Forest Pests 2017

Forest Health & Monitoring

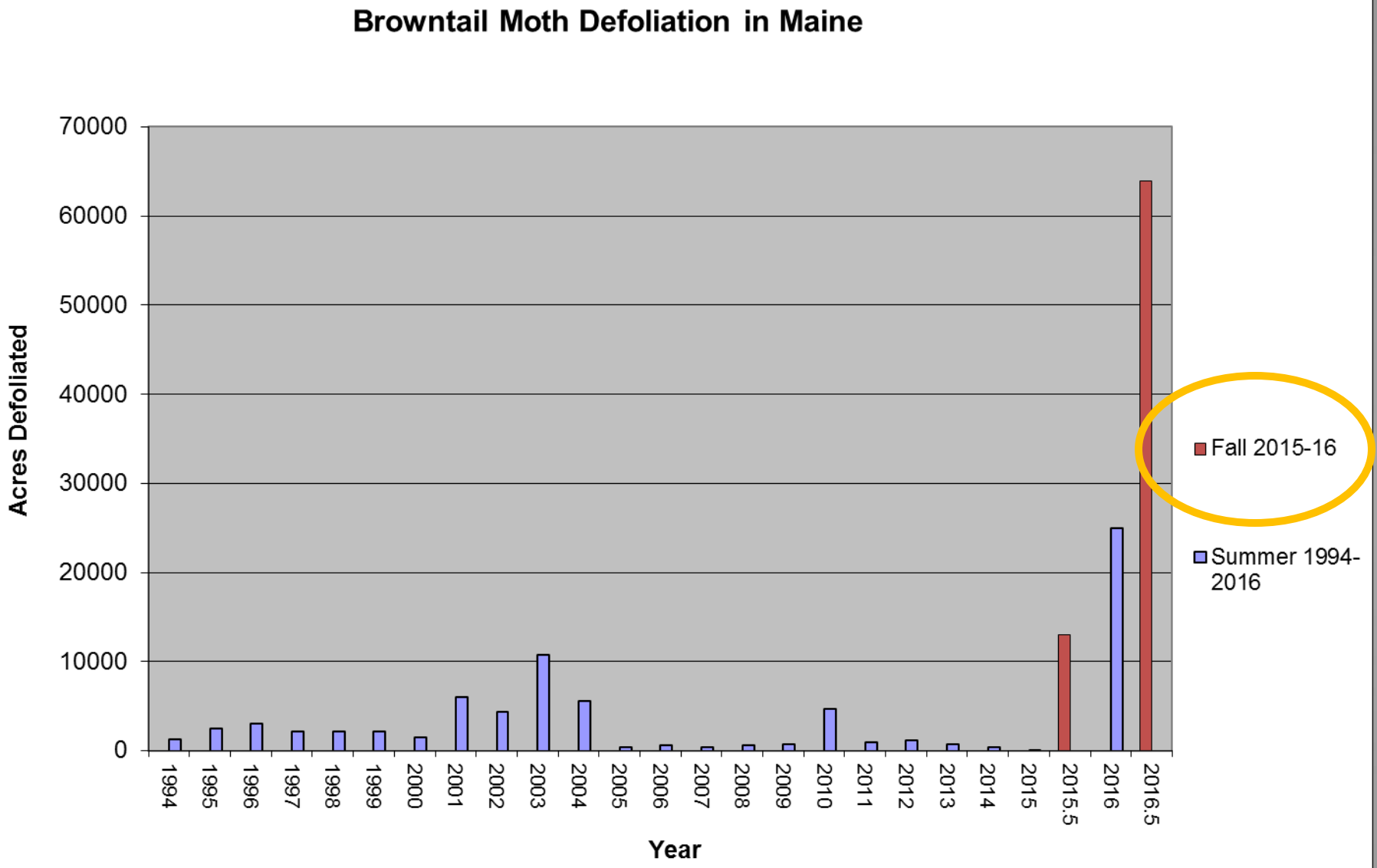
Maine Forest Service

Department of Agriculture, Conservation and Forestry

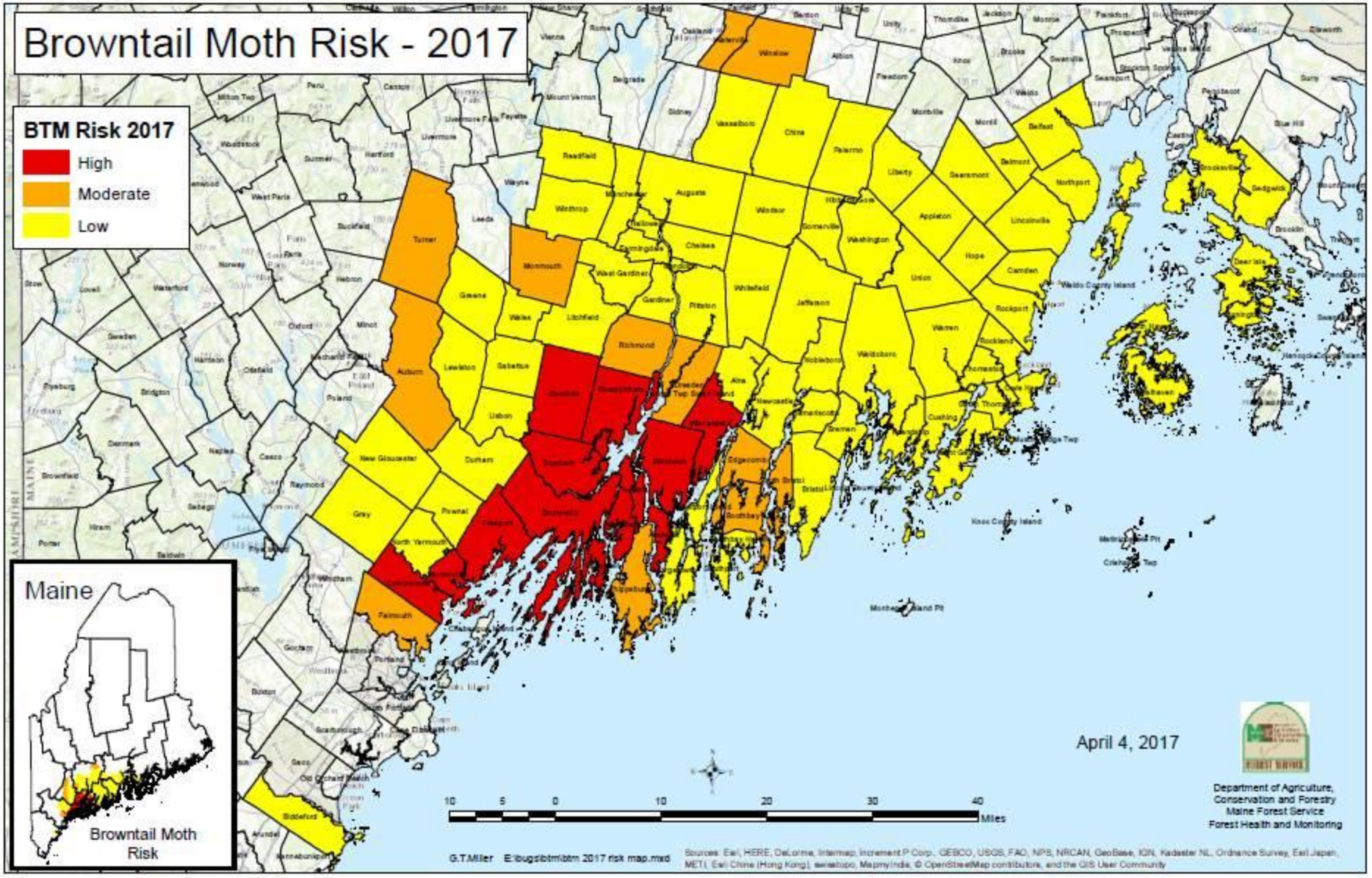
Browntail Moth

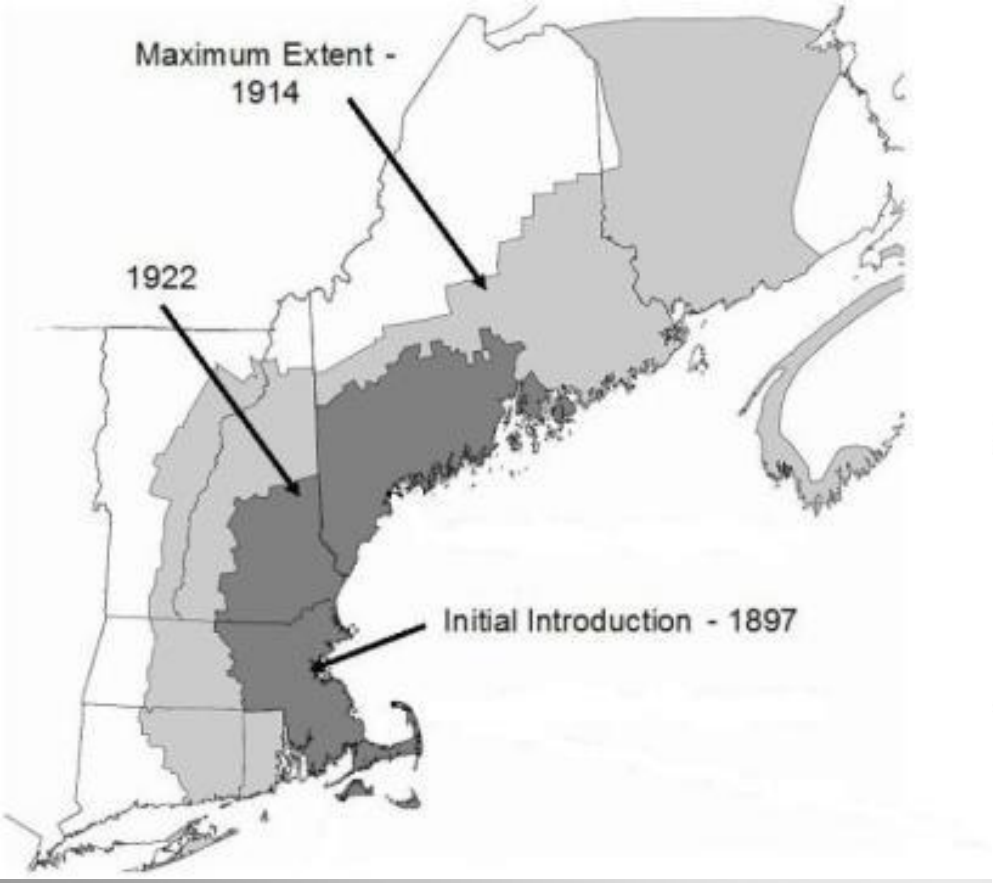
Caterpillar feeding causes
- branch dieback
- tree mortality

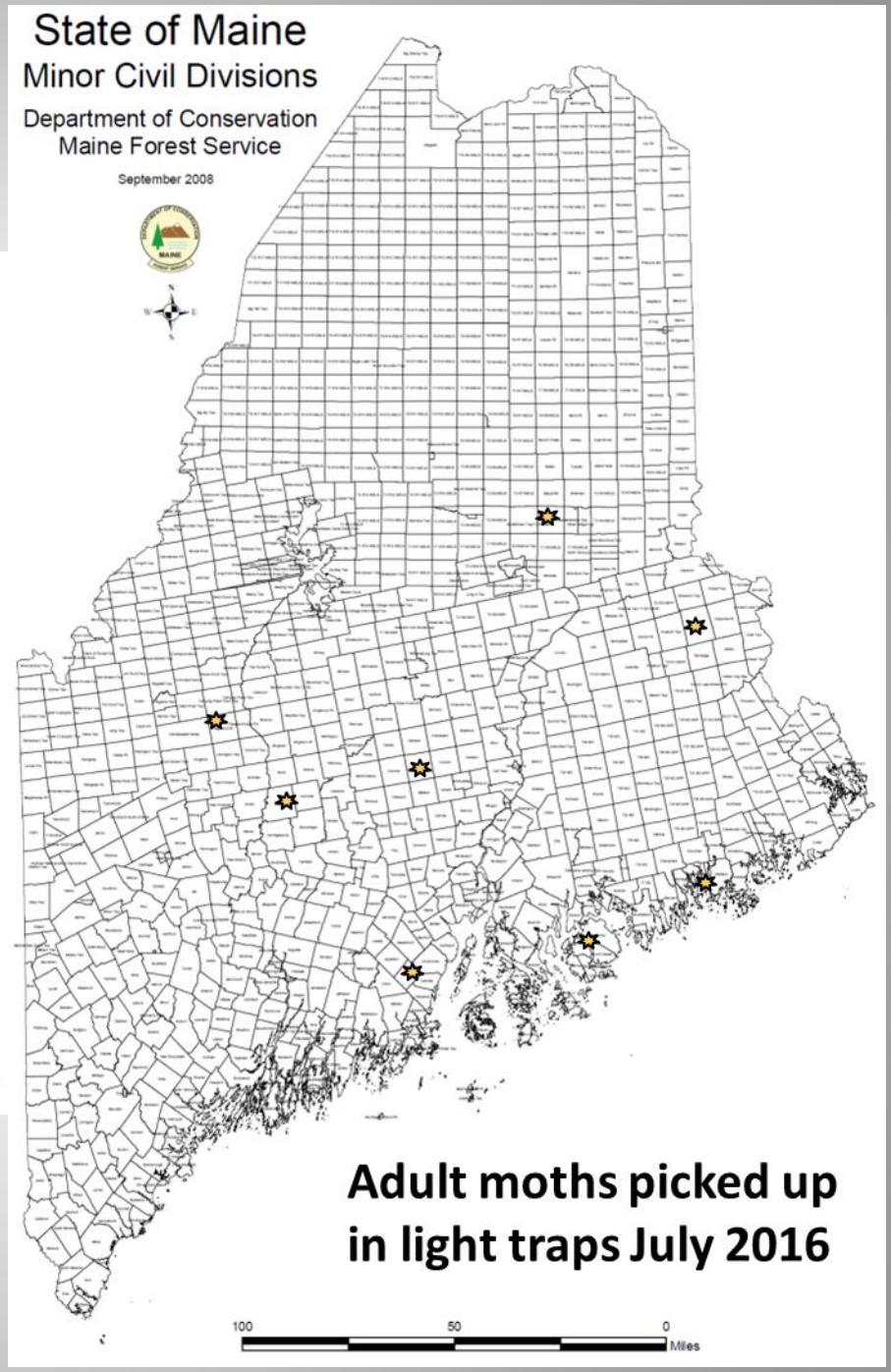
Caterpillars have toxic hairs that cause:
- Rash
- Respiratory distress
- Persistent toxin



Maine Forest Service Aerial Survey


Browntail Moth Risk - 2017
BTM Risk 2017
High
Moderate
Low
Maine
Browntail Moth Risk
April 4, 2017
10 5 0 10 20 30 40
Miles
Department of Agriculture, Conservation and Forestry
Maine Forest Service
Forest Health and Monitoring
G.T.Miller E:\bugs\btm\btm 2017 risk map.mxd
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community


Maximum Extent -
1914
1922
Initial Introduction - 1897


State of Maine
Minor Civil Divisions
Department of Conservation
Maine Forest Service
September 2008
Adult moths picked up
in light traps July 2016
100
50
0
Miles

Clip out winter webs from oaks, apple and other trees. Burn or soak in soapy water.

HAIRY CATERPILLAR COMPARISON CHART

Browntail Moth

Look for

Overall brown color;
White tufts along sides margins;
Red-orange dots on tail-end

DANGER!! Do Not Touch!!!

Eastern Tent

Look for

White stripe down center of back
Blue spots like the "eye" in peacock feather along each side of stripe

Forest Tent

Look for

White or off-white footprint-shaped marks down the center of the back
Blue body coloration in later instars

Gypsy Moth

Look for

Prominent knobs with hairs on each side of head capsule.
Five pairs of blue- and six pairs of red- spots along back (4th instar and later).

Winter Moth

Defoliates hardwood trees and shrubs in early spring

Favored hosts:

- oak
- apple
- maple
- birch
- basswood
- blueberry
- And others


Photo: Maine Forest Service


Photo: P. Johnson


Photo: Maine Forest Service


Photo: P. Johnson

Hungary Forest Research Institute, Bugwood.org

Eggs: November-April

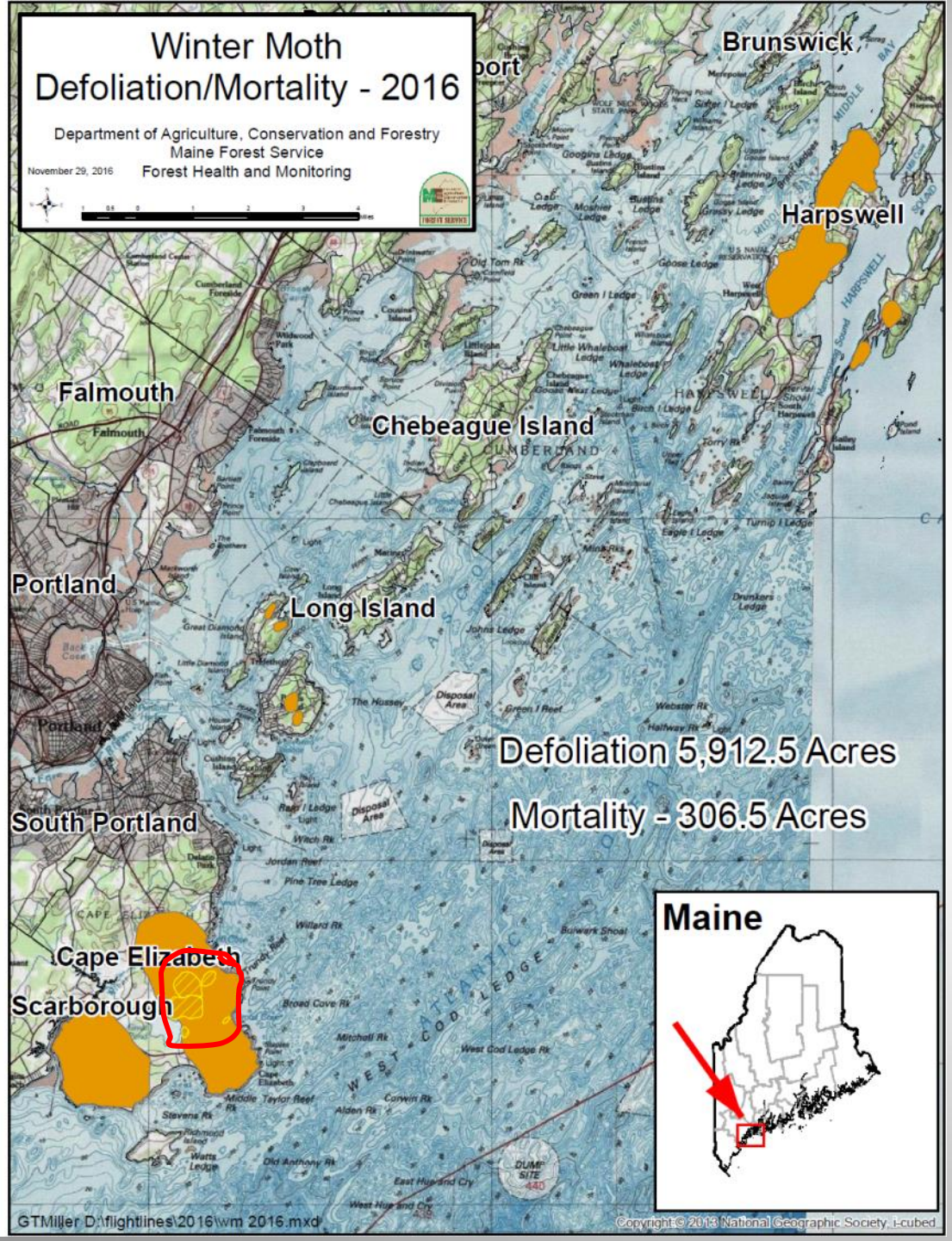
Larvae: April -June

Photo: P. Johnson

Photo: P. Johnson

Pupae: June-November

Adults: November-January



2016 Winter Moth Defoliation

- Aerial Survey ~6000 Ac
  - ~10,000 2015
  - Weather →Loss of synchrony
- Similar areas hit over last several years
- Oak mortality in Cape Elizabeth area.
  - 4+ yr Defoliation, Drought, Site

Long Term Outlook—Biological Control

- *Cyzenis albicans* – Parasitic Fly

ME Towns with *Cyzenis albicans* Releases

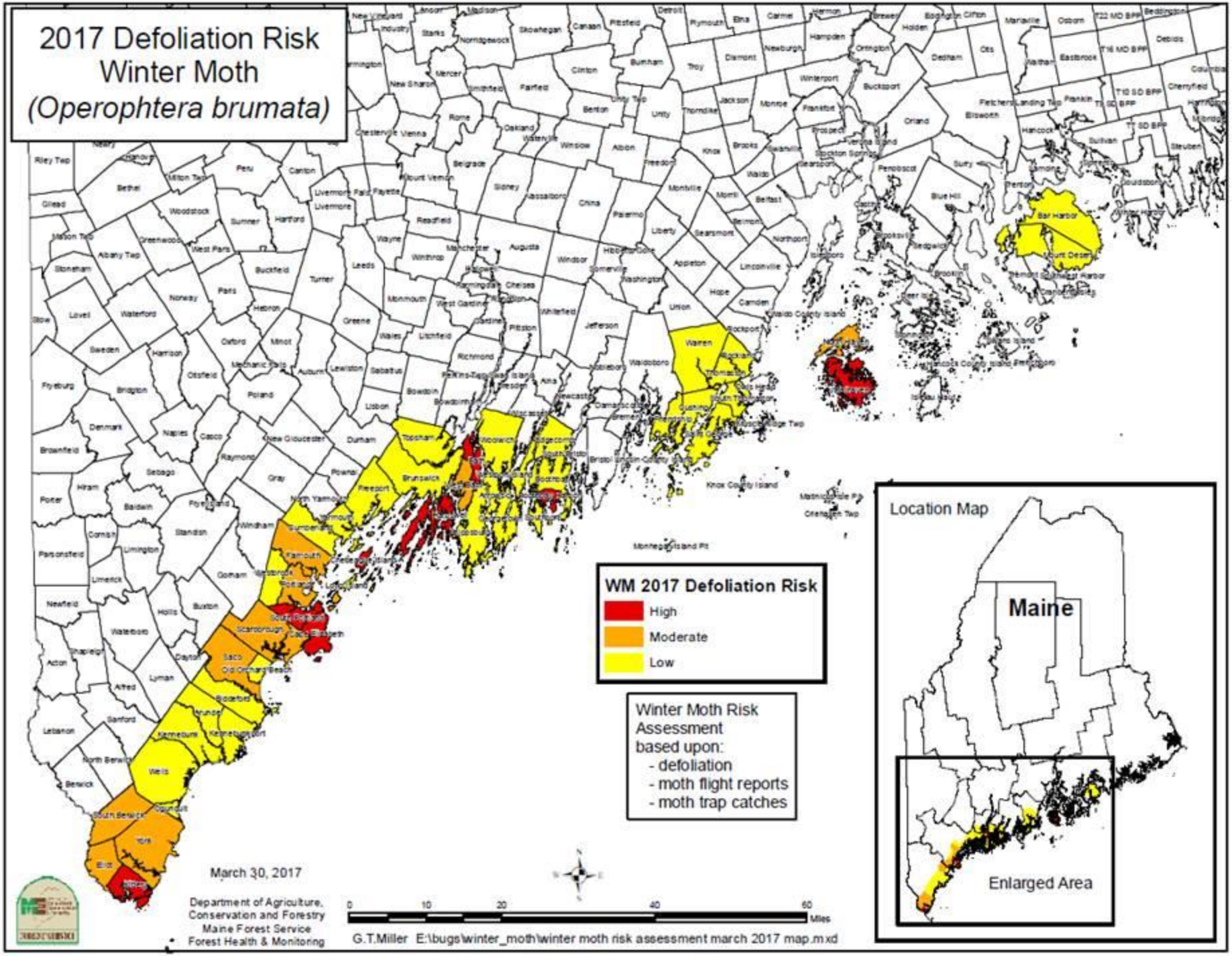
Location	Year
Harpswell	2013, 2014, 2016
Cape Elizabeth	**2013, 2015**
Kittery	**2014**
Vinalhaven	2014
Portland (Peaks Island)	2015

- Fly recovery in 2016!
- Experimental cocoon release in 2016 (Harpswell)

Parasitic Wasp in ME

- Searching activity observed
- Specimens collected
- Species ID unknown (perhaps undescribed)
- Important mortality factor in MA

2017 Defoliation Risk
Winter Moth
(Operophtera brumata)



Winter Moth - *Operophtera brumata*

- More likely to be found in 2nd home areas and lagre developments than forest
- Probably brought from Southern NE in landscape plantings

Winter Moth - CONTROL

DO NOT MOVE LANDSCAPE MATERIAL from infested areas as the cocoons of winter moth are in the soil from **June through November.**

OR apple or blueberry

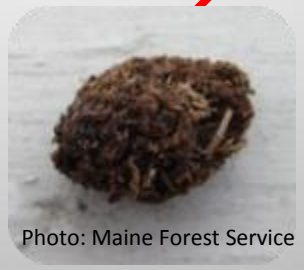
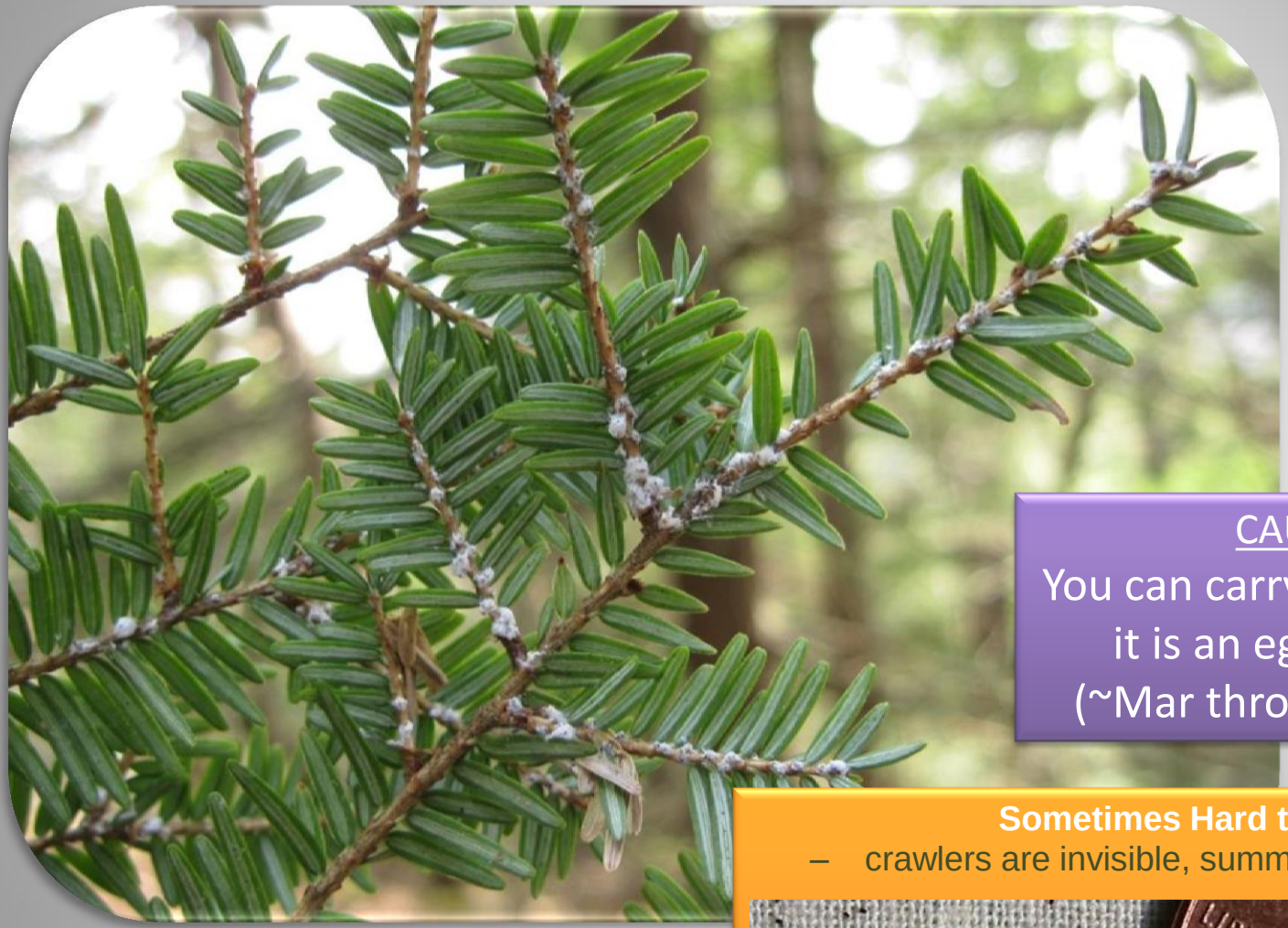


