

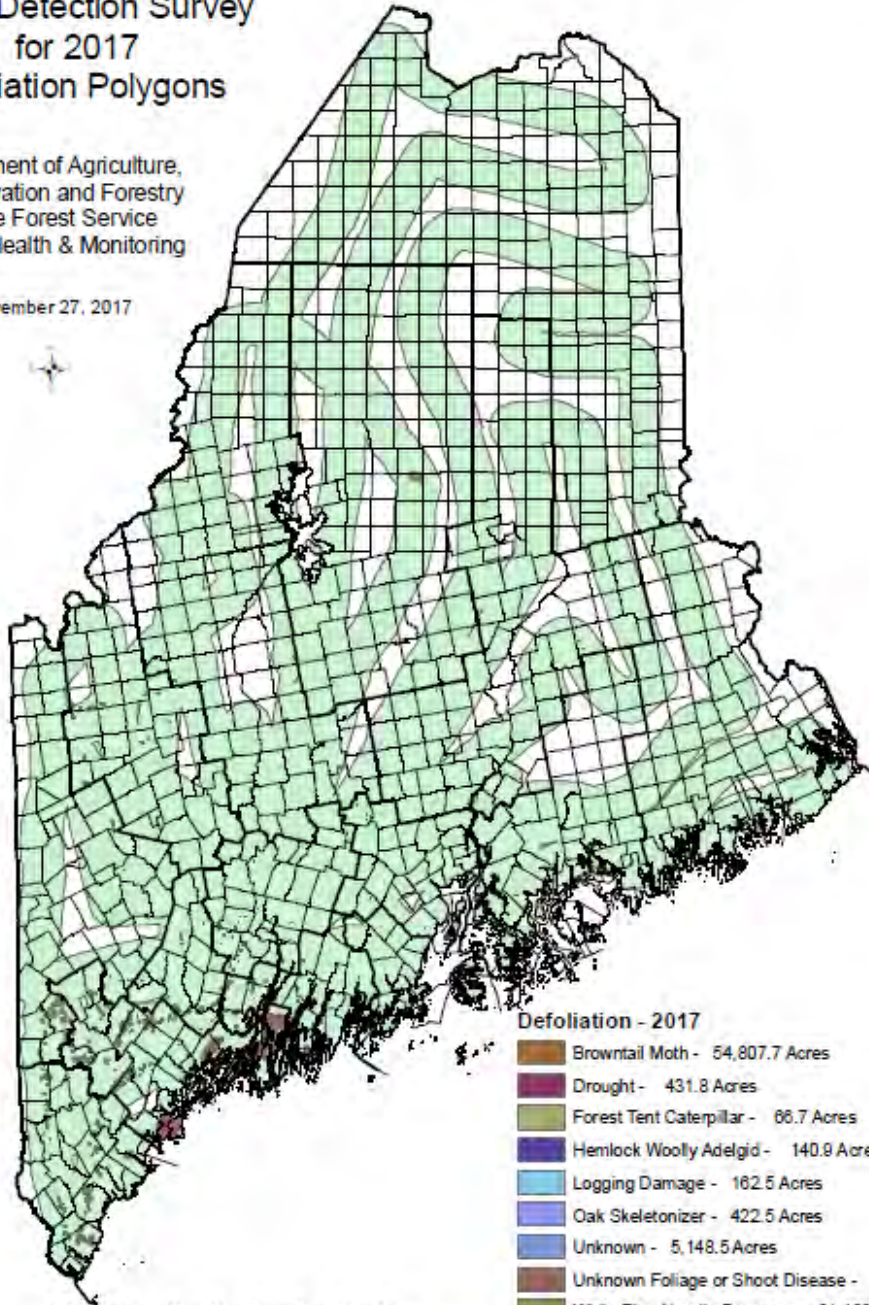
Maine Forest Insect & Disease Update

Allison Kanoti Maine Forest
Service, DACF

General Forest Health
Aerial Detection Survey
for 2017
Defoliation Polygons

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

November 27, 2017



10 5 0 10 20 30 40 50 60 70 Miles

GTMiller D:\flightlines\2017\DMSM Final 11272017.mxd

2017 Aerial Survey

