Firewood & Forest Management

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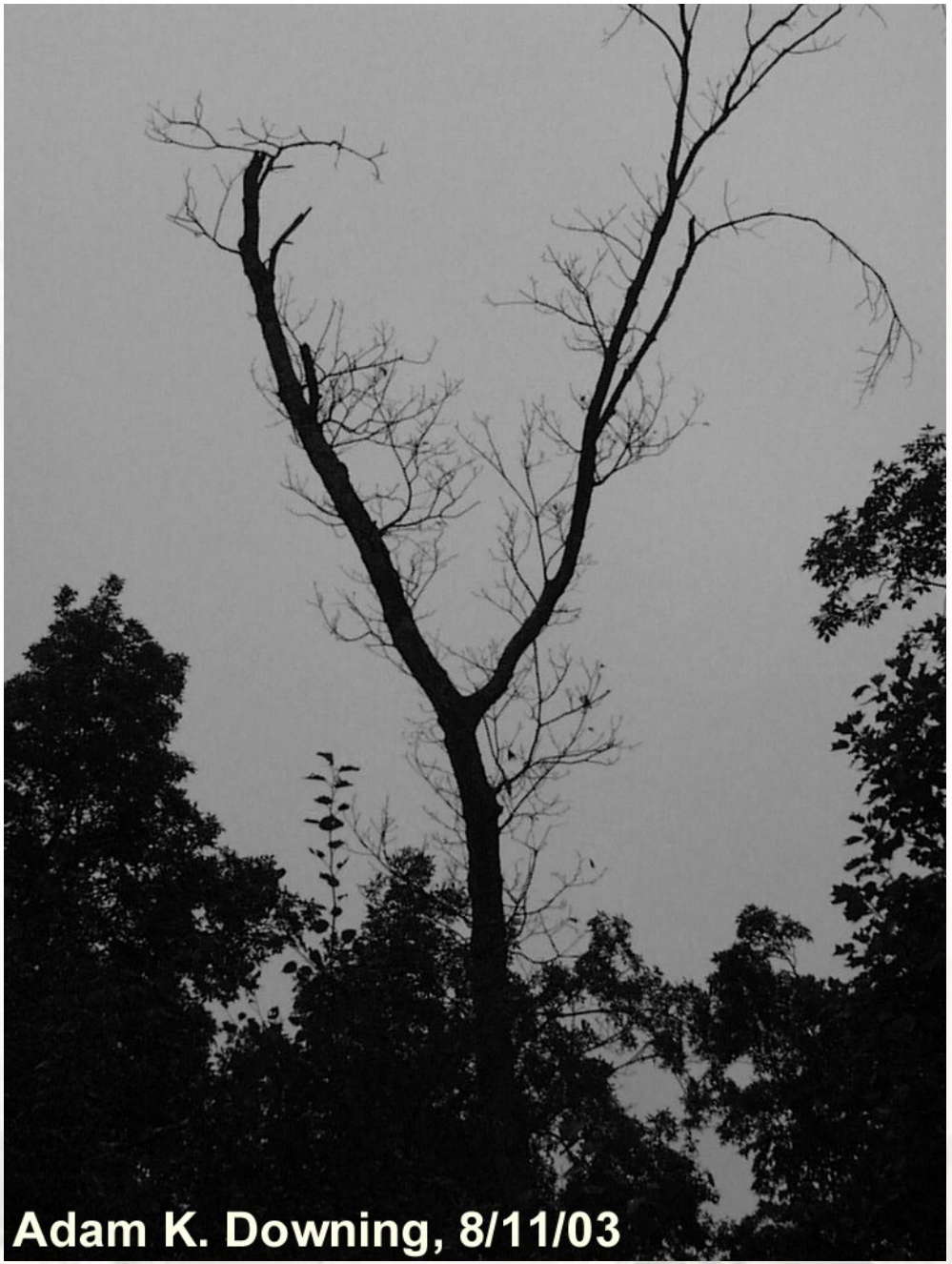
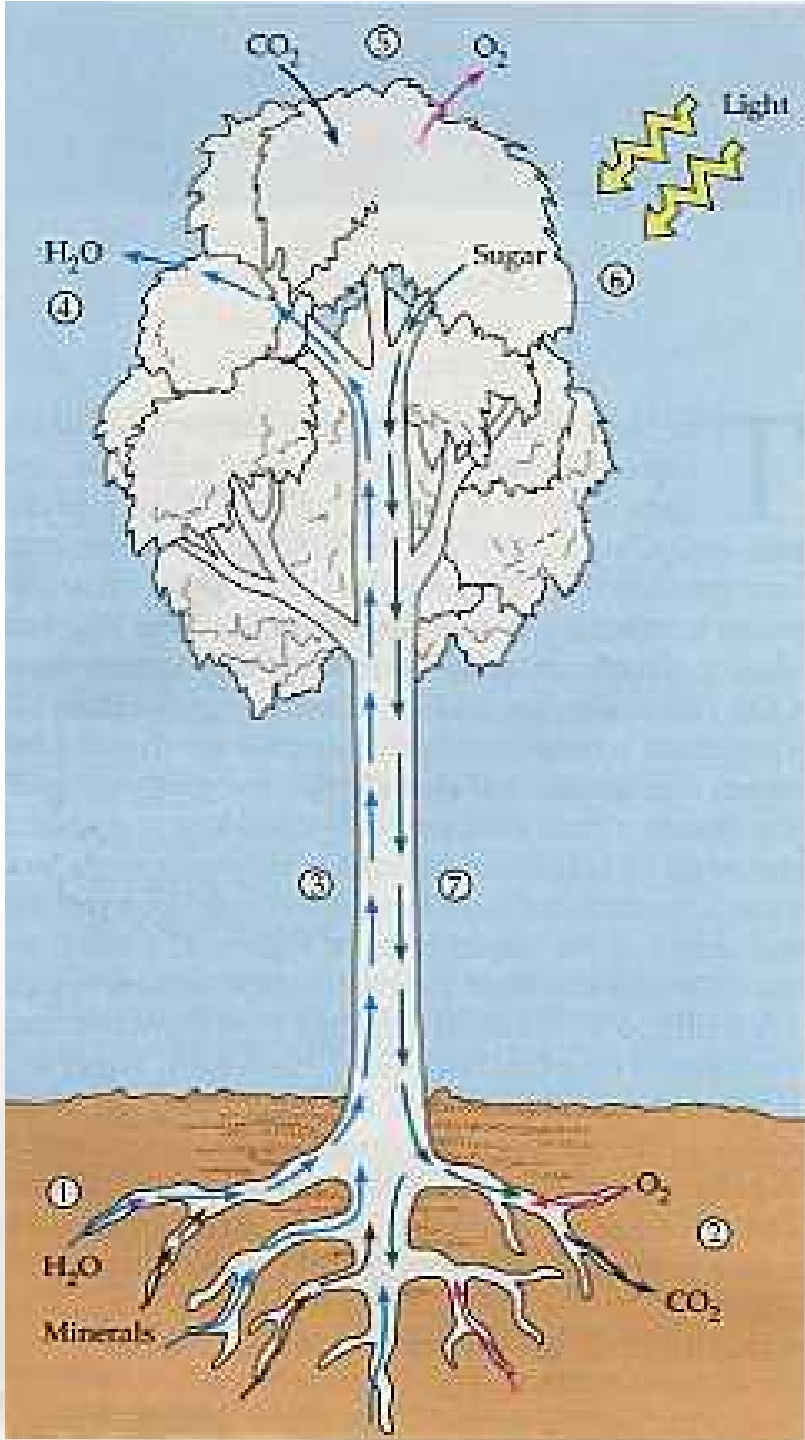
UGA5050074


