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# Woodland Management for Wildlife, Timber, and Enjoyment

## A Forest Management Primer for Illinois Woodland Owners

**By Jay C. Hayek**

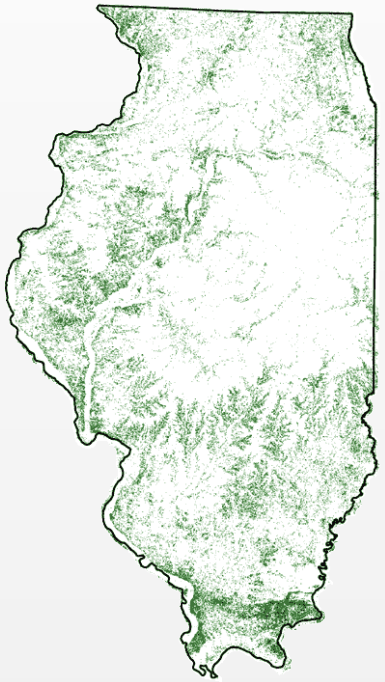
Univ. of IL Extension Forestry Specialist

# Outline

1. Illinois Forestry Facts
2. The Value of “Working” Forests:  Ecosystem Services
3. Forest Management Plans
4. State & Federal Forestry Programs
5. Forestry Practices (Most “Bang” for your $$$)

# IL Forestry Data -- 2019

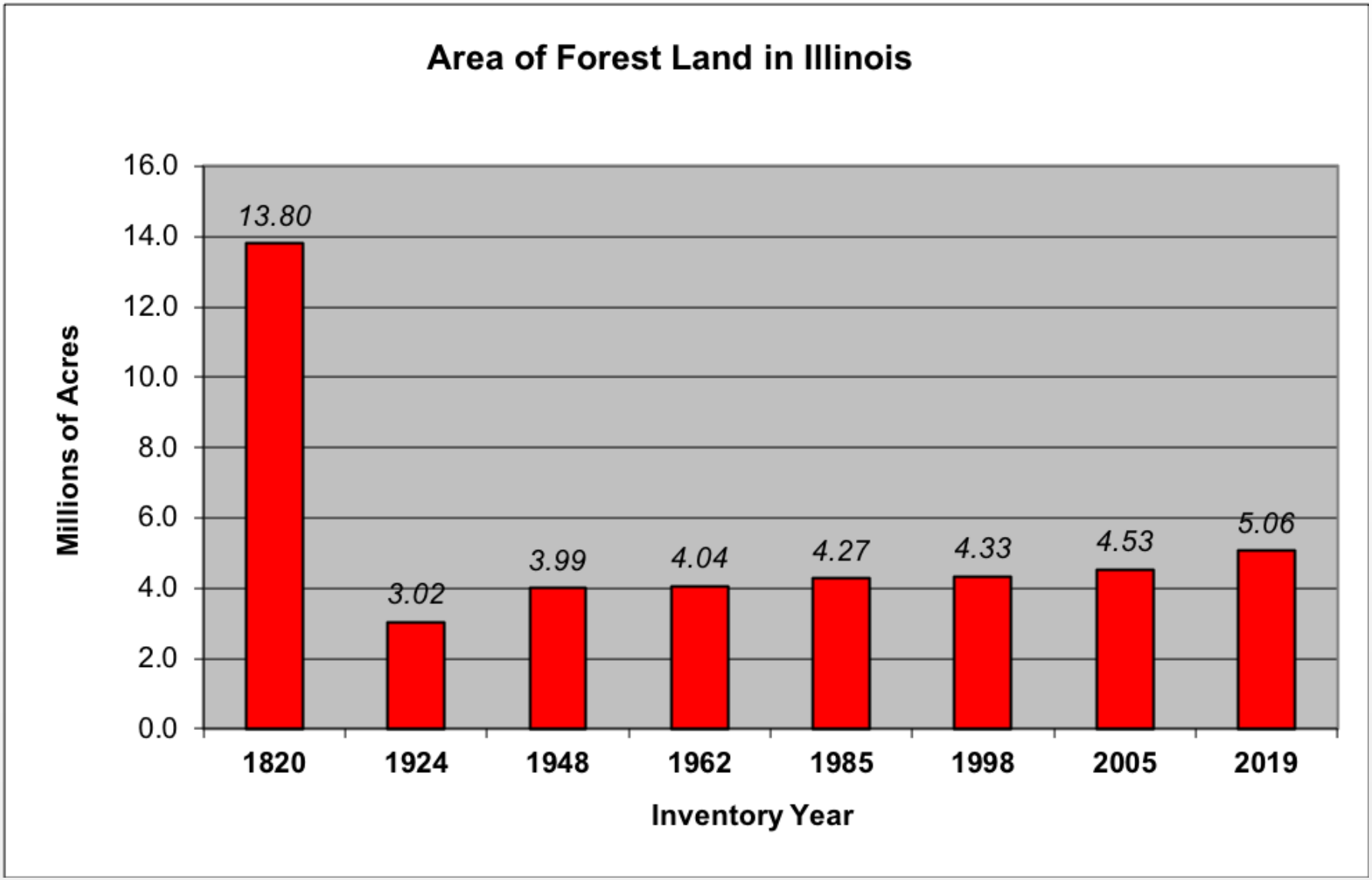
- **5.06 million acres of forest land***
  - 83.4% of all forest land is privately owned*
    - 4.1 million acres
  - 77% owned by family forest owners
    - 3.8 million acres



- **176,000 Family Forest Owners**
  - 9,600 IFDA plans
  - 340,000 acres enrolled in IFDA
- **Only 5.4% of IL woodland owners have a forest management plan**
- **Only 8.9% of forest land owned by family forest owners is under management**

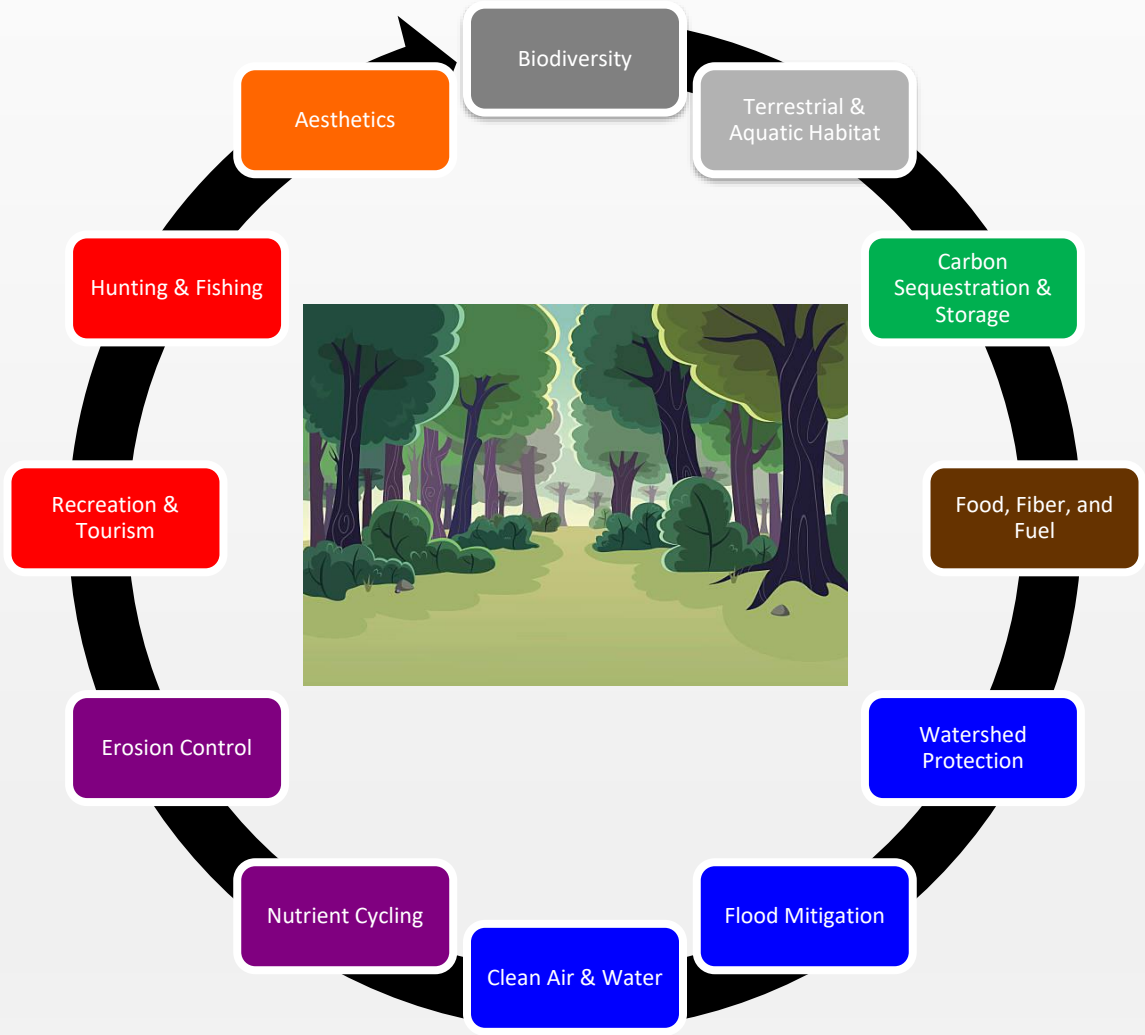


*** Source:** USDA Forest Service. 2019




**66.6% Increase in Forest Land since 1924 !!!**

# Ecosystem Services



# Benefits of Illinois' Forests

- **Economic Impact**
  - Forestry Products Industry
  - Hunting & Fishing
  - Wildlife Viewing, Camping, and Hiking, (recreation)

- **Ecosystem Services**
  - Biodiversity
  - Illinois forests provide the major habitat for more than 420 vertebrate species
    - 75% of Illinois wildlife utilizes forest habitat for a portion of their life cycle
  - IL forests sequester 343 million tons/yr of carbon
  - Soil and water conservation
  - Urban trees & forests

# Economic Impact

- Since 2007, more than 44 million people have visited Illinois state parks, forests, fish and wildlife areas, etc.

- Hunting, fishing, wildlife viewing, trail use, sightseeing, boating, camping, and picnicking generates **$3.2 billion** annual economic impact in Illinois, supporting **33,000 jobs**.



**Source**: https://www.dnr.illinois.gov/about/Pages/DidYouKnow.aspx)

**83% of Mammals**

**63% of Birds**

**80% of Amphibians and Reptiles**

**Require Forest Habitat for a Portion of their Life Cycle !!!**

# Keeping Forests as Working Forests

- A managed forest — what foresters often refer to as “working forests” — can easily retain its natural beauty and functions while simultaneously producing a sustainable supply of wood, fiber, wildlife, recreation, biodiversity, and clean water.

- Managing one aspect of your woodlot **DOES NOT** preclude the possibility of developing or enjoying the other uses and resources on your property.
  - e.g., Managing for Timber & Wildlife

# Keeping Forests as Working Forests

- This mistaken romantic notion that we can simply “bottle up” a forest and preserve it in some arbitrary “static state” is simply a fallacy

- Forests are constantly undergoing succession, which by definition is a dynamic, not a static, ecological process !!!

# Forest Management Plans: Your Roadmap to Successful Stewardship

# Why Forest Management?

**Stewardship or Conservation Ethic**

**Achieve Short-term & Long-term Goals**

**Periodic Income From Timber Harvesting**

**Better Hunting & Recreation**

**Preferential Tax Assessment**

# Woodland Owner Needs

- **On-site Technical Assistance / Forest Mgt Recommendations**
  - Professional consulting foresters and IDNR district foresters
- **Forest Health Advice & Guidance**
  - Invasive species, insects, and disease
    - Cost-share programs, on-site assistance, publications, etc.
- **Timber Sales & Harvesting**
  - Professional timber sale administration & marketing
- **Wildlife Management & Better Habitat**
  - Bigger deer…more turkey, bigger turkey…
- **Preferential Property Tax Assessment**
  - Woodland Assessment vs. Fair Market Value Assessment
- **Forestry Cost-share Programs**
  - IFDA (IDNR's flagship forestry program)
  - EQIP (USDA-NRCS initiative)
  - Conservation Stewardship Program (State & Federal CSP programs)

# Landowner Goals

- **Goals:** Concise statements that describe intended results or desired conditions normally expressed in broad, general terms without a specific time frame for achievement. Goals are reached by attaining specific objectives, although not all goals have quantifiable objectives.
  - Goals are based on personal values and desires
  - However, goals must be realistic and within the realm of reason for your particular land
  - Professional foresters and natural resource specialists are available to help you attain your stated goals

# Objectives

- **Objectives:** Concise, time-specific statements of measurable planned results that respond to pre-established goals.
  - An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals.
  - Objectives are for the 10-year period following Forest Plan approval.

