

# *The ABC's of Protecting Trees During Construction*

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- NJ Shade Tree Federation Meeting
    - October 22, 2011
    - Cherry Hill, NJ

# *What Will We Learn Today?*

"A world that will not sustain trees will soon become a world that cannot sustain people."

*Anonymous, 1850*

*Give a person a fish, and they will eat for a day.*

*Teach a person to fish and they will eat for a lifetime.*

*Anonymous 100 BC*

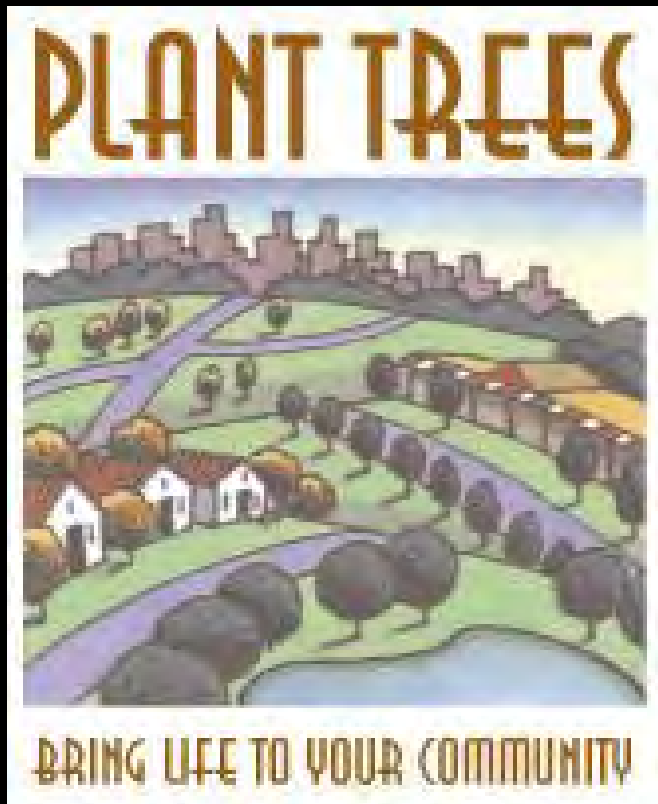
*This morning.....you will learn to fish.  
Not just the how .....but the why.....*

# TODAYS OBJECTIVES

- To provide you with some information on the benefits of trees.
- Dispel the myths that are out there regarding trees and how they grow. The ABC's of Tree Physiology.
- Provide the building blocks for informed decision making regarding trees and how they grow. \*
- Information to help you decide..... how to save trees, which ones should be saved, when you should consider saving trees, where they should be saved. \*

\*Learning to fish

# BENEFITS of TREES



One 50 year old tree planted next to your home can provide these ANNUAL economic benefits:

- \$106 in erosion protection.
- \$70.54 in pollution reduction.
- \$75.00 in wildlife habitat.
- \$103.15 in air conditioning.

[www.communitytrees.org](http://www.communitytrees.org)  
[www.treelink.org](http://www.treelink.org)

# HOWEVER .....

- What benefits are actually provided by a large tree that dies 2-years after preservation efforts fail?

## Counter-benefits.....

- Hazardous
- Expensive to remove
- Loss of equity to the home
- Cost of replacement
- Time to maturity (within our lifetimes?)



# Dispelling Tree Myths

- "You can tell a tree's root system by how it branches, the two are the same."
- Tree wounds that are painted "heal" faster.
- Fertilizer is "plant food".
- "Every tree is worth saving."
- George Washington cut down a cherry tree.



*"You can tell a tree's root system by its branches, the two are the same."*

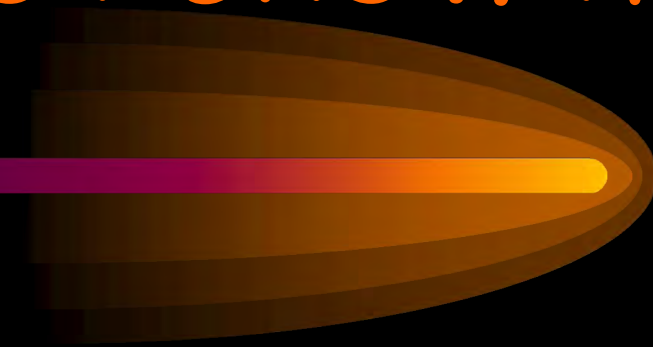
80% of all tree problems originate below ground in the soil.

