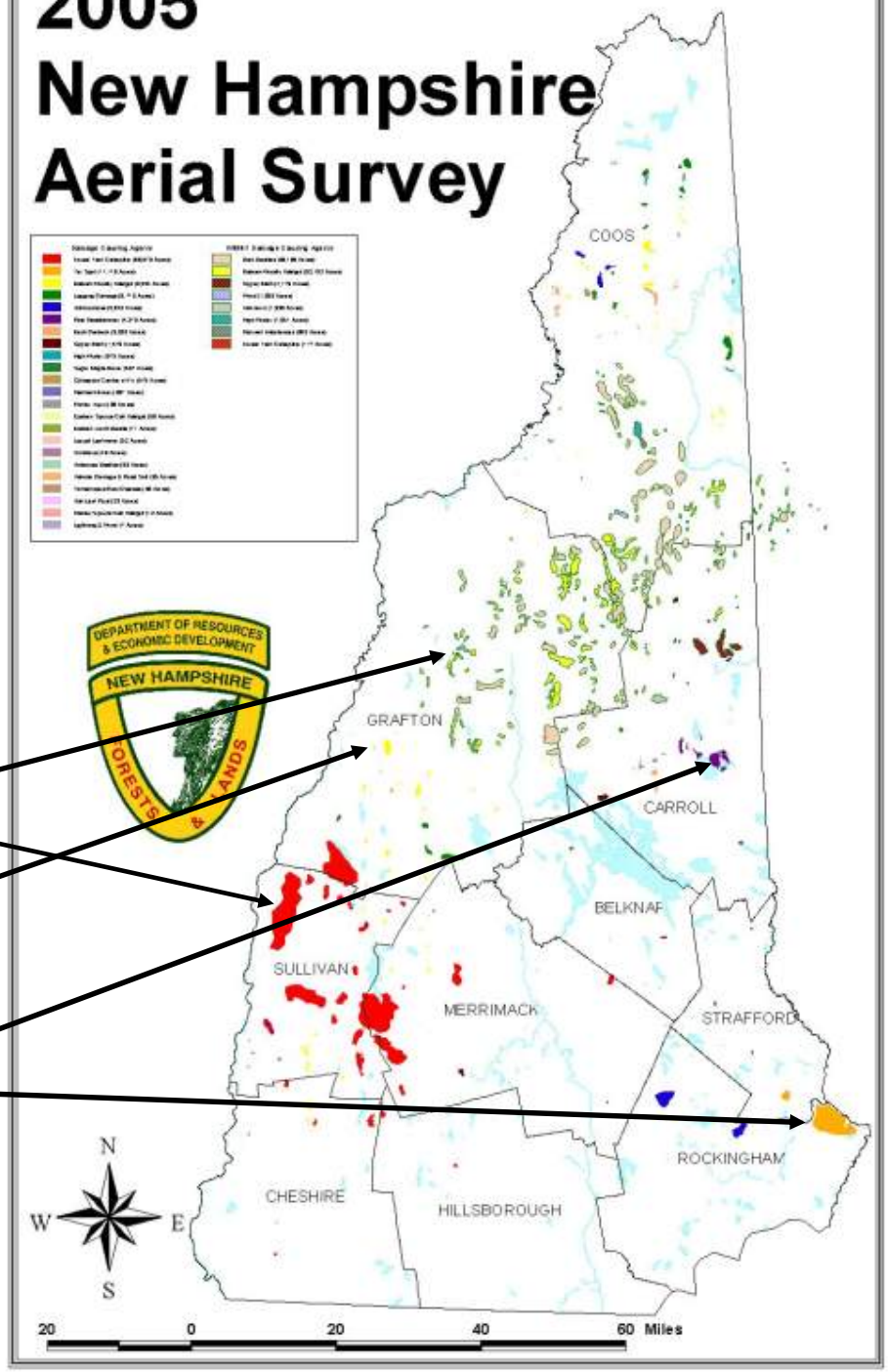
2005 New Hampshire Forest Health

Year End Review

Kyle Lombard
Forest Health Section

The 2005 aerial survey mapped 111,282 acres of serious damage or defoliation on State and private lands. And 98,507 acres on the White Mountains. The most total acreage sense the ice storm of 1998, and the most insect and disease damage since the Gypsy Moth outbreaks in the 1980's.



