

# Douglas-fir Beetle

*Dendroctonus pseudotsugae*



Host:

Douglas-fir

Down western larch



# Identification

Boring dust or frass on the  
outside of trees



# Identification

# Gallery Pattern



Wood borers have wider galleries with no distinct pattern





UGA1207025

# Identification

Pitch Streamers



# Identification

## Adult Beetles



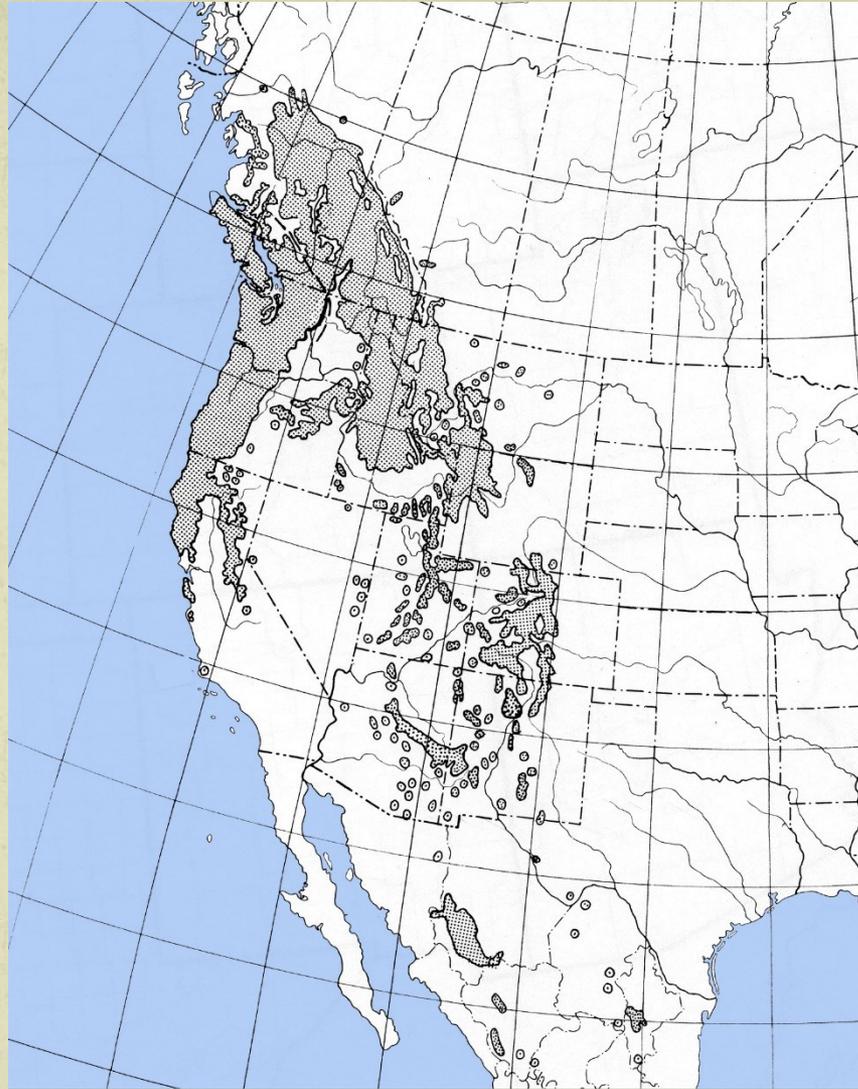
# Identification

## Pouch Fungus



# Distribution

Throughout the  
distribution of  
Douglas-fir



Distribution of Douglas-fir (Little 1971)