Basic soil provides 13 of 16 elements required for plant growth.

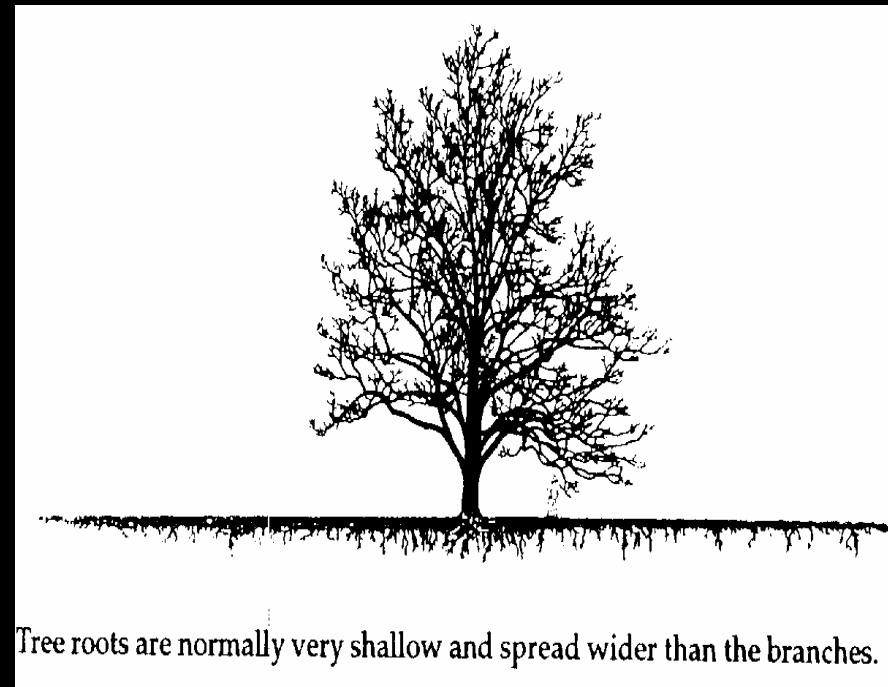


This is way wrong!

# ACTUAL TREE ROOT GROWTH



- 90% of a tree's roots are in the top 2' of soil.
- Tree roots normally extend 2 1/2 times the crown spread or drip-line.
- Therefore, staying out of the drip-line does not ensure tree survival during construction.....
- ????????????????????