# Forest Management Plan

**Cover Page and Landowner Goals & Objectives**

**Property Description: Aerial Photo & Soils Report**

**Forest Inventory Data *(forester needed)***

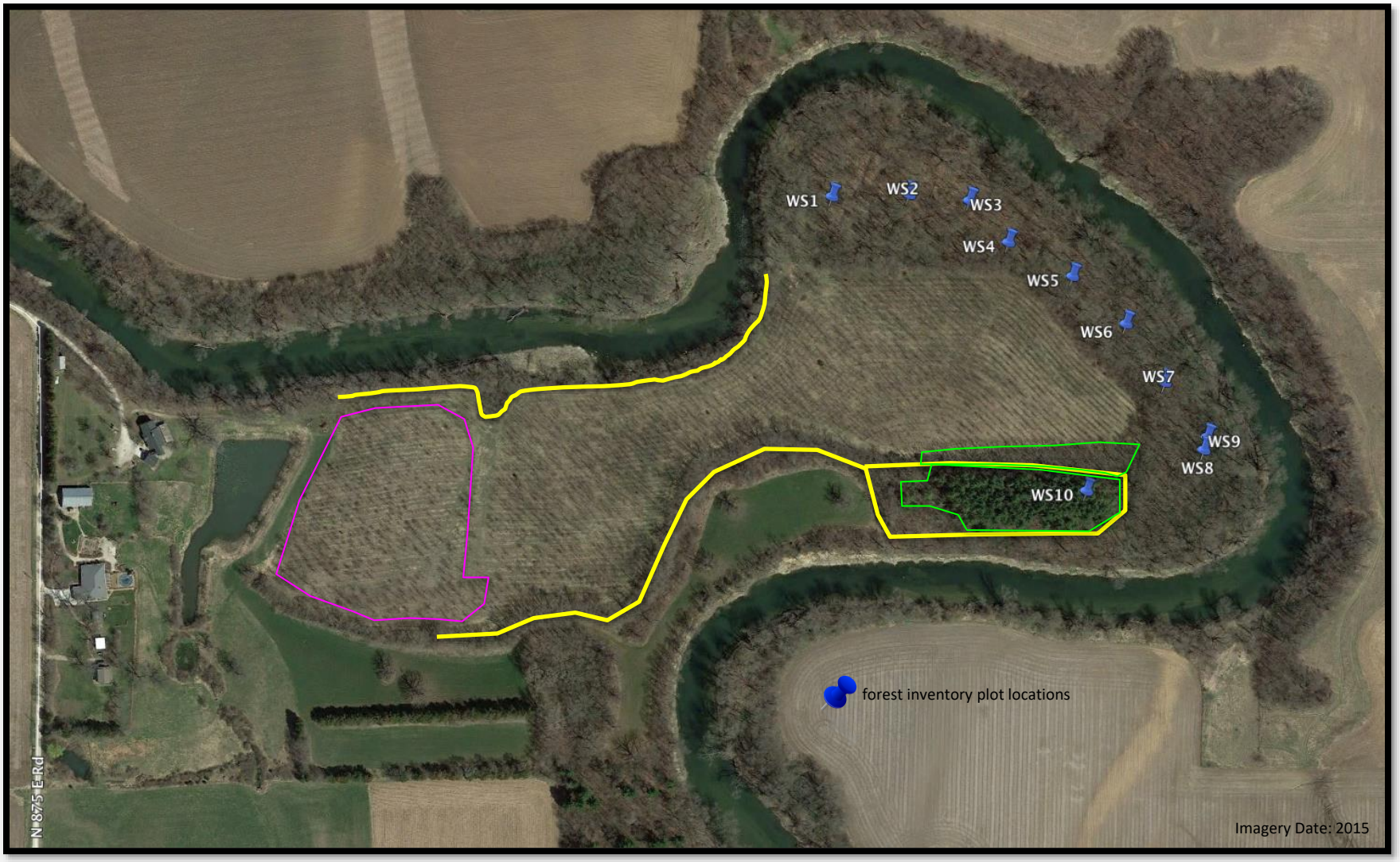
**Stand Descriptions, Data, and Mgt. Recommendations**

**Detailed Management Activity Schedule**

**Timber Harvest Schedule & Regeneration Rx (FDA)**

# Mr. Joe Landowner| Amity TWP | Livingston Co., IL

## Supplemental Map: Scheduled Forest Management Practices (2017-2027)




Bush Honeysuckle Treatment Area(s)

Pruning Area(s)

Crop Tree Release Area(s)

# Forestry Programs

# Special Property Tax Valuation

**Forestry Development Act (FDA)**
***"1/6 EAV as Cropland"***

**Conservation Stewardship Law**
***"5% Fair Cash Value"***

**Need...**

**DNR-Approved Forest Mgt. Plan**

**Conservation Mgt. Plan**

# Illinois Forestry Development Act

- **Illinois FDA…**
  - 9,600 IFDA plans
  - 340,000 acres enrolled in IFDA
  - Cost-Share Program
  - Low-cost Seedlings
  - Special Tax Valuation


# Where & How to Begin?

- **Ask Yourself…**
  - Why do you own your forest land?
  - What do you want to do with your land?
  - What are your goals?

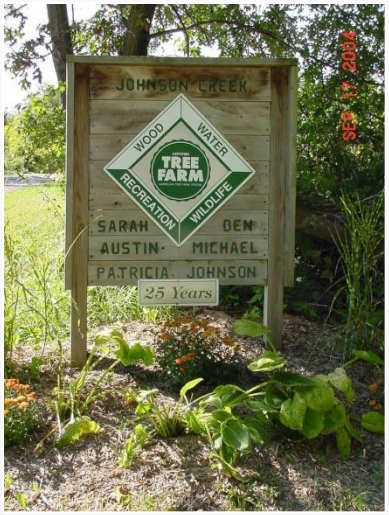
- **Contact a Professional Forester Today for a Field Visit**
  - Get on their waiting list now!

- **Participate in Forestry Workshops**

- **Educate Yourself…**
  - Visit Extension Forestry and State Forest Agency websites
  - Purchase a book or two on forestry

# American Tree Farm System

- **Illinois Tree Farm**
  - America's Oldest Landowner Organization
  - Non-profit Organization
  - 1,129 Certified Tree Farms
  - 96,719 Acres Certified



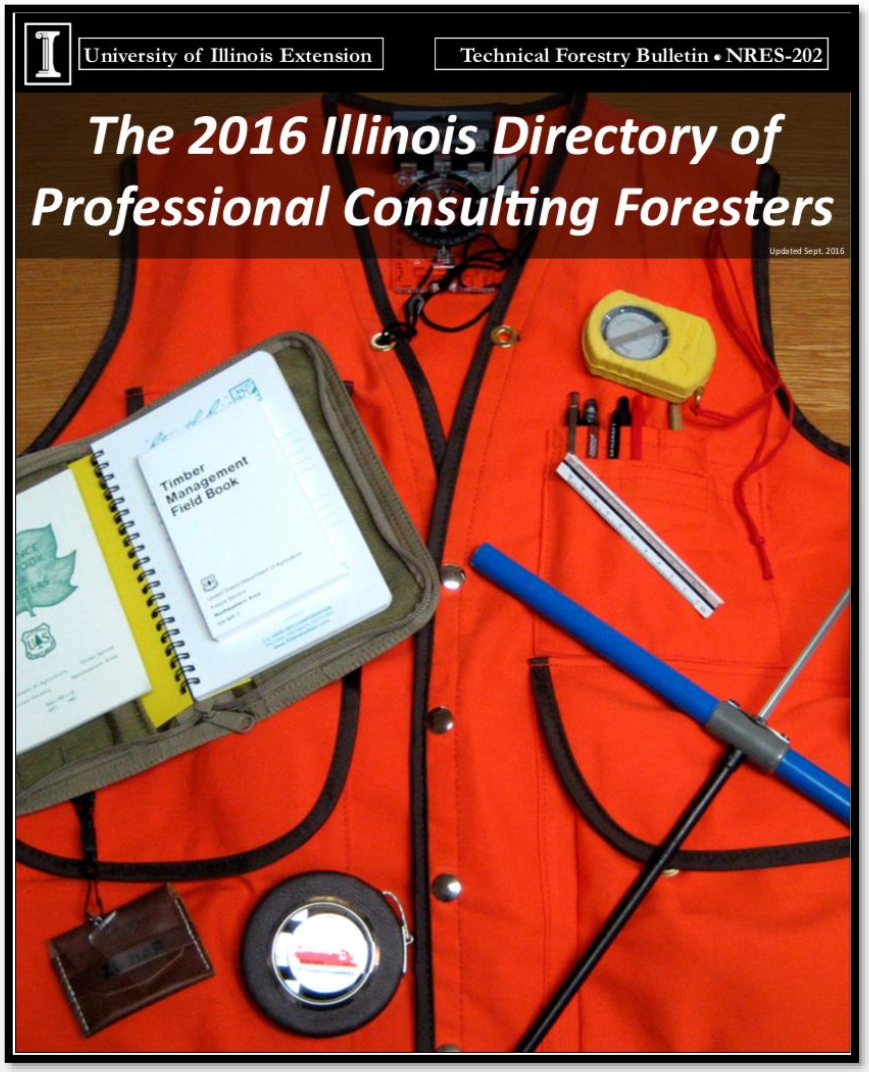

# Stewardship Pride

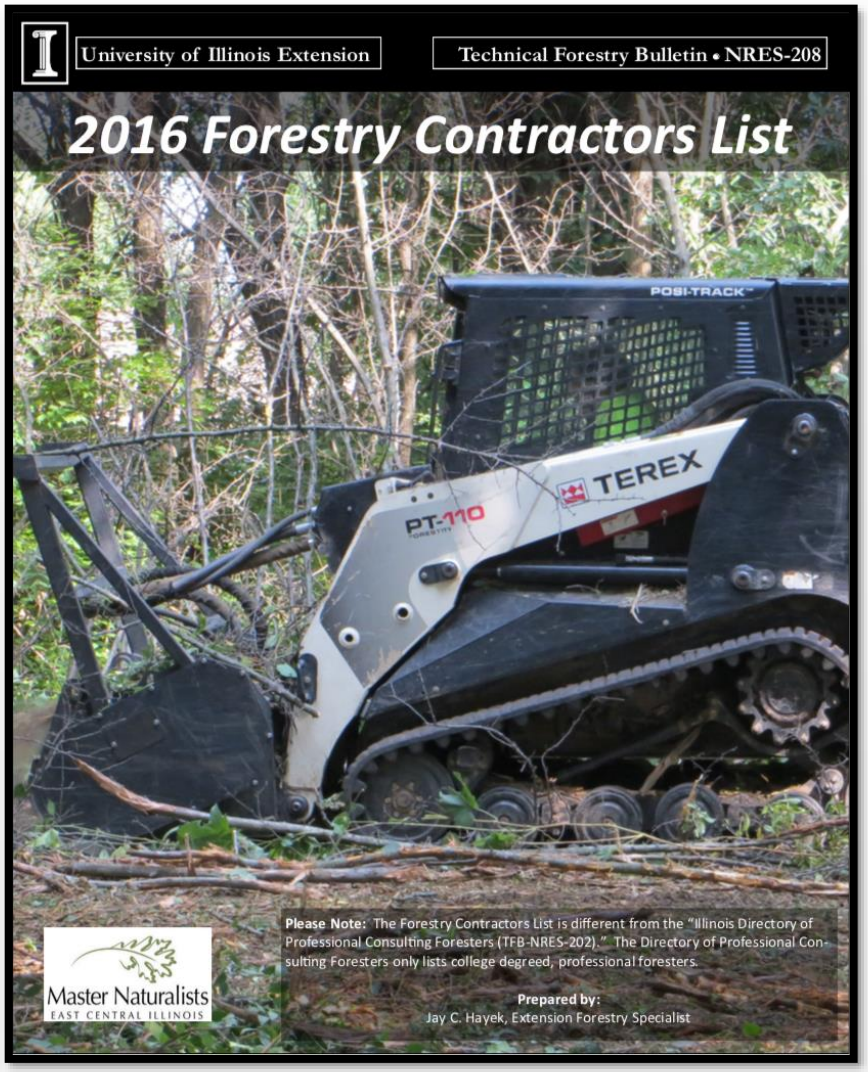


# Technical Assistance

- **Need to develop a forest management plan; looking to sell some timber; need advice managing your forest land…call a professional forester!**
  - DNR District Foresters
  - Professional Consulting Foresters
    - Lists are available at the Division of Forest Resources Internet Homepage
    - https://www.dnr.illinois.gov/conservation/Forestry/Pages/default.aspx