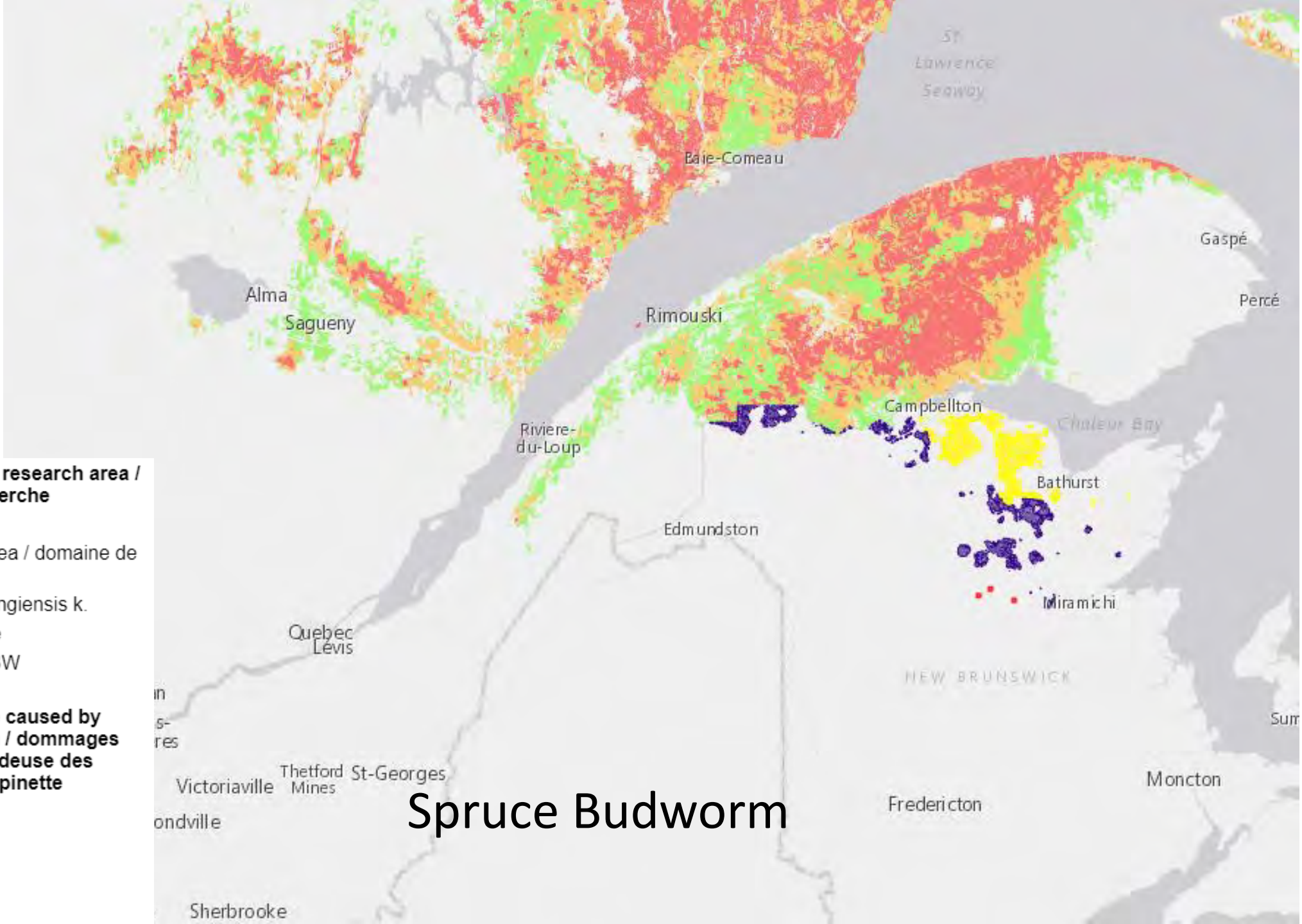
Damage Agents Acres Mapped
(2016 numbers in Parentheses)

- WPND: ~61K (125K) ↓
- BTM: ~55K (25K) ↑
- WM: ~30K (6K) ↑
- Drought: ~430 ↑
- BPOLR: ~420 (3K) ↓
- HWA: 140 ↑
- FTC: <70ac ↑

The Caterpillar Roundup



- Spruce Budworm Update
- Gypsy Moth Quarantine Expansion
- Browntail Moth Explosion
- Forest Tent Caterpillar Sightings



