



# Forest Management for Small Woodlots

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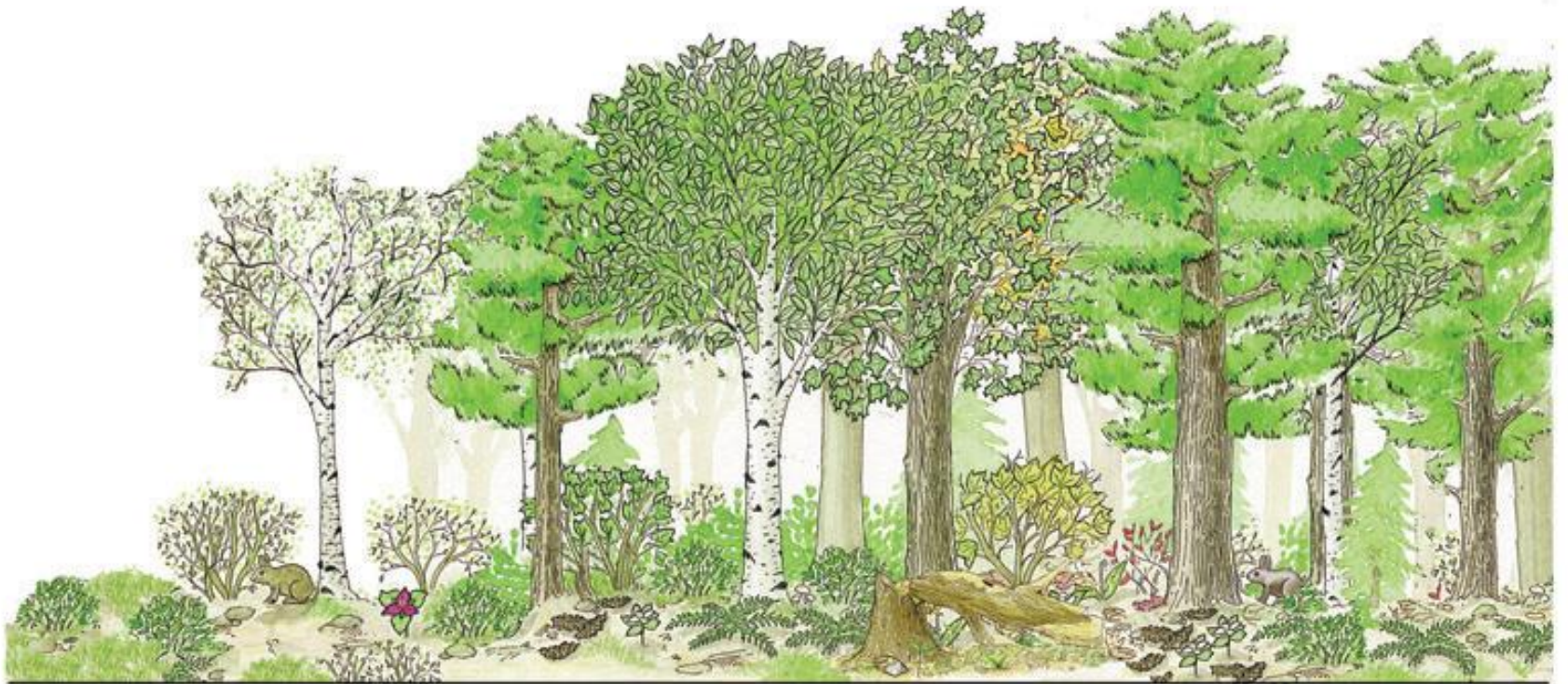
# Outline of today's topics:

- Traditional Forest Management
- Crop Tree Management





# Forest Succession



**Plants Stage**  
First 5 years

**Shrub Stage**  
6-25 years

**Young Forest**  
26 - 50 years

**Mature Forest**  
51 - 150 years

**Climax Forest**  
150 - 300 years

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# Forest Succession

- Partially driven by tree tolerance to shade

## Shade Intolerant

(requires full sun)

