

Around One Tree

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“When we try to pick out anything by itself, we find it hitched to everything in the Universe”

John Muir

As there is much information available about the physiology of trees, we would like to focus on the ecology of trees and their relationships to other organisms. By ‘adopting’ one tree we hope students can increase their awareness and appreciation of their local environment, but more importantly experience the joy of spending time outdoors and develop personal connections with nature. Observation is key.

Journaling

Supply or make journals with your students. They are a great way to record observations over time. Students will describe, by writing or drawing in their journal, something that is their very own and is special to them e.g. a pet, a toy, an item of clothing. Why is it special?

Next with this in mind, find an area with several trees on or near the school grounds or in their backyard or neighborhood and have them choose a tree that is special to them in some way. Each student should write or draw why they chose it and what makes it special.

The students will visit and observe their tree repeatedly over a period of time, ideally through different seasons. They might tie a piece of yarn around it if it’s with other trees that appear quite similar. It is preferable if they choose a tree with leaves that they can reach. Make sure to have them check for hazards such as sharp objects or irritating plants such as poison ivy.

Mapping

Draw a map showing your tree in relation to other trees, paths, buildings, plants. This is the community your tree lives in.

Getting to know you

1. Make your own Scavenger Hunt

Have students walk around their tree and observe the ground, roots, trunk and any branches and leaves they can reach. They may find seeds, leaf buds, flowers, nests, insects, galls, cavities, spiders, moss, and fungi. Have them create their own detailed scavenger hunt to share and challenge a sibling, neighbor or classmate. Challenge them to look at small easily overlooked details like a spider web. Here’s a link to what that might look like:

<https://kidsactivitiesblog.com/wp-content/uploads/2014/10/Fall-Nature-Scavenger-Hunt.pdf>

2. Fallen Leaves - What Good Are They?

Have students take a leaf from their tree and make a leaf rubbing in their journal with a crayon. Have them use their senses to describe how it feels, smells and looks. Can they make connections between the following items and the important resources fallen leaves provide?

- a. Blanket - Many wildlife species find warmth and protection in the leaf litter as their primary habitat. These include salamanders, chipmunks, wood frogs, box turtles, toads, shrews, earthworms, millipedes and many insect species. Many butterfly and moth species overwinter in leaf litter.



- b. Fertilizer - In the wild, leaves pack down under trees and slowly decompose. The process builds and enriches the soil, feeding the very trees the leaves fell from.
- c. Peanut butter - Leaves are food for worms and other invertebrates.
- d. Watering can - Leaves act as a barrier keeping moisture in the soil.
- e. Brick - Leaves are building materials for bird nests and squirrel drays and many other animals.
- f. Alarm - Leaves make it more difficult for predators to sneak up on prey when leaves crackle under foot.

3. How Does Your Tree Measure Up?

- a. Circumference – To measure the circumference of the tree, wrap a string around the trunk about 4 feet off the ground. Cut it or mark where it meets the end and measure the length. For large trees, this may take two people to complete.
- b. Diameter - Diameter can be calculated using the circumference and the following formula. $\text{Diameter} = \text{Circumference}/3.14$
- c. Height - There are a few ways to do this. The age of the students and your location will determine which works best. There are more accurate calculations, but they are more appropriate for older students.

- On a sunny day, measure the height of your shadow and the height of the tree’s shadow. Also measure your height. Use the following formula

$$\text{Height of tree} = \frac{\text{height of tree's shadow} \times \text{your height}}{\text{Height of your shadow}}$$

- Or find a stick the length of your arm. Hold it upright at arm’s length and walk backwards until it matches up with the top and bottom of the tree. The distance between you and the tree is an approximation of the tree’s height. If a tape measure isn’t available, you can measure in anything: footsteps, stuffed animal lengths, etc.