Adam K. Downing, 8/11/03

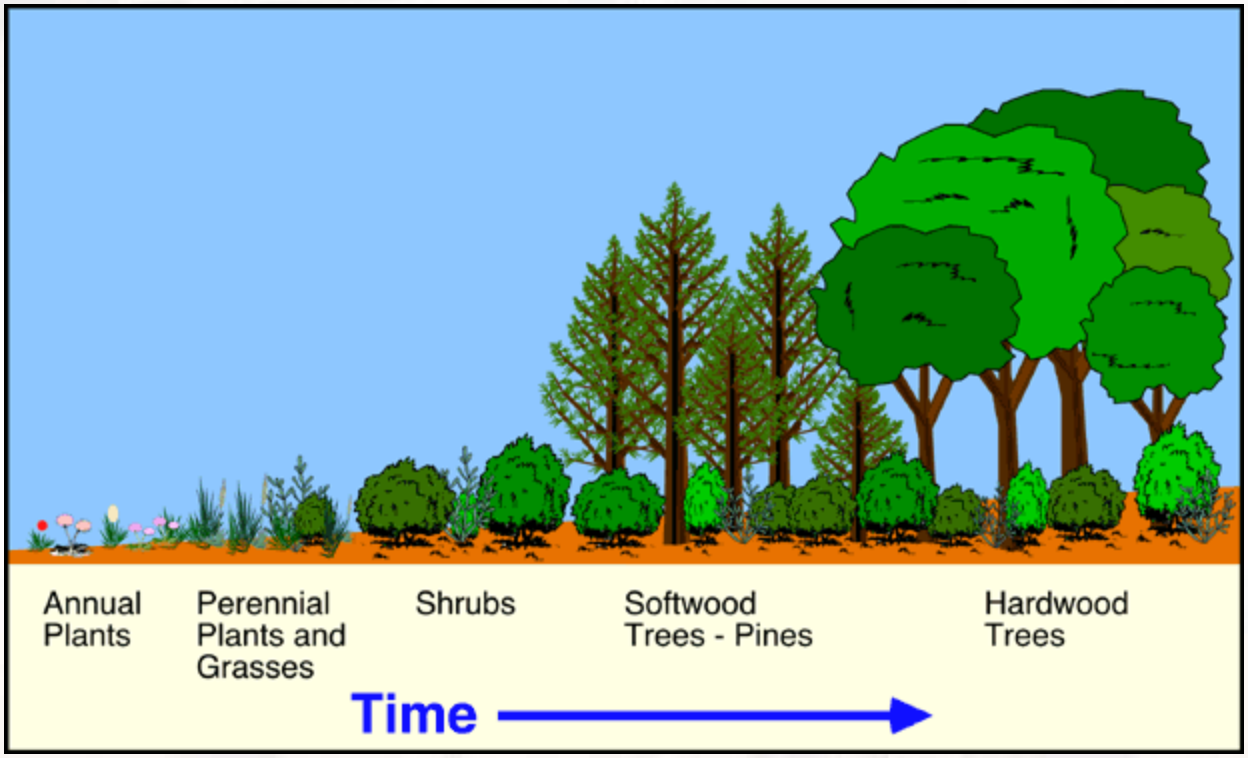
Natural Systems

- Energy
- Nutrient
- Water



Systems

We work within the laws of “Secondary Succession Systems”

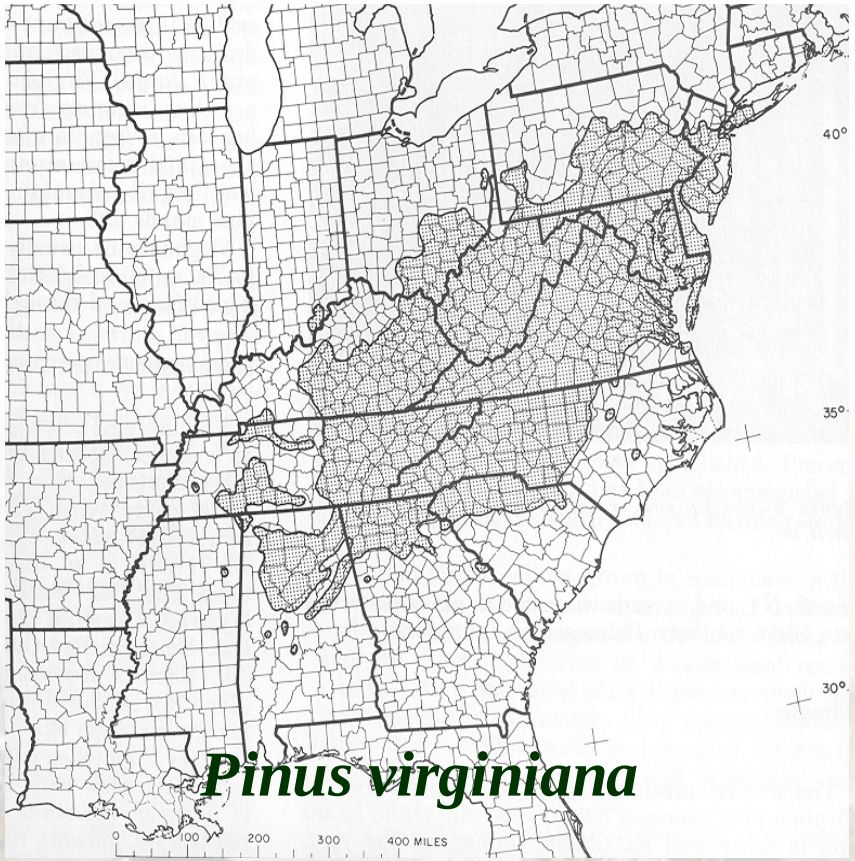


Typical abandoned field in Central Virginia + 120 years

Silvics

Silvics are the biological characteristics of individual trees, such as…

- Natural range
- Shade tolerance
- Place in succession
- Regeneration characteristics
  - seedbed requirements
  - seed dispersal
  - germination requirements
- Growth form
- Longevity



Pinus virginiana

Stand Development
(succession within a forest stand)

- A function primarily of
  - site quality
  - Past history
  - current practices (grazing, for example)
  - species composition