Jack pine

Red pine

Aspen – popple

Paper birch

## Intermediate

Oaks

White pine

Ash

## Shade Tolerant

Sugar Maple

Beech

Basswood

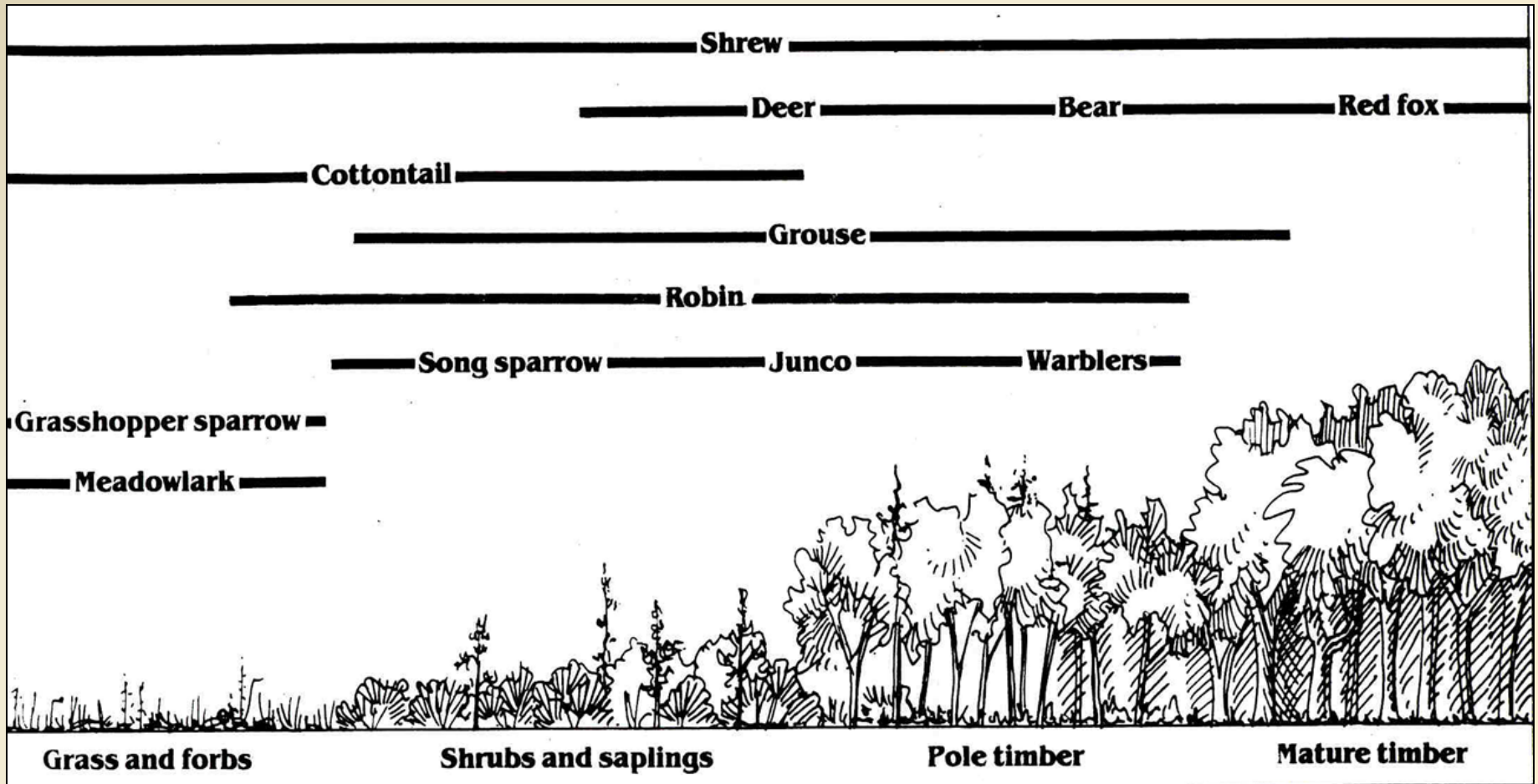
Cedar

Balsam fir

Spruces

Hemlock

# Forest Succession



# Succession follows Disturbance

- Drought, insect epidemic
- Wildfires
- Agriculture (NLP and UP)
  
- Forest management = logging = disturbance
  - Planned disturbance
  - Outcomes predictable (somewhat)
  - Forest management activities are specifically chosen to regenerate desired species of trees

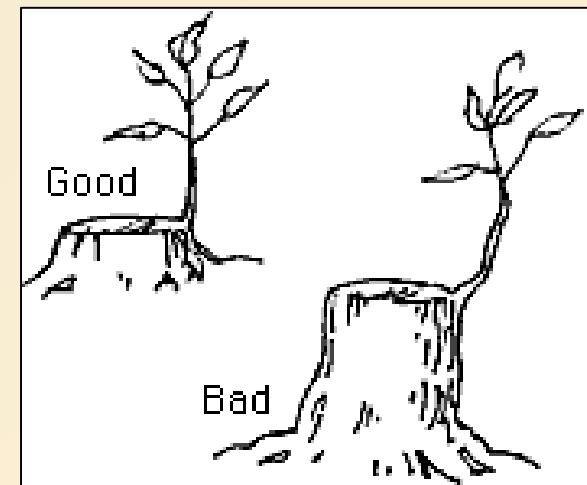


# Forest Management

- Clearcutting
  - Apsen
  - (White, Red, Jack) pine
  - (White, Black) spruce
  - Oaks



- Shelterwood and/or Seed tree
  - Oaks
  - White pine
  - Spruce-fir
  - Northern hardwoods





