

**Silvicultural Guidelines
for Forest Stands
Threatened by Gypsy Moth
*GTR NE-171***

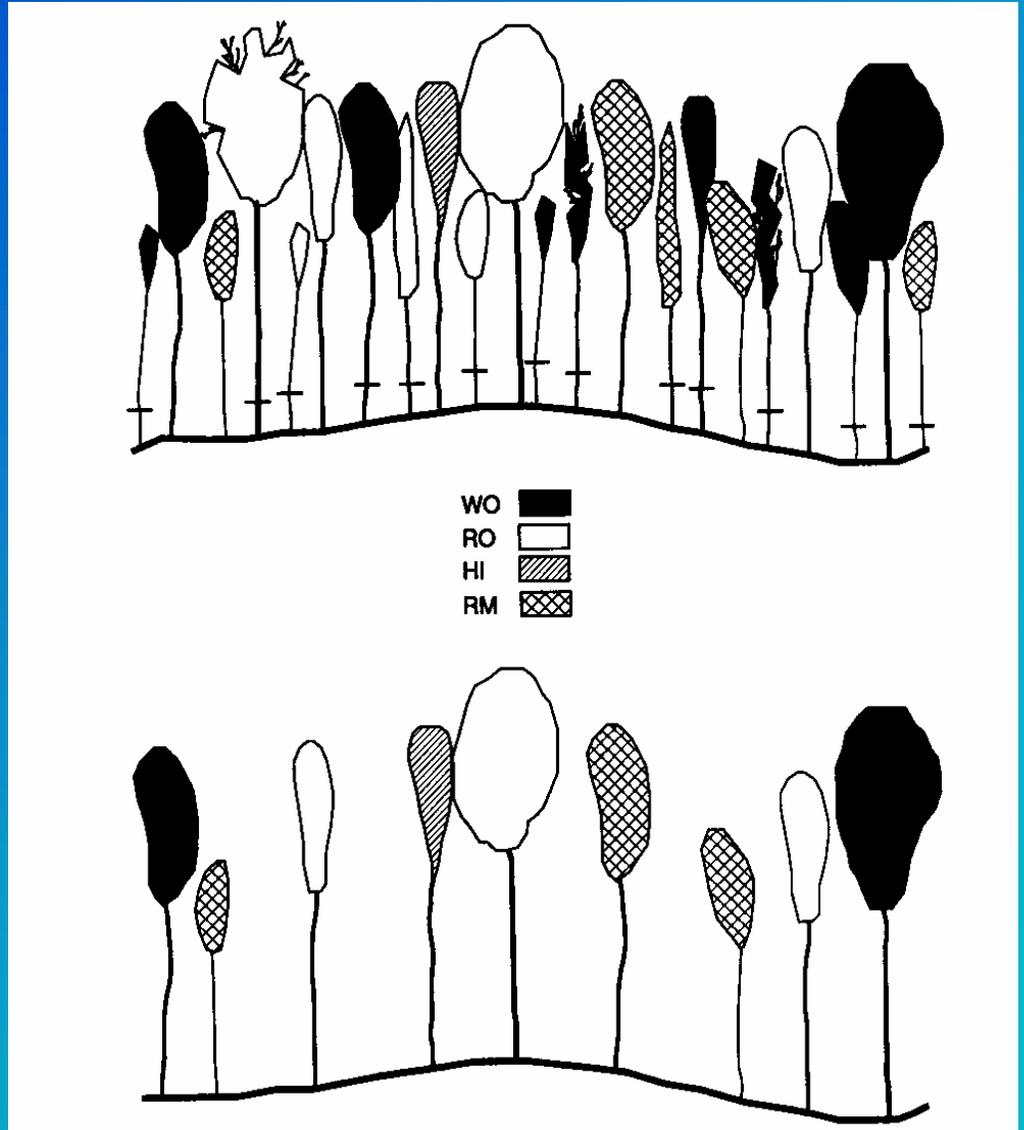
Kurt Gottschalk