# Douglas-fir Beetle Biology

One generation per year



Overwinter mainly as adults, fly in Spring



Eggs



Larva



Pupa

About 20% of population overwinter as larvae and fly in July



## Natural Parasites and Predators



# Douglas-fir Beetle Biology

Low populations  
associated with root  
diseased Douglas-fir



# Douglas-fir Beetle Biology

## Outbreaks triggered by disturbance



**Windthrow**



**Fire**



**Defoliation by budworm  
or tussock moth**





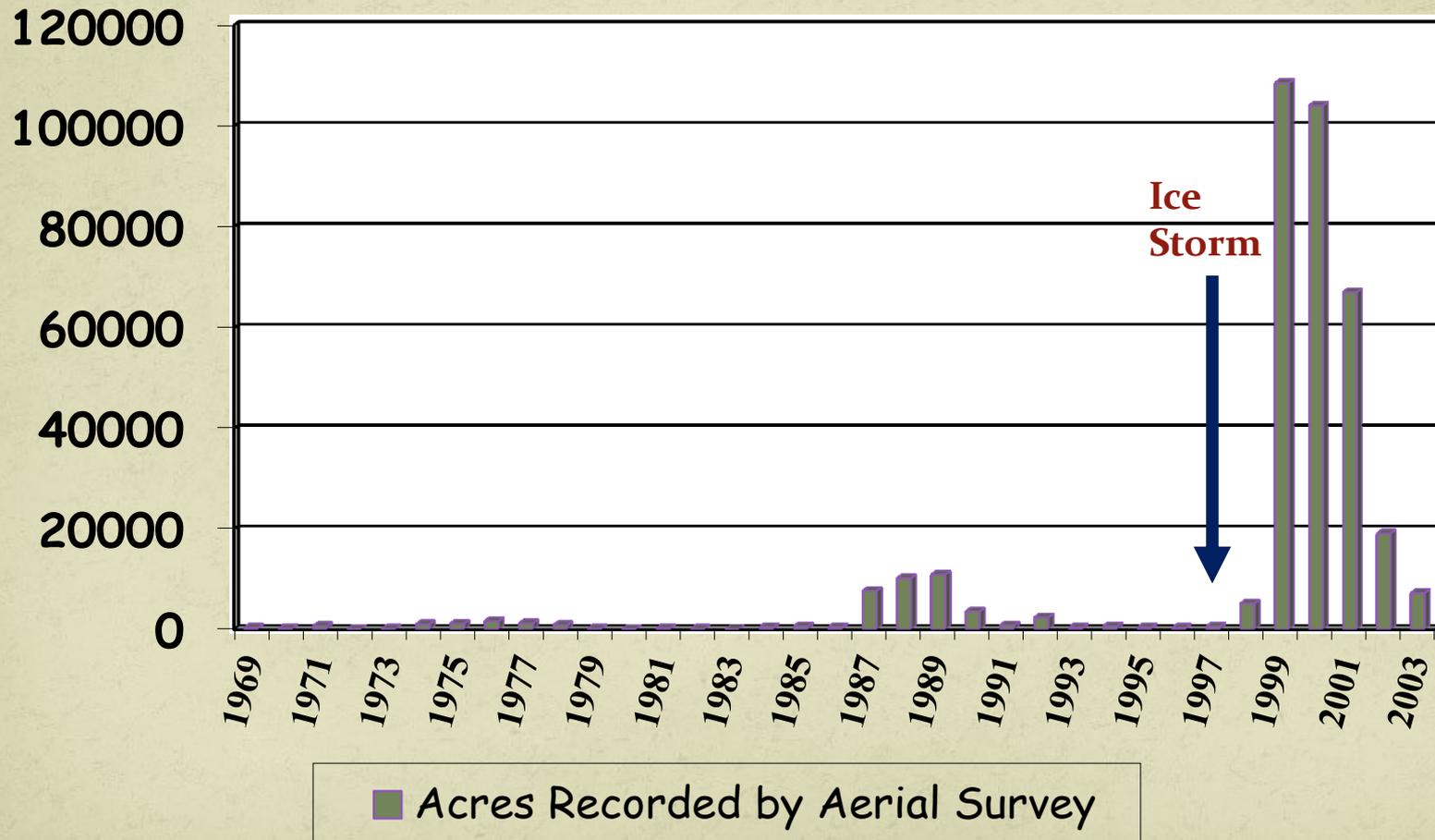
- **Outbreaks last about 2-4 years**
- **Droughts can prolong outbreaks**
- **Can kill 60-80% of mature DF**



# Douglas-fir Beetle Infested Acres

## Idaho Panhandle National Forests and Adjacent Lands

1969-2003





Management Options  
for Douglas-fir Beetle

Salvage windthrown, fire damaged,  
or defoliated Douglas-fir

Salvage within 1 year of disturbance or  
before beetles complete their development