4. What is your tree DOING?

We may take trees for granted and think of them as static organisms, lacking movement and change, but they are dynamic, growing, ever-changing ecosystems. In their journal have your students describe what their tree is doing. This is a collection students can continue to add to over time and it gives insight into the ecological importance of trees. Here are a few that we thought of:

Growing	Flowering	Reproducing
Sheltering	Reaching	Shading
Humidifying	Dancing	Absorbing
Sunbathing	Producing	Protecting
Sensing	Waiting	Resisting

Hosting

Drinking

Sheltering

Leaning

Waiting

Providing

Stabilizing

Adapting

Budding

Life in and Around Your Tree

1. Make a Sound Map

Ask students to find a place a few feet away from their tree where they can sit comfortably with their journal and crayons or markers. Have them place an X in the middle of their page to represent where they are sitting. Use pictures or words to represent the sounds that are heard and their distance and direction. A helpful link:

<https://www.natureconnect.ca/blog/sound-maps>

Guiding questions:

- a. What were the sources of the sounds you heard? Were they plants, animals, people or machines?
- b. Did some of the sounds come from your tree?
- c. What animals do you think need the tree to survive?
- d. What sounds did you like/dislike?
- e. If your tree were not here, would it sound different?

2. Tree Shake

Students will lay a light colored sheet or umbrella under the low hanging branches and give the branch a shake. The goal is to have the “mini-beasts” collect in their umbrella or on their sheet. Collect some of the insects with a paintbrush and container and explore with a magnifier, being careful not to harm them. Record findings with words, drawings or photographs. Be gentle and return these living creatures back to their home after a short time.

3. Hunt for Daytime Mini-Beasts

Find a patch of leaf litter and plants under your tree and measure out an area of one square yard using a tape measure. Use string, yarn or rope to make the square. This will serve as a one-yard sampling frame. A hula hoop works just fine for younger children. Ask students to predict what type of animals they think they will find?

Place the sampling frame on the ground, have them observe the leaves and plants within the frame. Leaves could be placed in a tray and a magnifier used for closer examination.

Guiding questions:

- a. How many legs are there, if any?
- b. Why do you think they live here?

- c. What color are they? Does this help them to survive?
- d. Look out for obvious differences like color, size, and shape to distinguish species. Record the number of different species you see.

4. Make a Pitfall Trap for Night time Visitors

A pitfall trap is used to catch small animals, particularly insects and other invertebrates that spend most of their time on the ground. It consists of a container buried so that its top is level with the surface of the ground. Any creatures that wander nearby may fall in. A tall smooth sided container will help prevent invertebrates from climbing, jumping or flying out so that your students can discover them. Containers like a parmesan cheese jar work well for this exploration. Add a little soil and some leaves in the bottom for critters to hide.

If it looks like it will rain make a small roof for your trap. Balance a small piece of wood or stone on four small stones (one for each corner). A drainage hole would help in case of unexpected rain. Ask students where they should place it. Perhaps next to growing plants or near dead wood. Don't forget to check the trap in the morning before it gets too warm. Many insects are nocturnal so place your pitfall trap out in the afternoon or early evening.

5. Cover Boards

Using an old piece of plywood or cardboard lay it down by your tree for a few days and each morning check to see who is finding shelter under it. Invertebrates, amphibians and reptiles are cold blooded and will use this space for thermoregulation before the day heats up.

6. Track and Bait Station

Establish a bait station near your tree by placing some food items such as a little cat food or tuna and/or some vegetables and fruit in the center of a large piece of posterboard or plywood. If there's a smooth cement path close by it could be used or a flat, bare patch of soil underneath your tree. However students would need to remove debris such as small rocks and leaves. Grass and gravel will not capture an animal's tracks. Sprinkle a thin layer of flour on the chosen surface to see who comes to visit tonight. Test the track station by placing your knuckles in the flour to see if they register a print. Students can record their findings using different types of bait. It is important not to habituate wildlife to expect food every day, but is a good observational learning tool over the span of a couple of nights.

Guiding questions:

- a. Can you predict which animals will visit?
- b. Get down on your hands and knees and look at your bait station from different angles. Photograph or draw what you see.
- c. Which food was eaten? Was anything left uneaten?
- d. Can you see tracks or other signs of animals such as scat?
- e. What would happen if you placed different bait at the station?

7. A Day in the Life

Tell the story of a day in the life of your tree. Get creative and give a voice to your tree and its community. What does the tree do on a normal day? Who visits it and why? What conversations would they have? Are there things your tree likes or dislikes? Does it have any hopes for the future? What stories does it want to share? This story can be written down or you could record yourself telling it's story to share with others.

Reference: Project Learning Tree

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Great Parks of Hamilton County Virtual programs 2020:

<https://www.greatparks.org/discovery/teachers>