Forest Tent Caterpillar

Birch decline

Balsam Woolly Adelgid

Tar Spot

Pine Needleminer

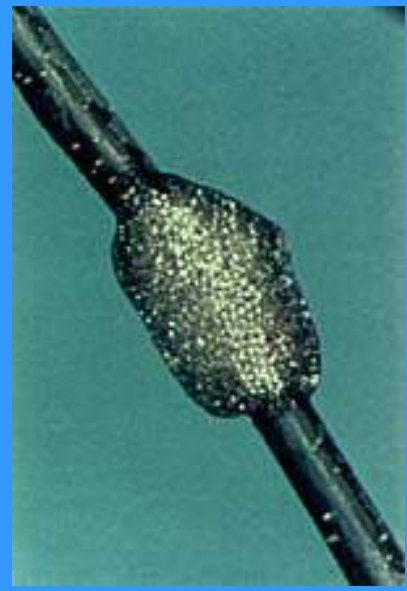
Forest Tent Caterpillar

66,000 acres in 2005

Up from an estimated 10,000 in 2004

FOREST TENT

EASTERN TENT



RECOMMENDATIONS REGARDING FOREST LANDS HIT BY FTC

1. Wait it out. Hold off on harvests in heavily defoliated forests for at least two or three years after the population crash.

   why? Because serious defoliation events can cause trees to re-foliate at least once during the growing season.

Trees with reduced vigor and low levels of stored energy are at higher risk of mortality or dieback from damage done by the harvesting process.

Historically FTC has moves quickly from west to east, only hitting a stand one or two years before populations are brought under control by native predators.

EUROPEAN FRUIT LECANIUM SCALE

Lecanium Scale Facts

It’s a soft scale

It’s NATIVE, with over 40 known predators

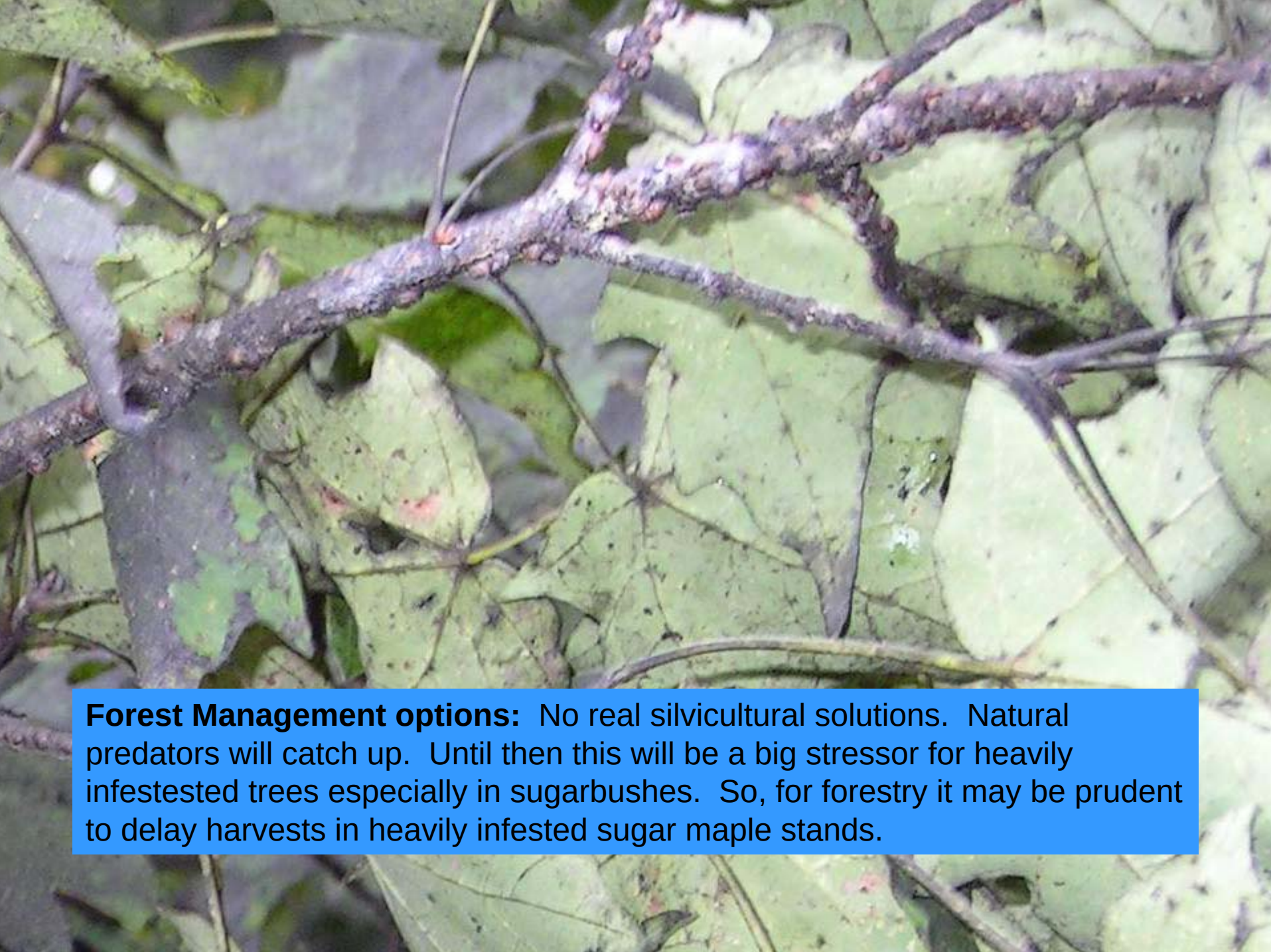
Host is limitless, but only seen on SM and Norway this year