**2018 preliminary research area /
domaine de recherche
préliminaire**

**2018 treatment area / domaine de
traitement**

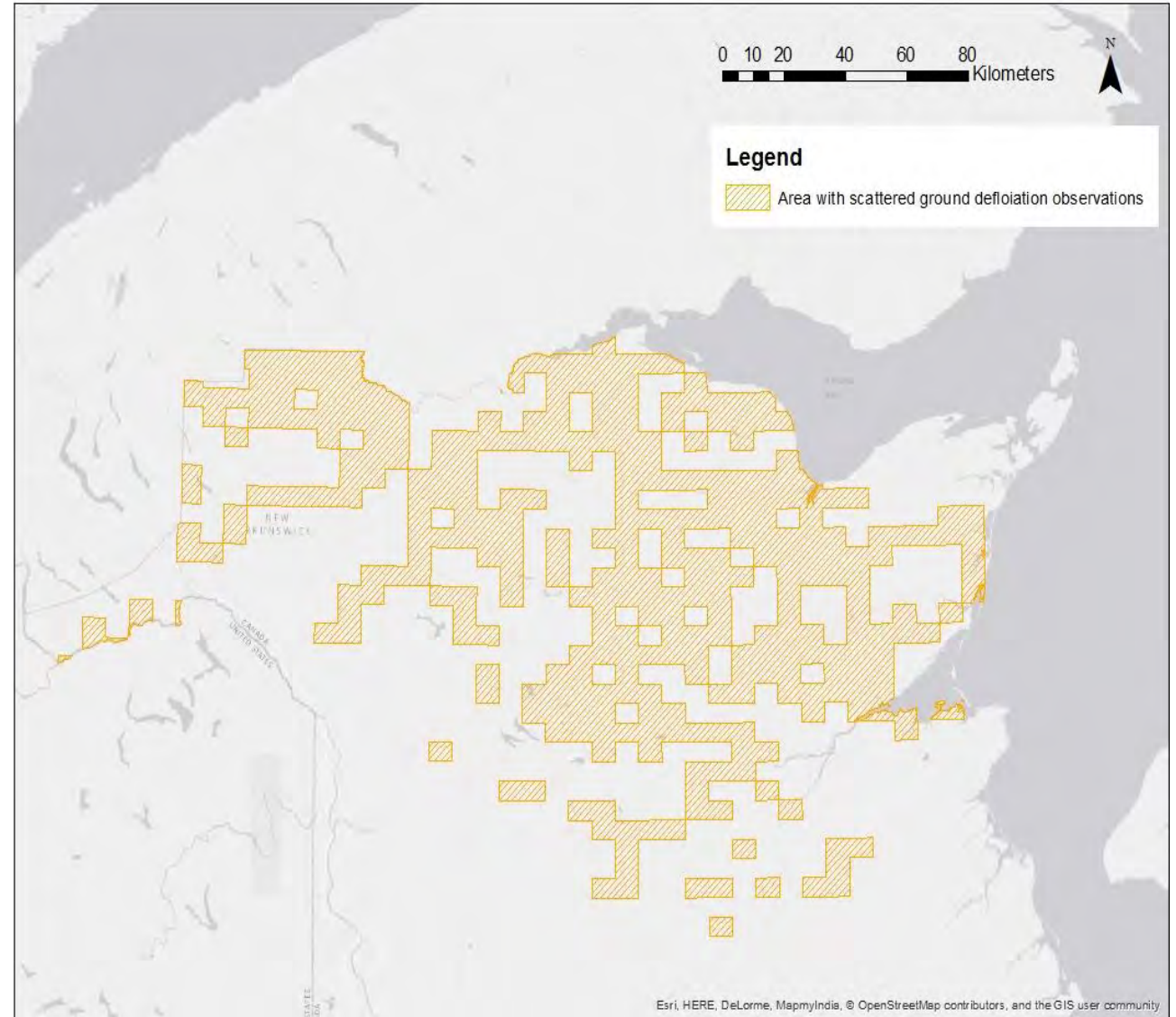