A photographic history from the Allegheny Plateau in Pennsylvania


1927


1928

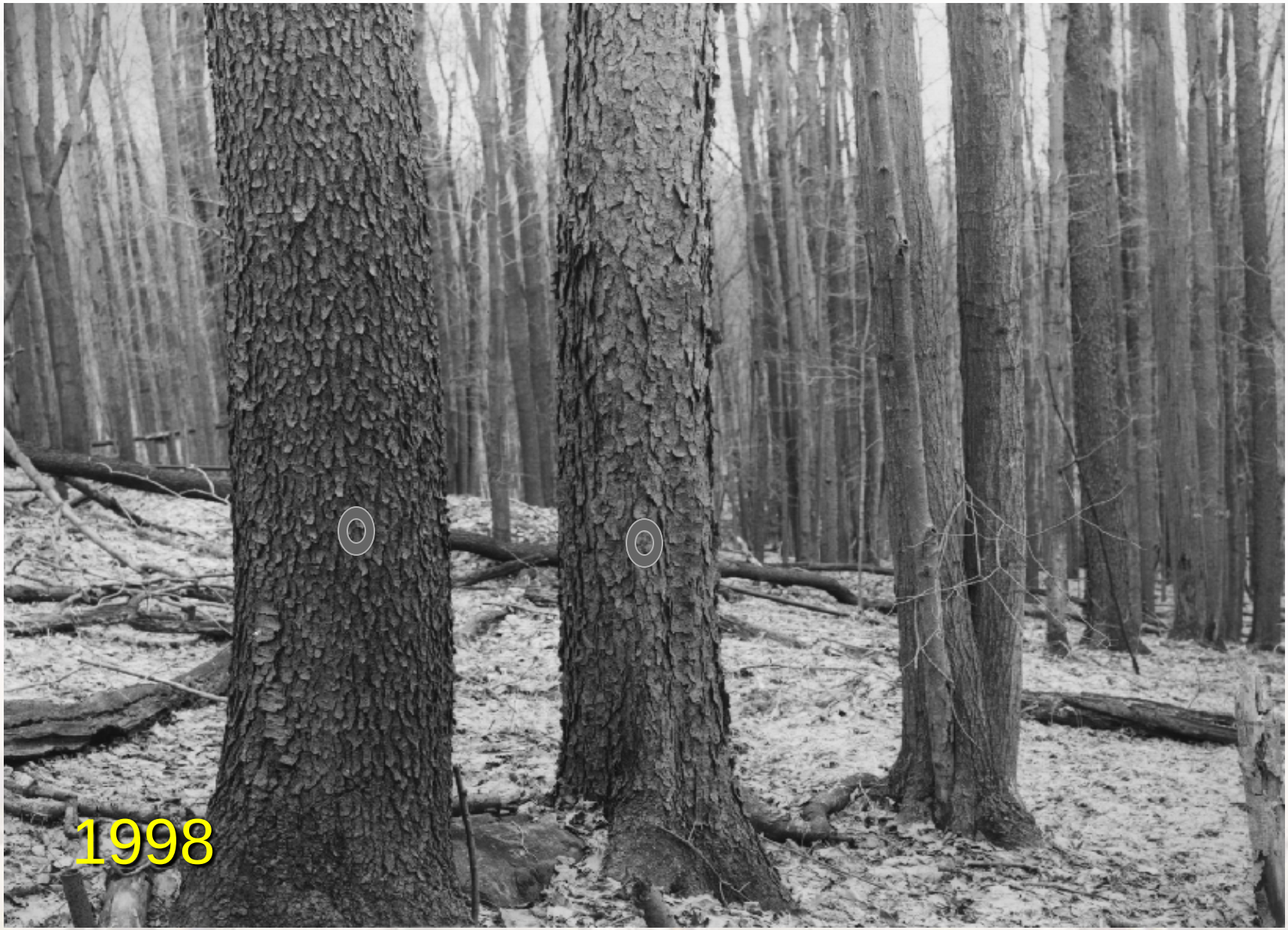

1937


1947


1958

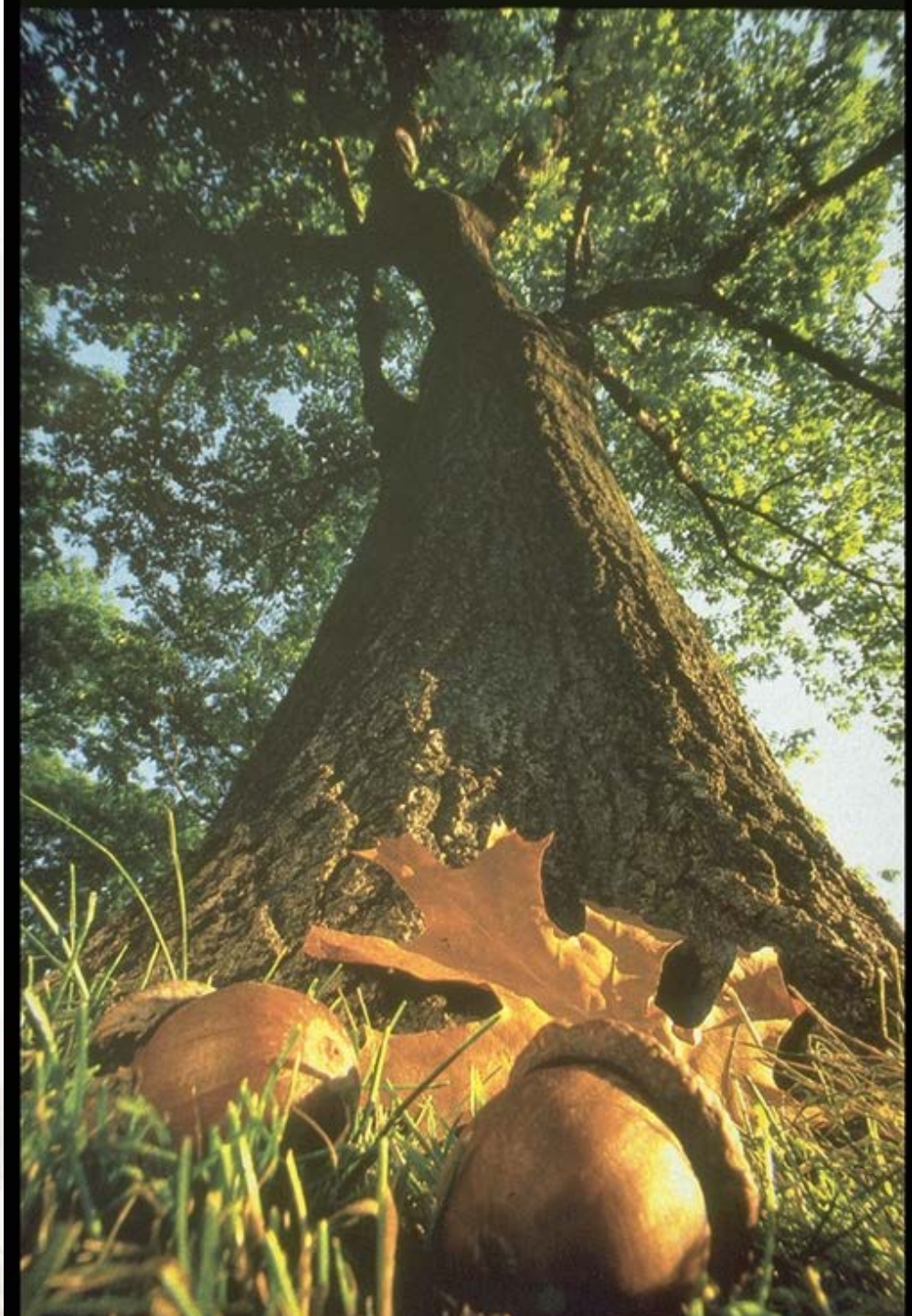

1968


1978

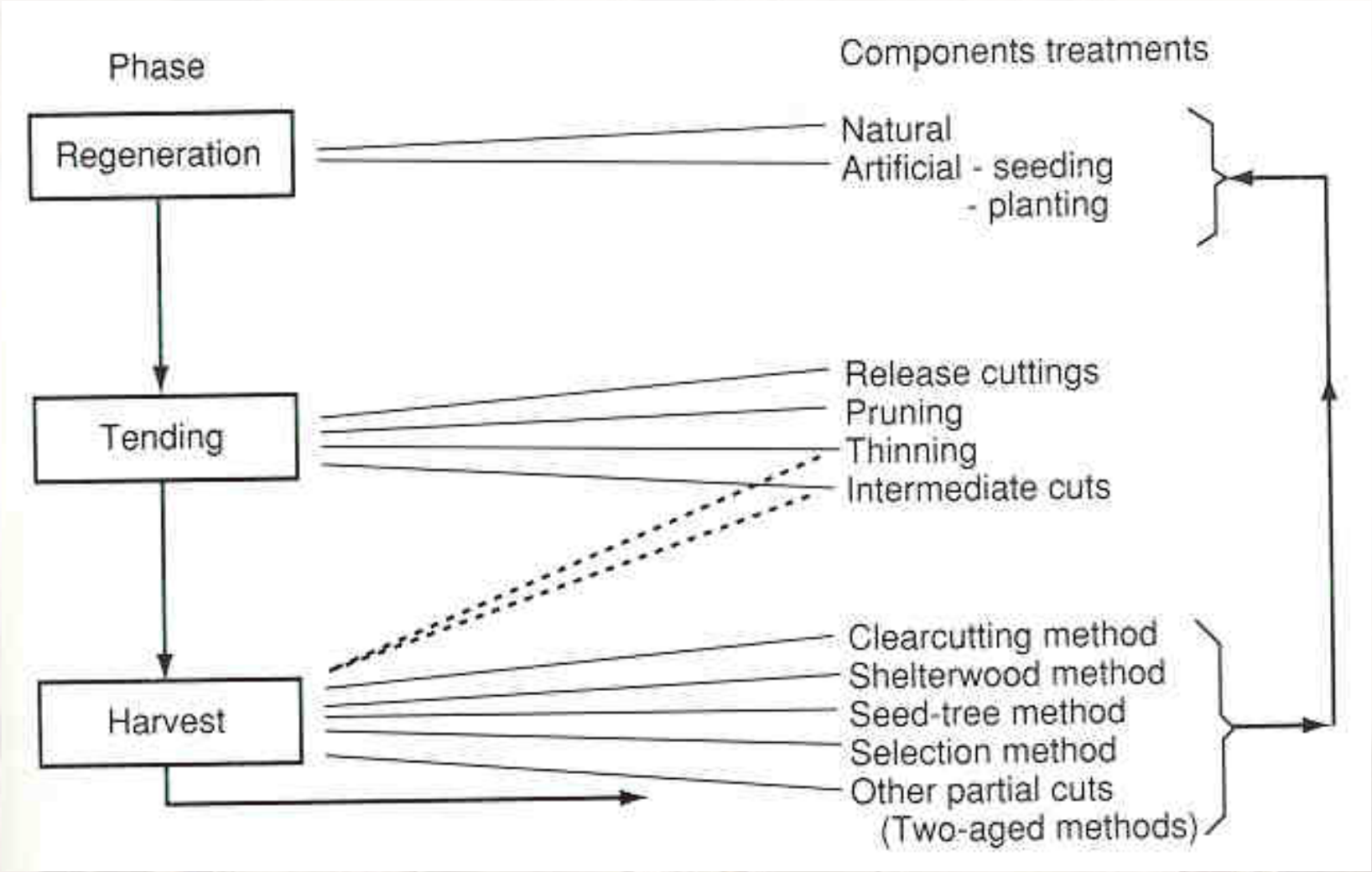

1998

Silviculture:

A Management Tool



Three Components of a Silvicultural System



Intermediate Treatments (tending)

- Release
- Thinning
- Timber Stand Improvement (TSI)

Release

- To *release* a young tree means to kill or cut undesirable trees or other vegetation that overtops it.

- Commonly used with young planted pines to free them from hardwood or grass competition.

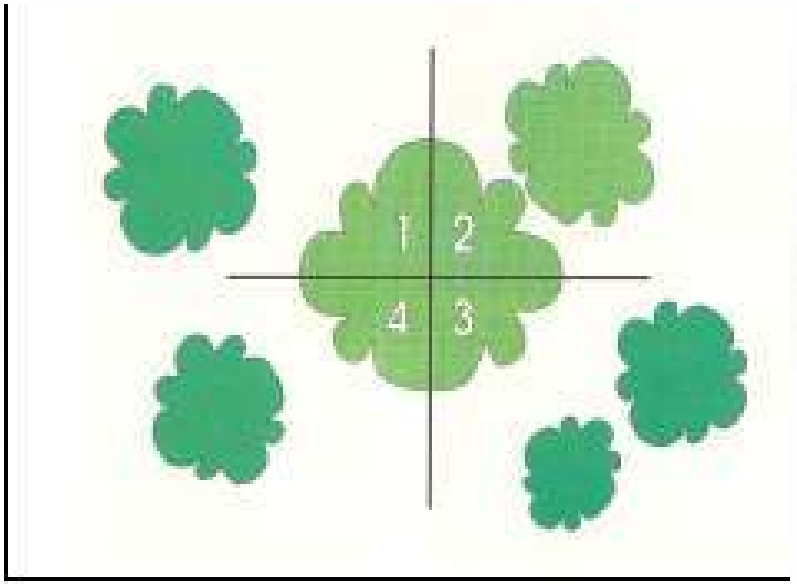
- **Crop tree release** - cutting or deadening trees in a young hardwood stand to focus growth on better growing trees of desired species and canopy position.

Timber Stand Improvement

- Removes trees of less desirable species, poor form, and poor condition from the main canopy to favor better trees and improve stand quality and composition.
- A first step for improving degraded stands. Used primarily in hardwood stands.

FIGURE 22-1
Improvement cutting removes trees damaged by natural agents like wind and ice, or injured during logging, freeing adjacent good quality trees in the upper canopy for better growth and development.