This is the first major outbreak recorded in any of the Eastern States. Vermont has it throughout the SM region and NH has it throughout the SM region

Life cycle: adult lays eggs in the spring- eggs hatch and crawlers spend summer on the leaves feeding. Crawlers come back to the branches in August and over winter. Crawlers make the last molt to adult form in the spring, feed on the branches and lay eggs.

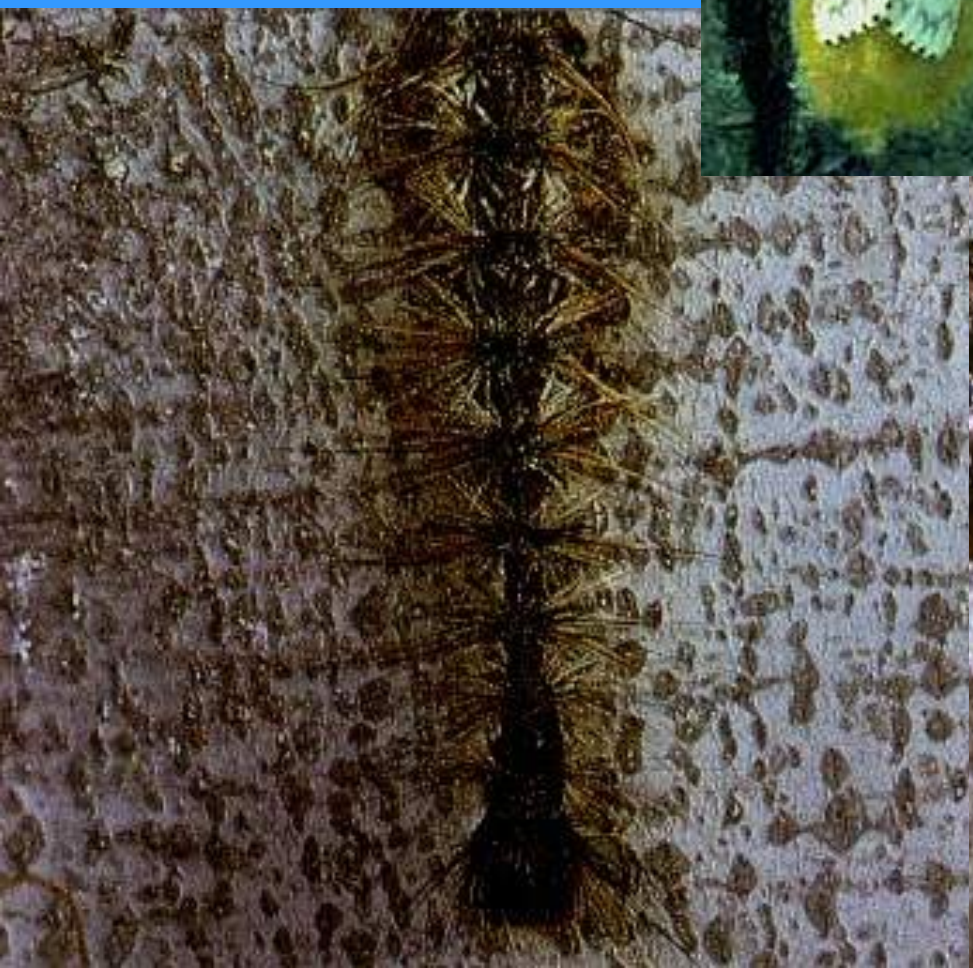
Because of the abundance of feeding we expect to see branch dieback and early leaf drop in many areas where heavy populations exist.

