



Section B

Michigan Trees: Tree Surveys in Modern Forestry

Background

Foresters work in both cities and rural areas to manage one of Michigan’s most valuable resources – trees. Good management means having good information obtained through surveys that must be constantly updated as the individual trees grow and the forest changes.

Many villages and cities are surveying trees to determine how many were recently affected by diseases and pests like emerald ash borer and oak wilt. In West Michigan, beech trees started dying several years ago from a disease. And each winter, ice storms cause tree damage throughout Michigan.

Professional foresters are often needed for specific types of tree surveys, but a non-forester can get a better

Tree Identification – What to Note

understanding of wildlife habitat and conservation issues by becoming familiar with some of the information the professionals gather. This basic information involves identifying, grouping, sizing, and assessing condition.

Knowing how to identify trees is step one. This is not the same as recognizing trees (knowing a species at a glance because you have seen it again and again, like one of your friends). The identification process requires you to look at

details, some of which might not be easy to notice at all times of the year. Becoming an expert at tree identification takes a lot of time, but you can build some useful skills in just a few hours.

A person who uses a good identification process considers:



(Images: photos of rough bark and smooth bark)



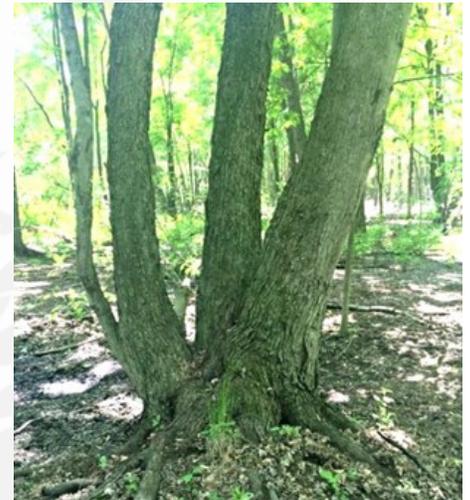
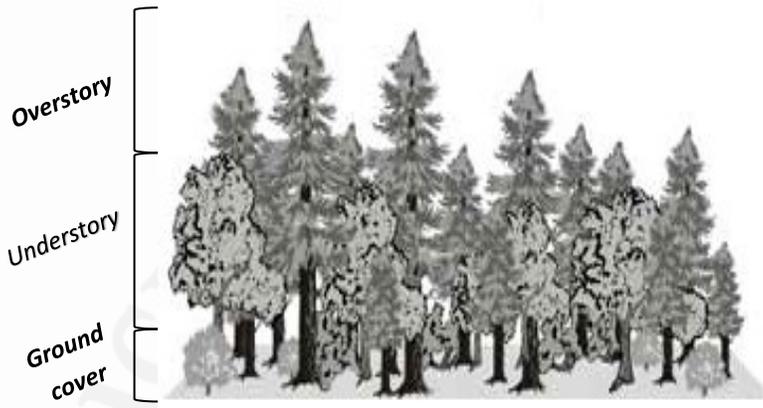


How to Document the Identity of Individual Trees

The best way to document what tree species you have found is with at least two photographs or sketches — one close-up showing enough of the tree to indicate whether

it is opposite or alternate and to show the shape and arrangement of the leaves, and another taken from far enough away to show the overall growth form.

(Images: Left, diagram of overstory, understory, and ground cover. Right, photo of a multiple-trunked maple tree)



Grouping

There are many ways to group trees for surveys. When one tree species is far more numerous in an area, foresters often refer to the trees as a “stand” (e.g., a stand of sugar maples) even though other species are present. Trees in a woodlot may have many species of different sizes; the larger ones can be considered “overstory” trees, shading the “understory” trees. Small

seedlings and stump sprouts less than three feet high can be considered as part of the “ground cover.” The understory and ground cover can be described as dense, medium, or sparse. The important idea is to collect information in a way that gives a clear picture in 3-D of what is present in an area. Along an urban street, there really are no stands, understory or ground cover to

