LEAF: Learning About Forests

BASELINE AUDIT, GRADES K-2

Consider contacting a local non-profit, business, government agency, college or university. Their involvement is a great way to connect to the community, inspire students, demonstrate career possibilities and share resource expertise. If you cannot conduct a study in the field please determine the best way to gather data, i.e. a phone call, an email or ideally a virtual conferencing tool with someone who works as a forester, forest ecologist, landscape architect, park planner, volunteer, etc. Contact your state forest service office for resource specialist contacts, resources or recommendations.

Invite parents and community members to participate in the auditing process. Students can take on the role of educator by working with volunteers on citizen science. This experience is a great way to build community.

Identify resource specialists and/or volunteers who may be able to provide assistance and/or share their expertise with the team/class.

Before starting the LEAF audit or going further, survey the students. Insert the average response.
On a scale from 1-10, 10 being the most important and 1 being the lease important,

- How important are trees to plants and animals? _____
- How important are trees to make the things we use every day? _____

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TABLE 1. DEFINING THE STUDY SITE

1. What are the GPS coordinates for your study site? Use you smartphone's GPS or go to: https://www.whatsmygps.com to find the coordinates.	Latitude N _____ Longitude W _____
2. How many trees are in the forest study site?	◯ A few (less than 5) ◯ Some (between 6 and 12) ◯ Many (more than 12) ◯ Exact number if known _____
3. If there are dead trees on the study site, count the number of standing fallen dead trees.	☐ N/A _____ Standing dead trees (snags) _____ Fallen dead trees (logs)
4. Look at the trees in the study site. Are the trees all the same or do they look different?	◯ All trees are the same. ◯ All trees are different. ◯ Some are the same and some are different.
5. How is land used surrounding the study site? Check all that apply.	☐ Neighborhoods ☐ Parks/Public Green Space ☐ Businesses ☐ Undeveloped Land

CHART 1. TREE SPECIES DATA

Choose 3 trees and complete Chart 1. Some of this data will be needed for Table 6. If needed, refer to the Forest Study Site Measurement Guide for instructions on proper measurement techniques for trees.

Tree Species	Deciduous (D) or Evergreen (E)	Age Sprout, Seedling, Mature, or Snag	Tree Height in Feet	Tree Diameter (DBH) in Inches
Example: Sugar Maple	**D**	**Mature**	**17**	**28**
#1				
#2				
#3				

Think about the following questions as you summarize the information in Table and Chart 1.

1. Explain how the trees are the same and how the trees observed are different.
2. Did students observe patterns in the leaves?
3. Is there room to plant more trees?

TABLE 2. WEATHER

1. Identify the season during which data is being collected.	◯ Summer ◯ Fall ◯ Winter ◯ Spring
2. What is the temperature at the study site today?	_____ °F
3. What is the weather like outside at the study site today?	☐ sunny ☐ rainy ☐ windy ☐ cloudy ☐ snowy ☐ foggy ☐ partly sunny/cloudy ☐ hazy from pollution or fires _____ other
4. When the team/class conducts the post-action audit, will the weather be the same or different?	◯ Same ◯ Different

Think about the following question as you summarize the data in Table 2.

1. How do weather conditions impact trees?
2. Safety is the number one priority, but if possible, provide students with opportunities to see how trees react to different weather conditions. Also encourage parents to take nature walks, looking for signs of weather impacts on trees.

TABLE 3. WATER QUALITY

1. Is there a water source within 50 yards of the study site? **If yes, conduct the following water quality tests.**	◯ Yes ◯ No
2. What type of water is observed? *Seasonal pools of water are called vernal pools and are pools of standing water only in the spring. These pools are important nurseries for many amphibian species.	☐ seasonal pool* ☐ permanent pooling water ☐ flowing water (stream, creek, etc.)
3. As a team/class write five words to describe the appearance of the water source.	
4. pH (strips or probe) Test 1 _____ pH Level Test 2 _____ pH Level Test 3 _____ pH Level ◯ Acidic ◯ Neutral ◯ Basic	5. Temperature (thermometer or probe) Test 1 _____°F Test 2 _____°F Test 3 _____°F

Think about the following questions as you summarize the data in Table 3.

