

# Talking Trees

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Jane Lucia

Williston Northampton  
School

Easthampton, MA

[jlucia@williston.com](mailto:jlucia@williston.com)

7<sup>th</sup> Grade Life Science

**If Trees could Talk...**

AND THIS ONE LIFE EXEMPT FROM PUBLIC HAUNT  
FINDS TONGUES IN TREES,  
BOOKS IN RUNNING BROOKS,  
SEASONS IN STORIES  
AND GOD IN EVERYTHING.  
"SHAKEPEARE, AS YOU LIKE IT, ACT 1, SC. 1, L. 215"

**HOW LEAVES CHANGE COLOR**

**Leaf and Branch Dissection**  
Work with your partner to determine which terms apply to each branch.

1. Arrange them on the stem: **veins** or **stipules**
2. Leaf type: **simple** or **compound**
3. Margin: **entire**, **serrated**, **wavy**, **toothed**, **lobed**
4. Color: **green**, **yellow**, **orange**, **red**, **purple**, **black**
5. Where in the **axils** of the leaf?
6. What in the **axils**?
7. Where are the **nodes**?
8. What **stipules** and **stems** and the leaf?

**Be careful not to wrap off any leaves.**

**Phenology**  
The timing of recurring events in nature and the relationship to weather and climate.

**We are Learning to Listen.**

# Through Careful Observation and Documentation ...

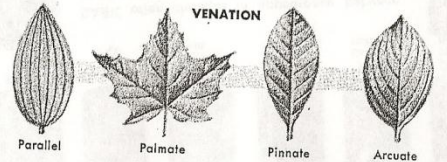
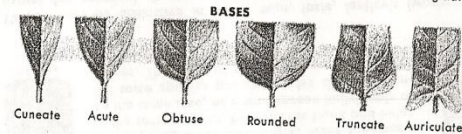
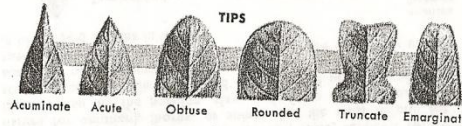
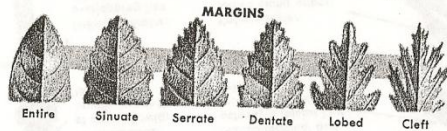
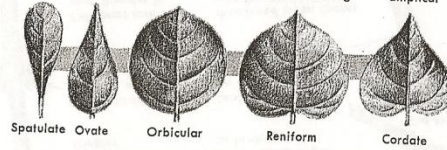
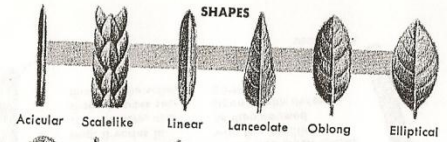
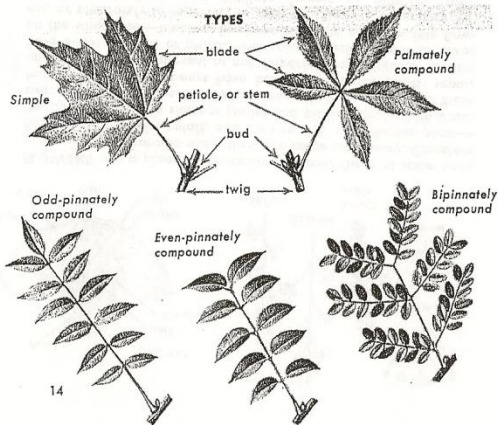
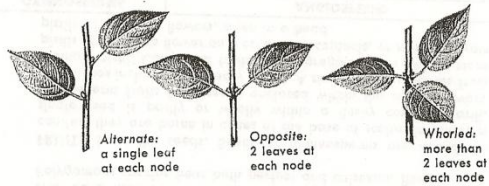
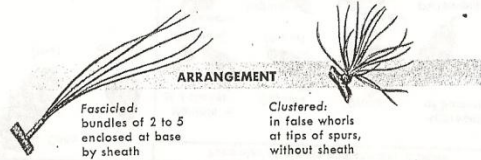
- ◆ “And this our life, exempt from public haunt,  
finds tongues in trees, books in running brooks,  
sermons in stones and good in everything.”
- ◆ Shakespeare: As You Like It, Act 2:1.15