Photo: Maine Forest Service

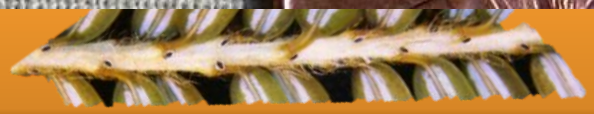
Hemlock Woolly Adelgid– *Adelges tsugae*



CAUTION:
You can carry this pest when it is an egg or crawler (~Mar through Early Aug)

Sometimes Hard to See!

– crawlers are invisible, summer stage aestivates



How do WE move them?

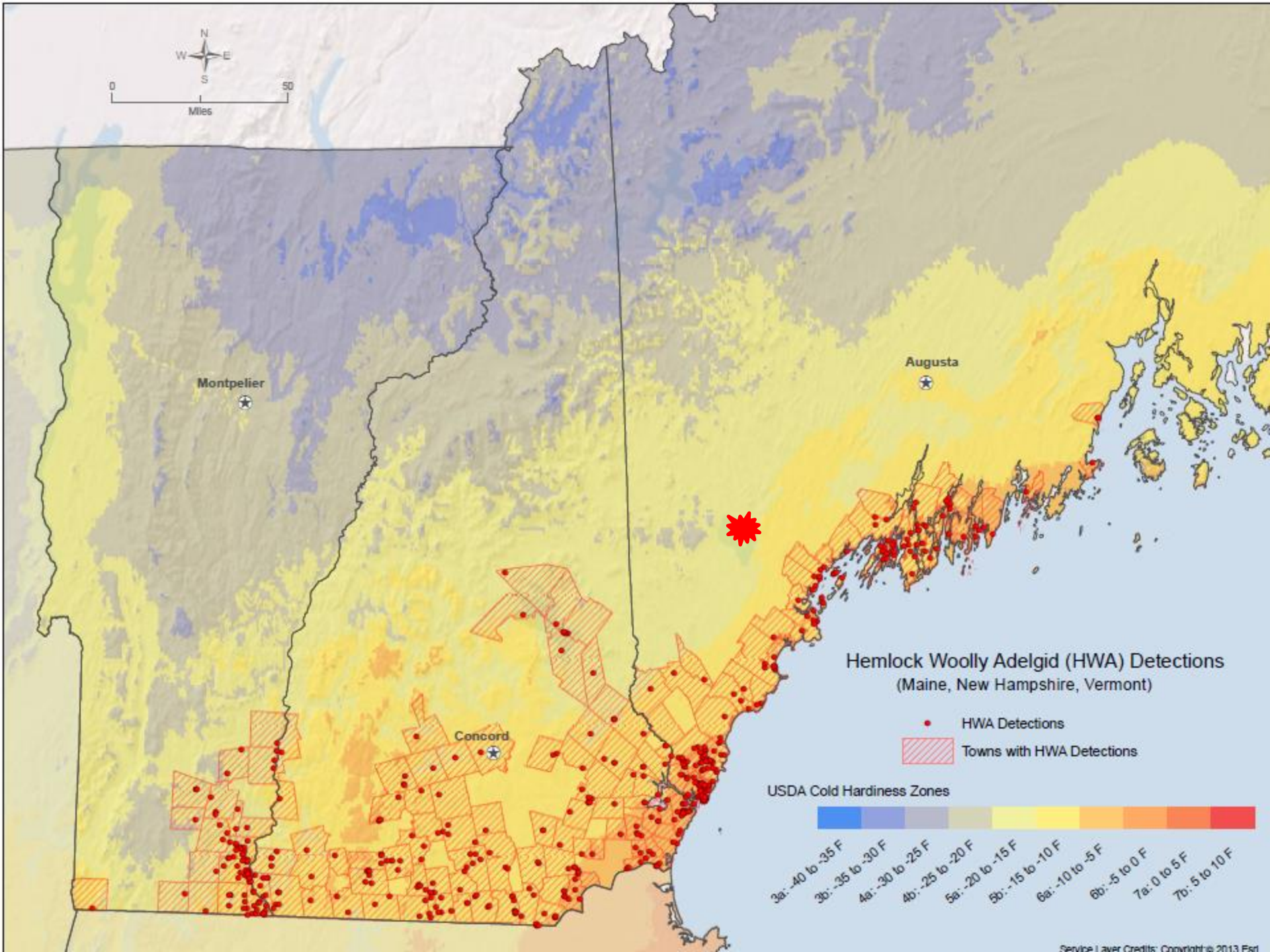
- Year Round - **Live plants**
- **March-July** (crawlers/eggs)
  - Severed hemlock
  - Clothing, Machinery, etc

What about natural spread?

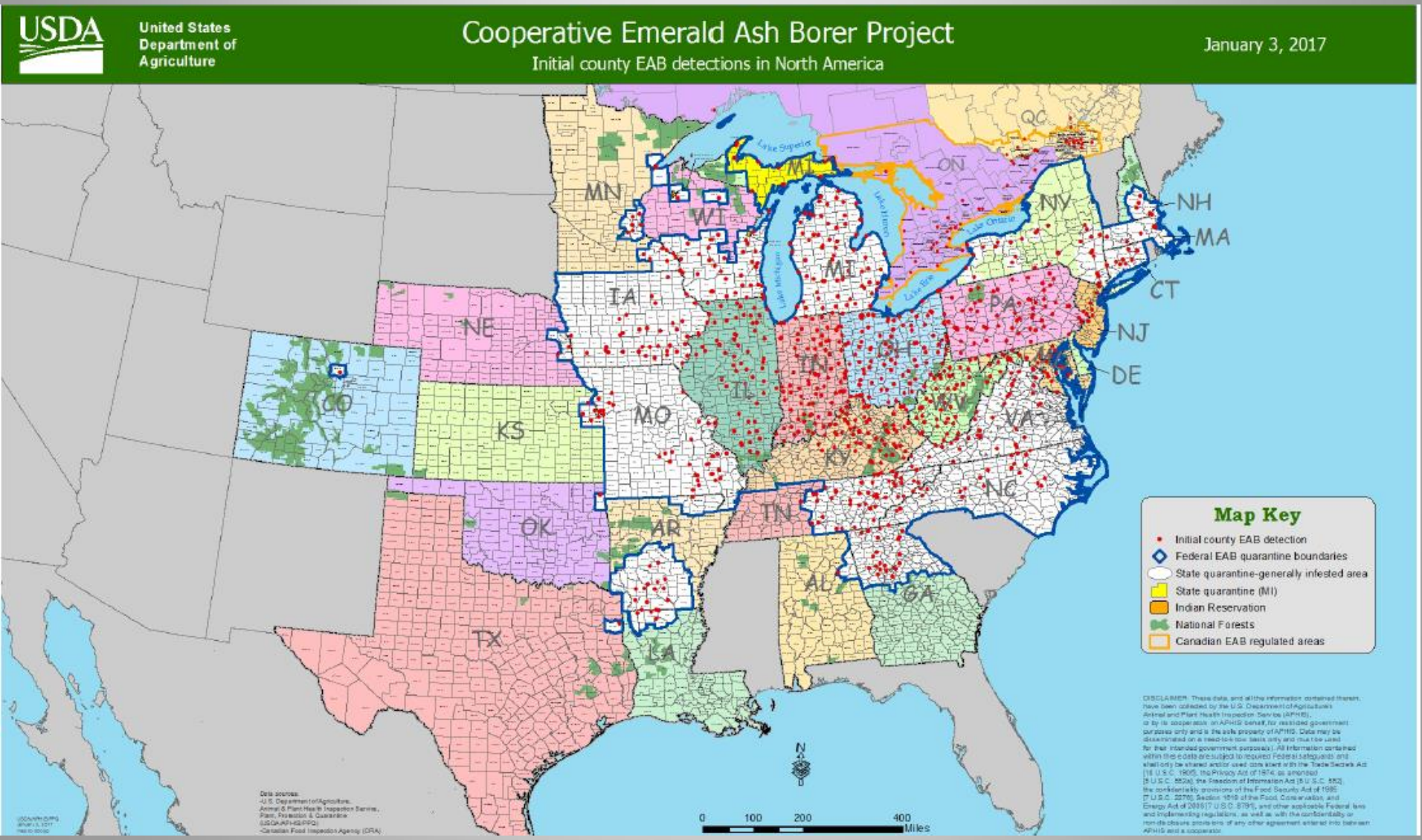
- **March-July** (crawlers/eggs)
  - Wind and weather
  - Animals