Northeastern Forest Experiment Station

Morgantown, WV

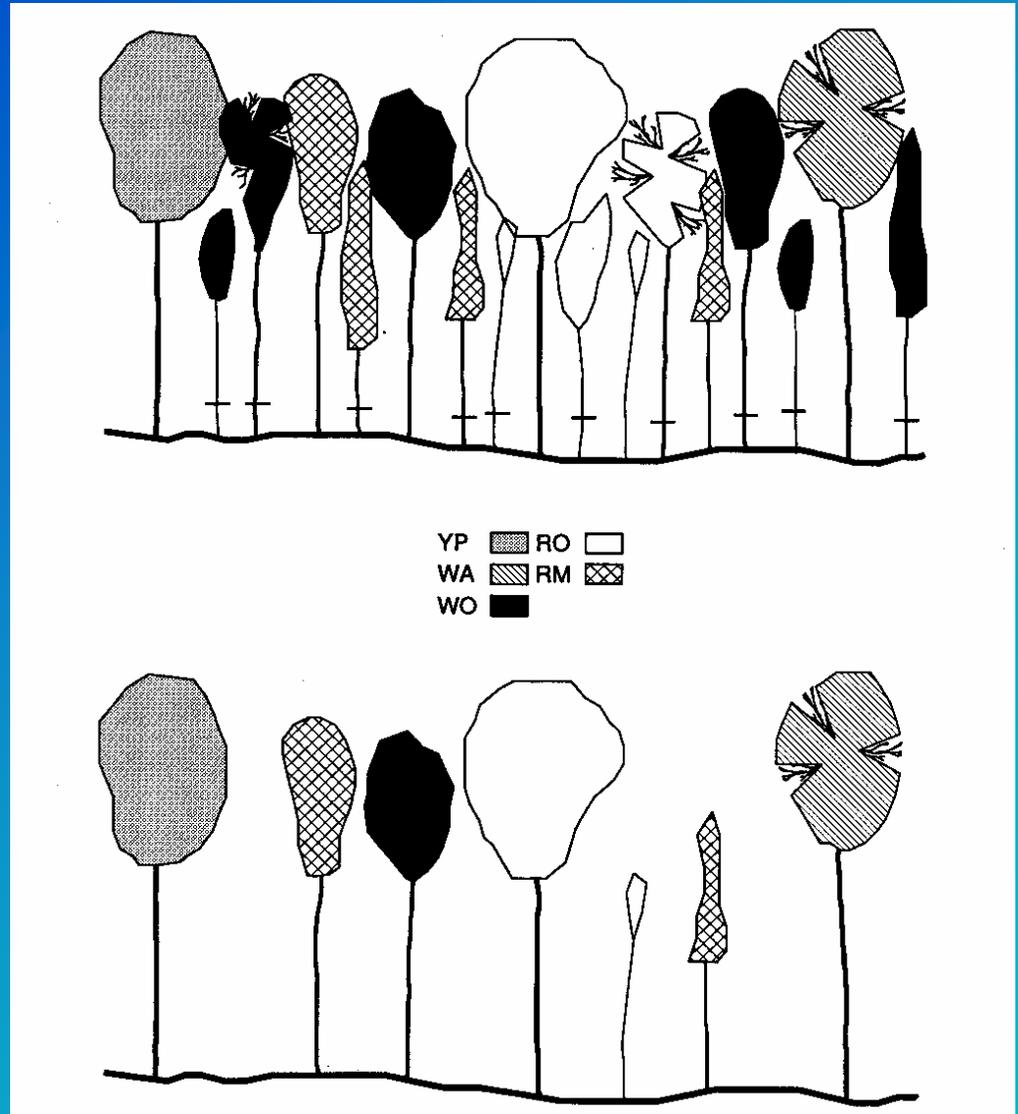
Presalvage Thinning

Reduce Vulnerability
(remove oaks with poor
crowns)