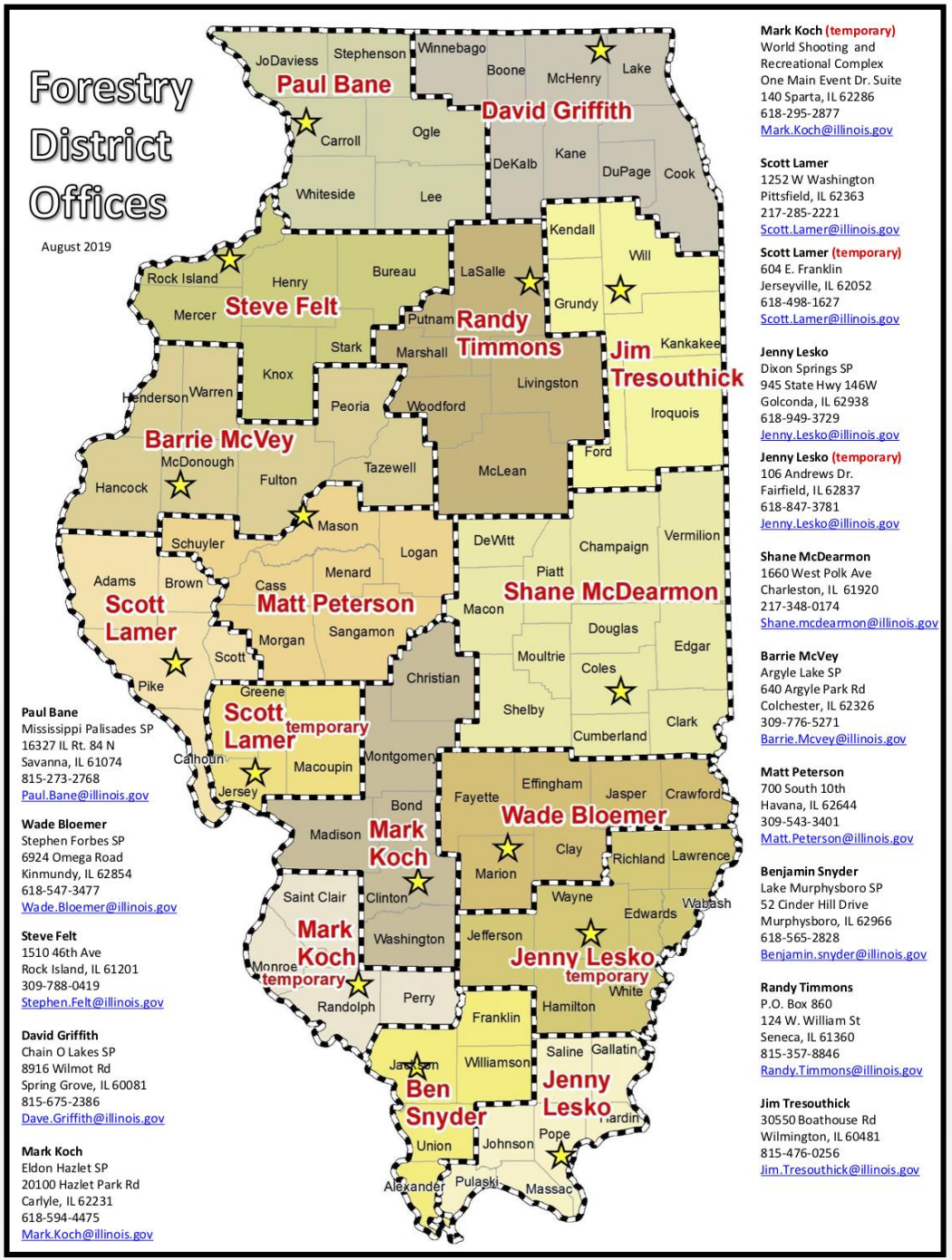
# Professional Resources



# Forestry District Offices

August 2019




**Paul Bane**
Mississippi Palisades SP
16327 IL Rt. 84 N
Savanna, IL 61074
815-273-2768
Paul.Bane@illinois.gov

**Wade Bloemer**
Stephen Forbes SP
6924 Omega Road
Kinmundy, IL 62854
618-547-3477
Wade.Bloemer@illinois.gov

**Steve Felt**
1510 46th Ave
Rock Island, IL 61201
309-788-0419
Stephen.Felt@illinois.gov

**David Griffith**
Chain O Lakes SP
8916 Wilmot Rd
Spring Grove, IL 60081
815-675-2386
Dave.Griffith@illinois.gov

**Mark Koch**
Eldon Hazlet SP
20100 Hazlet Park Rd
Carlyle, IL 62231
618-594-4475
Mark.Koch@illinois.gov

**Mark Koch (temporary)**
World Shooting and Recreational Complex
One Main Event Dr. Suite 140 Sparta, IL 62286
618-295-2877
Mark.Koch@illinois.gov

**Scott Lamer**
1252 W Washington
Pittsfield, IL 62363
217-285-2221
Scott.Lamer@illinois.gov

**Scott Lamer (temporary)**
604 E. Franklin
Jerseyville, IL 62052
618-498-1627
Scott.Lamer@illinois.gov

**Jenny Lesko**
Dixon Springs SP
945 State Hwy 146W
Golconda, IL 62938
618-949-3729
Jenny.Lesko@illinois.gov

**Jenny Lesko (temporary)**
106 Andrews Dr.
Fairfield, IL 62837
618-847-3781
Jenny.Lesko@illinois.gov

**Shane McDearmon**
1660 West Polk Ave
Charleston, IL 61920
217-348-0174
Shane.mcdearmon@illinois.gov

**Barrie McVey**
Argyle Lake SP
640 Argyle Park Rd
Colchester, IL 62326
309-776-5271
Barrie.Mcvey@illinois.gov

**Matt Peterson**
700 South 10th
Havana, IL 62644
309-543-3401
Matt.Peterson@illinois.gov

**Benjamin Snyder**
Lake Murphysboro SP
52 Cinder Hill Drive
Murphysboro, IL 62966
618-565-2828
Benjamin.snyder@illinois.gov

**Randy Timmons**
P.O. Box 860
124 W. William St
Seneca, IL 61360
815-357-8846
Randy.Timmons@illinois.gov

**Jim Tresouthick**
30550 Boathouse Rd
Wilmington, IL 60481
815-476-0256
Jim.Tresouthick@illinois.gov

# Forestry Practices:
# The Best Bang for your Buck $$$

# Top Forest Management Practices

- To get the most bang for your buck (i.e., ROI), the following forest management activities are strongly recommended on most woodland properties in Illinois
  - **Intermediate Stand Management**
    - Crop Tree Release
    - Forest Stand Improvement (including woody vine control)
  - **Invasive Species Control**
  - **Prescribed Fire (great tool, but not a panacea)**
    - Use w/ Caution & use Wisely !!!

# Sage Advice

**…all trees are not created equal…
in most stands, there are only a limited number of trees that have the potential to produce high-value timber products.**

**Dr. Arlyn W. Perkey**
**USDA Forest Service, Retired**

# Crop Tree Management (CTM)

**A forest management technique that focuses on releasing individual [crop] trees that have been pre-selected to produce future benefits consistent with the landowner's goals.**

**Crop Tree Management is not thinning… not exactly!**

# Crop Tree Release (CTR)

**…is the selective and deliberate removal of adjacent, competing canopy trees (neighbors) whose crowns overtop, touch, or infringe upon the growth and development of your selected crop tree's crown.**

# The Principle…

**Guarantee (within reason) and perpetuate your crop tree's domimant / codominant crown position**

**Facilitates crown expansion**

**Younger stands benefit the most…you, rather than Mother Nature, get to pick the "winners"**

**Most Bang For Your $$$$**

# A Crop Tree is…

**…any tree or species of tree that the landowner wishes to maintain as part of their timber stand over a given period of time**

**Different forest stands often have different crop tree criteria!**

# Crop Tree Selection Criteria

## General Comments

Dominant & Co-Dominant Trees
Don't Release Overtopped Intolerants

Healthy, Symmetrical Crown

Avoid High Risk Trees

Expected Longevity 20+ yrs.

Species Adapted to the Site

Release 30-50 Trees/Acre

## Timber Trees

Good Form

Higher-Value Species*

Quality Butt Log ~ $8^6$

No Epicormic Branching

Avoid High Risk Trees

Minimal Defect

**Bigger…Better…Faster…Greater Value!**

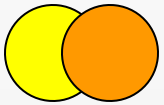
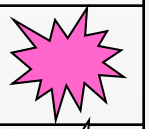
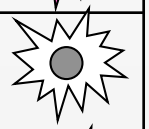
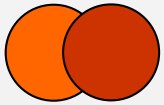
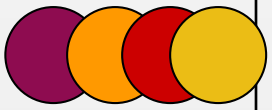
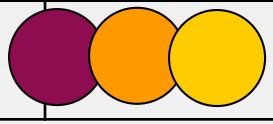
# Crop Trees: Timber Value

| | | |
|---|---|---|
| **Black Walnut** $$$$ | **White Oak sp.** $$$ | **Silver Maple** $$ |
| **Black Cherry** $$ | **Red Oak sp.** $$ | **Basswood** $$ |
| **Hard Maple** $$ | **Hickory** $$ | **Ash** $$ |



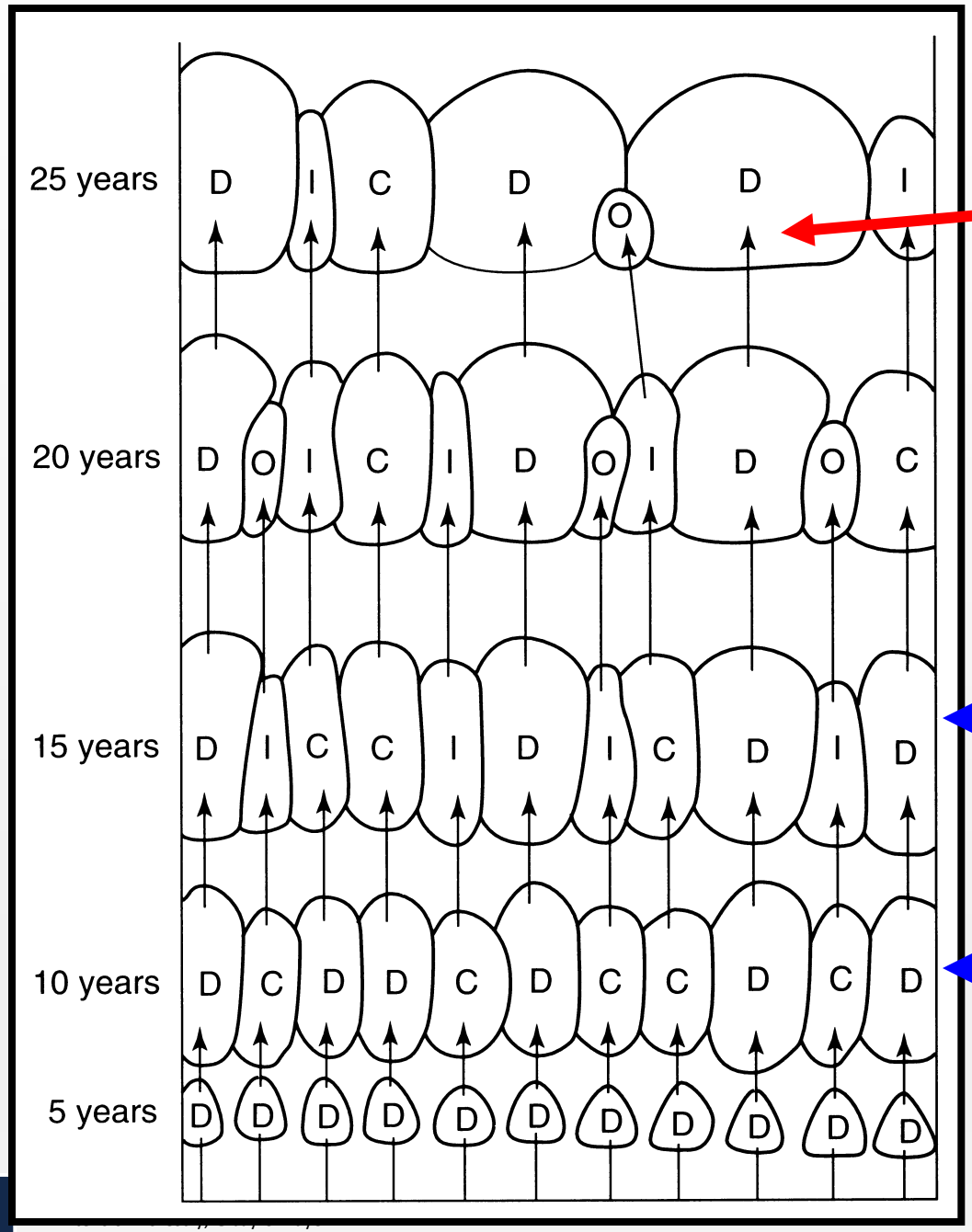
**$ = Illinois timber values ~ winter 2019**