# Management Options

## Stands most likely to be attacked:

- Overly dense ( $> 250$  ft.<sup>2</sup> BA)
- Mature ( $> 120$  years)
- Large dbh ( $> 16$ " )
- High % DF



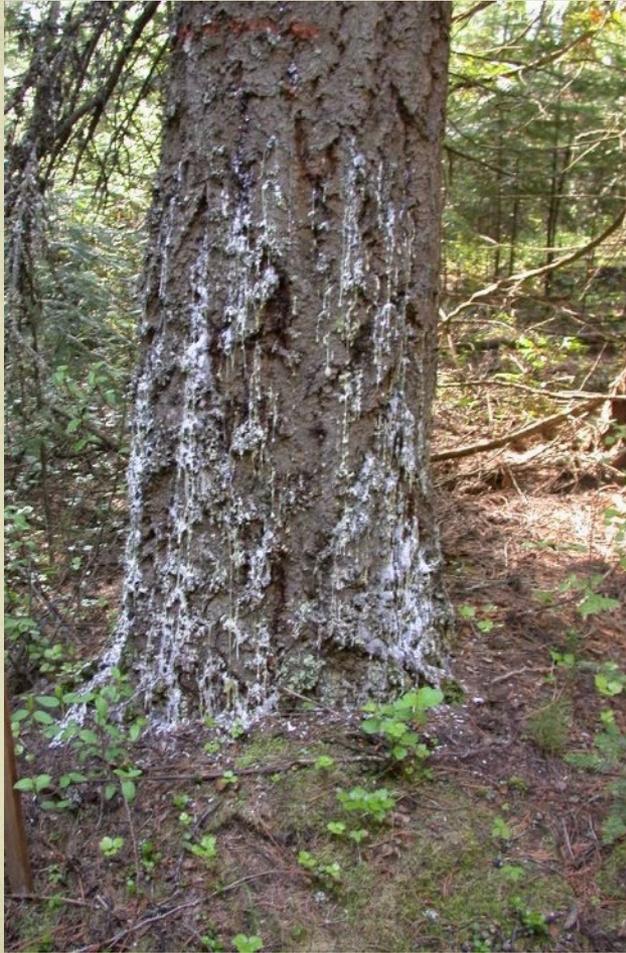
# Management Options



## Silvicultural Manipulation of High Hazard Stands

Reduce BA, average  
age/size, %DF

Partial cutting is NOT recommended  
in areas with root disease



# Management Options

## Trap Trees

- Cut prior to beetle flight in spring
- Cut in groups of 3-5
- Dropped in shade, unlimbed, unbucked
- Salvage within 1 year