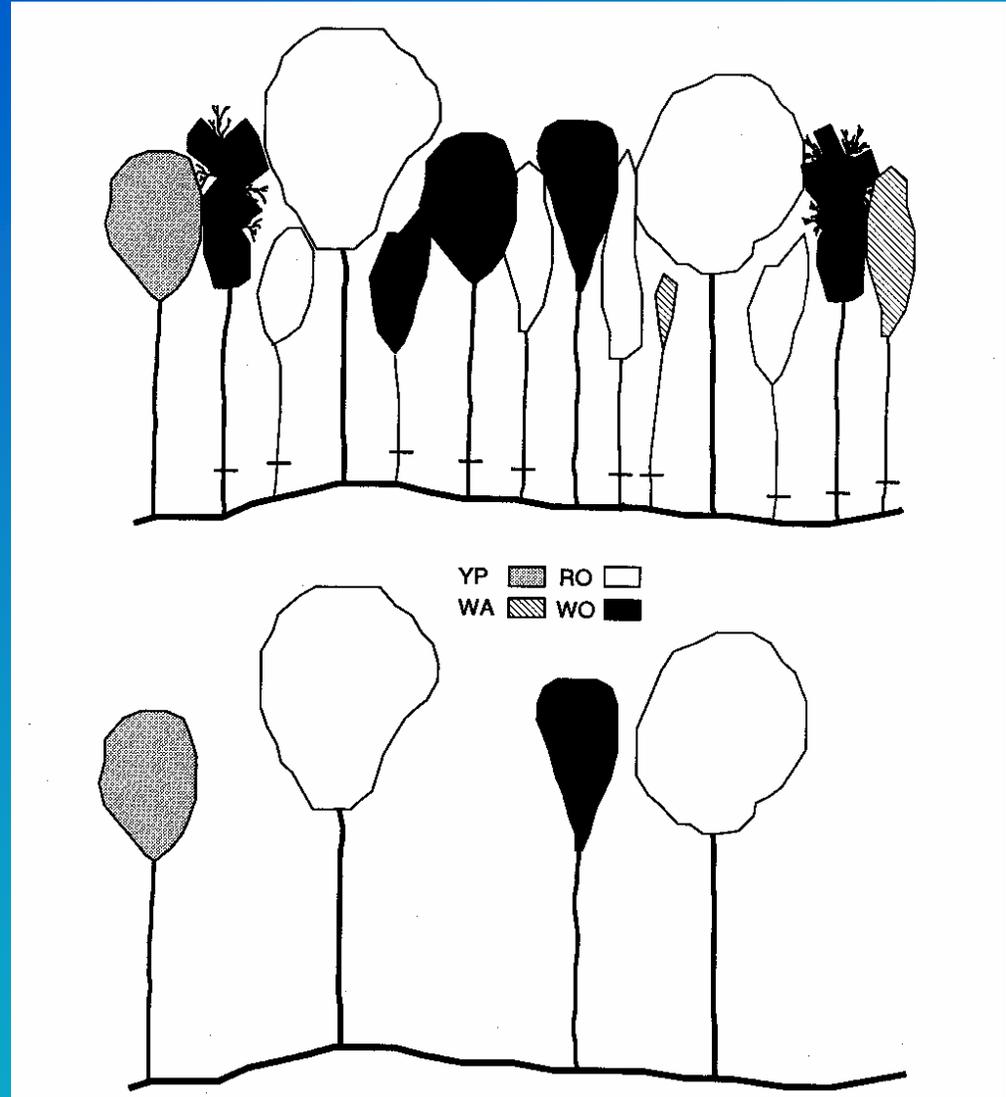
Sanitation Thinning

Reduce Susceptibility
(remove gm-preferred
species)