# Crop Trees: Aesthetics

| Fall Foliage | Spring Flowers |
|---|---|
| Sugar maple  | Redbud  |
| Red maple  | Dogwoods  |
| Yellow-poplar  | Serviceberry  |
| Sassafras  | |
| Sweetgum  | |
| Scarlet oak  | |
| Ash & some Hickories  | |

# When...or at What Stage Should you Apply CTM?

- **Answers:**
  - ***Immediately*** in young stands; soon before or after canopy closure (Age 10-25 yrs.)
  - When canopy closure initiates crown competition
    - Can you live with what Mother Nature gives you?
  - Trees should be around 18-25 ft. tall
  - Release treatments typically last 6-15 years, depending on stand development and site conditions.




**Are these trees you wanted? Do they meet your goals?**

**Winners vs. Losers**

CTM allows **YOU**, not Mother Nature, to pick the winners!

Start now…release Crop Trees early in stand development

# When to Apply CTM?

| | Total Trees/Ac | [D/C] Trees/Ac | Desirable D/C Trees/Ac |
|---|---|---|---|
| **Age 10** | 2600 | 837 | 145 |
| **Age 20** | 1200 | 307 | 25 |
| **Age 40** | 530 | 95 | 17 |

So, where is the window of opportunity for Crop Tree Management?

# How Do I Apply CTM?

1. **Select crop trees**
   - Identify your best 30-50 crop trees per acre
   - Evaluate their potential to respond to “release”
   - Either ***flag*** your crop trees or ***paint*** the trees that are competing with your crop trees

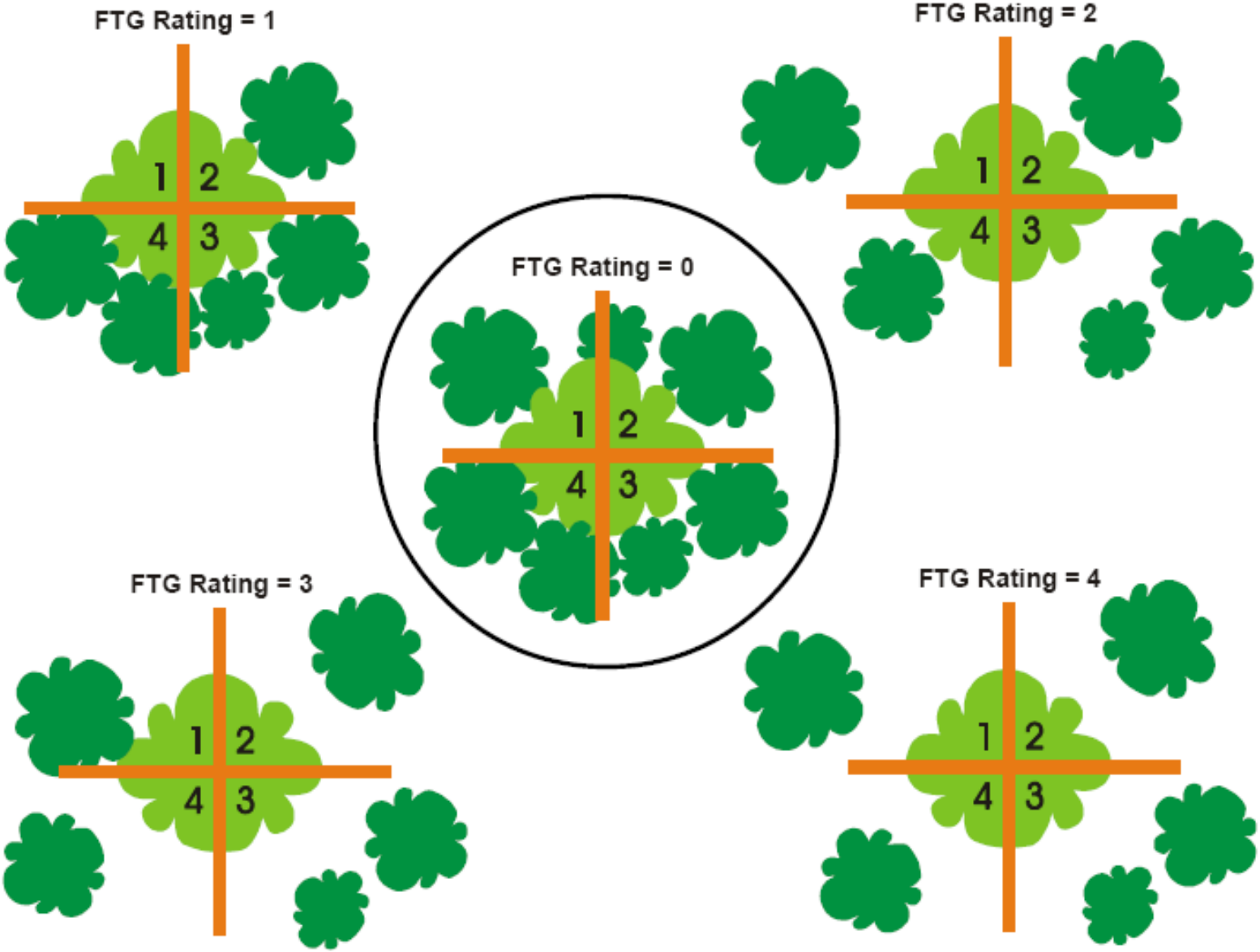
2. **Determine free-to-grow (FTG) status**
   - FTG rating is an index of competition

# Free-to-Grow (FTG) Status?

"The *free-to-grow* rating is an index of competition which rates the available growing space for the crop tree by determining on how many sides of the crown there is room for growth."
**(Apsley and Heiligmann, 2002)**

**As the FTG rating increases for individual crop trees, so does the growth rate for the individual tree (Perkey and Onken).**

## CROP TREE MANAGEMENT — FREE TO GROW RATINGS

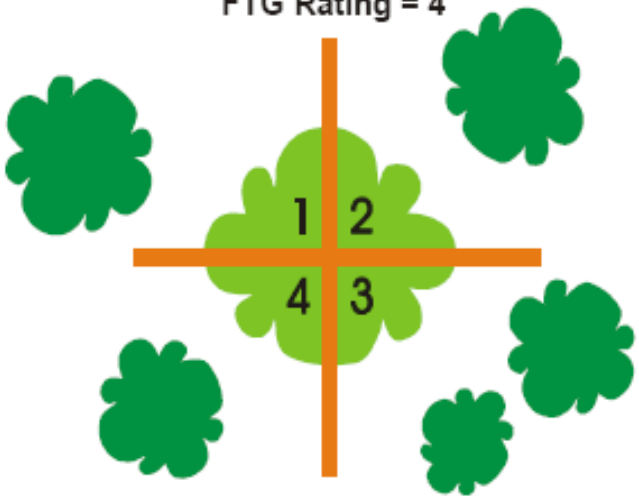


# CROP TREE MANAGEMENT — CROWN-TOUCHING RELEASE

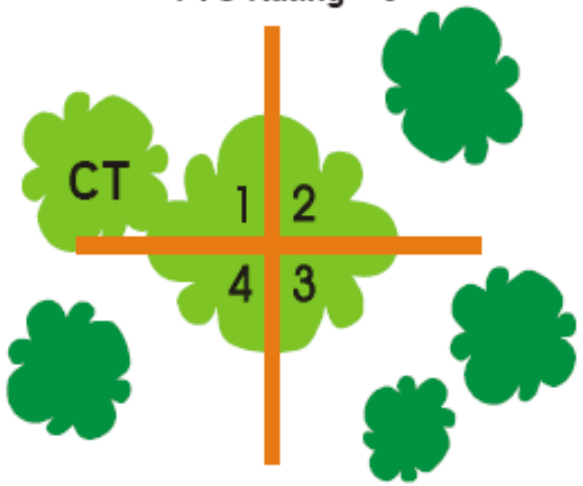
FOR OPTIMUM GROWTH
A 4-SIDED RELEASE IS REQUIRED

the only exception is . . .

FTG Rating = 4




FTG Rating = 3




a 3-sided release when the competing tree retained is another crop tree.

# How Do I Apply CTM?

3. **Selectively fell or girdle competing crowns (trees)**

   – Cut till you see a ring of light around your crop tree!

   – Expect to remove at least 3 to 5 trees for every released crop tree!

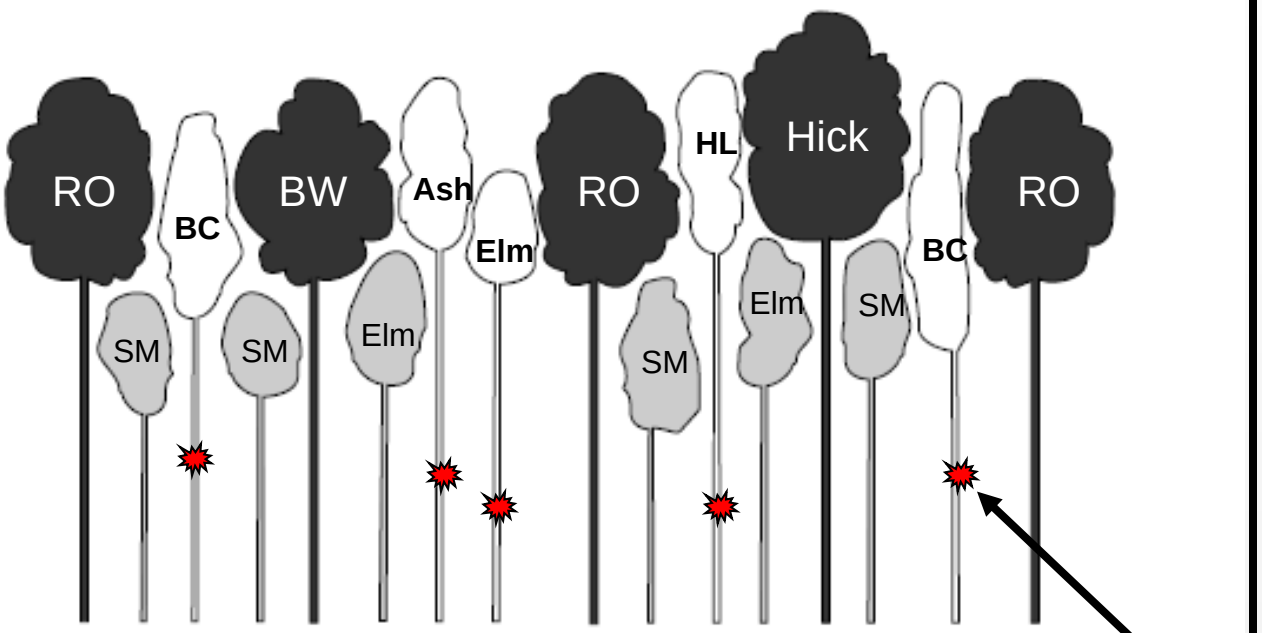
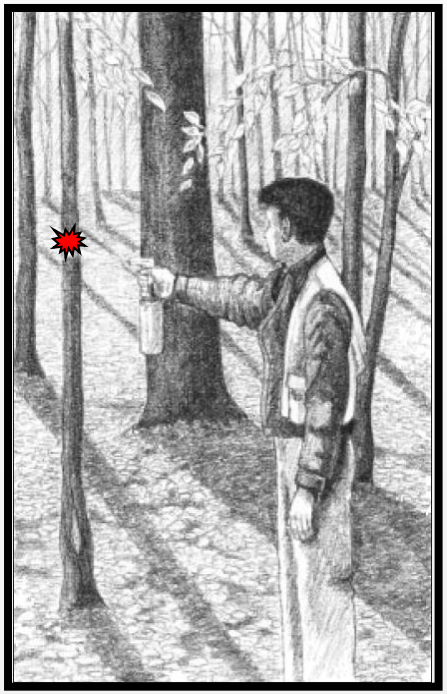