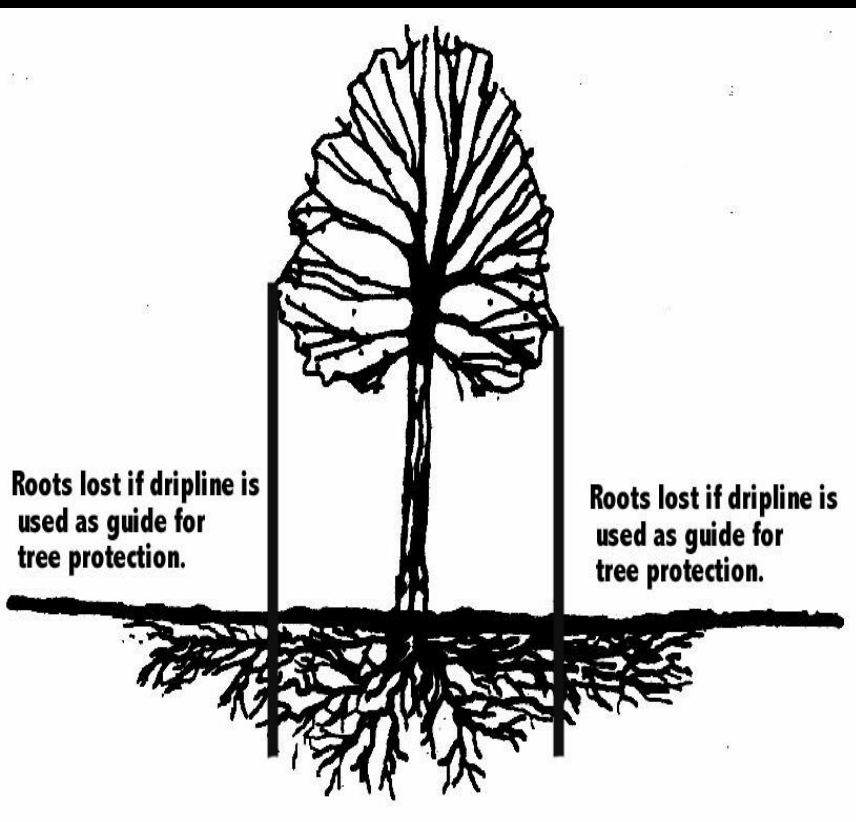


Tree roots are normally very shallow and spread wider than the branches.

This is the way it is!

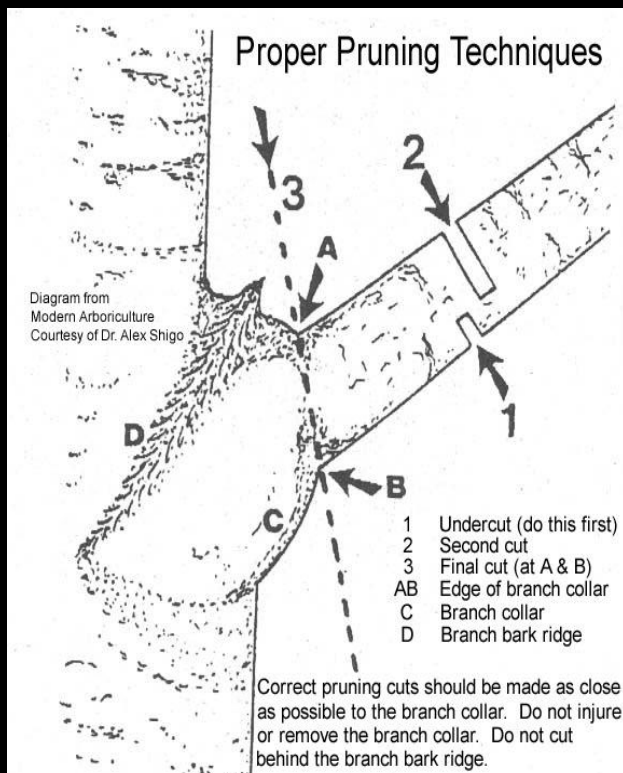


# Why Driplines May Not BE a Good Barometer for Ensuring Survival



- Every twig is attached to a specific root **AND THEY DON'T SHARE RESOURCES!**
- Death of a root will directly affect the partnered twig.....  
**THEY DON'T SHARE, EVER!**
- Survival of a root impacted tree is a function of age, vigor, health, available reserves and an individual tree species DNA..

# Tree Wounds That are Painted "Heal" Faster



- Animals are regenerators, dead cells break down and are replaced by living cells in the same place. Animals "heal".
- Trees are generating systems that form new cells in new places. They can't regenerate old cells. Trees "seal" off damaged cells, outside AND inside.
- Pruning should stimulate a tree's natural sealing protection, not inhibit it. Paint and improper pruning inhibits' a tree's natural defenses.

# FERTILIZER IS "PLANT FOOD"

- Fertilizer is composed of minerals needed by trees to carry out chemical processes.
- Tree "food" (sap) is a simple sugar and is a product of photosynthesis.

Sunlight + Chlorophyll + CO<sub>2</sub> = simple sugar + O<sub>2</sub>

# "Every Tree is Worth Saving"

- 90% of a tree's roots are in the top 2' of soil where they are very susceptible to damage.
- Trees require "reserves" to overcome construction impacts. Weak, damaged or diseased trees should not be included in any tree preservation efforts. They won't make it.
- Species, soil type, tree condition, type of disturbance, drainage, and age are some additional factors that need to be entered into the decision to save trees.

# Standard for Tree Protection

## "On New Development Sites with Existing Trees"

- Inventory the site and mark "areas" to be saved.
- "Reconnaissance should be performed."
- Determine characteristics of trees to be protected and saved.....