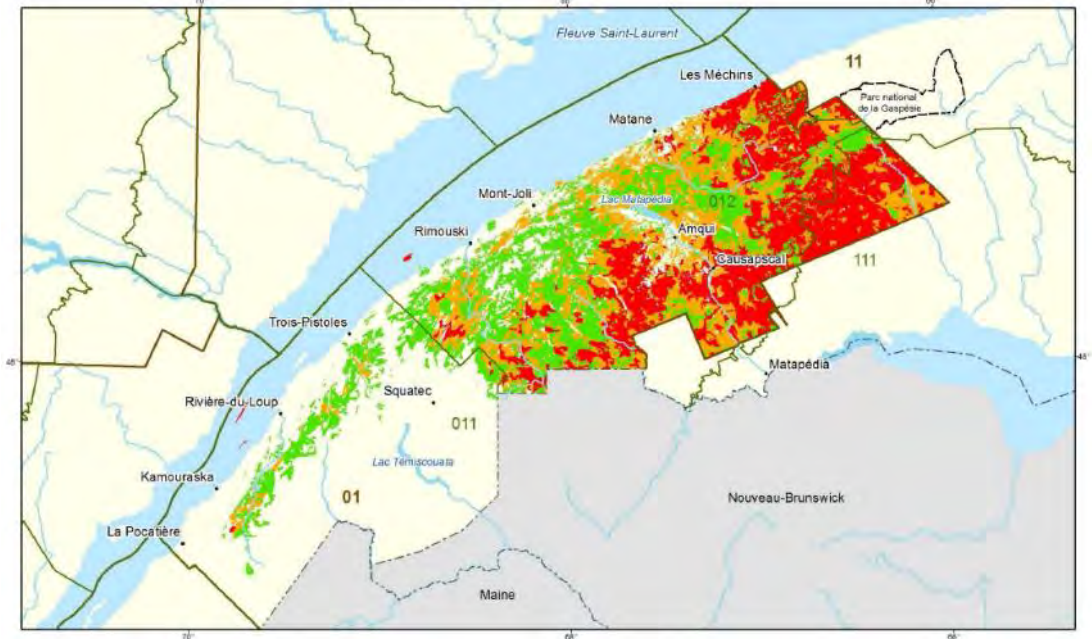
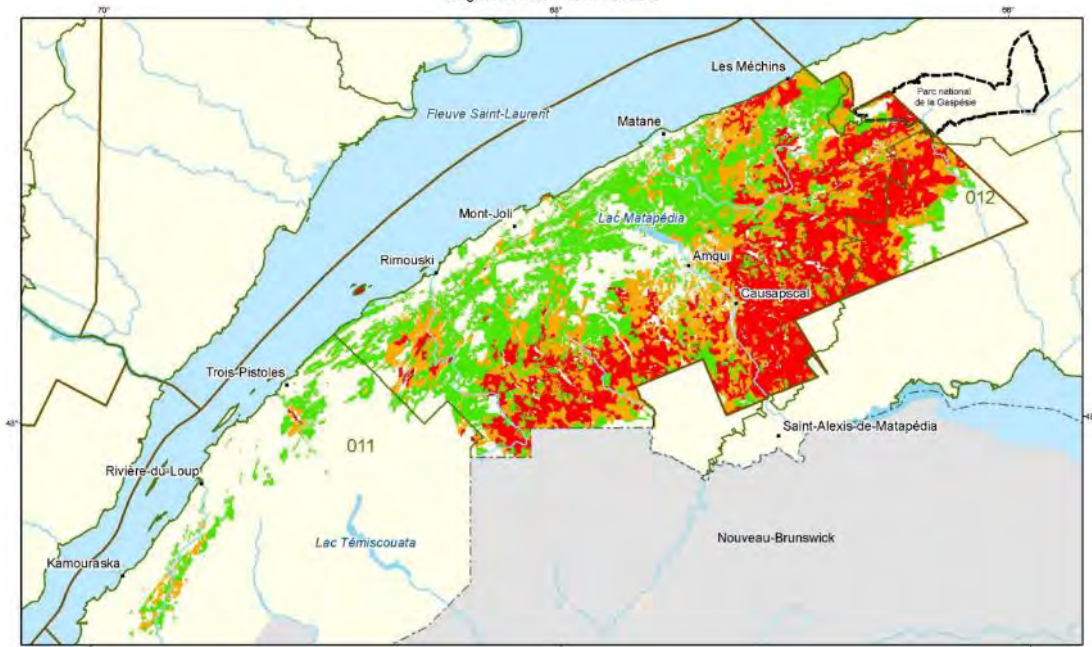
- Bacillus thuringiensis k.
- Tebufenozide
- Confound SBW