THE CRAWLERS



Forest Management options: No real silvicultural solutions. Natural predators will catch up. Until then this will be a big stressor for heavily infestested trees especially in sugarbushes. So, for forestry it may be prudent to delay harvests in heavily infested sugar maple stands.

GYPSY MOTH



PINE NEEDLE MINER

BIRCH DECLINE

ANTHRACNOSE:

Causal Agents: Several genera of fungi (e.g., *Aureobasidium, Discula, Kabatiella*).

Symptoms: The symptoms associated with anthracnose diseases vary with the species of maple and the fungus. Symptoms are often apparent from late spring to early summer but additional cycles of disease can result in damage that is visible later in the growing season. The range of symptoms includes leaf spots, blighted leaves and young shoots, cankers, and dieback of young twigs and branches. The most common symptoms are large, irregular, dead areas on the leaf that are often V-shaped or delineated by the veins.


TAR SPOT

HEMLOCK BORER

FLAT HEAD BORER

“SECONDARY PEST”

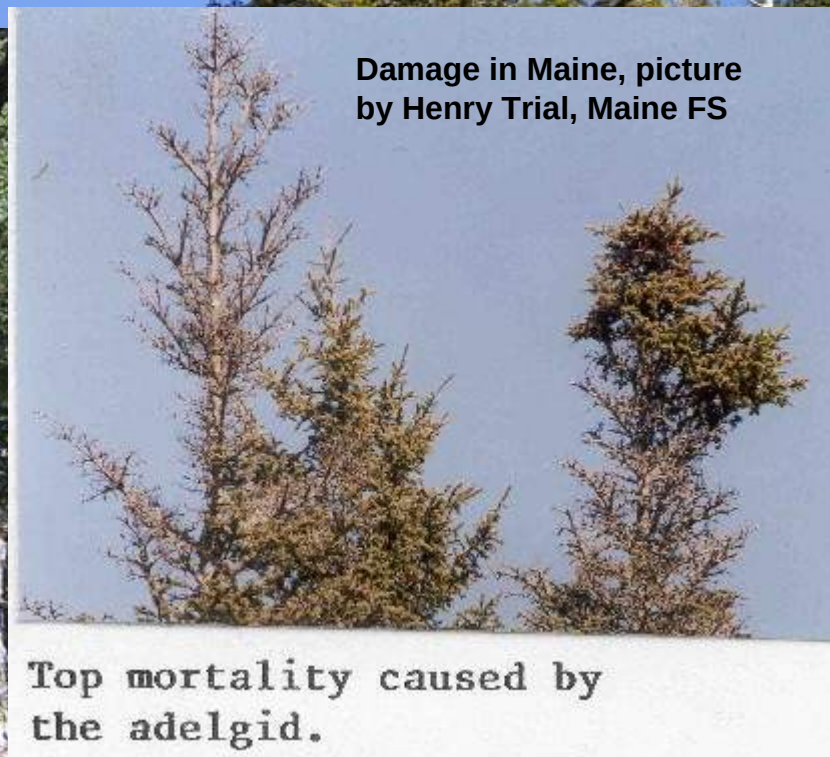
BARK BEETLE

CALICIOPSIS CANKER

Blister rust	Pine canker
Generally infects lower bole	infects thin barked upper bole
Infects through a branch	infects bark directly between whorls
Localized pitch from margins	long pitch streaks throughout canker region
Known to kill trees	literature suggests it's a secondary pathogen
Can cause major tree deformity	rarely kills cambium,
Rarely found on more than 20% Of the mature stand	75% of codominant trees infected is common
Usually only one stem canker	usually many small cankers along upper bole