Elongate 'Hemlock' Scale – *Fiorinia Externa*

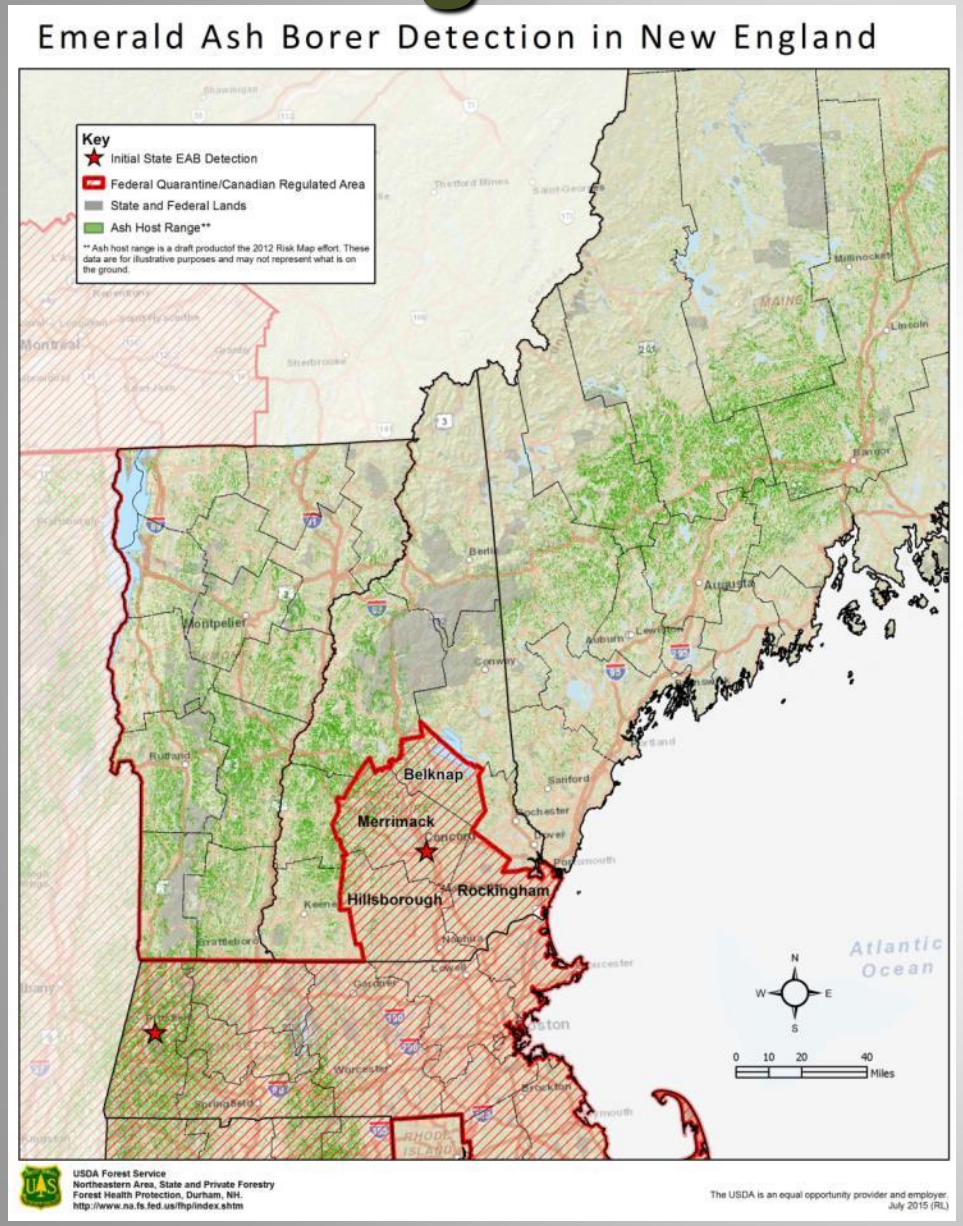
- Also look for this one on **fir**, spruce and other conifers.
  - Especially near residential areas
  - Especially where hemlock woolly adelgid is established

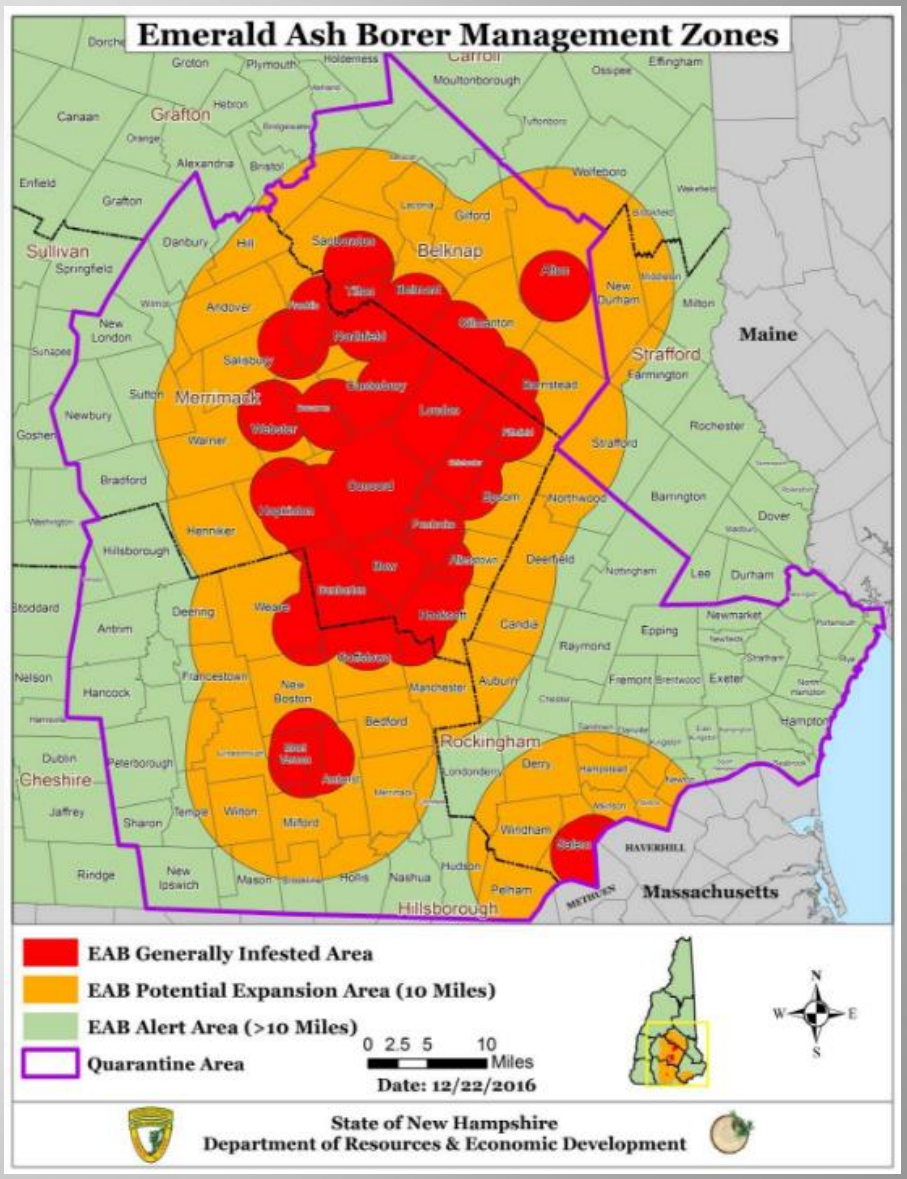

N
W
E
S
0
50
Miles
Montpelier
Augusta
Concord
Hemlock Woolly Adelgid (HWA) Detections
(Maine, New Hampshire, Vermont)
HWA Detections
Towns with HWA Detections
USDA Cold Hardiness Zones
3a: -40 to -35 F
3b: -35 to -30 F
4a: -30 to -25 F
4b: -25 to -20 F
5a: -20 to -15 F
5b: -15 to -10 F
6a: -10 to -5 F
6b: -5 to 0 F
7a: 0 to 5 F
7b: 5 to 10 F
Service Layer Credits: Copyright © 2013 Esri