# Forest Management

- Single tree selection
  - High quality hardwoods
- Timber stand improvement



# Forest Management

- Group or gap creation  
– hardwoods



<http://phys.org/news/2011-05-trade-offs-deer-timber.html>

Credit: Megan Matonis, Center for Systems Integration and Sustainability, Michigan State University

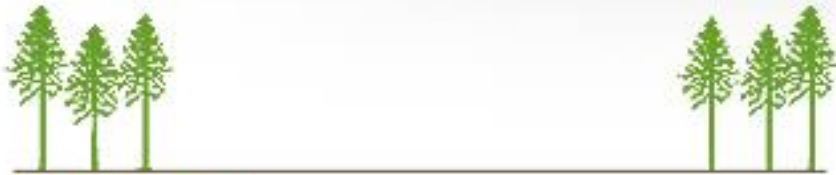


<http://michigansaf.org/Business/MSAFguide-2010/1-5-Management.html>



# Forest Management

## TYPES OF HARVEST



**CLEARCUTTING**



**PATCHCUT**



**SEED TREE**



**GROUP SELECTION**



**SHELTERWOOD**



**SINGLE TREE SELECTION**



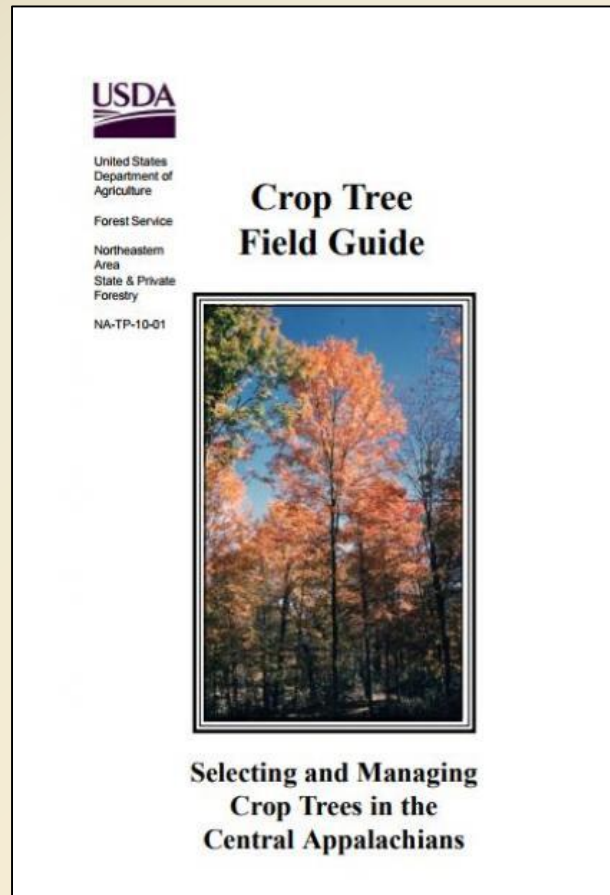
# Income Opportunities



- Income from timber harvest itself
  - Depends on species and size of trees
  - – and market availability/demand!!
- Aspen regeneration – decorative poles
- Gap creation – (rasp)berry growth opportunity
  - Ramps, violets, edible wild plants
- Firewood – tops usually left behind after timber harvest
- Game wildlife – benefit from branches on the ground
  - increase in sunlight = more ground vegetation
- Agroforestry – forest crop production under forest canopy



# Crop Tree Field Guide



<https://www.fs.usda.gov/naspf/publications/crop-tree-field-guide-selecting-and-managing-crop-trees-central-appalachians>

# Crop Tree Management

- Reducing competition
  - Light
  - Water
  - Space
  - Nutrients
  - Carbon dioxide
  - Oxygen
  - Above ground
  - Below ground





# Crop Tree Management

1. Identify goals
  - Timber production, habitat (game or non-game), recreation, enhanced view (aesthetics)
2. Develop crop tree criteria
  - Site quality important
  - Different for each forest stand (type)
  - 100 acres or less
  - Pre- or Non-commercial stands

# Crop Tree Management

3. Inventory property / stands
4. Layout proposed treatment
5. Decide how many crop trees to release per acre
6. Decide which trees to cut to release crop trees