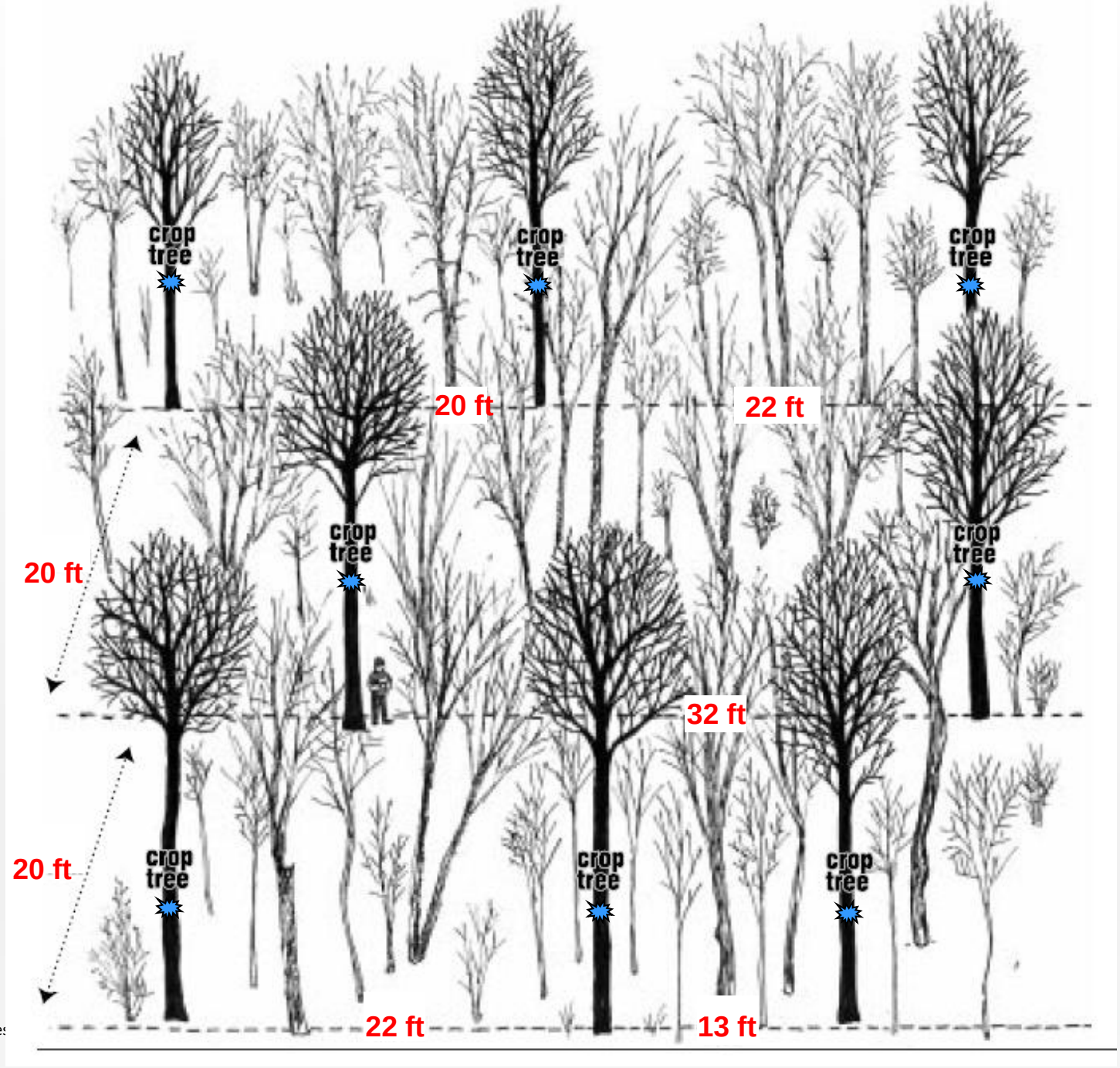

Figure 2 — Dominant trees (indicated by a dark colour in this illustration) are the tallest, most vigorous trees in the stand. The crowns of dominant trees get the most sunlight, allowing dominant trees to suppress the growth of neighbouring trees. Dominant trees make the best crop trees.



Trees marked for removal

**Image modified from:** Ontario Ministry of Natural Resources

Image Adapted from: Ontario Ministry of Natural Resources



# Where Does One Apply CTM?

- **Apply to young stands [plantations and natural]**
  - Younger stands typically will have more crop trees than older stands
  - Apply 3/4-sided release

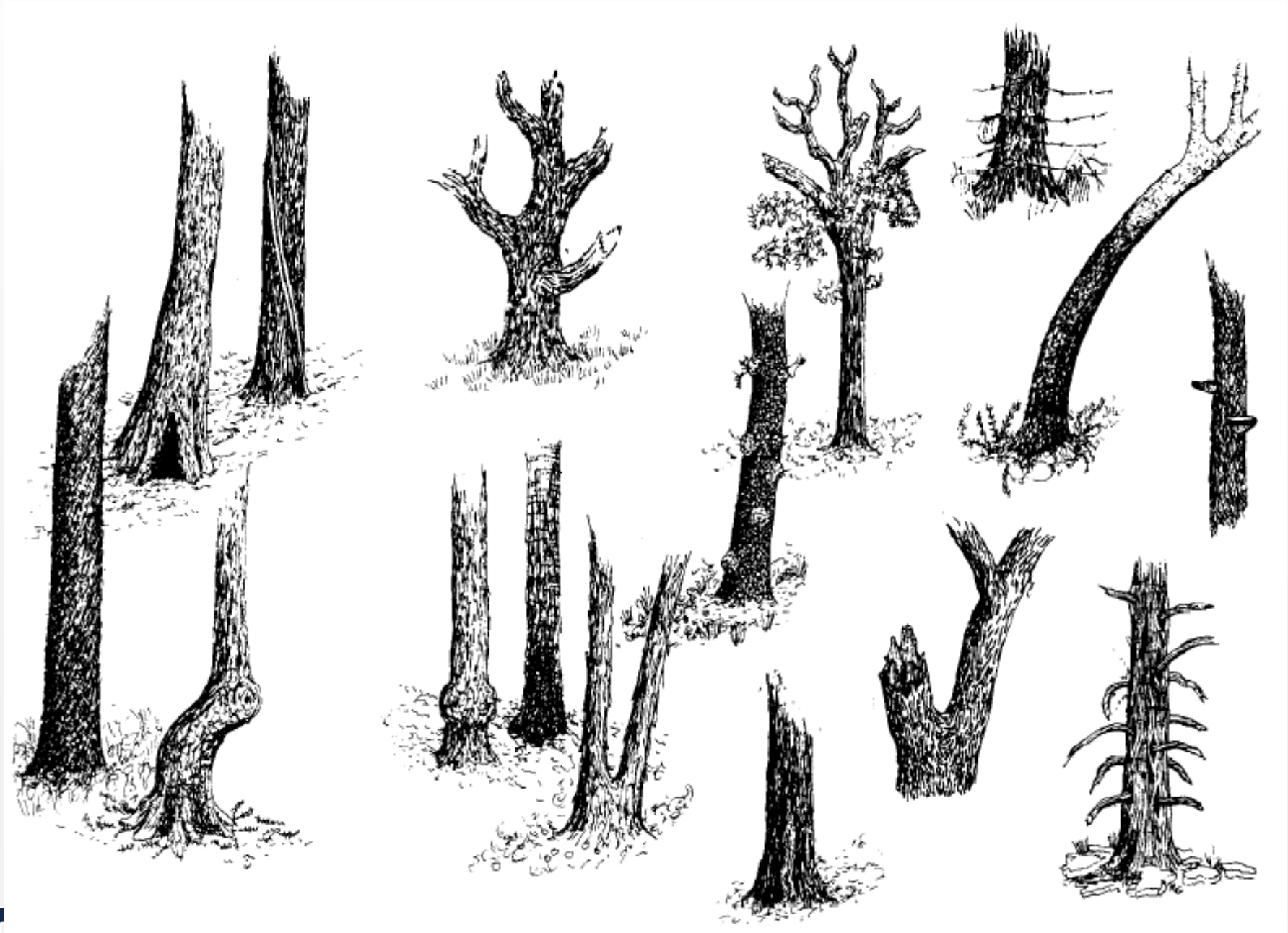
- **Apply to middle-aged stands [plantations and natural]**
  - Older stands will have fewer crop trees than younger stands
  - Release on 2 sides, rather than 3/4 sides if rapid growth rate is not desired in your small to medium-sawtimber stands (pers. comm. Gary Miller, USFS).

- **Apply CTM to your best sites first!**
  - High productivity sites typically have more potential crop trees and higher growth rates (Perkey and Onken).
  - The attractiveness of the financial investment of CTM increases as the number of desirable crop tree candidates per acre increases!
    - Greater ROI (return on investment)

# Forest Stand Improvement

- **An intermediate forest management technique that focuses on the following objectives:**
  - Improve species composition (AGS vs. UGS)
  - Reduce Stand Density
    - Optimum Stand Density (understocked, stocked, overstocked)
  - Selective removal of poorly formed or malformed trees in favor of better formed trees
  - Woody vine control on your crop trees