# Leaf Language Lesson

- ◆ Objectives:
- ◆ Students will acknowledge the need for subject-specific vocabulary.
- ◆ Students will practice using new terminology.
- ◆ New vocabulary will empower students to observe greater detail.
- ◆
- ◆ Introductory Game:
- ◆ Back to Back -prior to introduction of terms
- ◆ Introduce basic terminology
- ◆ Back to Back with basic terms
- ◆ What other terms would be helpful?

# Resource from National Audubon Society, First Field Guide to Trees

**LEAVES** may be deciduous (shed annually), or they may be evergreen or persistent (remaining on tree one to many years). Most cone-bearing trees and some broad-leaved trees are evergreen. Leaf arrangement may be obscure at growing tips, where leaves may not have reached full size. Leaves of some trees bear stipules (not shown), small leaflike appendages at base of petiole.





# Assessment of learning:

Student Assessment:

Label each leaf with the terms that apply

Measure and label the length and width of each leaf

Pair, share and compare with learning partner

Collected and evaluated for readiness to take our skills into the field!

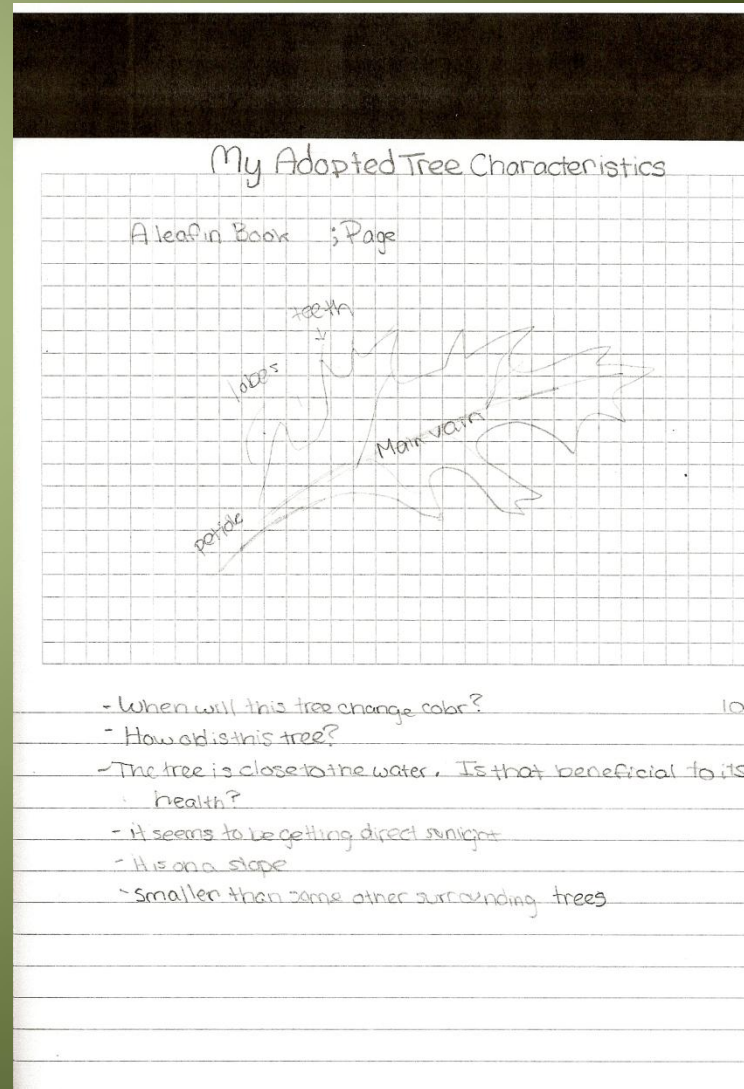


# In the field...

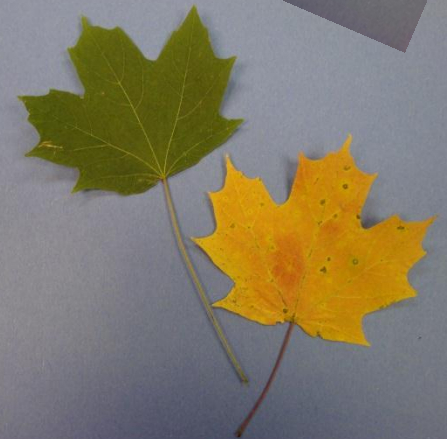