Determining Tree Sizes

The two most common measurements used by foresters are diameter and height. The diameter of a tree varies depending on where it is measured; the accepted method is to measure it about 4.5 feet above the ground. If there is more than one trunk (stem), each stem is measured or

an average taken. This is often the case when trees, like silver maples, stump sprout after they have been cut. If you see multiple-trunked trees it usually tells you a fairly large area was cut down in the past. Heights can be measured with a couple of gadgets foresters can carry in

Assessing Condition

Foresters often look for signs of diseases, especially those that may harm the wood used by lumber companies. Urban tree managers also look for diseases that cause loss

of leaves and branches to fall. This means high costs for trimming and clean-up. Signs of past ice damage are fairly easy to spot even in the summer.



Earning Points for Work in this Education Unit

Total Possible: 120 points

Activity 1 Survey trees in at least one acre of woods, then complete a Woods Survey Form.

EARN 35 POINTS FOR THIS ACTIVITY.

WOODS SURVEY FORM

An acre is 43,560 square feet. Areas surveyed as an acre are typically 100 x 400 feet, 200 x 200 feet, or 50 x 800 feet.

Although each is really only 40,000 square feet, that is close enough to an acre for most survey work.

OVERSTORY

Density* (circle one): Dense Medium Sparse

Five Most Abundant Species** Estimated Average Diameter of Trees (Inches) Average Height of trees
(Feet)

E.g. *Paper Birch* *25 inches* *50 feet*

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____

UNDERSTORY

Density*(circle one): Dense Medium Sparse

Five Most Abundant Species** Estimated Average Diameter of Trees (Inches) Average Height of trees
(Feet)

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____

* For Density, circle Dense if the overstory trees shade 75 percent or more of the ground. Circle Medium, if the overstory trees shade 30-75 percent, and circle Sparse if the overstory trees shade less than 30 percent of the ground.





Activity 2

Survey 25 trees along a street or sidewalk at least 300 feet long, completing an Urban Tree Survey Form. EARN 25 POINTS FOR THIS ACTIVITY.

<u>URBAN TREE SURVEY FORM</u>			
Tree Number	Circumference (Inches)*	How tall? (Feet)	Condition**
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			

* Measure circumference by wrapping a string around the tree trunk, then measuring the length of the string.





Activity 3

Identify and document the 30 tree species listed below. Document the key features that allowed you to identify each species with a photograph or sketch. RECEIVE 2 POINTS FOR EACH SPECIES COMPLETED, SO A TOTAL OF 60

POINTS CAN BE EARNED IN THIS ACTIVITY. As in the education unit on Animal Signs, we'll let you substitute any ten species not listed for any ten species on the list.

Thirty species of trees commonly found in Michigan in both urban and rural settings are:

- | | | | |
|--------------------------|----------------------|--------------------------|------------------|
| <input type="checkbox"/> | White Oak | <input type="checkbox"/> | American Beech |
| <input type="checkbox"/> | Bur Oak | <input type="checkbox"/> | Eastern Hemlock |
| <input type="checkbox"/> | Red Oak | <input type="checkbox"/> | White Pine |
| <input type="checkbox"/> | Green Ash | <input type="checkbox"/> | Red Pine |
| <input type="checkbox"/> | White Ash | <input type="checkbox"/> | Scotch Pine |
| <input type="checkbox"/> | American Sycamore | <input type="checkbox"/> | Cottonwood |
| <input type="checkbox"/> | Balsam Fir | <input type="checkbox"/> | Quaking Aspen |
| <input type="checkbox"/> | White Spruce | <input type="checkbox"/> | Basswood |
| <input type="checkbox"/> | Northern White Cedar | <input type="checkbox"/> | Tamarack |
| <input type="checkbox"/> | Red Maple | <input type="checkbox"/> | Jack Pine |
| <input type="checkbox"/> | Silver Maple | <input type="checkbox"/> | Shagbark Hickory |
| <input type="checkbox"/> | Sugar Maple | <input type="checkbox"/> | Willow |
| <input type="checkbox"/> | Box Elder | <input type="checkbox"/> | Paper Birch |