Image from: *Missouri Dept. of Conservation*



# Invasive Species Control

# Invasive Species Management

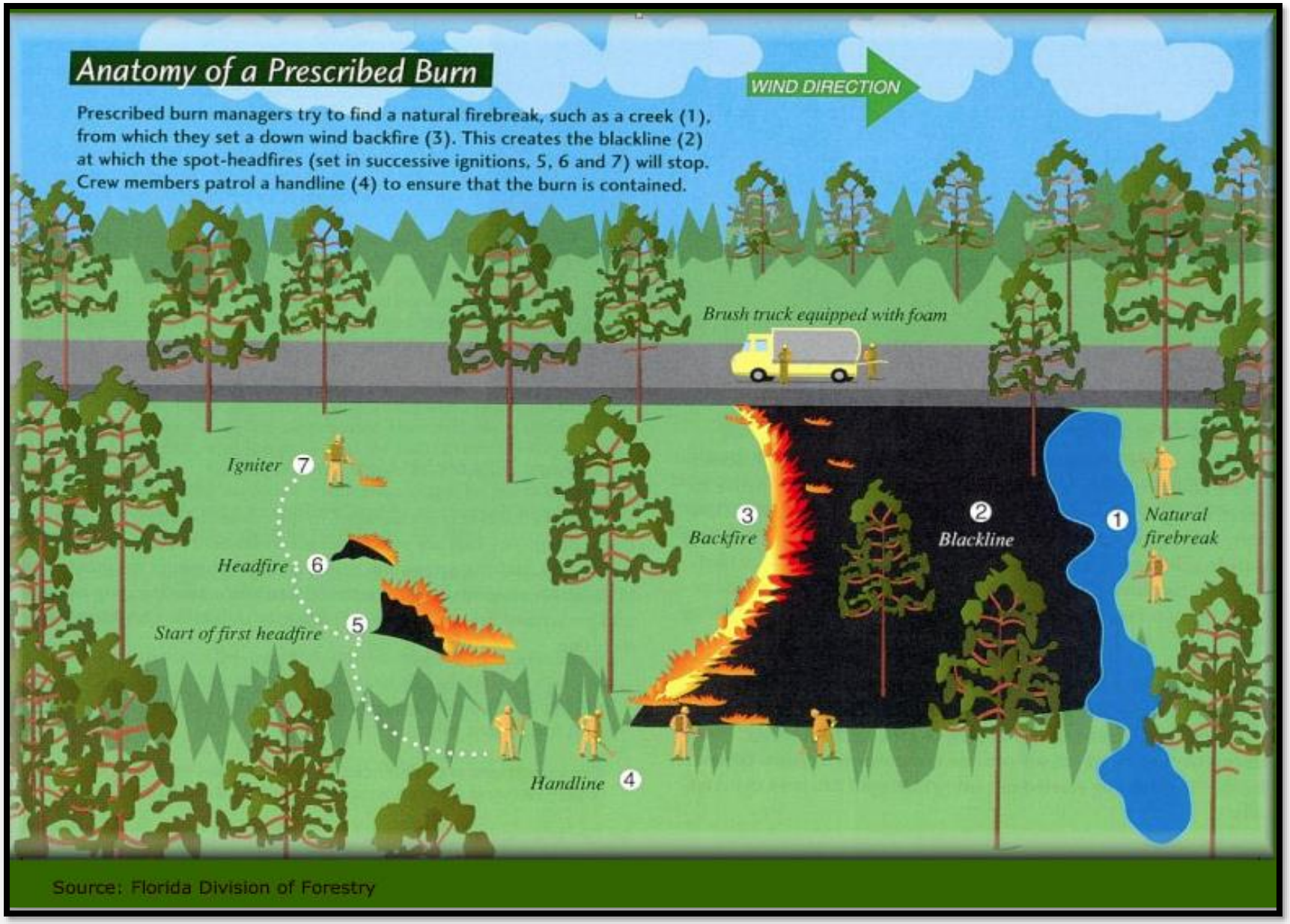
# Girdle/Frill
# Hack-n-Squirt Method

# Cut Stump Application


*Credit: BASF*

# Most Commonly Used Herbicides

- Glyphosate (e.g., Roundup™)
- Triclopyr (e.g., Garlon™)
- Triclopyr + 2,4-D (e.g., Crossbow™)
- Picloram (e.g., Pathway or Tordon RTU)



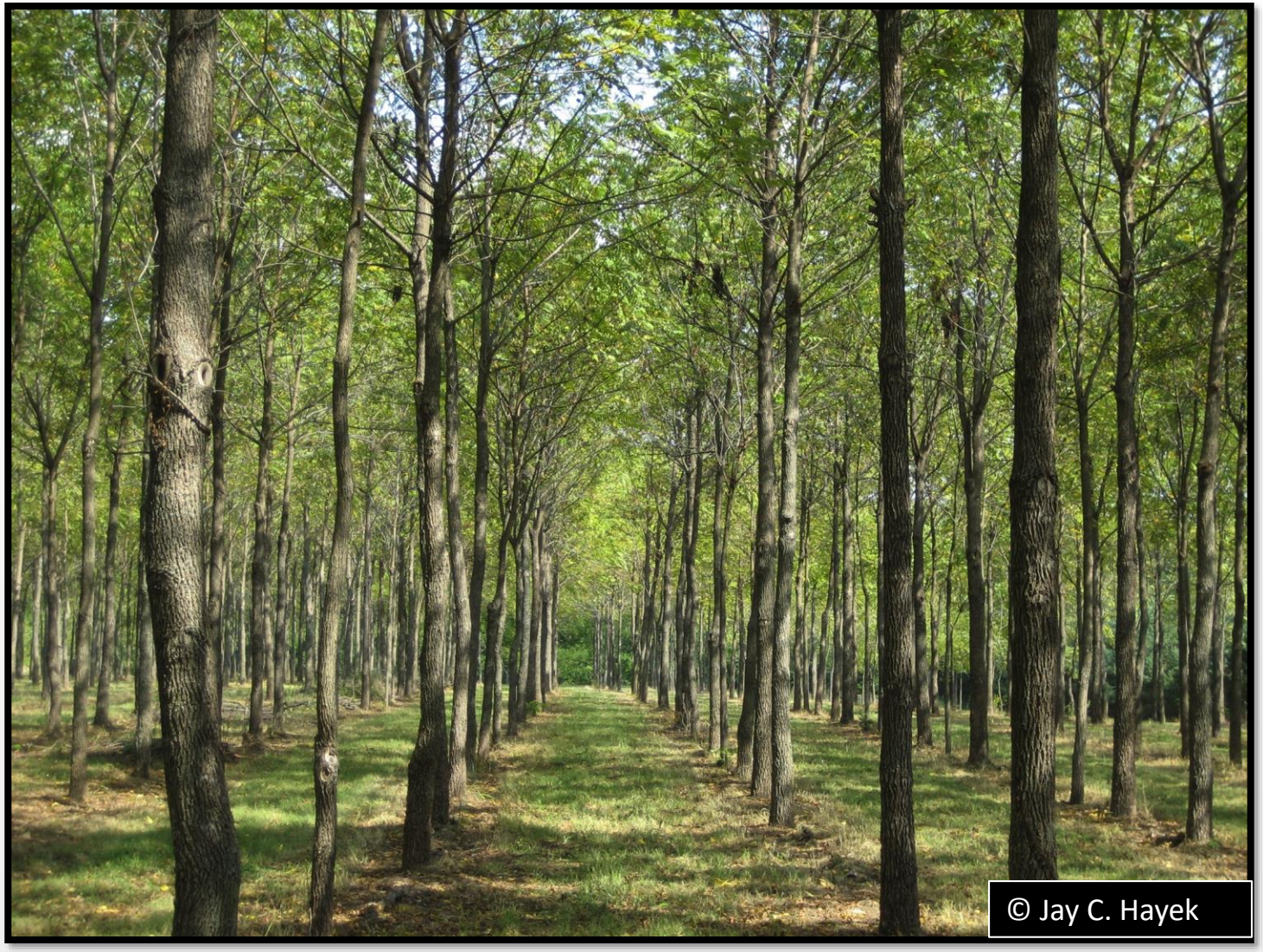
# Do Not Burn if…

- Rx fire should not be in pole-size (5-12” DBH) stands of oak, hickory, and black walnut on dry-mesic to mesic forest sites.
  - **Why?** There’s absolutely no silvicultural reason to “burn” these kind of stands, especially during this stage of stand development!
    - Bark is still too thin
    - Increased risk of stem / basal damage!


High-quality, well-stocked poletimber (5-11” dbh) and small sawtimber northern red oak on a mesic site in central Illinois. **DO NOT** introduce Rx fire into these stands at this stage of stand development !!!

# Do Not Burn if…

- **You have black walnut stands and plantations**
  - Don’t put Rx fire in your black walnut plantations!
  - Don’t put Rx fire in natural woodlands containing a significant component of black walnut
    - Rx fire is very damaging to black walnut trees!
    - Again, always contact a professional forester!




An example of a 15 year old black walnut plantation in southwest Illinois. **Do not** introduce Rx fire into ***(1)*** black walnut plantations, or ***(2)*** natural stands of timber with high-value veneer and sawtimber black walnut trees.

# Rx Fire: Allerton Park

# Rx Fire: Allerton Park

# Rx Fire: Allerton Park

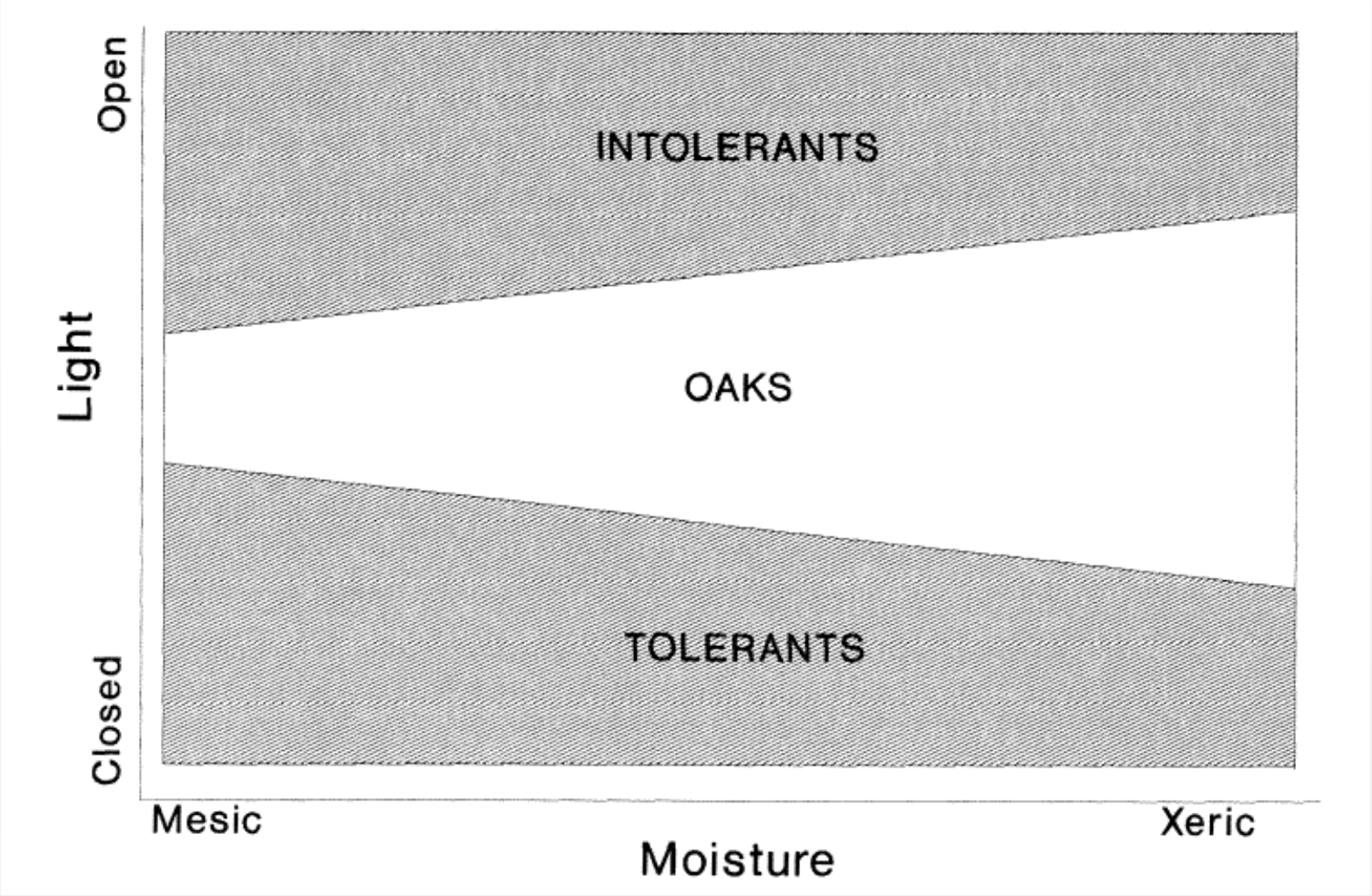

Raking or blowing around base of high-value trees prior to Rx fire. Proper planning ahead of Rx burns will help mitigate basal damage and any evidence of charring on your valuable veneer and sawtimber trees!