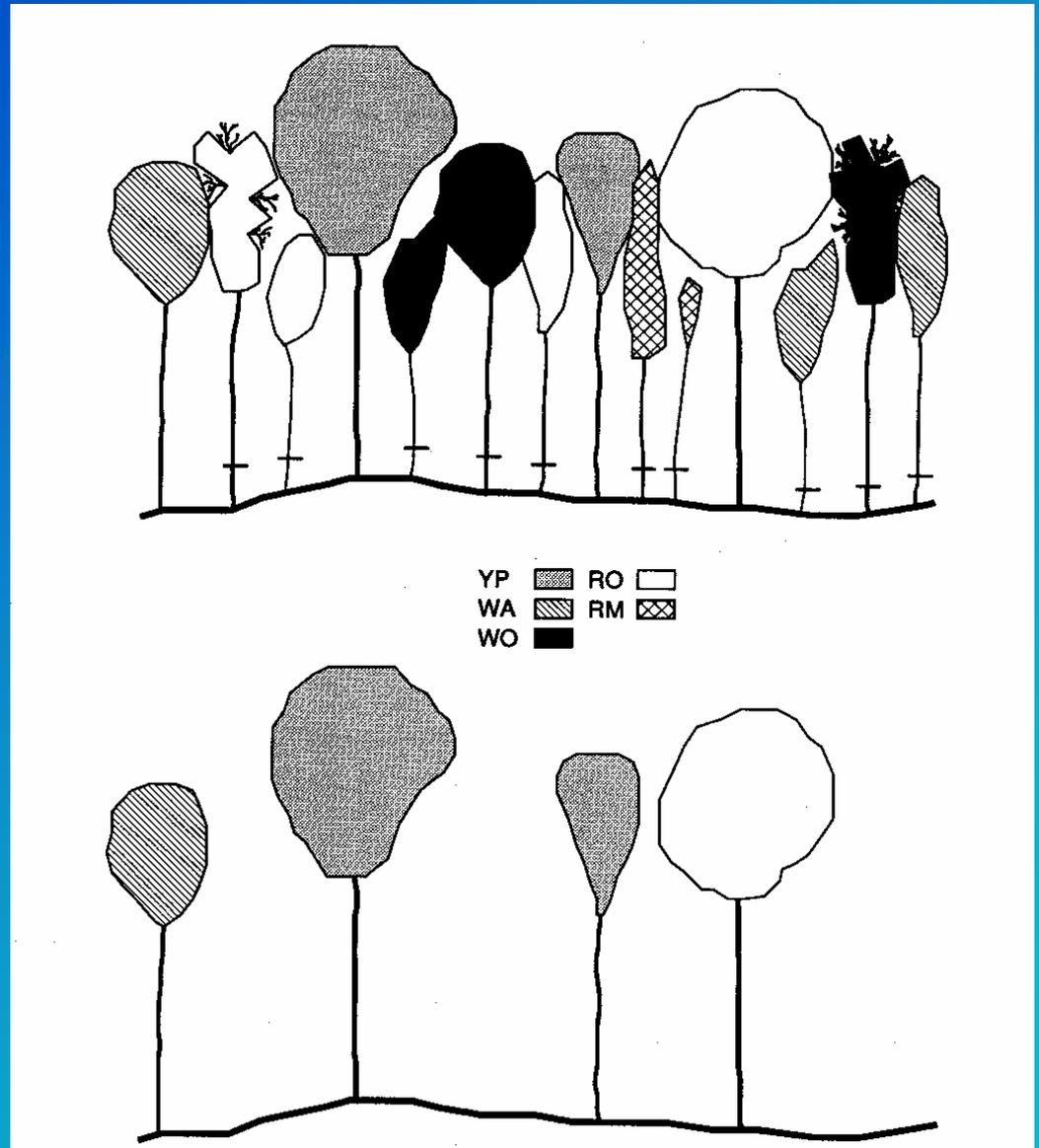
Presalvage Harvest (Shelterwood Shown)

Utilize or develop reproduction potential;
alter susceptibility by
favoring non-preferred species