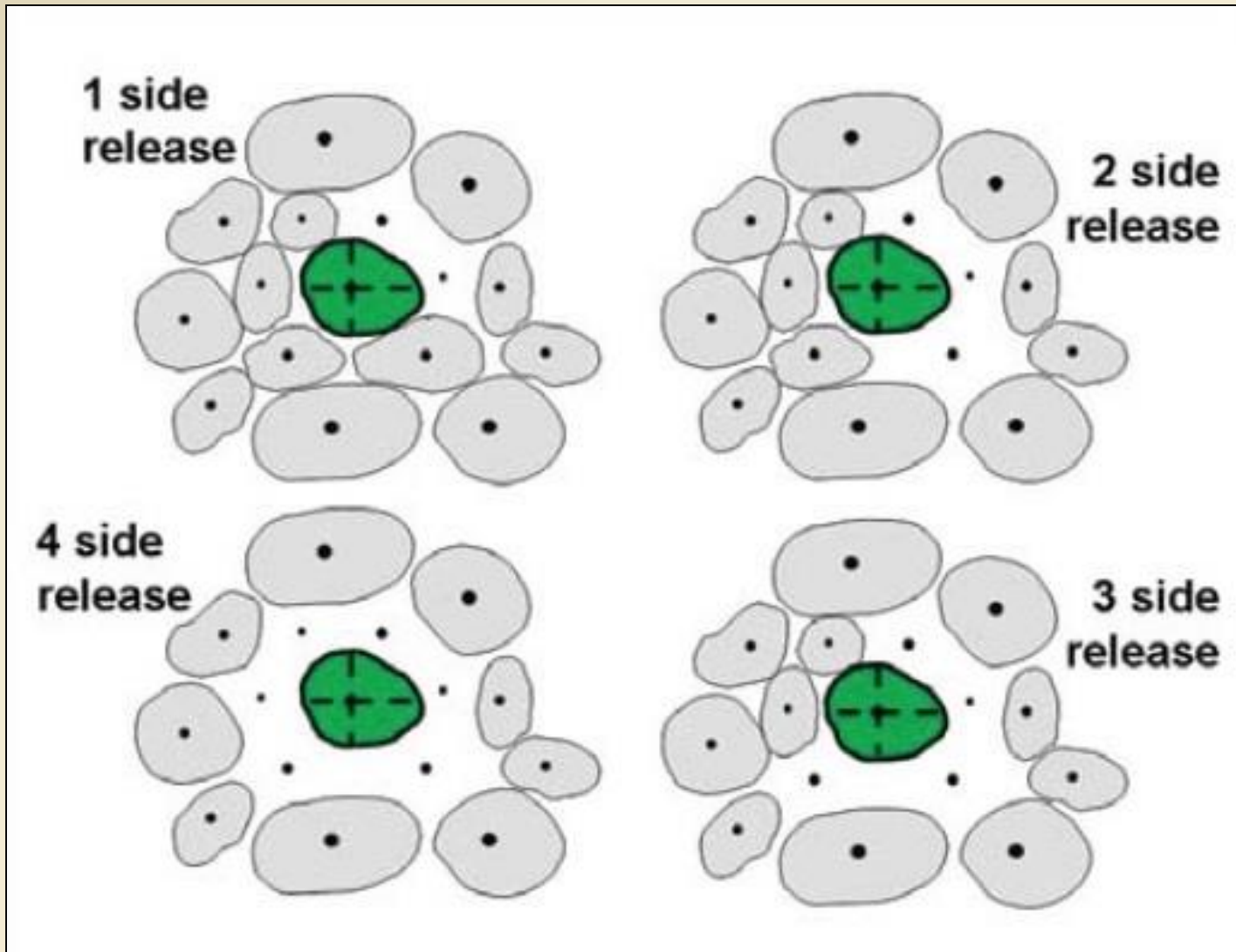


# Crop Tree Management

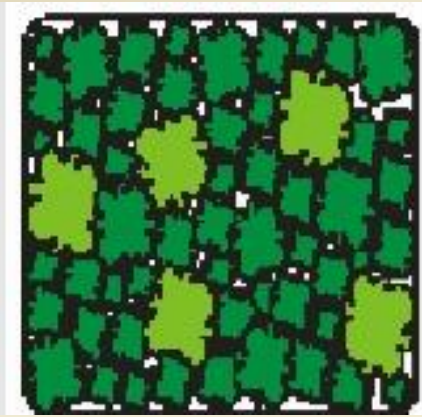




# Crop Tree Management

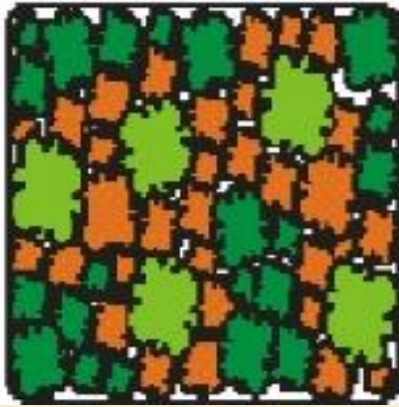


# Crop Tree Management

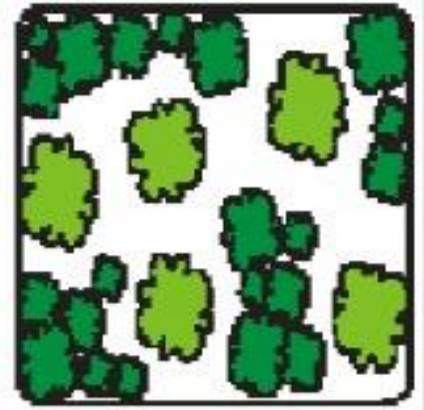


Graphic by Cornell University

Crop trees identified

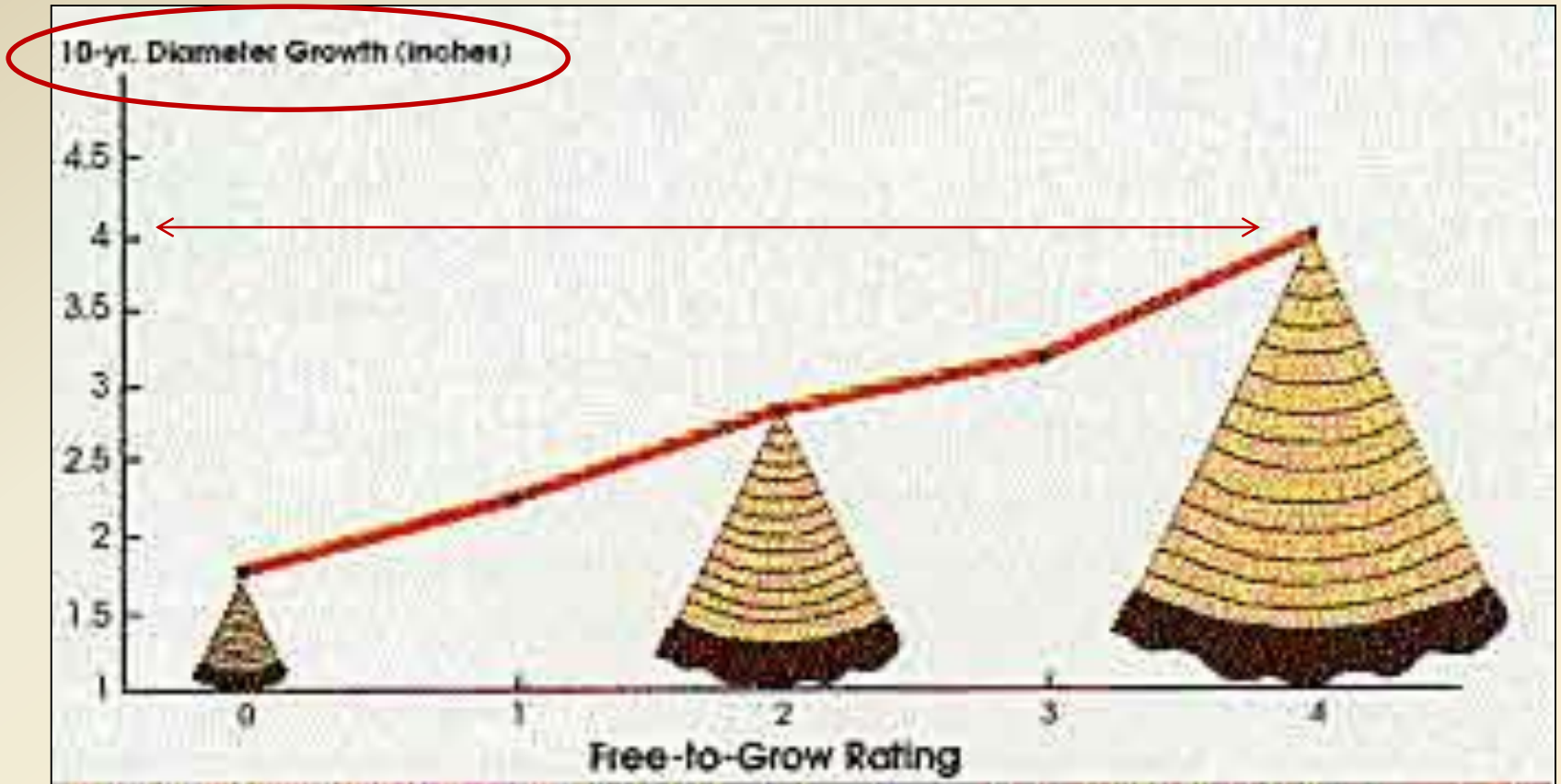


Competing trees in brown



Competing trees removed

# Crop Tree Management





# Income Opportunities from Crop Tree Management



- Timber trees increase in value
- Wildlife – hunting or lease for hunt
  - recreation value non-game wildlife (birdwatching, personal value)
- Aesthetics – personal or commercial view
  - Trails – personal or commercial use
- Water quality – regional streams/lakes
- Use removed trees for – firewood, decorative poles, sign posts, pulpwood, chips for trails