*Want to Protect Trees and do it Right? Consider these factors.....*

*Conduct a Pre-Construction Inventory of the Trees*

- Species
- Tree Vigor
- Tree Age
- Pest Resistance
- Aesthetics
- Fall color, Spring flowers
- Wildlife benefits
- Susceptibility to air pollution
- Species longevity\*

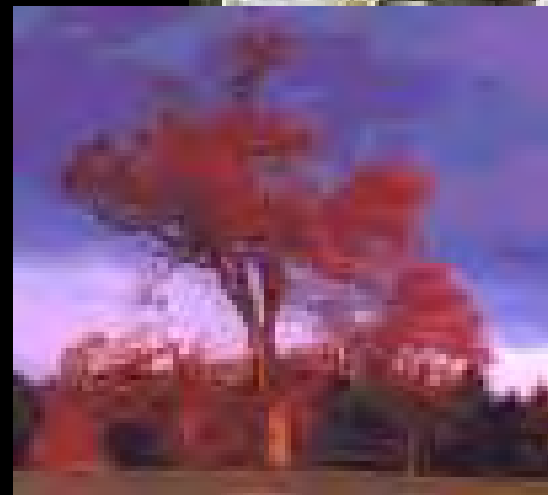
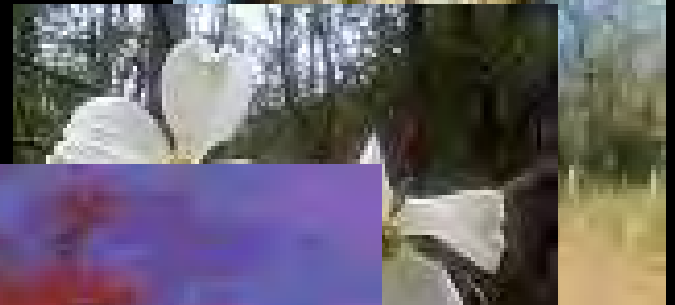
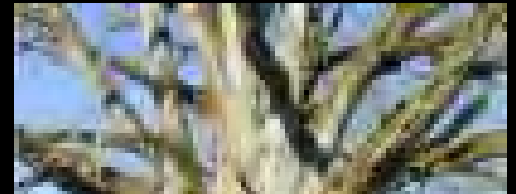
# Considerations

- **Species** (ID)
  - limitations: fruit, thorns, susceptibility to root impacts (DNA).
- **Tree vigor** (ID)
  - stunted leaves or twig growth.
  - visible fungal growth.
  - Dead branches
- **Tree age** (dbh × Multiplier)
  - Older trees have less reserves to overcome construction impacts.



# Considerations

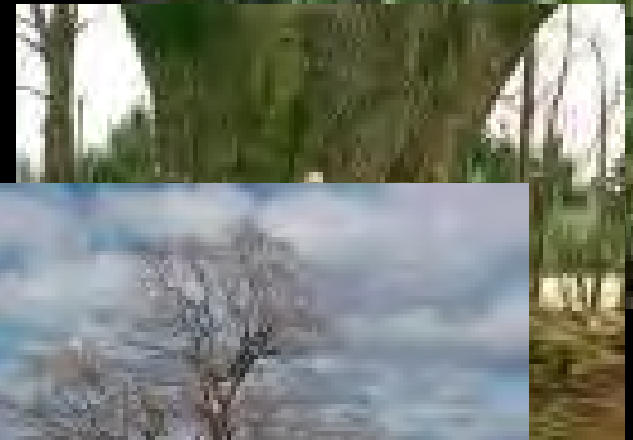
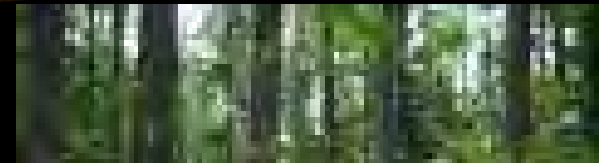
- Resistance to Insects and Disease.
  - White oak, Beech, Red oak
- Aesthetics
  - Proper shape & branching patterns reduce hazards.
- Spring flowers, fall color
  - White dogwood, Sugar maple, Black gum





# Even More Considerations.....

- **Wildlife benefits**
  - White pines, oaks, Beech.
- **Air pollution susceptibility**
  - Hackberry, most oaks, Blackgum, Sweetgum, are NOT susceptible.
- **Species Longevity**
  - Oaks, Hickories



# *Tree Inventories are Necessary to Save the Right Trees*

## Tree Inventory Form

Inspector: \_\_\_\_\_

Date: \_\_\_\_\_

Tree Number	Species	DBH	Tree Height	Tree Age DBH X Multiplier	Distance to Dripline	Tree Condition Good, Fair, Poor	Suitable for Preservation	Comments

Determine what trees should/can be saved, then devise a plan to preserve those trees.