## • Timing of Harvest

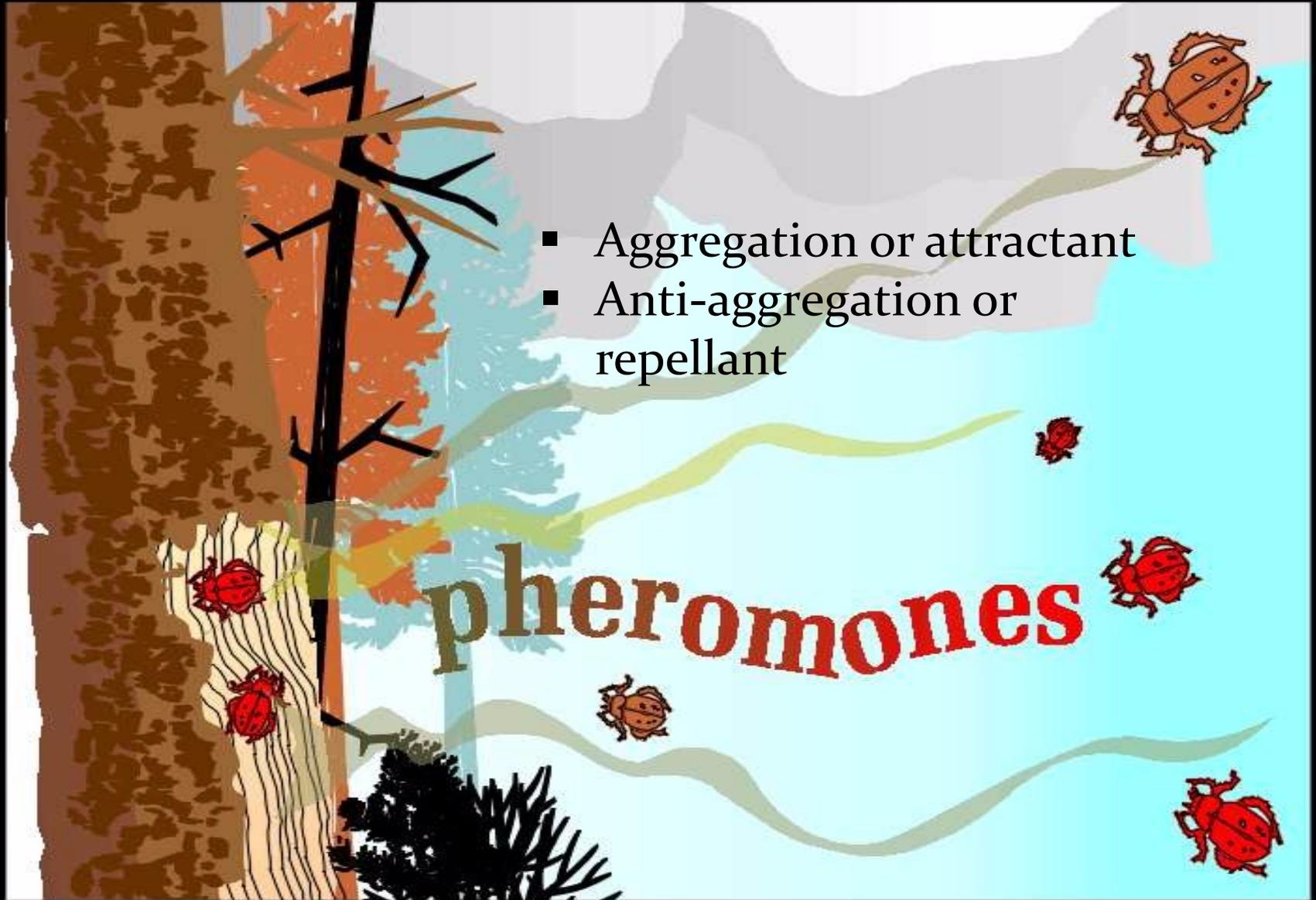
Trees dropped early in spring,  
left through beetle flight and  
then removed



# Management Options

- Aggregation or attractant
- Anti-aggregation or repellent

pheromones



## Management Options

Use the attractant pheromone in tree baits to attract beetles in stands scheduled for harvest



## Management Options

Use the anti-aggregation pheromone, MCH to protect individual trees and stands

MCH = (3-methylcyclohex-2-en-1-one)



# Management Options

## MCH to protect individual trees

2 bubble capsules/tree  
for trees < 24”  
4/tree for trees > 24”