www.emeraldashborer.info



Regional Detections of EAB





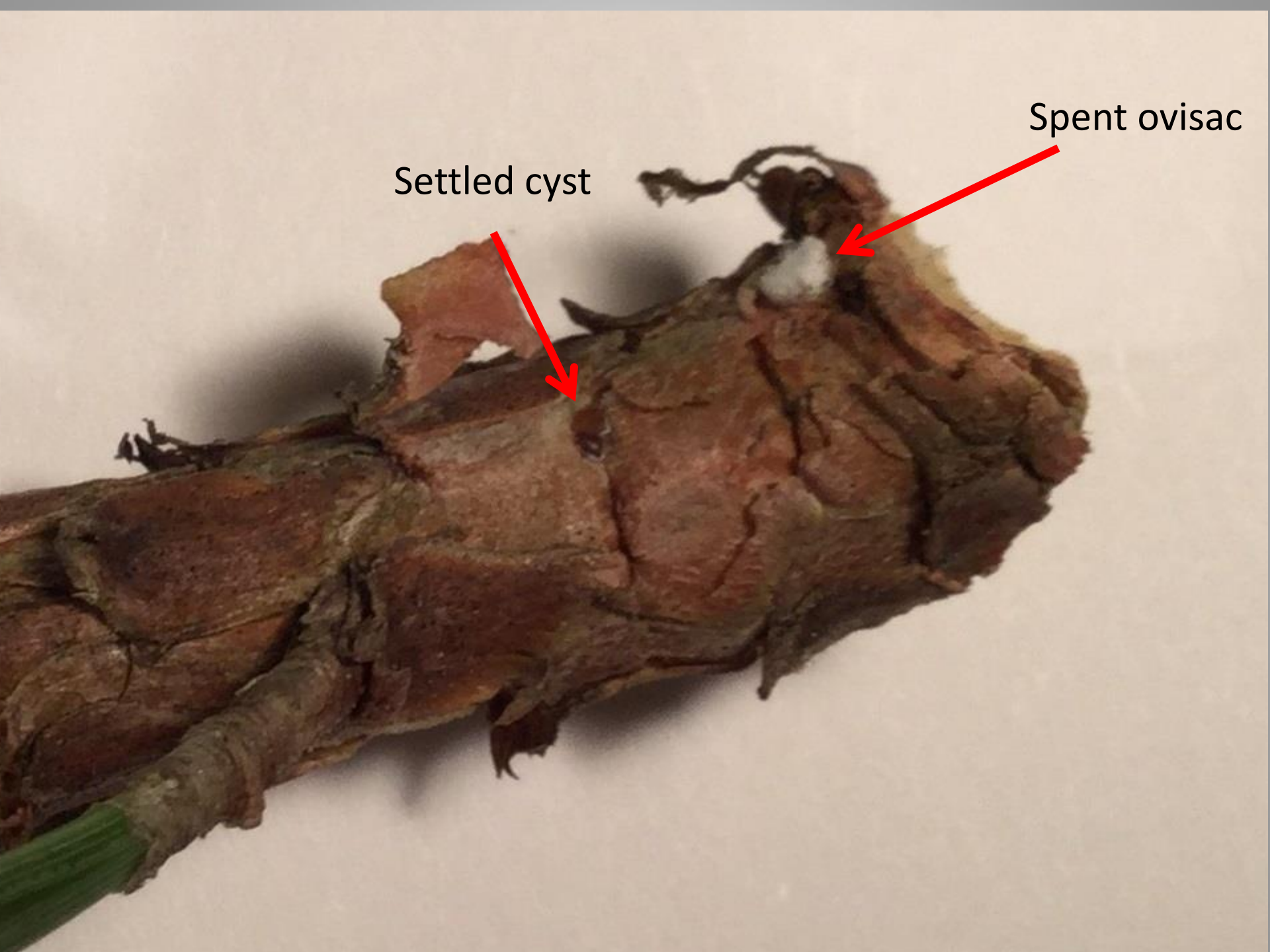
Red Pine Scale

- *Matsucoccus matsumurae*
- *(*formerly *M. resinosae)*

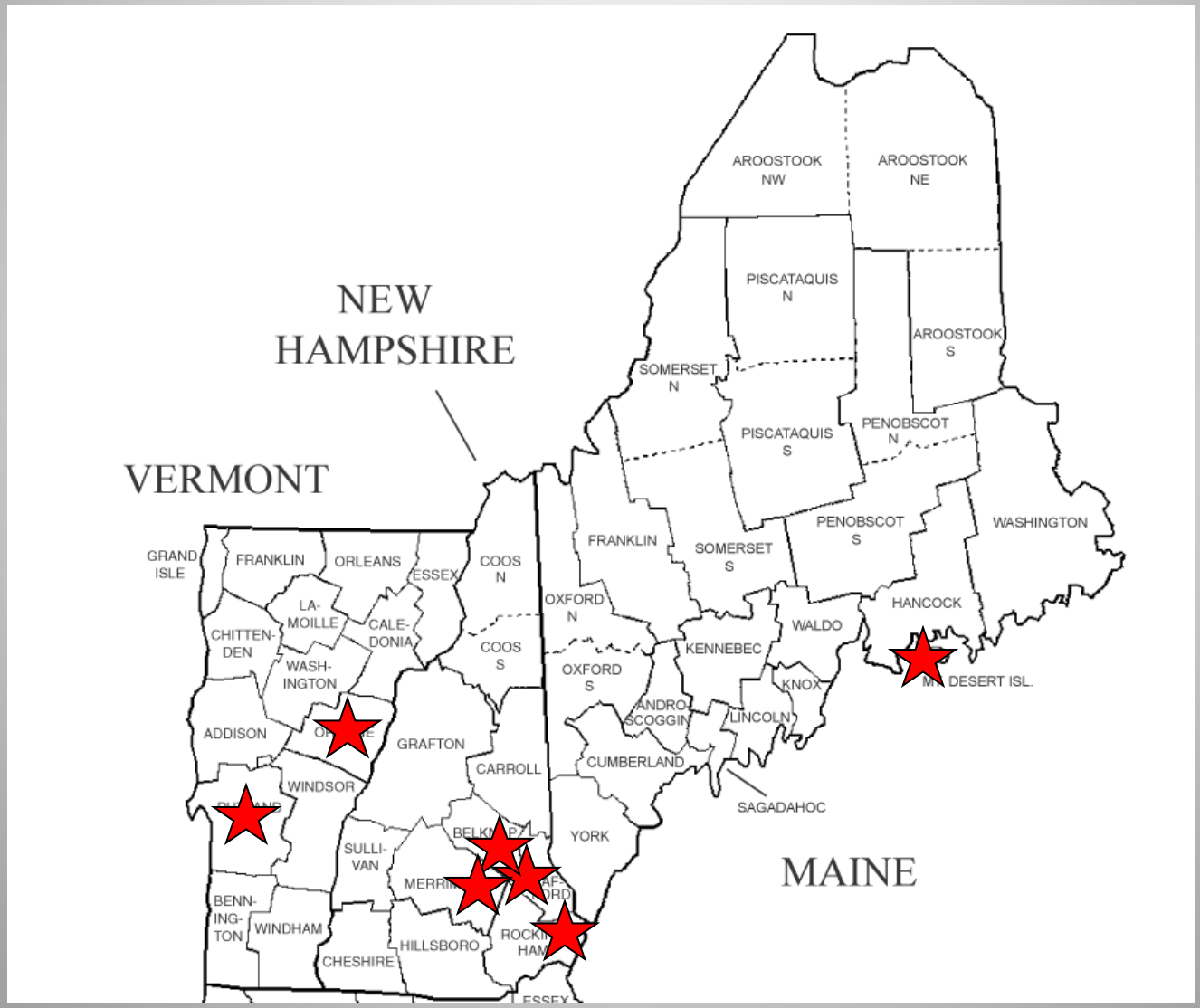
Red pine twig with scales

Affected trees turn red, from bottom up.

Sargeant Drive, town of Mount Desert


Spent ovisac
Settled cyst

Where is Red Pine Scale a Known Problem?