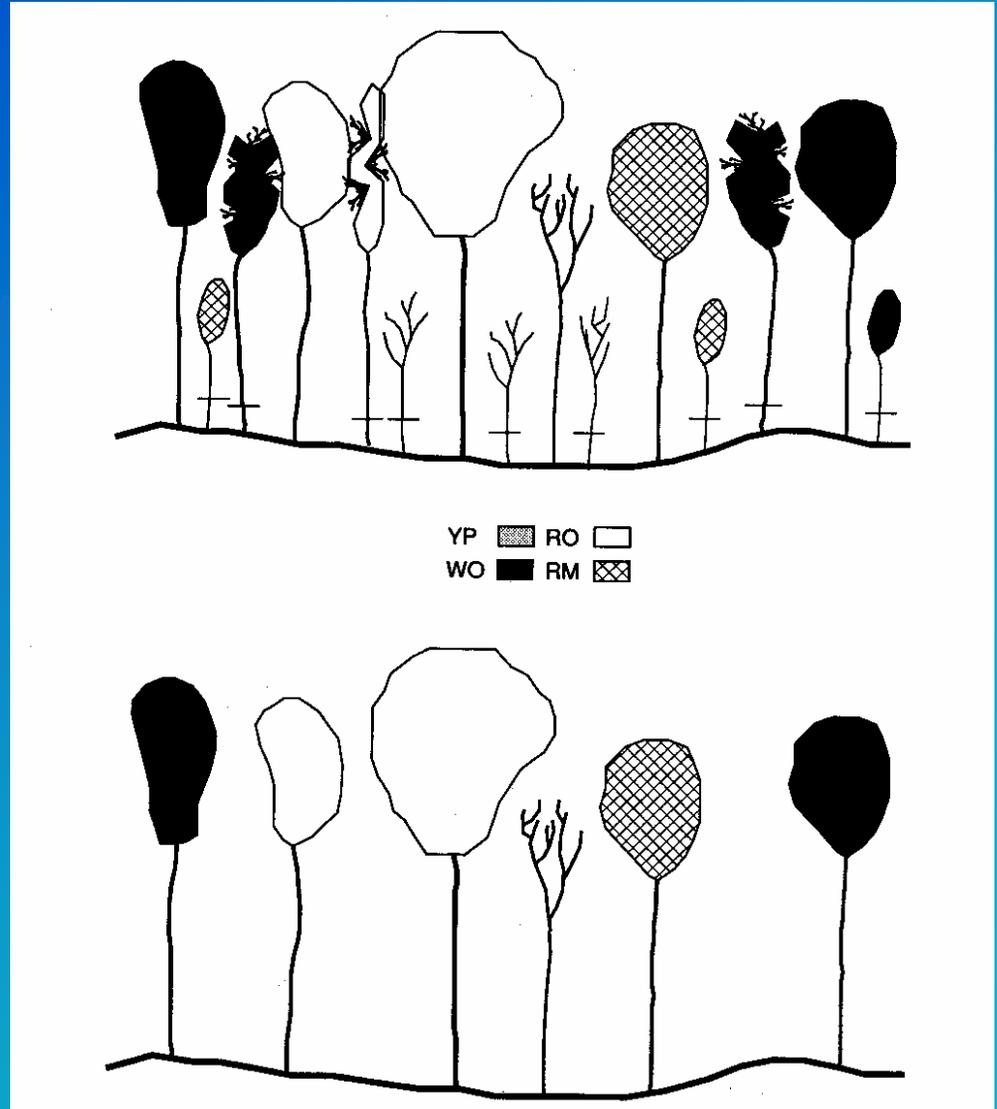
Sanitation Conversion

reduce susceptibility by
favoring non-preferred
species
and/or
vulnerability by removing
oaks w/ poor crowns