Balsam Woolly Adelgid

Damage from BWA in the Twin Mt. Area



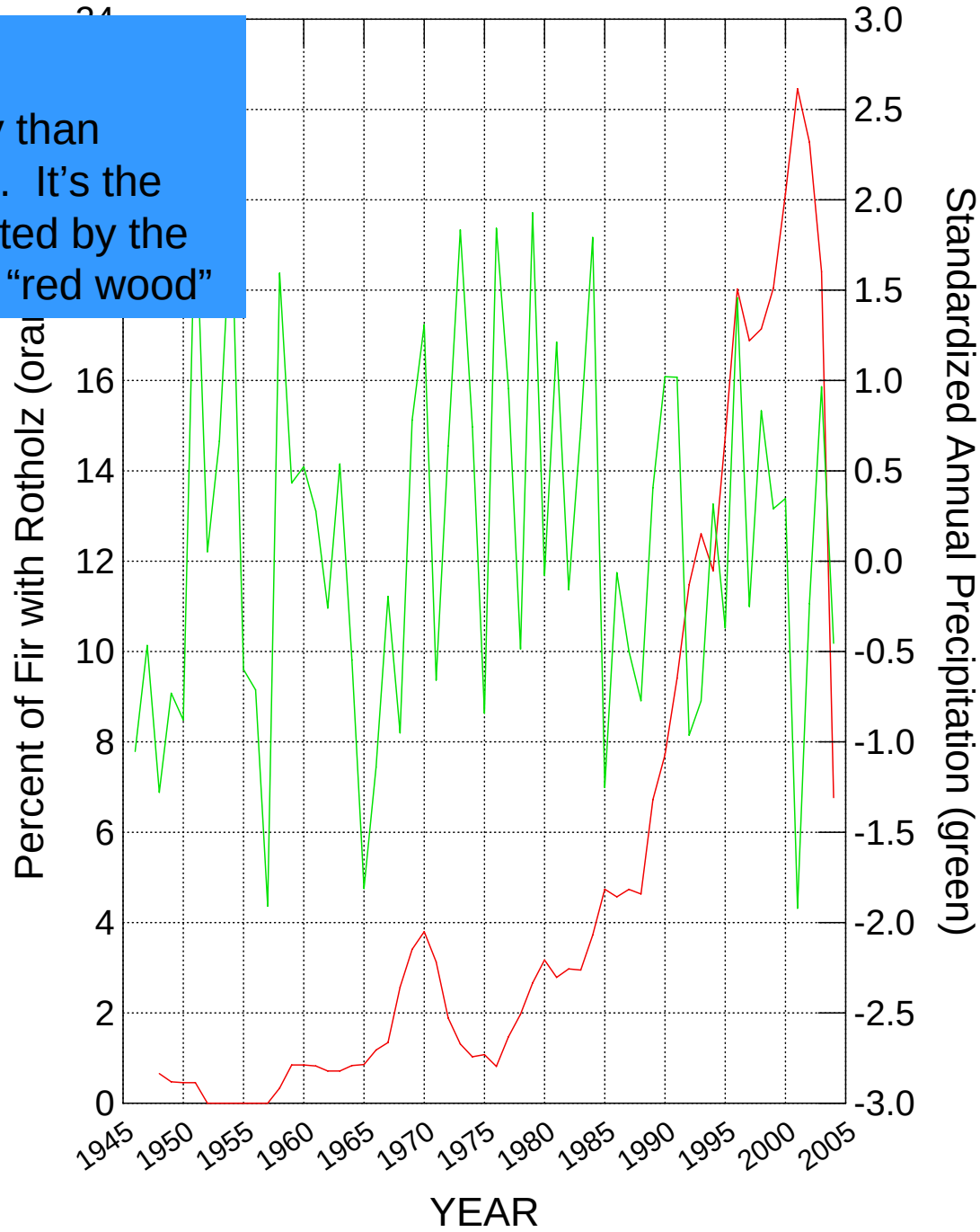
Damage in Maine, picture by Henry Trial, Maine FS

Top mortality caused by the adelgid.

what the heck is “rotholz”?