**2017 QC damage caused by
spruce budworm / dommages
causés par la tordeuse des
bourgeons de l'épinette**

- SBW_2017_PQ
- Light
 - Moderate
 - Severe

Spruce Budworm

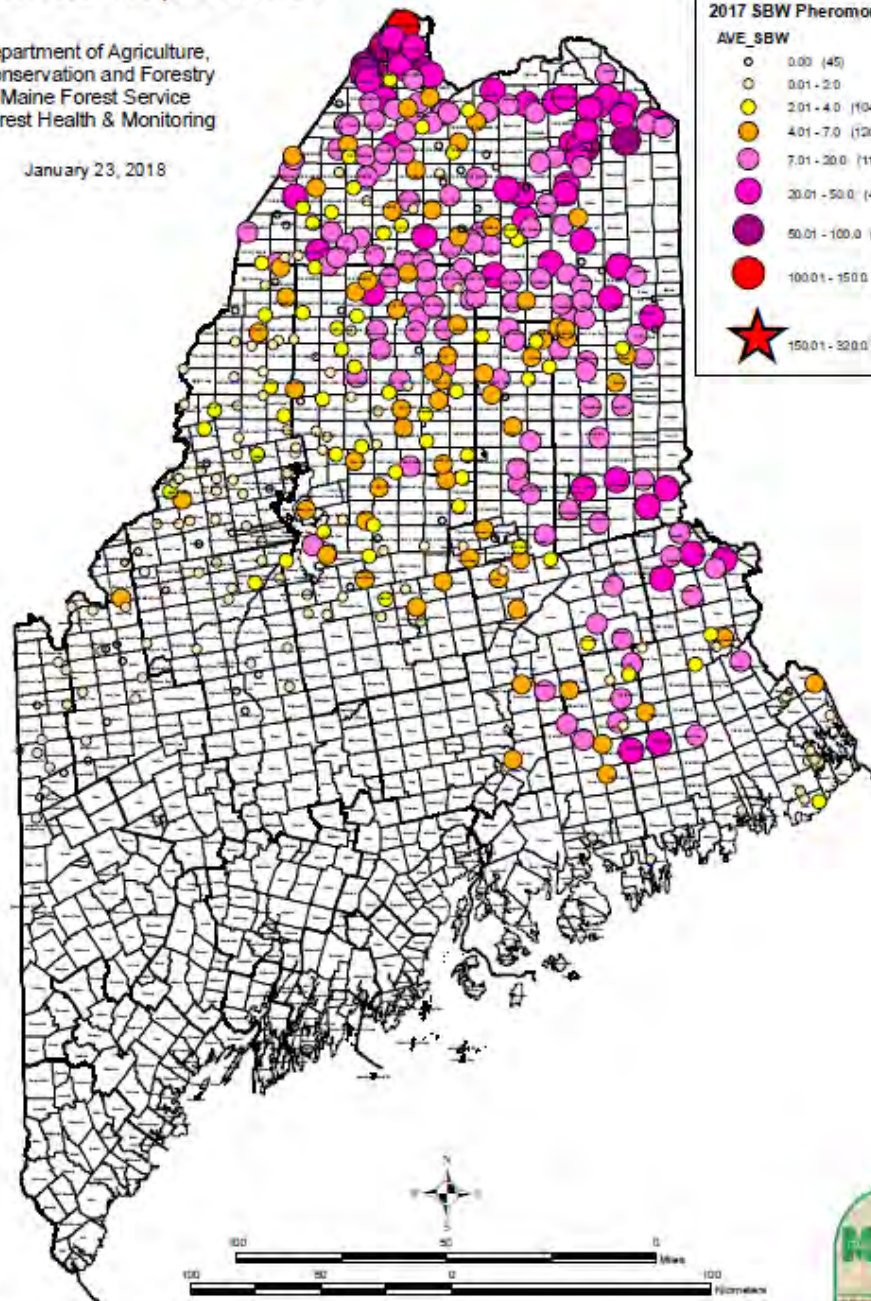
Défoliation causée par la tordeuse des bourgeons de l'épinette
Région du Bas-Saint-Laurent