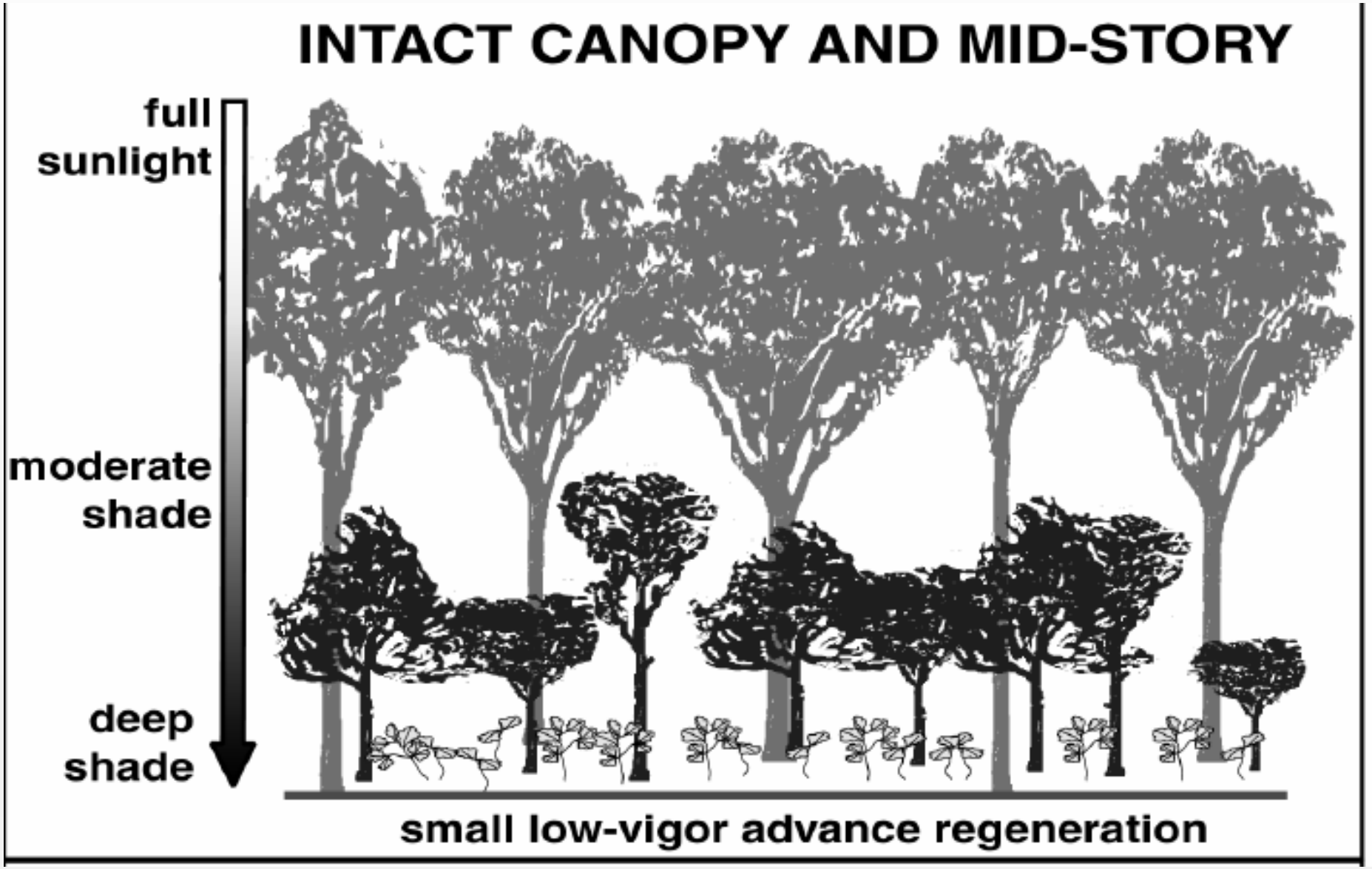
# The Oak Shelterwood

- Not to be confused with the classical shelterwood silvicultural system
- Used on dry-mesic to mesic sites to recruit intermediate shade tolerant oak species
- Midstory / Mid-canopy must be treated and controlled prior to any canopy manipulation