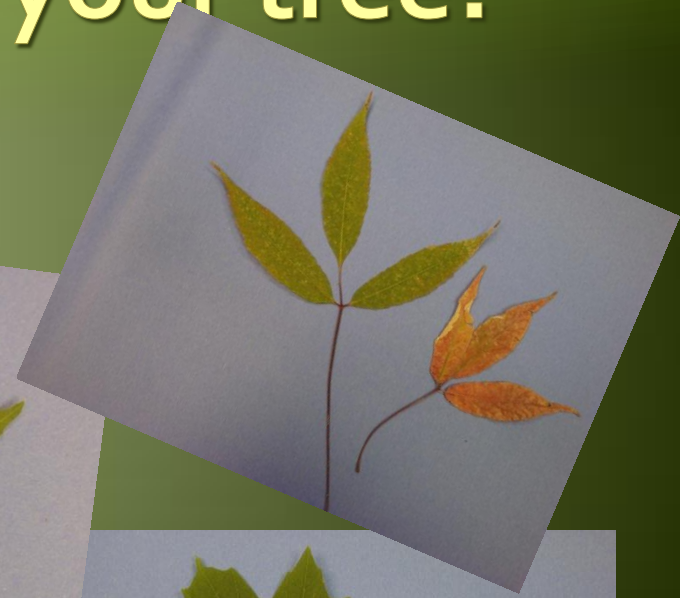
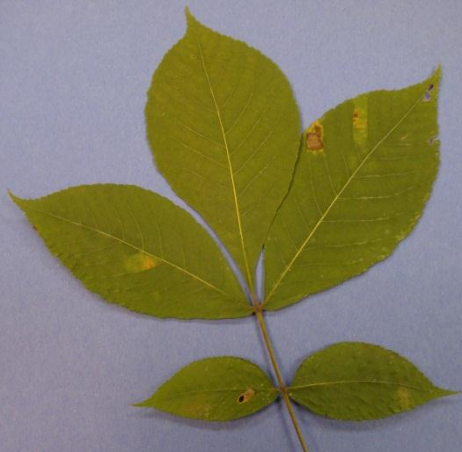
This is a page from a student's Life Log (field journal)

Sketch a leaf. Label the characteristics you observe using our acquired leaf language.

Make a list of Curiosity Questions about your tree, its leaves, and the surroundings.



# Which leaf comes from your tree?





# Tree Id





# Data Summary Form

Preparation to enter data into Harvard Forest's data base

Average leaf length and width

Color of Fall leaf

Date of 50% color change and 50% leaf drop

When we put all of our data together, do you think we will be able to answer "When does the growing season for our trees end?"

Fall Leaf Drop ✓

Buds, Leaves, and Global Warming  
Citizen Science, Schoolyard Ecology

Tree # 8 Tree species Quercus alba Team Natalie Richard  
David Fitch

Branch A

0 = not fallen 1 = Fallen

date	Leaf 1	Leaf 2	Leaf 3	Leaf 4	Leaf 5	Leaf 6	Leaves observed	Leaves fallen	Tree %not green
9/30	0	0	0	0	0	0	6	0	1
10/5	0	0	0	0	0	0	6	0	1
10/19	0	0	0	0	0	0	6	0	3
11/4	0	0	0	0	0	0	6	0	4
12/1	1	1	1	1	1	1	6	6	4

Analysis: Thinking more about the Fall Data

- Calculate the average length and width of your six research leaves. (Remember to record the metric units.)
 