Crop/Choosen Tree Release



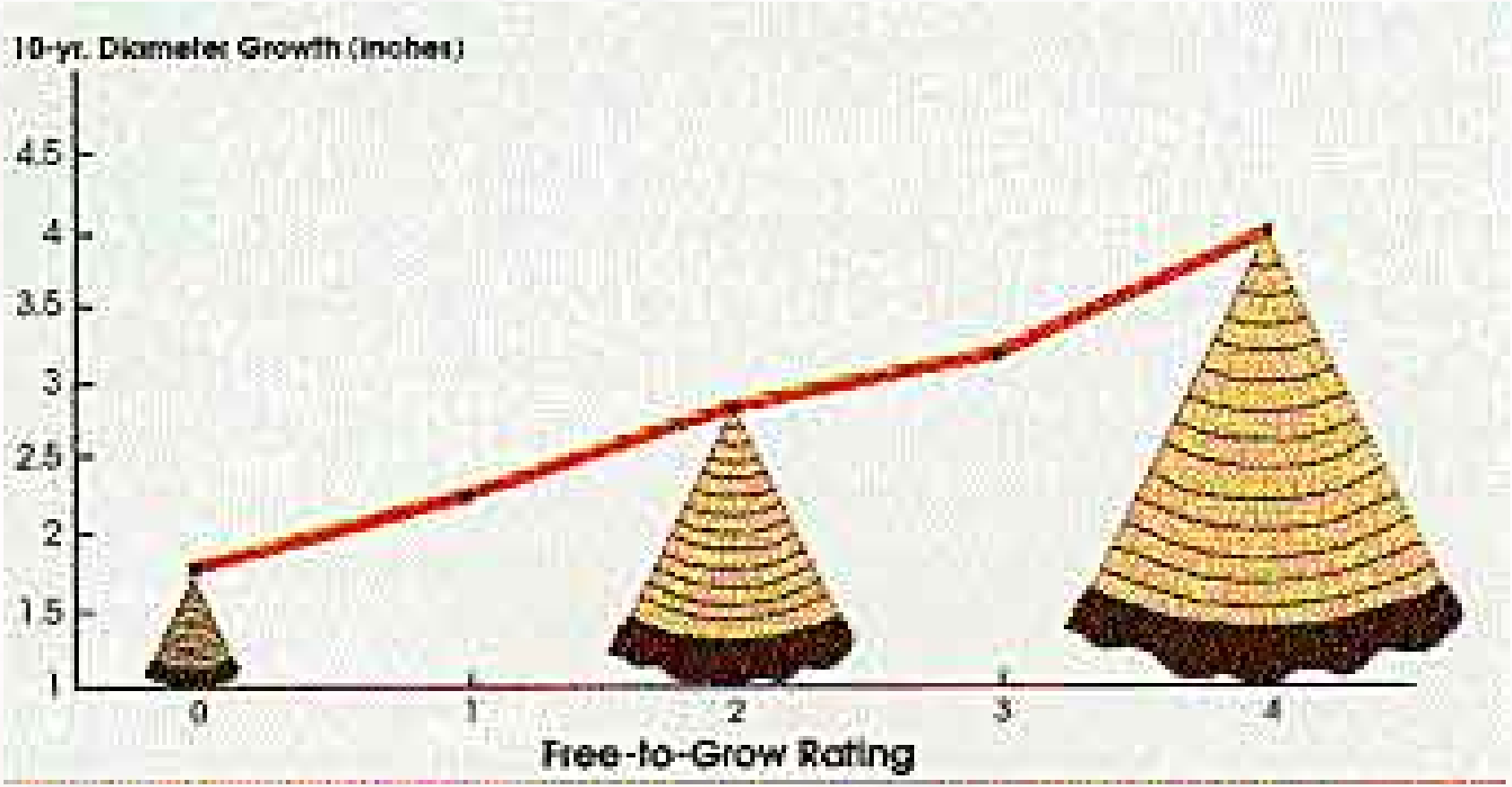
The center tree has space to grow on three of its four sides.

- To get <u>firewood</u>, <u>lumber</u>, <u>aesthetics</u>, <u>wildlife</u>, etc…

  Crop Tree System!

  – Crop Tree Release
    - applied to younger stands
  – Crop Tree Management
    - select “crop” trees, ~20 - 30/ac
  – Release (Free To Grow) on 3-4 sides
    - concentrates/accelerates growth

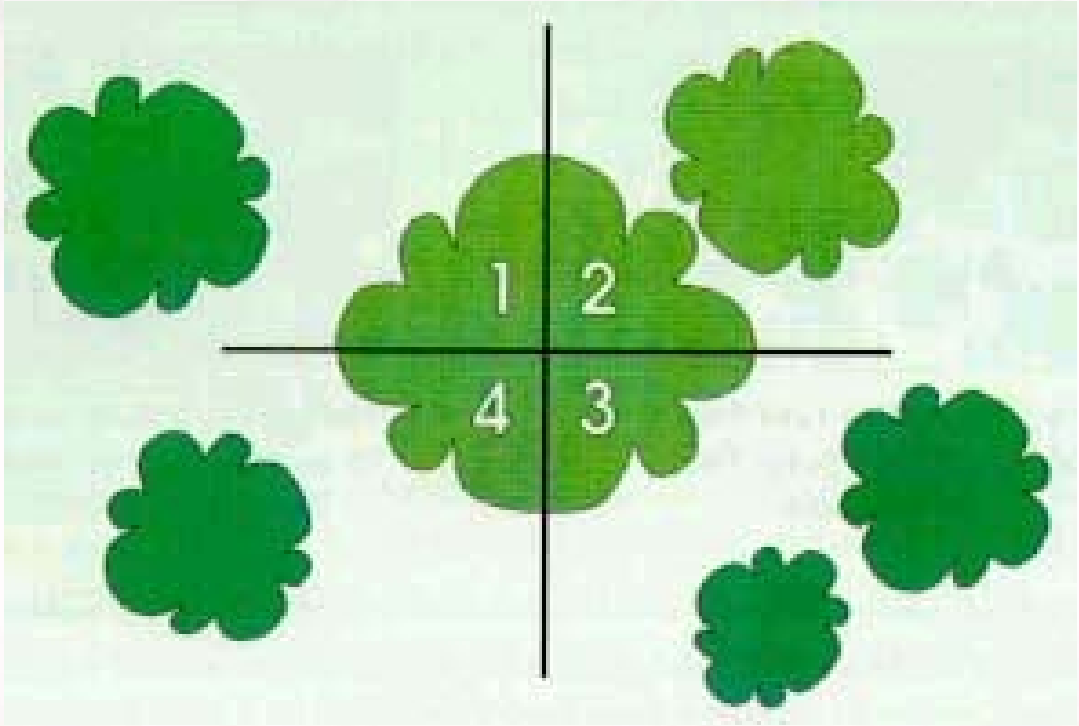
Crop Tree Management



This graph shows how an increase in free-to-grow rating from a crown-touching release can dramatically increase crop-tree growth.