# Crop Tree Management

## Example Crop Tree Criteria for:

- Timber
- Wildlife
- Aesthetics
- Water quality



<http://forestandrange.org/planning/lsregion/management/croptreerelease.htm>



# Crop Tree Criteria for Timber



- Dominate / Co-dominate trees 25' tall
- Healthy crown; large relative to dbh
- High value commercial species for area
- Expected longevity of 20+ years
- Species well adapted to site
- Limiting factors:
  - # of trees per acre for reasonable cost
  - Grow rapidly while maintaining characteristics that make them valuable (1-2 side release)



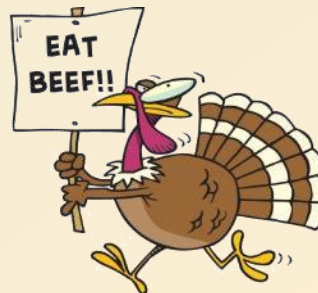


# Crop Tree Criteria for Wildlife



## Mast Trees

- Dominate or Co-dominate
- Healthy crown, large crown relative to dbh
- Hard mast producers favored
- Expected longevity of 20+ years
- Cavities, large broken branches ok
- Indicators of important mast producers:
  - Crown position
  - Species
  - Genotype





# Crop Tree Criteria for Wildlife



## Cavity Trees

- Mast producer = release, otherwise just keep
- Trees any species, size and crown position
- Dead, upper crown branches
- Cavities in main bole ok
- Expected longevity not important





# Crop Tree Criteria for Aesthetics

- Species that produce attractive flowers or fall foliage
- Visible from roadways
- Adjacent to streams, waterways
- Longevity of 20+ years
- Unique trees
  - Branching
  - Bark
  - Tree shape





# Crop Tree Criteria for Aesthetics

## “Michigan’s Fall Color Lineup” – by Bert Cregg

- Sugar maple – gold/yellow
- Red maple – bright red
- Aspen (Popple) – bright yellow
- Red oaks – russet red
- White oaks – yellow or dusty red
- Sassafras – yellow to deep red
- Larch – bright yellow, needles drop
- Honey locust – bright yellow
- Bald cypress – russet red, needle drop
- Sweetgum – deep red to purple
- Redbud – bright yellow
- Tulip poplar - yellow
- Hickories – yellow

Link to article:

[http://msue.anr.msu.edu/news/introducing\\_michigans\\_fall\\_color\\_lineup](http://msue.anr.msu.edu/news/introducing_michigans_fall_color_lineup)

# Crop Tree Criteria for Water Quality

- Control non-point source pollution
- Absorb excess nutrients from runoff
- Slows runoff
- Groundwater recharge
  - Infiltration rates increase
- Stabilizes soil



# Crop Tree Criteria for Water Quality

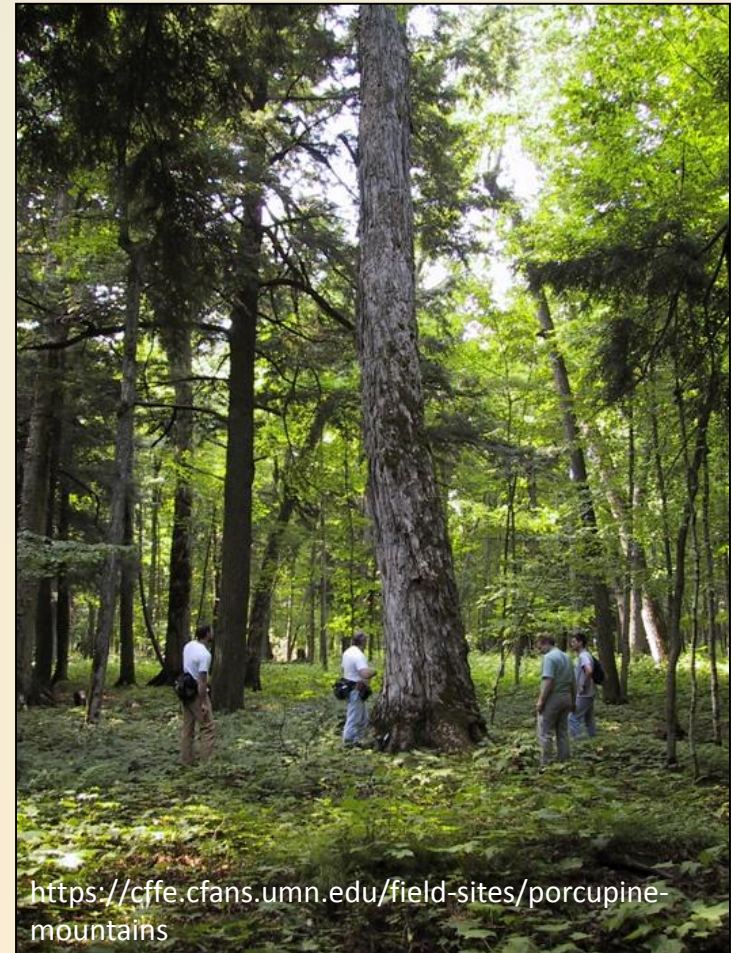
- Nutrient uptake most rapid in young, deciduous trees
- Red and white oak, red maple, quaking aspen absorb nitrogen well, to a point
- Basswood, yellow poplar, dogwood, red cedar
  - Calcium, phosphorous, potassium
  - Beech, red spruce, pines, hemlock - slower uptake