1. Why is it important to observe and test water quality near tree systems?

TABLE 4. SOIL QUALITY

<table>
<tr><td colspan="2">1. Soil Temperature – 10 cm measurement

_____° F

_____° F

_____° F

   </td></tr>
<tr><td>2. Soil Consistence

☐ hard ☐ loose ☐ plastic and sticky

☐ firm (in between hard and loose)</td><td>3. Soil pH

Test 1 _____ pH Level

Test 2 _____ pH Level

Test 3 _____ pH Level

◯ Acidic ◯ Neutral ◯ Basic</td></tr>
<tr><td>Use a soil tube to take soil sample. Observe and describe the sample using the senses. Do not taste the soil. Describe how the soil looks, feels and smells. Write five words to describe the soil.</td><td></td></tr>
</table>

Think about the following questions as you summarize the data in Table 4.

1. Why is it important to observe and test soil quality around trees?
2. Why do trees need soil?

TABLE 5. WILDLIFE - GENERAL

1. Are there animals present at the forest study site?	◯ Yes ◯ No
2. Did students see animals in the following families? Check all that apply, then fill in Chart 2. Wildlife-Animal Observations.	☐ mammals ☐ birds ☐ insects ☐ reptiles ☐ amphibians
3. Besides the presence of an animal(s) itself, what other evidence did students observe that wildlife were/are present? Check all that apply.	☐ feathers ☐ nests ☐ scat/poop ☐ tracks ☐ eggs ☐ fur or hair ☐ exoskeleton ☐ chrysalis or cocoon ☐ ground or tree dwellings _____other
4. Did students observe other plant types, besides trees, at the study site?	◯ Yes ◯ No
5. Did students see plants from the following groups? Check all that apply, then fill in Chart 3. Wildlife-Plant Observations.	☐ bushes ☐ grasses ☐ wildflowers ☐ ferns ☐ mosses ☐ other (fungi)

Think about the following questions as you summarize the information in Table 5.

1. How do forests/trees support wildlife?
2. What are some actions the team/class can take to improve wildlife habitat in the study site?

TABLE 6. TREE WORTH

Use the *National Tree Benefit Calculator*, http://www.treebenefits.com/calculator, to collect the data below. Some data will be used as metrics for your school's Eco-Schools USA Dashboard.

Use the information from Chart 1 to begin populating the table below. Next input the requested data into the online calculator at *National Tree Benefit Calculator*. If you would like to provide data for more trees or you would like to calculate multiple trees for a species, please enter the information into an Excel spreadsheet or other document and submit as evidence when applying for an Eco-Schools award.

Tree Species	Tree Diameter in Inches (in.)	Stormwater Runoff in Gallons (gal.)	Energy Saved in Kilowatt Hours (kWh)	Annual Overall Tree Benefit in Dollars ($)
Example: American Beech	**25**	**4,191**	**171**	**$212**
TOTALS				

Think about the following questions as you summarize the information in Table 6.

1. Did students equate trees to a value other than products, such as paper, furniture, etc.?
2. Worth is not always defined by numbers or monetarily. How have trees been valued in cultures native to the area? What spiritual, healing or familial value did/do trees have?
3. What are 1-2 local, state or national tree campaigns teams/students can support?

Continued on the next page.

Review of All Data

1. Based on what is known and has been learned, what conclusions can be made about trees based on the data and other evidence students collected?
2. Be prepared in the post-audit to explain **patterns and structures and functions** students observed through their investigations.
3. Be prepared in the post-audit to explain **cause and effect relationships** between weather and trees and wildlife and trees.