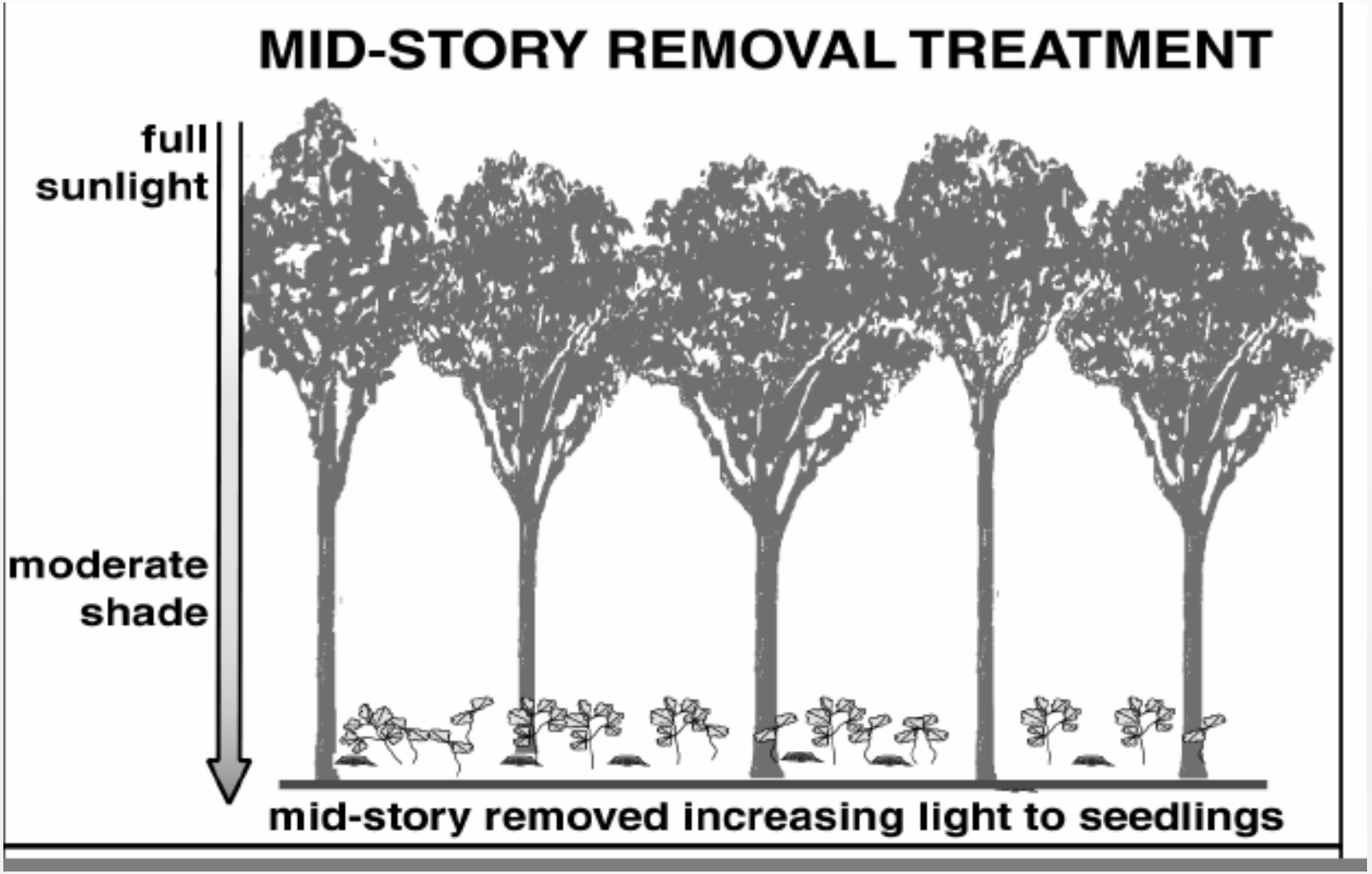
# Classic Shelterwood Timber Harvest

# The Oak Regeneration Window

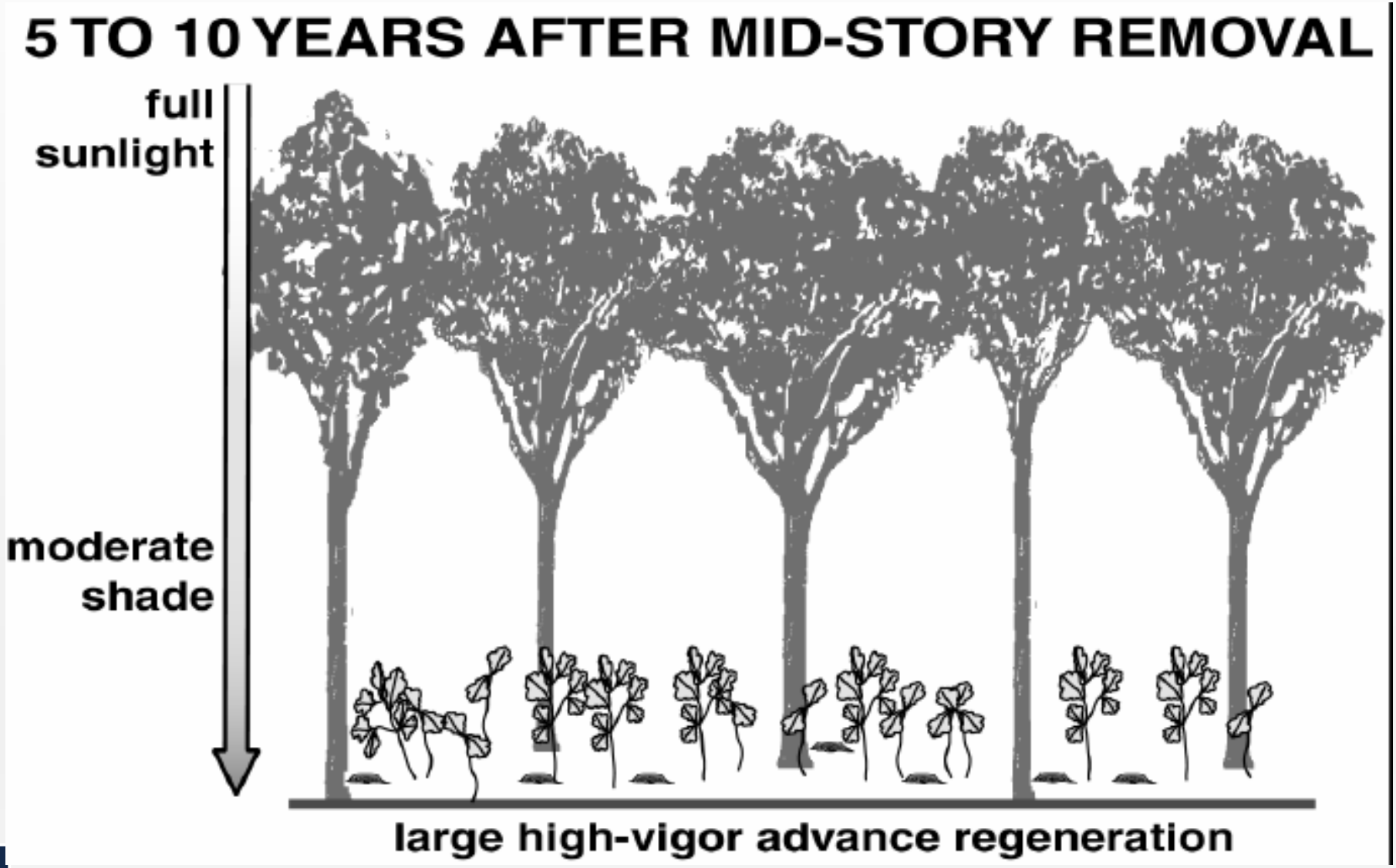


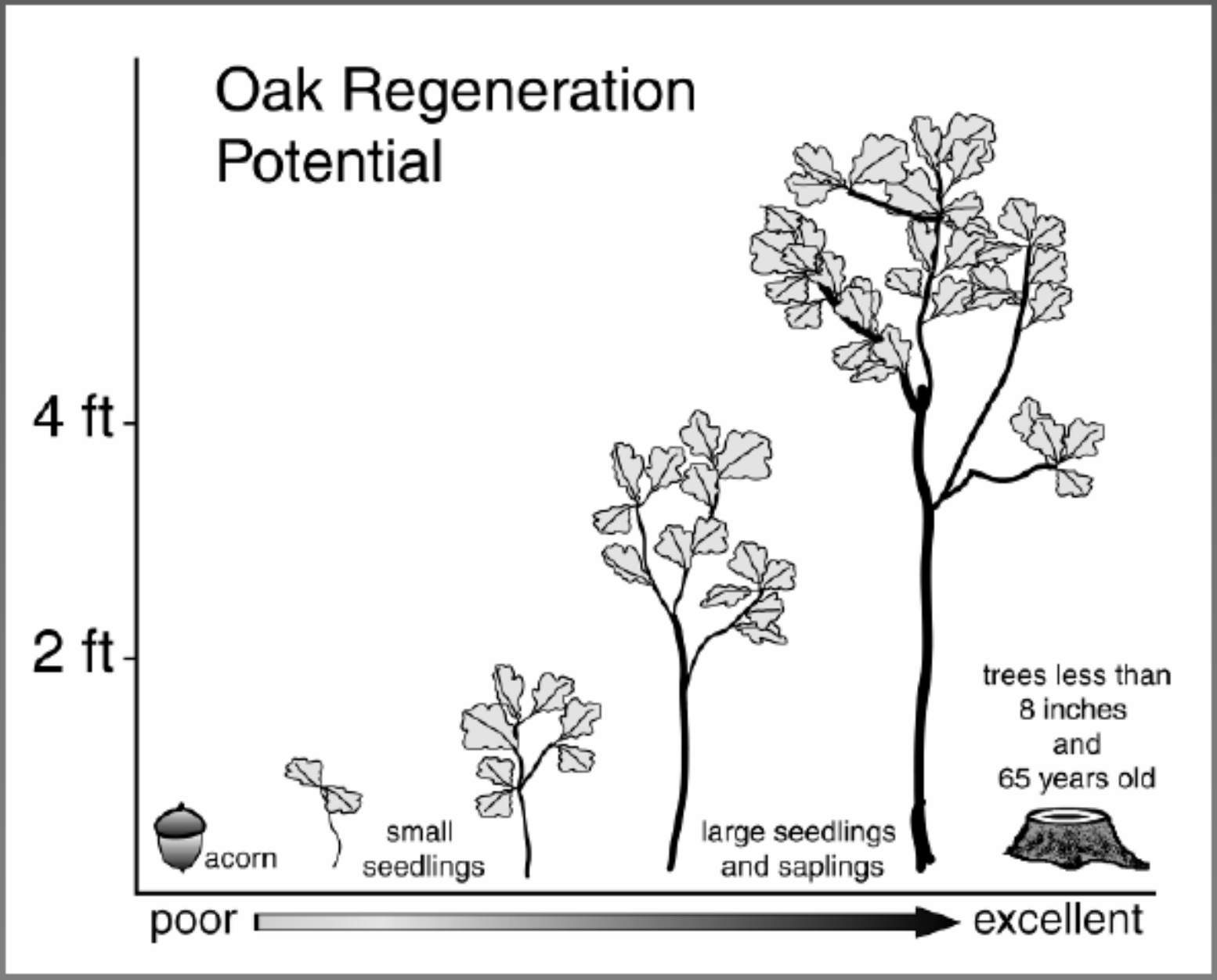


# Stage 1: Oak Shelterwood



# Stage 2: Monitor Oak Recruitment




Oak Regeneration Potential
4 ft
2 ft
acorn
small seedlings
large seedlings and saplings
trees less than 8 inches and 65 years old
poor
excellent

# The Biggest Threats

# Biggest Threats to Illinois Forests

| | | |
|---|---|---|
| **Fragmentation** | **Parcelization** | **Land Use Conversion** |
| **Insects**<br>Emerald Ash Borer<br>Gypsy Moth | **Disease**<br>oak wilt | **Invasives**<br>honeysuckle<br>garlic mustard |
| **Oak Regeneration Failures** | **Lack of Forest Management** | **Insufficient Technical Assistance** |

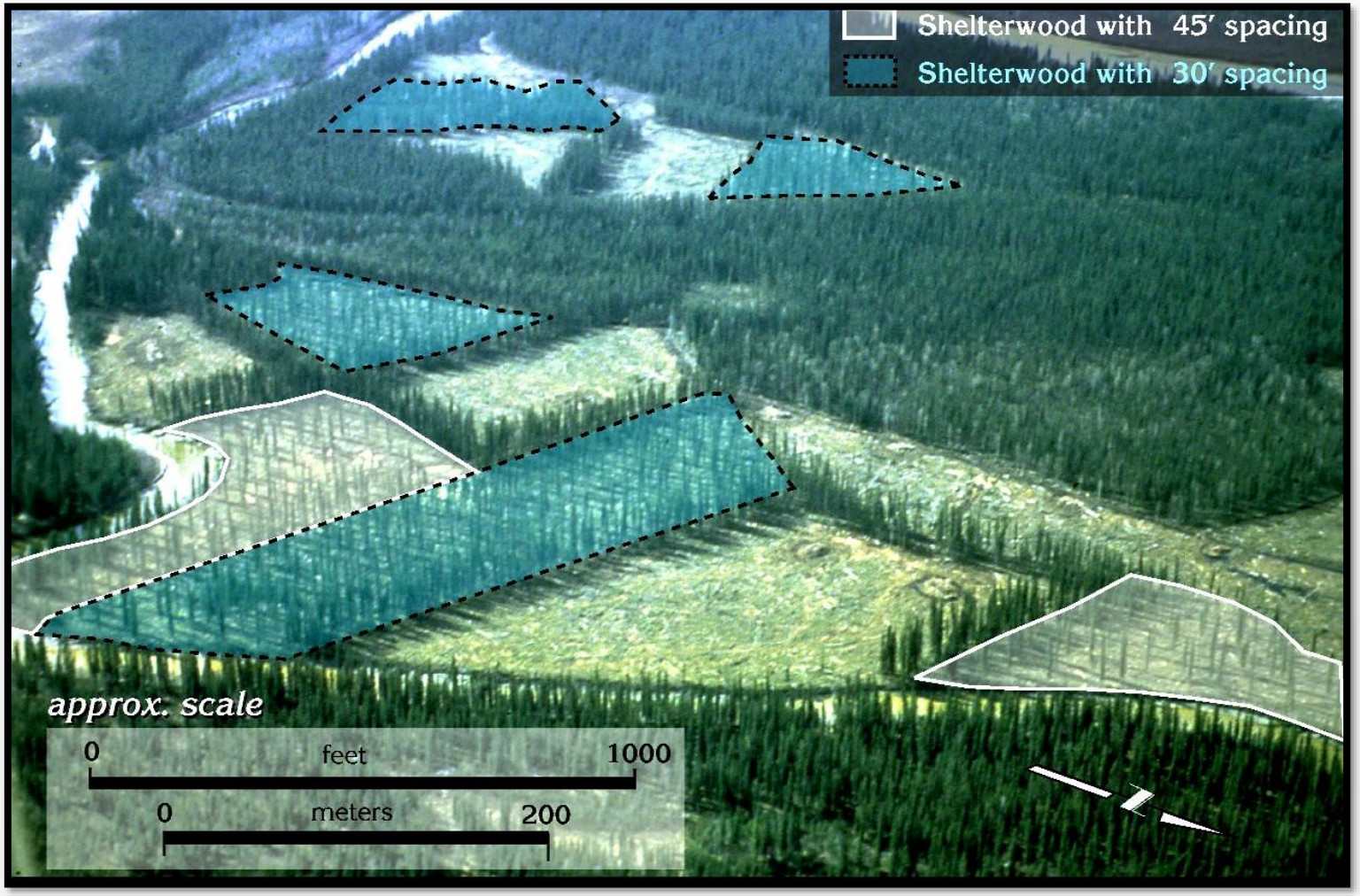
# What is Deforestation?

- **Which of the following cause(s) deforestation?**
  a) Forestry
  b) Logging
  c) Land-use Change
  d) Forest Fragmentation

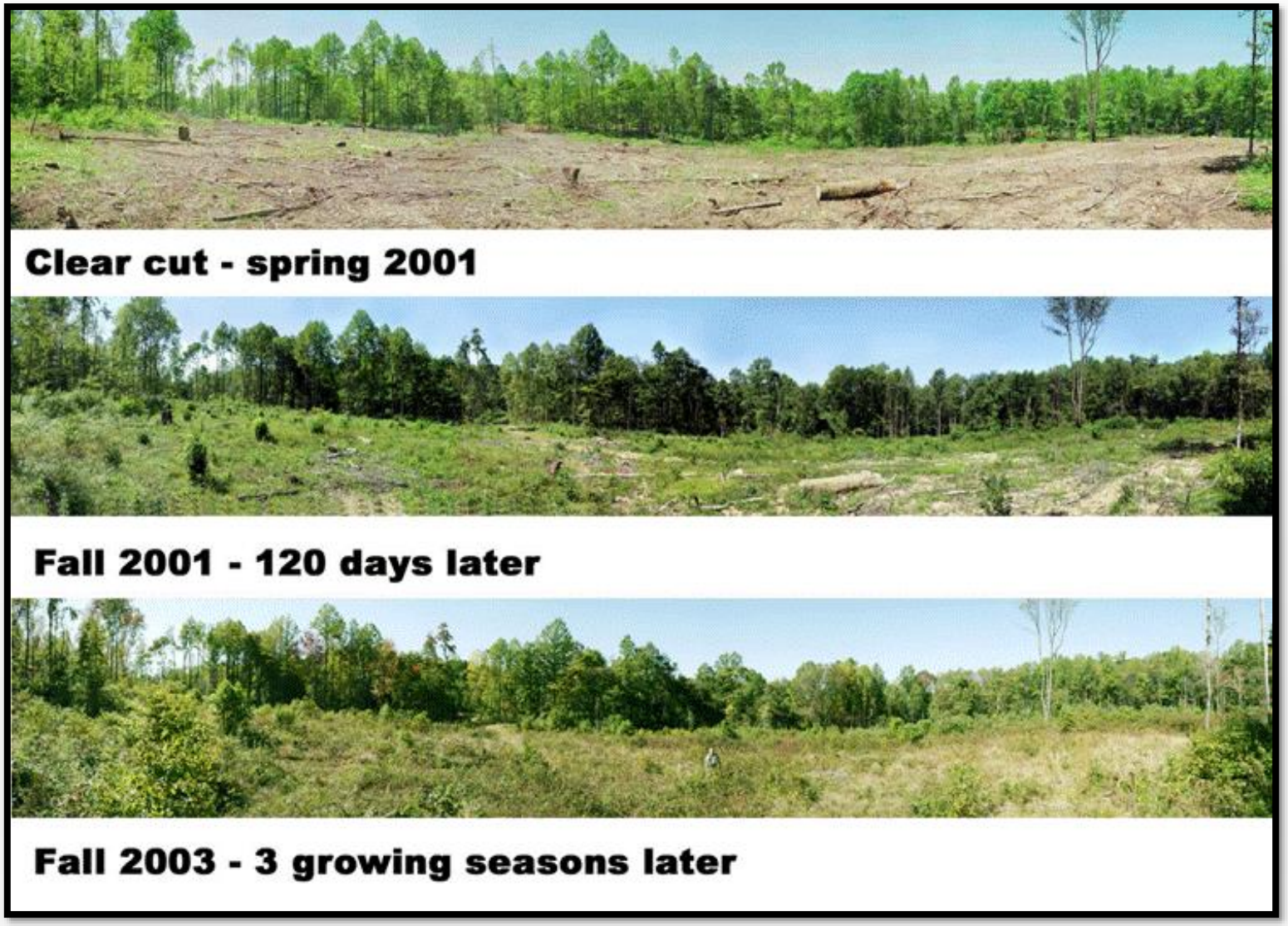
# This is Deforestation…

Deforestation is the intentional conversion of forestland to an alternate land use!

# This is Logging…



# Silvicultural Clearcut



# Fragmentation & Parcelization

Intact Forest

Parcelized

Parcelized & Fragmented



Source: http://clear.uconn.edu/projects/landscape/forestfrag/measuring/defined.htm

# This is Forest Fragmentation…

# Forest Fragmentation

- **Defined:**
  - The process of dividing large tracts of contiguous forest into smaller isolated tracts surrounded by human modified environments (SAF 2012).
    - That is, removing existing tree cover and replacing it with another, non-forested land cover.



Source: http://clear.uconn.edu/projects/landscape/forestfrag/measuring/defined.htm

# Forest Parcelization

- **Defined:**
  - Changes in ownership patterns whereby large forested tracts are divided into smaller parcels(Yale Forest Forum Review).
    - One can safely assume that parcelization does not always result in fragmentation, but does increase the likelihood that the forest will become fragmented (i.e. the construction of roads and structures).

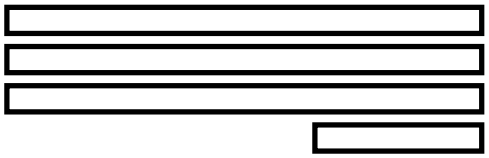


Source: http://clear.uconn.edu/projects/landscape/forestfrag/measuring/defined.htm

# Logging or Tornado?

# Logging or Hurricane?

# Contact Me



**Jay Hayek**
**W-521 Turner Hall (MC-047)**
**1102 S. Goodwin Ave.**
**Urbana, IL  61801**

***jhayek@illinois.edu***