And…

- S.NE
- NY
- NJ
- PA
- China
- Korea

White Pine Needle Disease Complex

Lecanosticta acicola—brown spot needle-blight

(Mycosphaerella dearnessii)

Lophophacidium dooksii

(Canavirgella banfieldii)

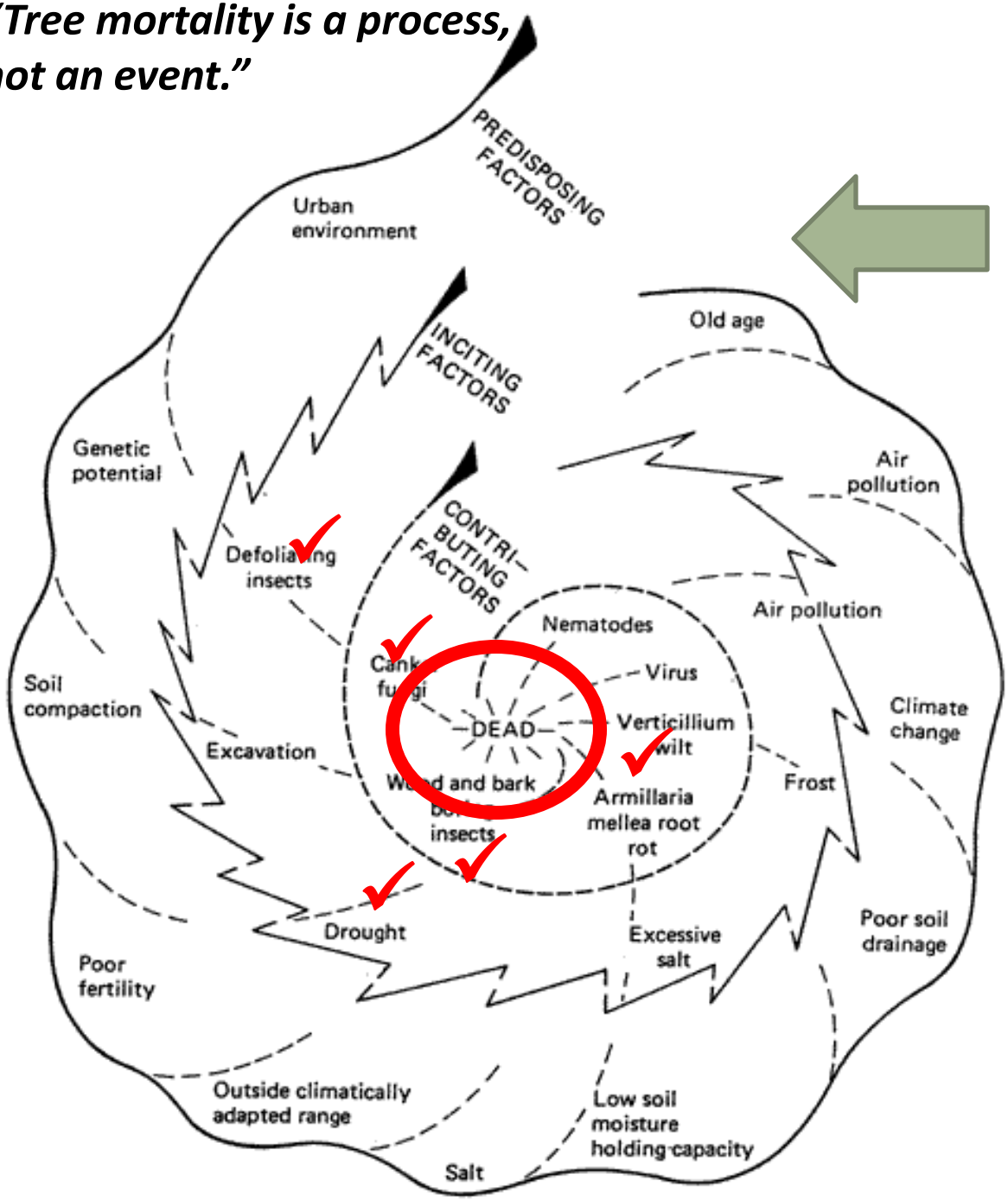
Bifusella linearis

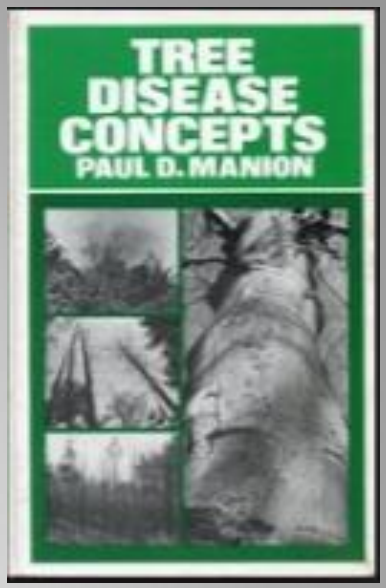
White Pine Needle Diseases

- Yellowing of prev yr. needles in June
- Infxn of current year late-spring to early-summer
- Needles shed in July
- Thin crowns
- Chronic stress (10+ yr in some areas)

WPND – Trees of all sizes and crown class categories are affected

"Tree mortality is a process, not an event."





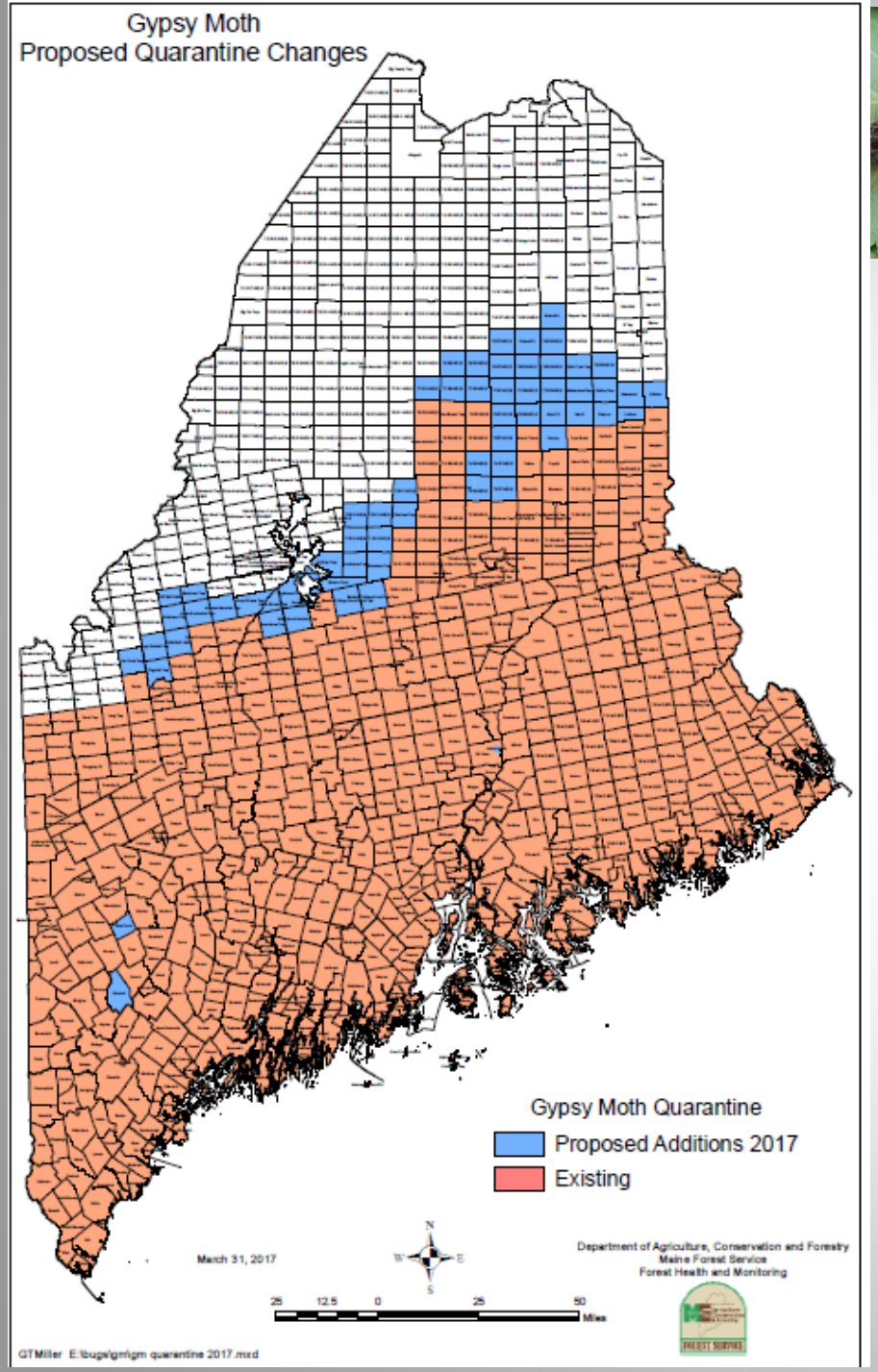
Spiral of Decline

Pine Leaf Adelgid

- Pine Leaf adelgid
  - 1° host = red and black spruce
  - 2 ° host = eastern white pine
- Causing growth loss and mortality in white pine
- Causes galls on spruce (red/black)
- Expect damage to white pine in 2017
  - >1/4 mill ac.
  - North – central ME

Shoot Damage on White Pine
Photo: Jensen Bissell, BSP

Galls and unaffected buds on Spruce
Photo: Maine Forest Service



Gypsy Moth

- Look for egg masses
  - Destroy now through April to reduce defoliation
  - Report if in Northern ME (photos/location)

Another Adelgid Comeback

Balsam Woolly Adelgid

Adelges piceae

- Chronic drought condition due to tree response
- Bugs do better in warmer winter
- Spike of decline/ mortality of fir when dry growing season/warm winter conditions meet

Photo: Andrew Wopat, Weyerhaeuser

Spruce Budworm Life Cycle in Maine

Adult moth (July-August)

Egg mass on needle (July-August)

Overwintering Larva in hibernaculum (August-May)

Feeding larva (May-June)

Pupa on branches (June-July)

Reddened foliage (July)

