up with a name for your tree that begins with the same sound as the kind of conifer you found, like Jimmy Juniper or Suzy Cedar.

Now, write a story about your tree's life. Here are some ideas you might include in your story:

- Your tree started as a seed in a cone
- How weather affects your tree
- Animals and insects that interact with your tree
- Things that help your tree
- Things that hurt your tree
- Other trees that interact with your tree
- Where your tree grows

Illustrate your story! Use what art supplies you have to paint, sculpt, draw, or build the things that happen to your tree. Share your illustrated story by reading it to someone in your home or a friend or family member far away on a video call.

TINS wants to see your art! Have your parent post a photo of your art project to Facebook and tag Tahoe Institute for Natural Science. You could also email the photo to us at kendal@tinsweb.org.



Plant a Tree with the Sugar Pine Foundation

Did you know the year 2020 marks 50 years since the very first Earth Day? To celebrate, the Sugar Pine Foundation is giving away free saplings for you to plant in April. You can pick up your very own Sugar Pine sapling to plant along with instructions on how to plant it.



Find a sapling pick-up location near your home and planting instructions by visiting sugarpinefoundation.org. Starting on April 18, free trees will be available until supplies last for tree availability. Find the perfect spot to plant your tree at or near your home, where you can visit your tree often and give it water.

Imagine what your tree will look like in another 50 years on the 100th Earth Day.

Words to Know:

conifer: a tree with cones and needles that are often evergreen

parasitic: a living thing that lives in or on another living things and takes its nutrients

sapling: a young tree

symbiotic relationship: a relationship between two different kinds of living things where both things benefit

Palabras para conocer:

la conífera: arboles con la forma de cono y que mantienen esa forma a lo largo de su existencia

el parásito: que se alimenta de las sustancias que elabora un ser vivo de distinta especie, viviendo en su interior o sobre su superficie, con lo que suele causarle algún daño o enfermedad

el arbol joven: un arbol que es joven y pequeño

un relación simbiótica: la interacción conjunta que tienen dos organismos diferentes producto de una historia evolutiva entrelazada

Further Learning

Did you know you can eat parts of spruce, fir, and pine trees in the spring? Learn how to [harvest their tips](#) for eating.

Learn more about how to help take care Tahoe's pine trees with the [Sugar Pine Foundation](#).

[Read](#) about a species of pine tree discovered on Mt. Rose less than 100 years ago.

Learn how to identify conifers based on their cones, bark, and habitat by [reading this](#).

Have an adult help you weave a [pine needle basket](#).

Watch [this video](#) to help figure out what kind of conifer you have found.