From: *Crop Tree Management in Eastern Hardwoods*. USDA-FS.

Crop Tree Management

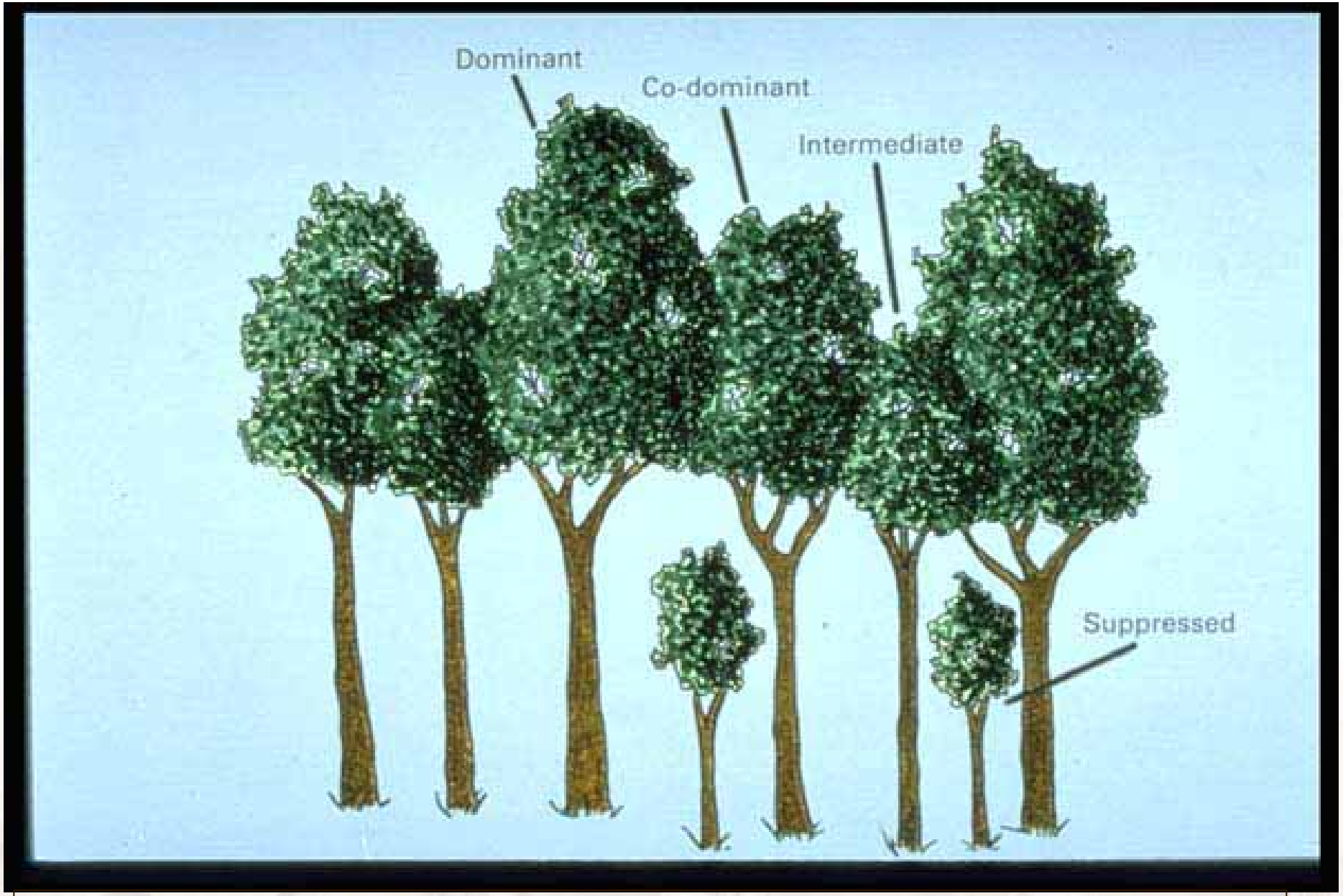


The center "crop tree" has a free-to-grow rating of 3. It has space to grow on three of its four sides.

From: *Crop Tree Management in Eastern Hardwoods*. USDA-FS.

Crop Tree Management

- Need to know
  - Silvics of the species
    - How will it respond to release?
    - Longevity?
  - Aware of regeneration implications
    - Shade tolerant vs. intolerant
  - How to kill trees…

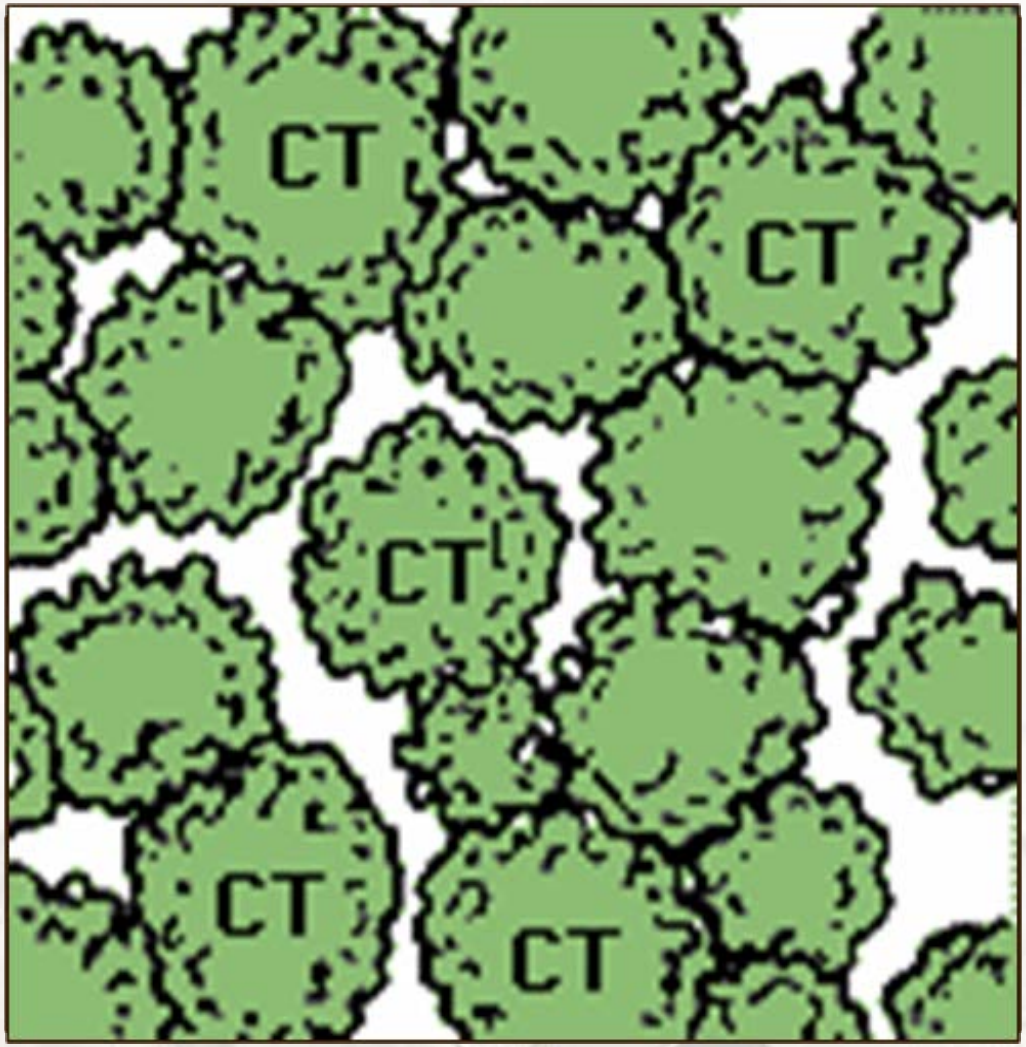


STRATIFICATION: The trees that are most successful in the competition for light outgrow and overtop the others

Crop Tree Management
How is it Done?