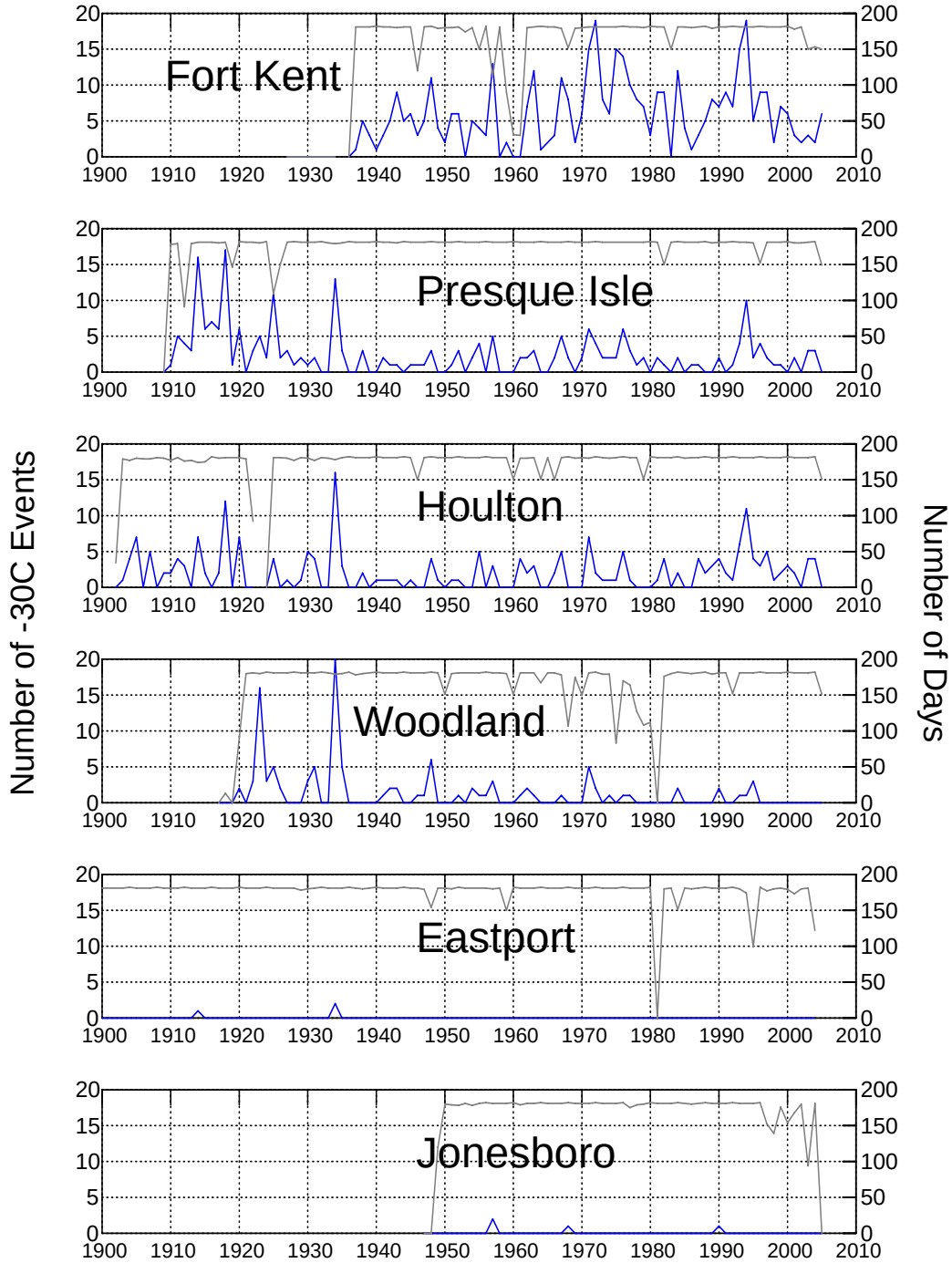
It’s reaction wood higher in density than normal wood with 15% more lignin. It’s the trees response to toxic saliva injected by the adelgid during feeding, also called “red wood”

- phase increases 1976-2001, Then Crashes
  - Indicated by rotholz in tree rings (orange line)
- Severe drought precedes population crash



BWA in Maine

- -30C is 100% lethal in lab
- Coastal areas rarely get this cold
- Northern areas have frequent events to -30C
- Coastal plain (Woodland)
  - -30C prior to 1940
  - Rare after 1940
  - Could explain increased damage in this region



MANAGEMENT OPTIONS

1. A decision needs to be made regarding when the pest has succeeded in capturing the stand. When does the loss of growth and mortality outweigh carrying the fir stand any further.

Below 1500' elevation: remove all fir when fir mortality reaches 30%, or when 50% is heavily crown damaged or heavily infested with trunk phase.

Above 1500' elevation: Be more selective. Winter temps are more apt to control major outbreaks. Remove heavily damaged trees but allow a few cold winters to control epidemic populations