2017 Spruce Budworm Pheromone Trap Catches

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

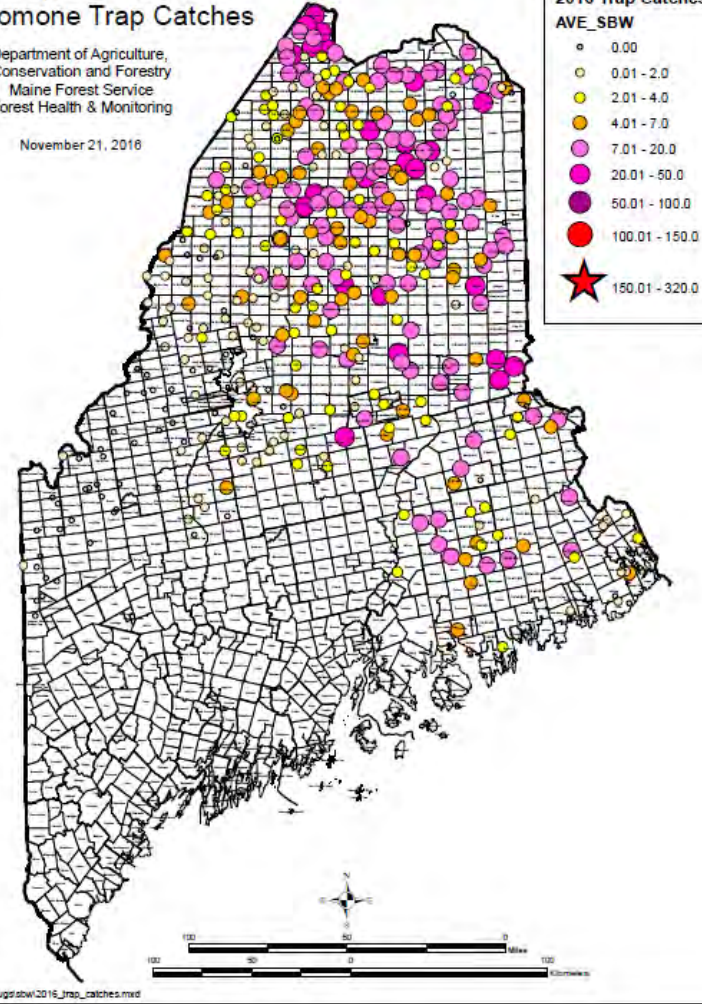
January 23, 2018



Preliminary 2016 Spruce Budworm Pheromone Trap Catches

Department of Agriculture,
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Maine Forest Service
Forest Health & Monitoring