The next five pages include images of the leaves and bark of the 30 species listed





American Beech



Paper Birch



American Elm



Black Cherry



Willow



Shagbark Hickory





Silver Maple



Sugar Maple



Box Elder



Red Maple



Bur-Oak



White Oak







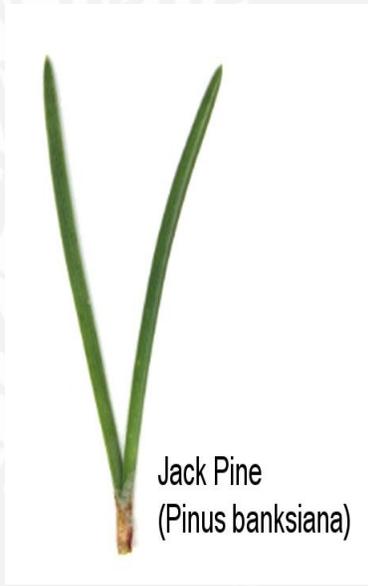
American Sycamore



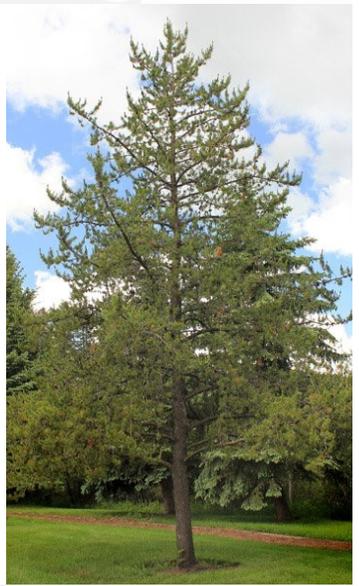
Sassafras



Tamarack



Jack Pine
(*Pinus banksiana*)



Black Walnut



Balsam Fir

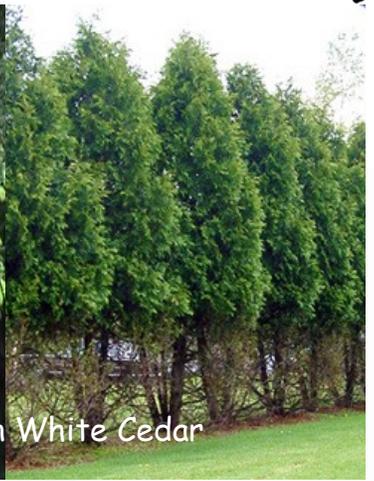




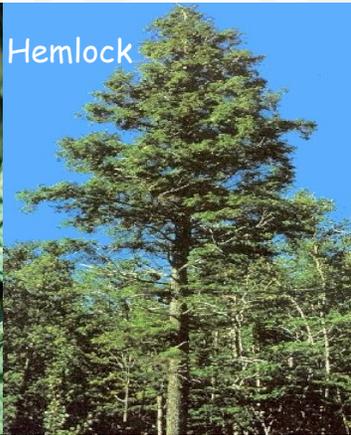
White Spruce



Northern White Cedar



Eastern Hemlock



Basswood

HINTS

- ◆ Many grandparents are pretty good at tree identification. They might be able to help with this, if available!
- ◆ The Bengel Wildlife Center has a trail segment where some trees are labeled. You might also find trees labeled on parts of other nature centers and college campuses.
- ◆ There are lots of good references, websites, and smart phone apps that will help in this unit including:
 - Apps such as **TreeBook** and **Trees Pro HD** can help with identification.
 - You can borrow a tree field guide from your local library.



Brain Buster: Is it better to have lots of different kinds of trees along city streets or just a couple of different kinds? Why?