# Management Options

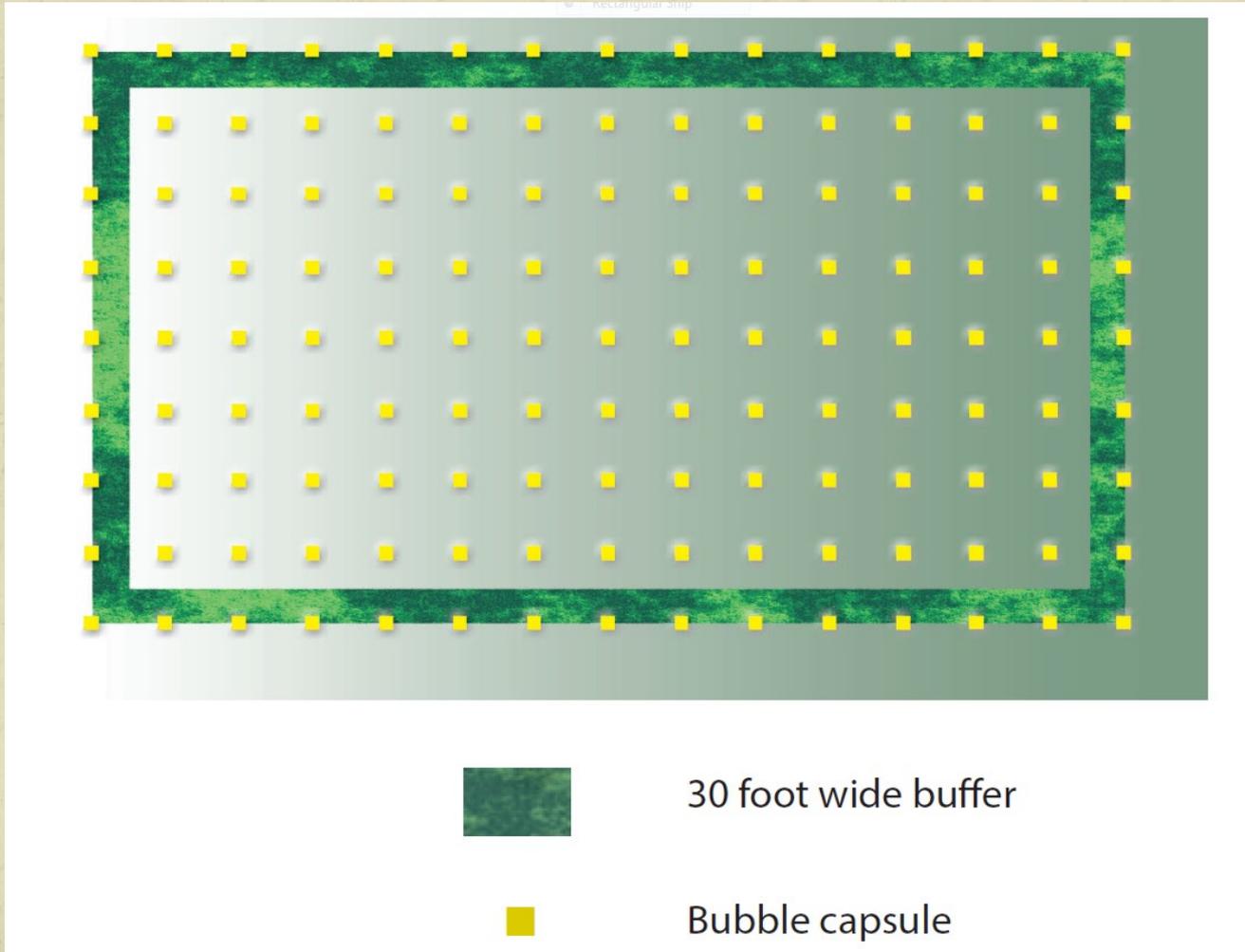
## MCH to protect areas

- Apply at a rate of 30/acre
- Apply in spring before beetle flight begins (before 3<sup>rd</sup> week of April)



# Management Options

## Grid application of MCH



## Management Options

### Spacing release points of MCH bubble capsules applied on a grid

MCH release rate	Spacing in Feet
Standard (1x)	38
2x	54
3x	66
4x	76
5x	85

Standard bubble cap = 400 mg MCH

Double bubble = 800 mg MCH

# Management Options



Pheromone-releasing laminated flakes applied by air in inaccessible areas



# MCH Handbook

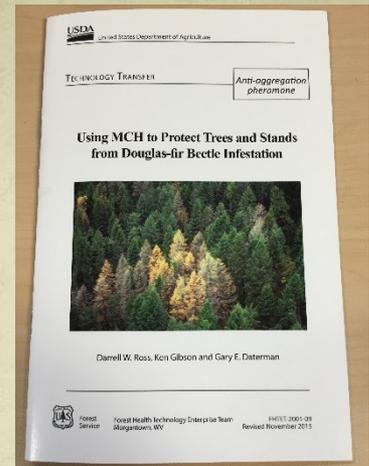
[http://www.fs.fed.us/foresthealth/technology/pdfs/MCH\\_handbook\\_11\\_15\\_508.pdf](http://www.fs.fed.us/foresthealth/technology/pdfs/MCH_handbook_11_15_508.pdf)

# Douglas-fir Beetle Pest Leaflet

[http://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fsbdev2\\_043201.pdf](http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev2_043201.pdf)

# Region 1 Management Guide for DFB

[http://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb5187396.pdf](http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5187396.pdf)



# Questions?