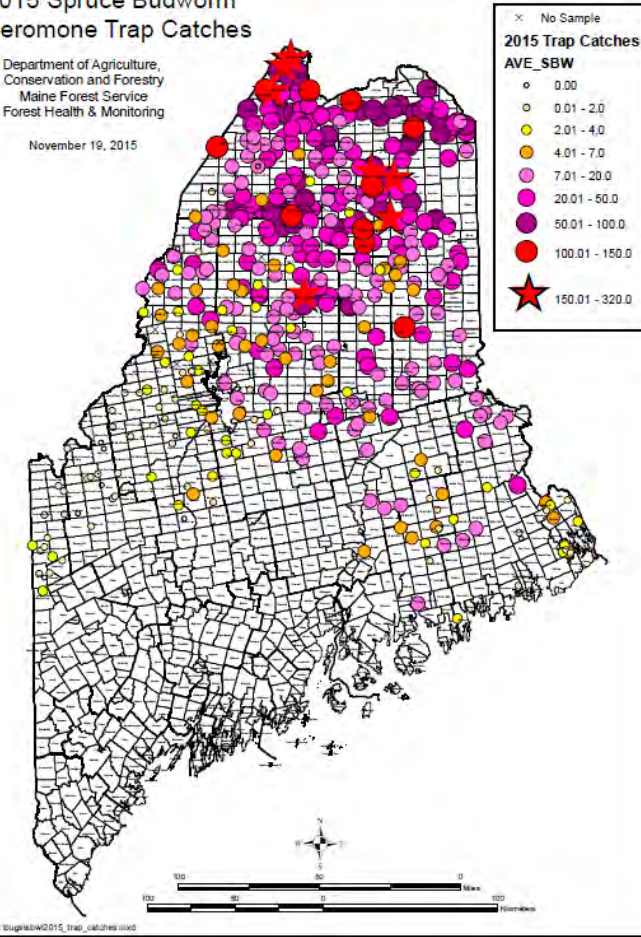
November 21, 2016

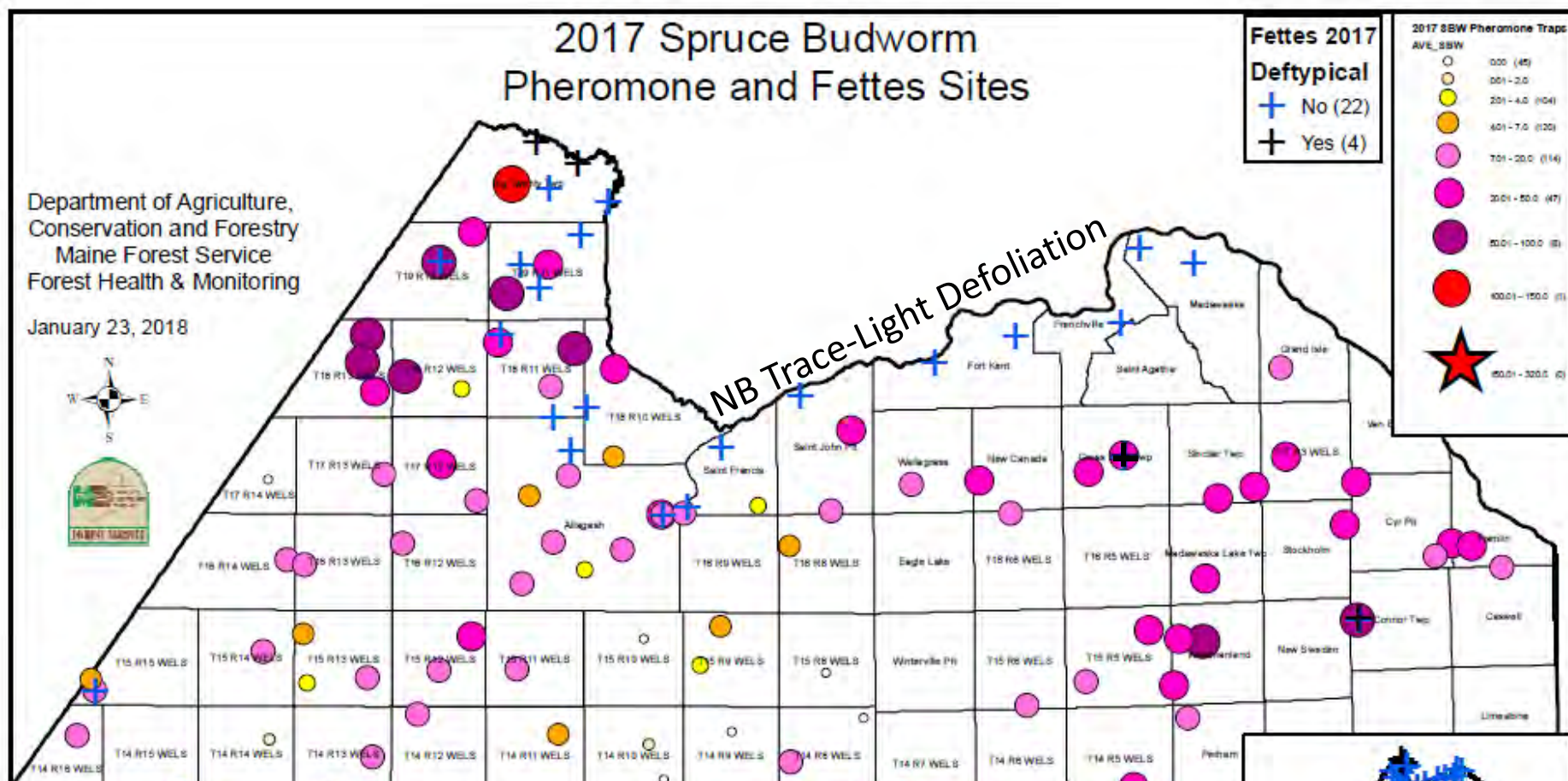


2015 Spruce Budworm Pheromone Trap Catches

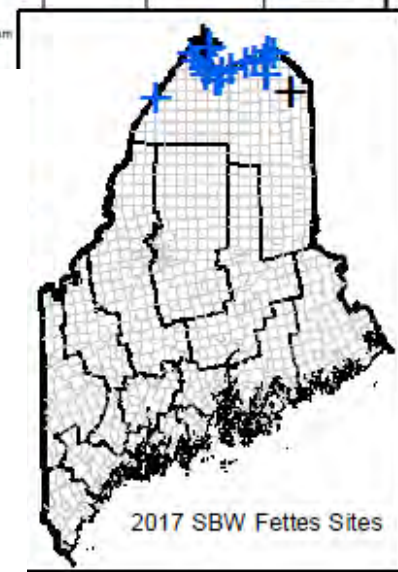
Department of Agriculture,
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Maine Forest Service
Forest Health & Monitoring