- Step 1: Plan!
  - Identify goals & objectives
  - Resource assessment
- Step 2: Define crop tree attributes
  - Based on objectives
  - Assessment will determine number
- Step 3: Mark crop trees in the woods
- Step 4: Remove (or kill) competing trees

Crop Tree Management
How is it Done?



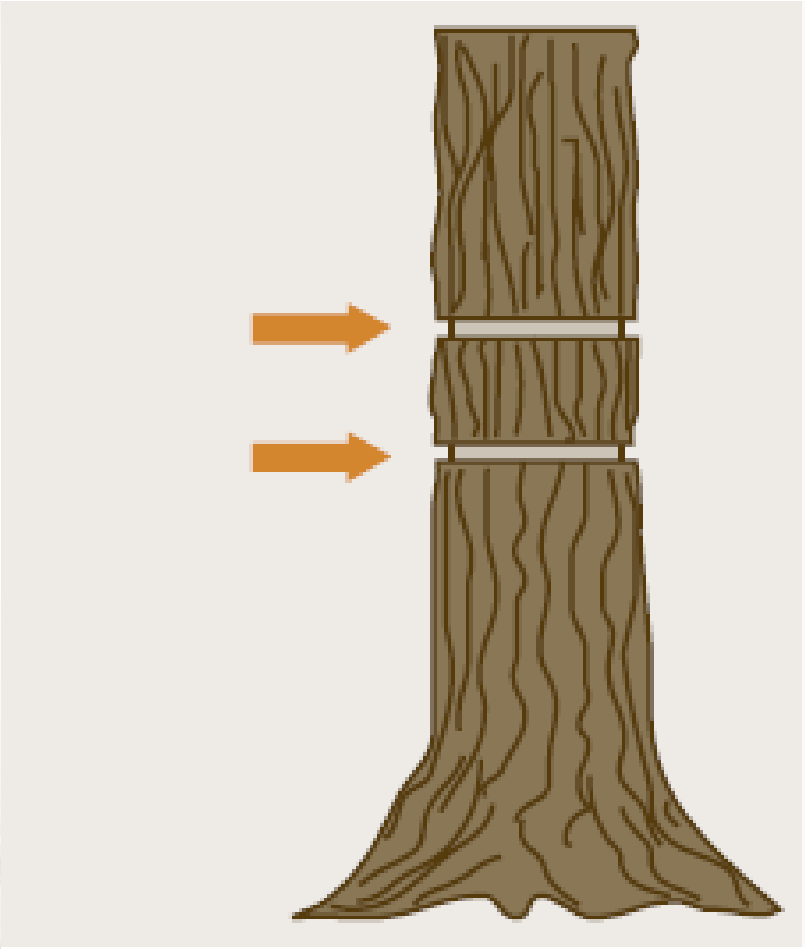
Crop Tree Management
How is it Done?

How to kill Trees

- Cutting
  - Immediate
  - Leaves root system
- Girdling
  - Leaves root system
- Chemically
- Combination

Girdling

- Hatchet or chainsaw
- Cut through the cambium
- Some species easier to kill than others.