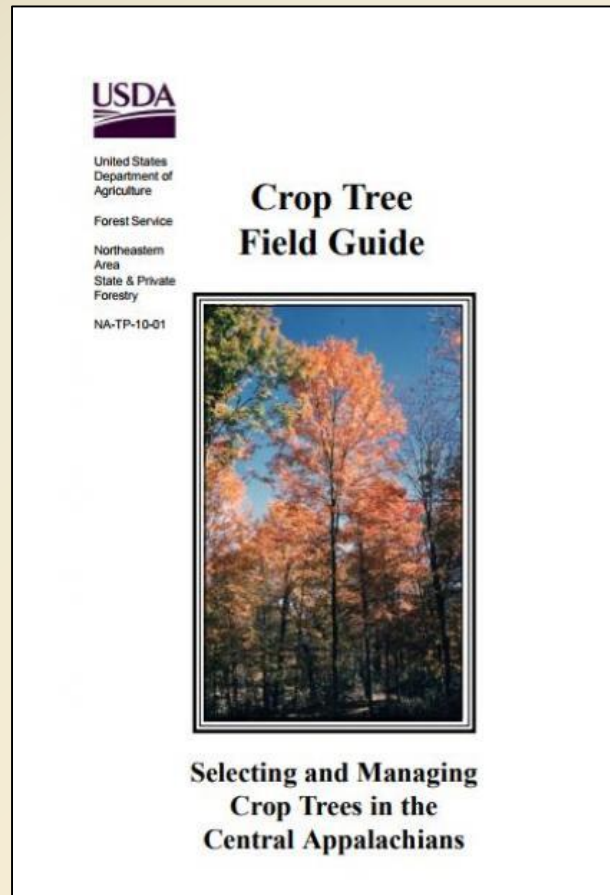


# Visual Considerations

- Competing trees
  - Cut down?
  - Knocked down?
  - Remain standing (dead)?
- Park-like or not
- Mid-story treatment
- Fell during dormant season

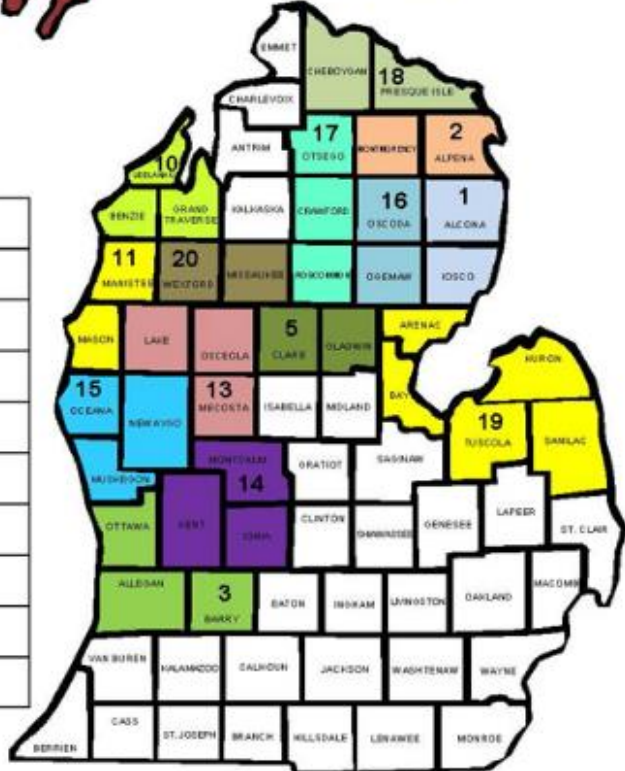
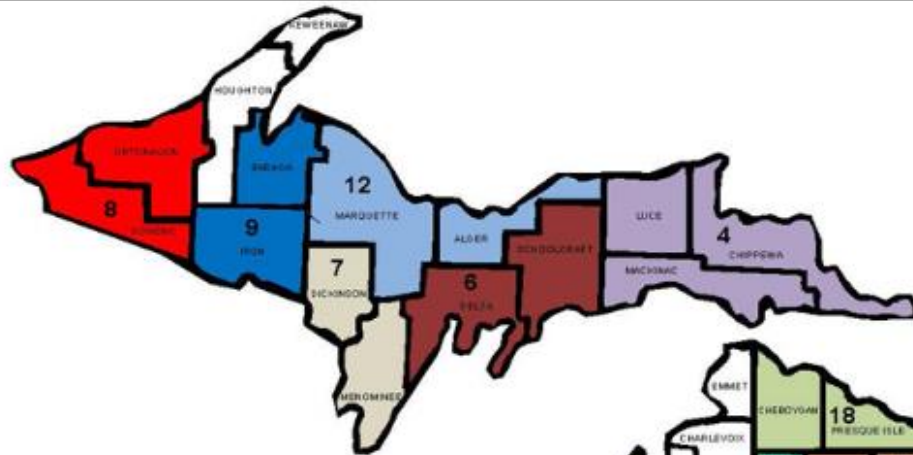