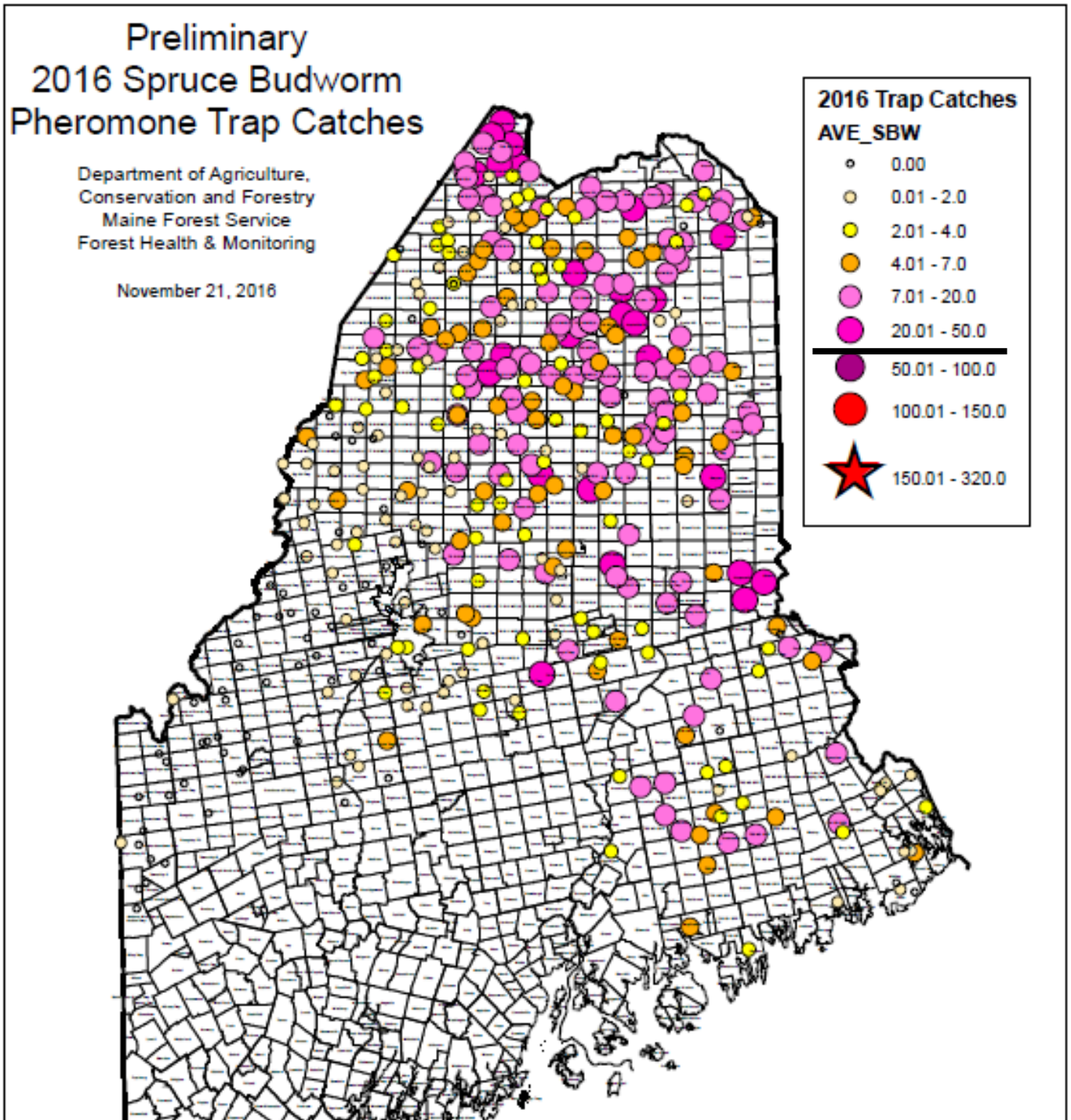
Spruce Budworm
a native moth

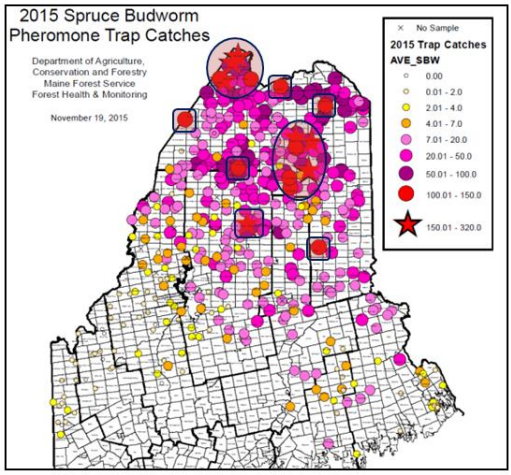
Photos: Egg mass, Natural Resources Canada, Canadian Forest Service (FS); Hibernaculum, USDA FS- Region 2, Bugwood.org; Larva, D. Gordon Mott; Pupa, Maine FS; Adult, Brian Roth, CFRU; Defoliated trees, Maine FS

Preliminary 2016 Spruce Budworm Pheromone Trap Catches

Department of Agriculture,
Conservation and Forestry
Maine Forest Service
Forest Health & Monitoring

November 21, 2016





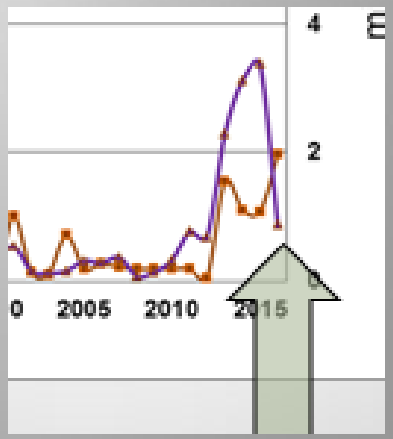
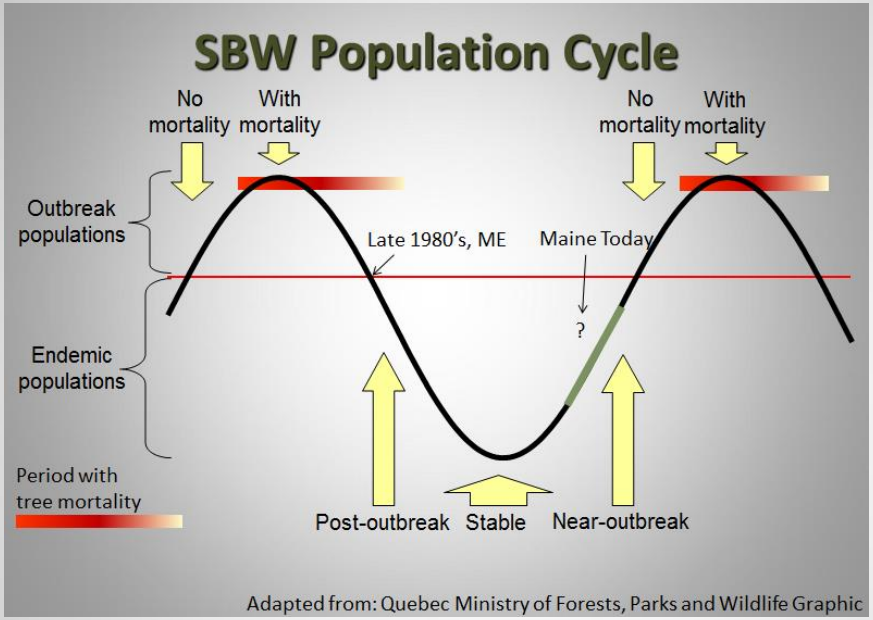


Photo: J. Dewey, USFS, Bugwood.org

Maine Spruce Budworm Predictions



Less severe timber losses than last epidemic

Less Severe ≠ Insignificant → There is still time to prepare and plan

Spread the Word:
Leave Your Firewood at Home!

Kennebunk, ME

Photo: Dave Hobbins

WEBSITE:
www.maine.gov/forestpests

http://www.maine.gov/dacf/mfs/forest_health/index.htm

Insect and Disease Management Personnel

Dave Struble
State Entomologist,
Forest Health and Monitoring
Director

Mike Devine
Forest Health and Monitoring
State Supervisor

Maine Forest Service

Insect & Disease Lab
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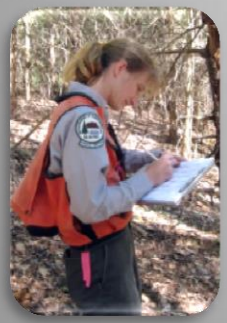
Augusta, ME 04333
(50 Hospital Street)
Tel 207 287-2431

Insect & Disease Lab, Augusta
Pathologist: Aaron Bergdahl
Entomologists: Charlene Donahue, Colleen Teerling
Administrative Support: Patti Roberts
Technician: Amy Ouellette



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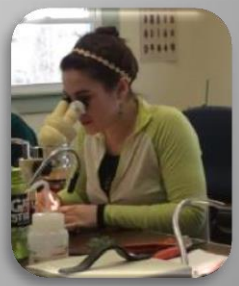
(207) 827-1813

Field Technicians

Stockholm
Joseph Bither

New Gloucester
Wayne Searles



Portland
Regina Smith