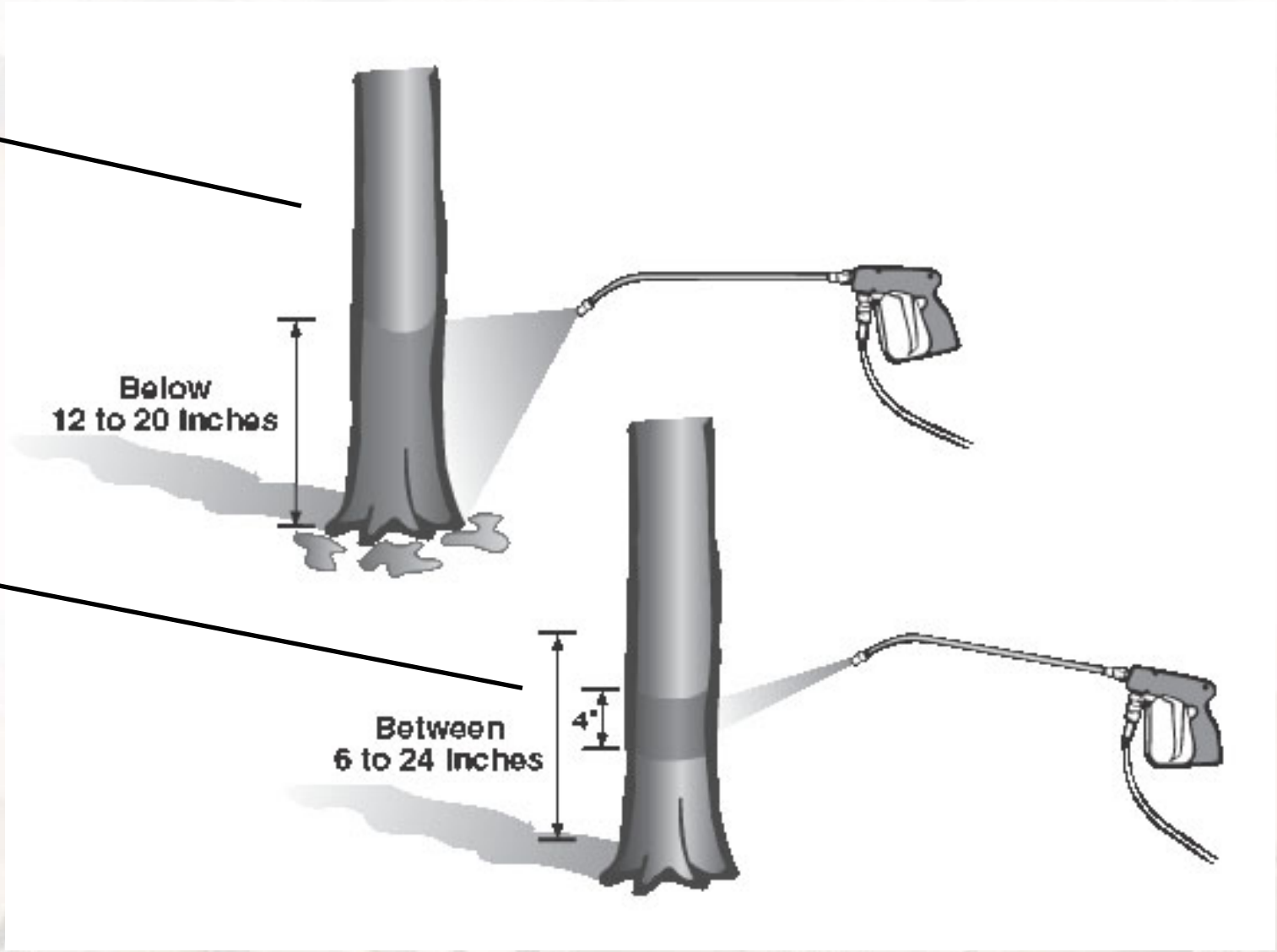


Chemically

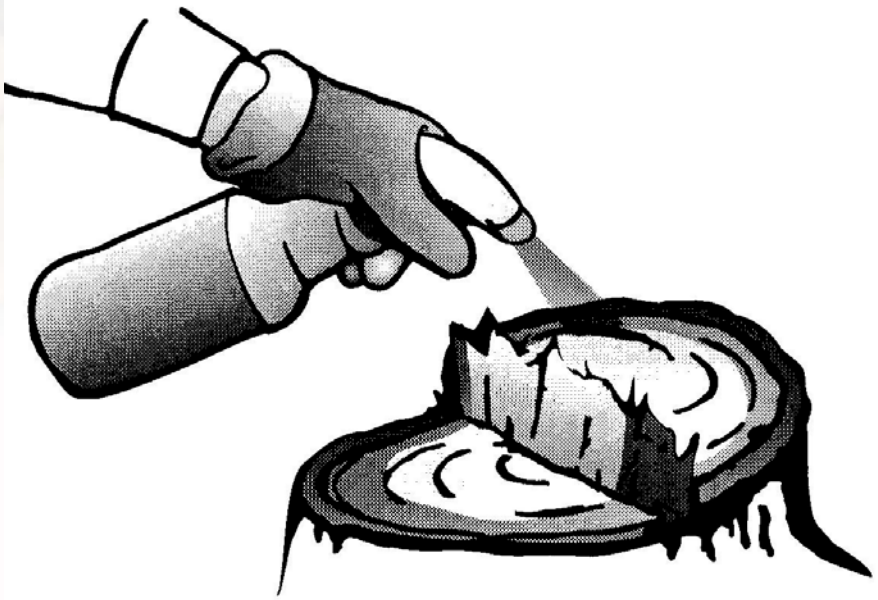
- Basal Spray
  - Stems up to 6” in diameter
  - “full” = low concentration, high volume
  - “streamline” = higher concentration, lower volume
- Injection
  - Used on larger trees (> 2” in diameter)
- Stump spray.
  - Used on cut trees to prevent re-sprout. (any size stump)

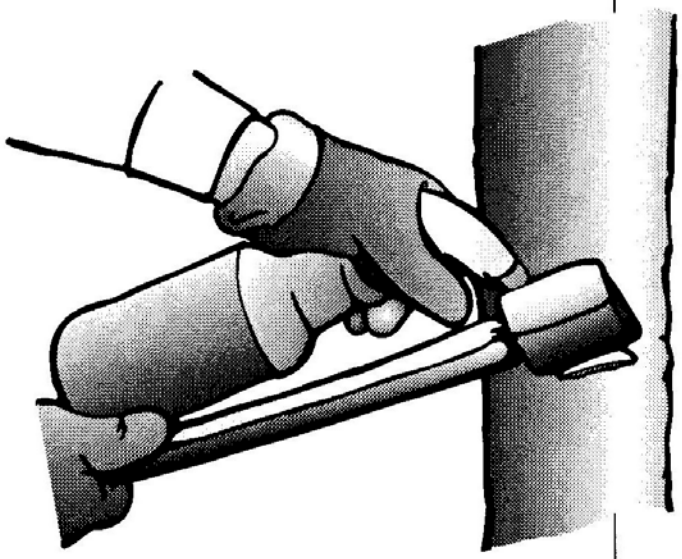
Full Basal

Streamline Basal



Cut Stump Application





C. Hack-and-squirt

Crop Tree Management
Final Thoughts

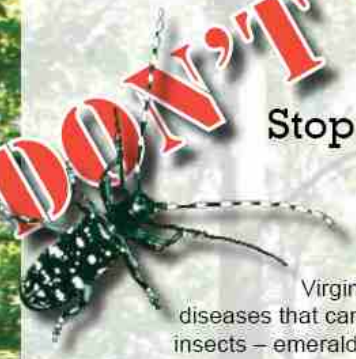
- Suitable for different objectives
  - Timber/Lumber for own use
    - Value, not volume
    - High-value species
    - Suitable for site
    - Pruning on young trees
  - Wildlife
    - Hard mast-producing trees
    - Strive for diversity
  - Aesthetic
    - Fall foliage
    - Attractive flowers
    - Attractive form or characteristics
  - Diversity
    - Unique or uncommon species

Crop Tree Management
Final Thoughts

- Variation in application
  - Can be applied at any point in stand's life
  - As early as 10 years (weeding)
  - Best suited when trees are 25' tall and stand has begun to stratify
  - Goal is to identify and release 'best' trees
- In nearly all cases
  - Dominant or codominant trees
  - Healthy, full crowns
- 20 – 50 crop trees per acre
  - Depending on species, stand age, and objectives
- Regeneration limitations
  - Underplanting
  - Look for stump sprouts
  - Plan 10 - 20 years prior

Crop Tree Management
Questions or Comments?

DON'T MOVE FIREWOOD



Stop the Spread of Tree-Destroying Insects and Diseases

Leave Your Firewood at Home

Virginia's forests are threatened by non-native insects and diseases that can kill large numbers of trees. Three recently introduced insects – emerald ash borer, Asian longhorned beetle, and Sirex woodwasp – are wood-infesting species that can be transported long distances in firewood. Likewise, oak wilt and other diseases can be spread through firewood. The gypsy moth, already well established in much of Virginia, can be spread over great distances when it lays its eggs on firewood that is moved into non-infested areas. Once transported into new areas, these insects and diseases can become established and kill local trees. We must STOP THE SPREAD of these insects and diseases and protect our forests and trees.

How you can help:

- Use firewood from local sources.
- If you have moved firewood, burn all of it before leaving your campsite.
- Do not transport firewood across state lines or into campgrounds or parks.

For more information contact your local Virginia Cooperative Extension office (www.ext.vt.edu/offices) or Virginia Department of Forestry office (www.dof.virginia.gov/) or visit the following Web sites:

www.emeraldashborer.info

www.aphis.usda.gov/ppq/pdmp/

www.fs.fed.us/r8/foresthealth/

Virginia Cooperative Extension

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FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

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