# Good Tree Protection Plans Take the 9 Criteria into Account

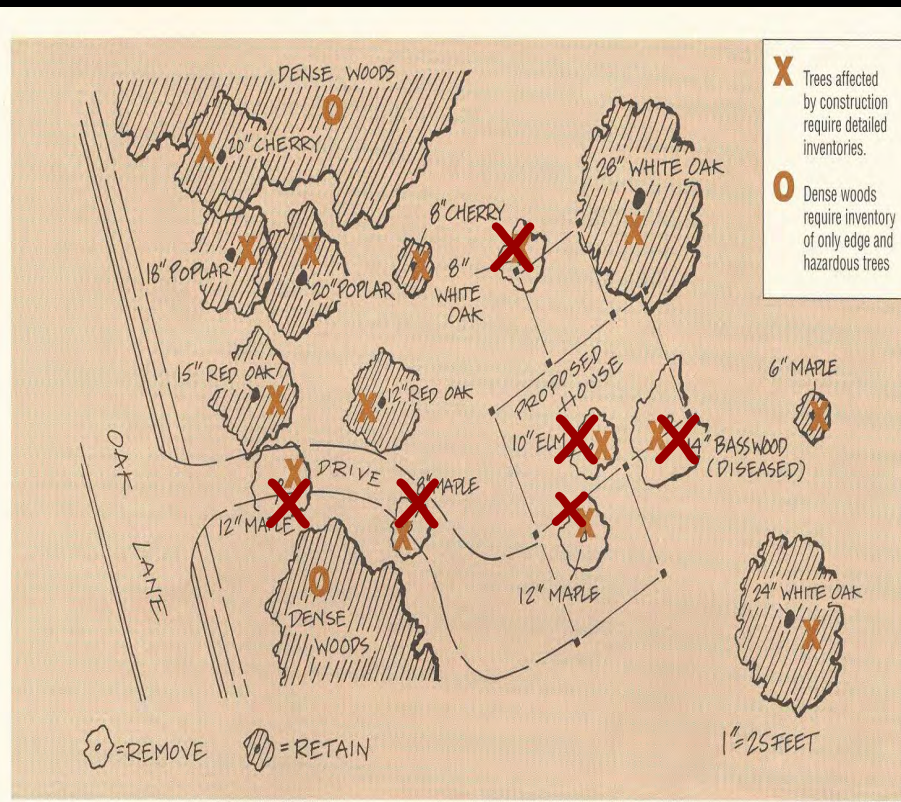


Figure 11. A simple tree preservation plan shows the location of house, driveway, and trees to be removed, encroached upon, and retained.

- Diseased Basswood & disease-prone American elm are removed.
- Maples in the driveway are also removed.
- Small white oak is also to be removed.