# Crop Tree Field Guide



<https://www.fs.usda.gov/naspf/publications/crop-tree-field-guide-selecting-and-managing-crop-trees-central-appalachians>

# Forestry Assistance Program



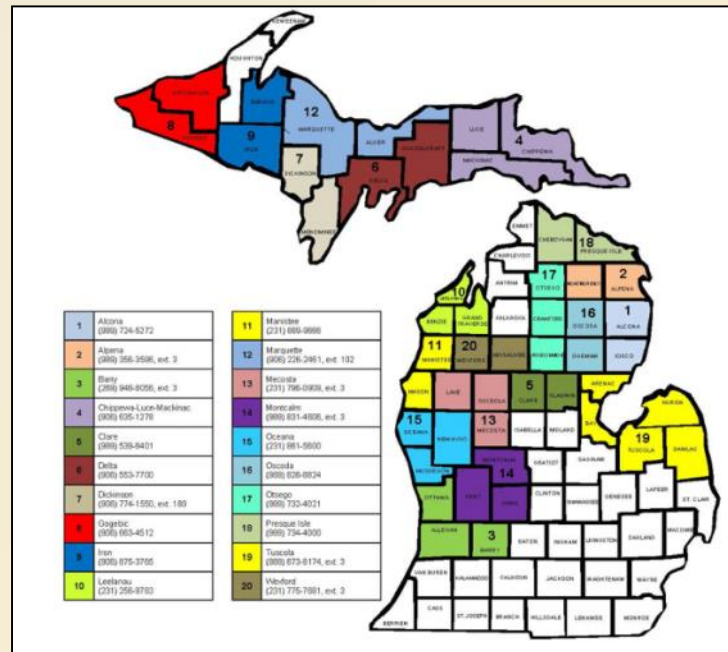
1	Alcona (989) 724-5272
2	Alpena (989) 356-3586, ext. 3
3	Barry (269) 948-8056, ext. 3
4	Chippewa-Luce-Mackinac (906) 635-1278
5	Clare (989) 539-6401
6	Delta (906) 553-7700
7	Dickinson (906) 774-1550, ext. 180
8	Gogebic (906) 663-4512
9	Iron (906) 675-3765
10	Leelanau (231) 256-9763

11	Marquette (231) 889-9666
12	Marquette (906) 226-2461, ext. 102
13	Mecosta (231) 796-0909, ext. 3
14	Montcalm (989) 831-4806, ext. 3
15	Oceana (231) 861-5600
16	Oscoda (989) 626-8824
17	Otsego (989) 732-4021
18	Presque Isle (989) 734-4000
19	Tuscola (989) 673-6174, ext. 3
20	Windsor (231) 775-7881, ext. 3



# Forestry Assistance Program

- Foresters available to meet at no charge
  - Provide guidance
  - Referral service for professional providers
  - Internet search for “MDARD FAP”
  - Employed through local Conservation Districts



# Natural Resources Conservation Service (NRCS)

- **EQIP - Environmental Quality Incentives Program**
- Forestry practices, including crop tree release may qualify for cost share
- Forest Management Plan (~100% cost share)
- TSI – Timber Stand Improvement
- Clearcutting to regenerate aspen/oak for wildlife
- Tree planting for wildlife

## **Michigan NRCS Local Service Centers and Field Staff**

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/mi/contact/local/>

# Consulting Foresters and Timbermen

- Association of Consulting Foresters
  - <https://www.acf-foresters.org/>
- Michigan Association of Timbermen
  - <http://www.timbermen.org>
- Michigan Forest Products Council
  - <http://www.michiganforest.com/>
- Local Conservation Districts
  - List of service providers



# Resources

- MSU Product Center
  - <https://www.canr.msu.edu/productcenter/>
  - *“The MSU Product Center can help you develop and commercialize high value products in the food, agriculture and natural resource sectors.”*



# Questions?



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# Illustrated Example





# Illustrated Example





# Illustrated Example





# Illustrated Example





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# Illustrated Example





# Illustrated Example





# Questions? Comments?



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