Average leaf length 15.8 cm

Average leaf width 9 cm

The scientists at Harvard Forest determine that a tree has experienced color change when 50% of the tree's leaves have changed color. The tree has experienced leaf drop when the tree has lost 50% of its leaves.

- Look at your data. What date can you say that 50% of your tree had changed color? 10/19
- What color(s) did your tree's leaves turn? They went from green to red to brown
- Look at your data again. What date can you say your tree had lost 50% of its leaves? 10/19

Additional Comments:

# Looking, Listening more closely

What twigs have to tell us...

Measuring growth between scars

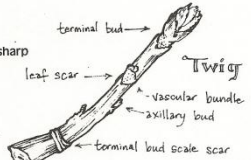
**Twig Explorations**

A twig is one of two places on a tree where the fastest growth appears. Can you guess where the second place is? Here are a few interesting ways to learn about twigs.


**Activity:** Twig Explorations

**Materials:** clippers, hand lens, sharp knife for dissecting

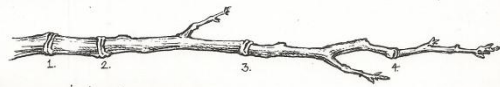
- Find a twig from a deciduous tree. Maple, Ash, Shagbark Hickory, Birch, or Oak are possibilities. Clip a 12" sample for observation. Locate the parts seen to the right.



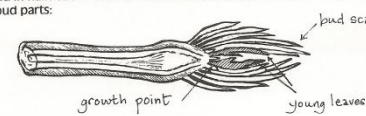
- What pattern do the leaf scars make? Are they alternate, opposite or whorled (circular)?



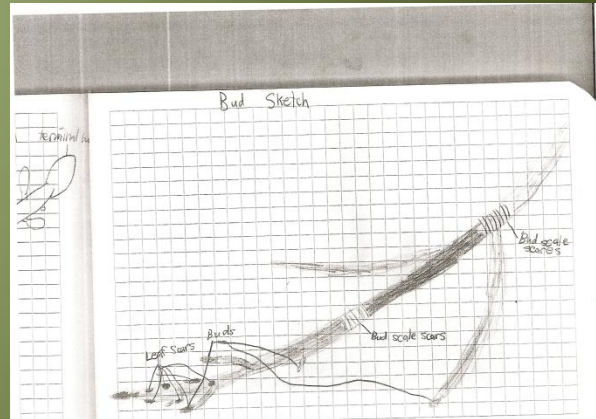
- Look at the shape and size of the leaf scar. What does it look like? (heart, face, big, small, etc.). Can this scar tell you anything about the leaf petiole (stem) of the twig? The leaf or leaves?
- The bud scale scar is where a terminal bud used to be before the twig grew longer. Do you have more than one set of these rough "rings" on your twig? (The distance between 2 sets of "rings" is one year's growth). To find the age of your twig, count the number of growth areas between bud scale scars.



- Find the terminal bud and feel the tip. Is it waxy? Think about a bud in winter. How might this covering help? Holding the twig firmly in one hand, carefully take a sharp knife and cut the terminal bud in half. Cut the bud off of the twig, leaving a little bit of twig under the bud. Locate these bud parts:



Bud Sketch



Tree name - Yellow-Poplar, Scientific Name - *Liriodendron tulipifera*

1 - 7 cm  
2 - 1/2 cm  
3 - 9 to cm

Circumference - 150 cm, Diameter - 48 cm

Leaf average length - 6.5 cm, Leaf average width - 8.6 cm

normal

15

# Thank you for this rich experience!