# TREES NEED ROOM TO GROW



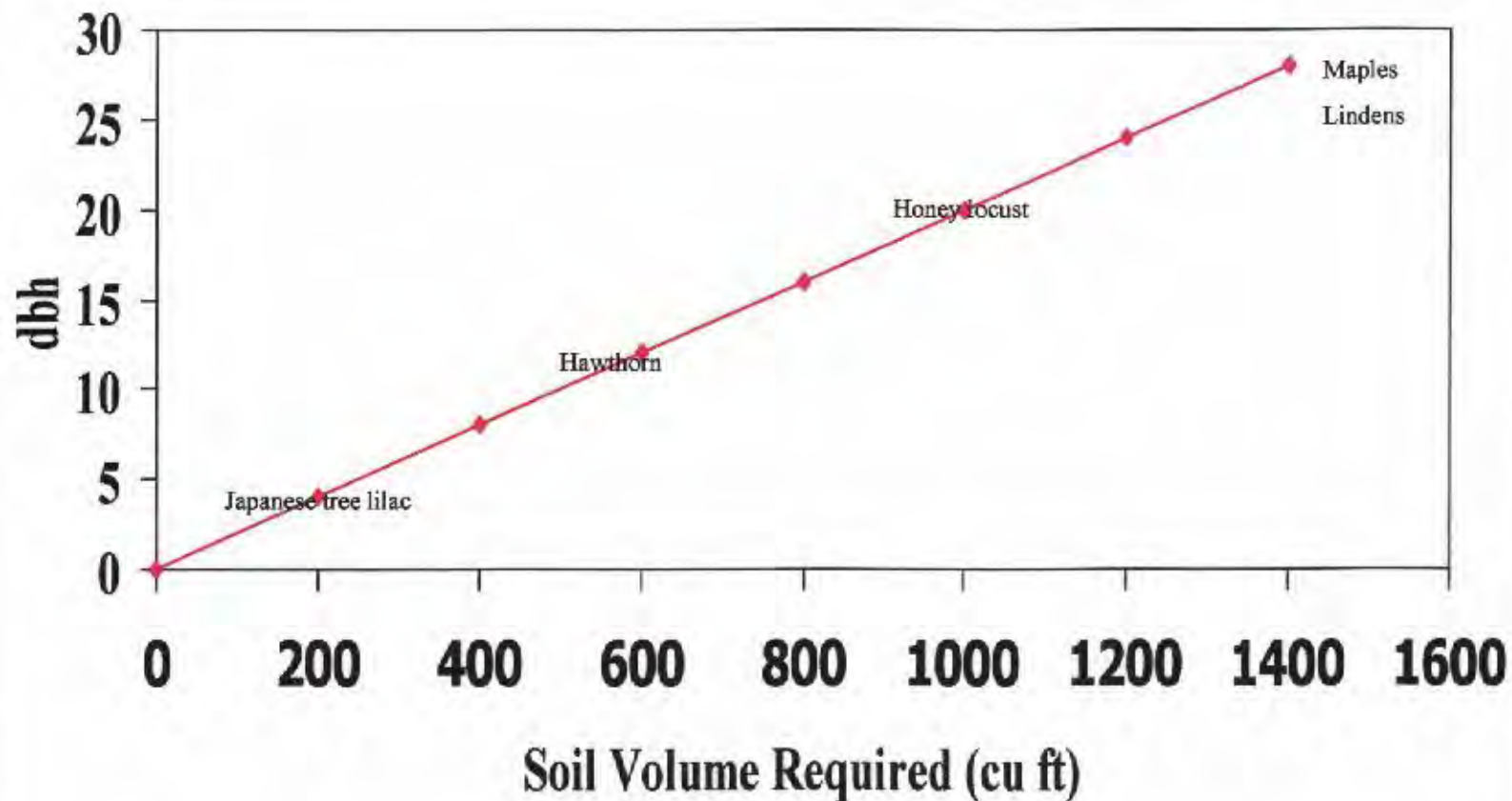
London planetree planted 2 years ago. Height 19 feet.



Littleleaf linden planted 8 years ago. Height 12 feet.

What tree species might have been more appropriate here?

## Soil Volume to Tree Size Comparison



—◆— Line 1

# Soil Volume Rules of Thumb

- Soil volume required should be figured at 50 cubic feet per inch of dbh at maturity. 200 cubic feet is a minimum.
- If you cannot provide adequate soil volume for a tree to reach maturity, revise your species selection to a smaller tree.



# *Bill's Rule's of Thumb for Saving Trees*



- ❑ If you plan to save trees-**STAY OUT OF THE DRIPLINE +.** If you cannot stay out of the dripline and must grade to the tree... cut it down. You can't save it. In 2 years that will be apparent.
- ❑ Consider the nine factors in the Standards for determining trees to save. Hire a Certified Tree Expert (CTE) or a NJ Approved Forester.
- ❑ Understand how trees grow and function....the better to understand how to protect them .....successfully.
- ❑ Save larger areas with groups of trees. Trees in the forest are "pack flora" and survive better when preserved together as opposed to individually.