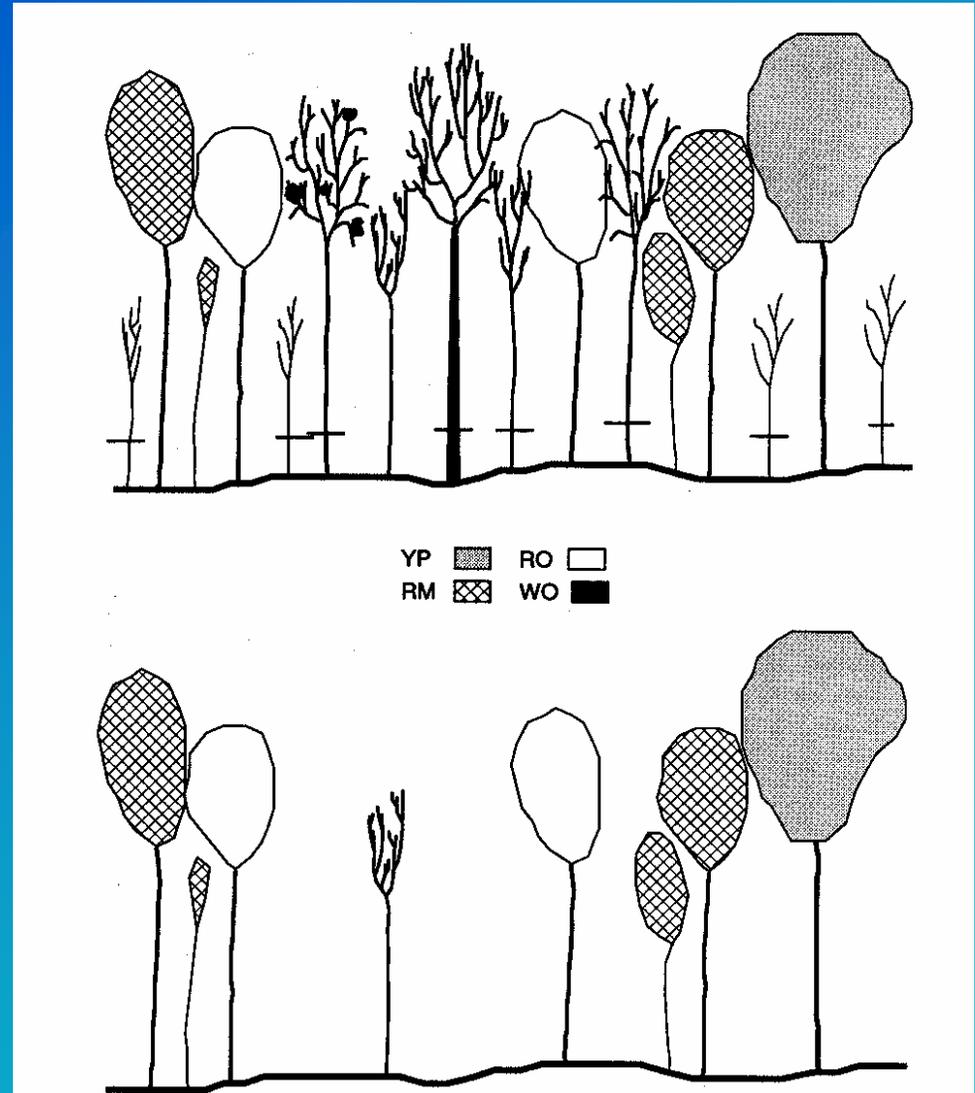
Salvage Thinning

Recover economic value of mortality while reducing susceptibility and vulnerability in residual live trees



Salvage Cutting

No regeneration objective.
Recover economic value of dead and dying trees (no thinning of live trees);
mortality has usually resulted in a less susceptible and vulnerable stand

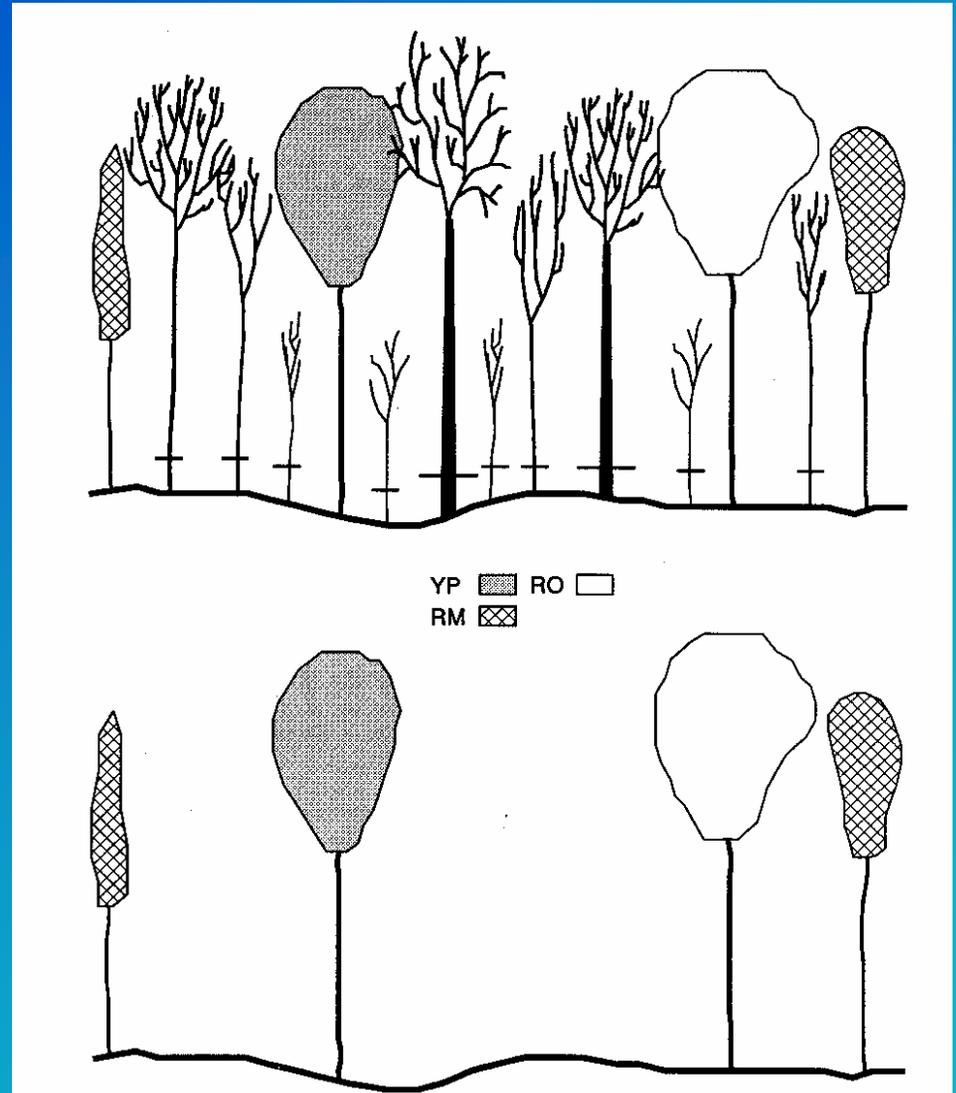


Salvage Shelterwood

Regeneration objective.

Recover economic value of mortality while developing advance reproduction

(Other cutting methods may utilize adequate existing reproduction)



Gypsy Moth Silviculture Guides

➤ Stand Susceptibility

Probability of defoliation if insect present

➤ Stand Vulnerability

Probability of mortality if defoliation occurs

Gypsy Moth Susceptibility

Probability of Defoliation

- **Large numbers of preferred food species**
This means OAKS!
- Abundant larvae refuges
- Sparse litter protection (and other habitat unfavorable for small mammal predators)

Gypsy Moth Vulnerability

Probability of Mortality

- Oaks with poor crown condition
 - dieback
 - sparse foliage
 - low live crown ratio
- White oak group component
- Diameter class, slope, elevation,

Gypsy Moth

Ecological Effects & Socioeconomic Impacts

- Aesthetic & Recreation
- Nuisance, Public Health, Residential
- Wildlife & Fish Habitat
- Nutrient Cycling, Water Quality & Yield
- Fire Hazard
- Acorn Production
- Tree Growth and Yield
- Tree Mortality
- Vegetation Changes

Gypsy Moth Preferred Hosts

Oak Species

Basswood

Sweetgum

Serviceberry

Hornbeam, Hop Hornbeam

Willow

Apple

Aspen

Gray, Paper, River Birches

Gypsy Moth Resistant Hosts

Beech

Sweet, Yellow Birch

Blackgum

Buckeye

Walnuts

Black Cherry

Hickories

Red & Sugar Maple

American Chestnut

Cottonwood

Cucumbertree

Elms

Sourwood

Sassafras

Hemlock

Pines

Gypsy Moth “Immune” Hosts

Ash

Fir

Holly

Black Locust

Sycamore

Yellow Poplar

Striped Maple

Dogwood

Mountain Laurel

Grape

Chestnut Blight, Oak Decline, and Gypsy Moth Interactions

- **Introduced pathogen**
- **Loss of chestnut**
- **Replacement with oak**
- **Physiologic maturity**
- **Outbreak dynamics of introduced insect**
- **Defoliation stress**

Oak Decline – Gypsy Moth Management

Treatment Options

➤ Do Nothing

Most often selected option

➤ Alter Susceptibility

Species composition

➤ Alter Vulnerability

Remove future mortality

Improve vigor

Change stand structure

Gypsy Moth Silviculture Guides

Basic Options

- **Defer and Re-examine Later**
- **Presalvage Thinning**
reduce vulnerability
- **Sanitation Thinning**
Reduce susceptibility
- **Presalvage Harvest**
use existing regeneration potential
- **Presalvage Shelterwood**
develop regeneration potential
- **Sanitation Conversion**
reduce susceptibility &/or vulnerability

Oak Decline Structure Effects

Overstory Mortality (Trees/Ac)