November 19, 2015





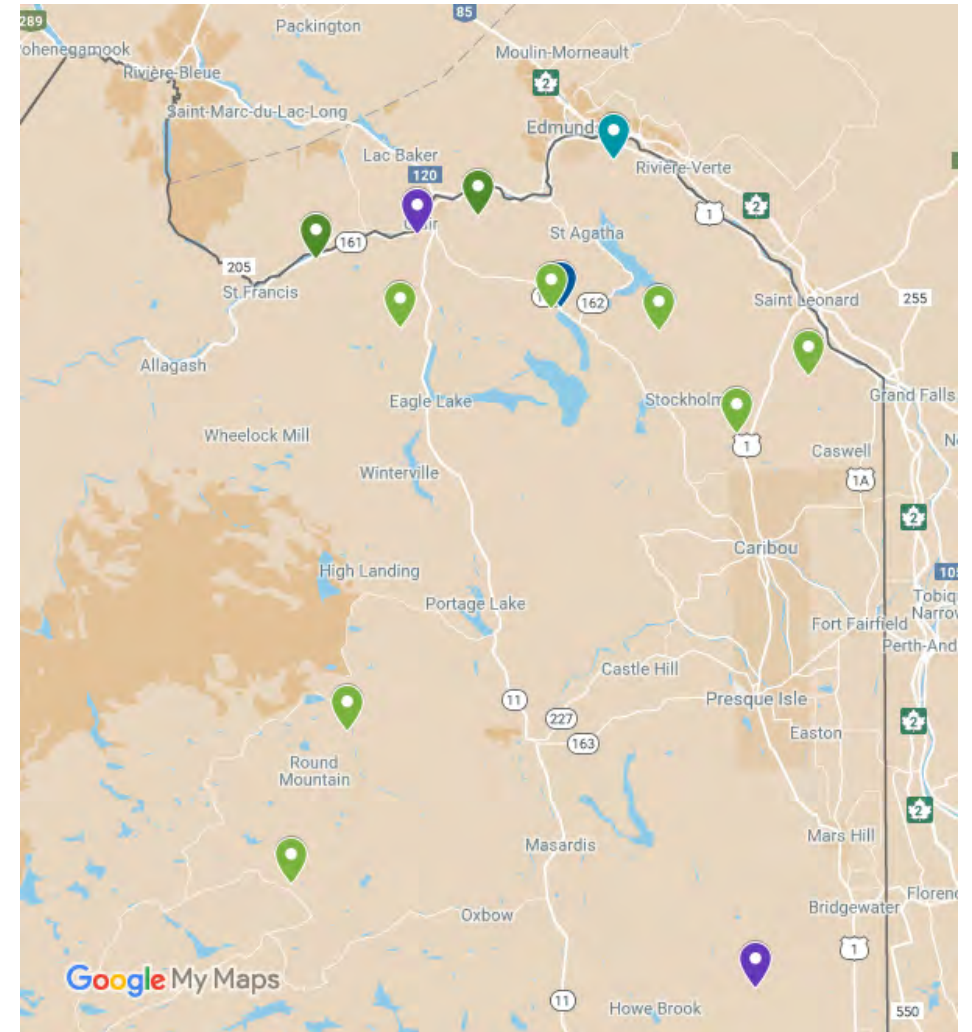
- Fettes Method employed at Northern ME MFS L2 sites and other locations to quantify defoliation of current-year growth.
- Trace defoliation at all sites (all causes)
- Potential SBW-caused defoliation at 4 sites (2 in Big 20 Twp, 1 in Cross Lake Twp, 1 in Connor Twp)
- Revisit of all sites and other sites with higher catches in July 2018



L2 Results -- 14 of 255 Sites Positive

Max 2.3/30" Branch Total: 32

Connor Twp	Aroostook	MFS-CON	0.3
Cross Lake Twp	Aroostook	MFS-175	1.3
Cross Lake Twp	Aroostook	MFS-175-ALT	0.3
Fort Kent	Aroostook	MFS-FTK	0.7
Fort Kent	Aroostook	MFS-FTK-2	2.3
Hamlin	Aroostook	IRV-HML-48	0.3
Madawaska	Aroostook	MFS-MAD	1
Saint John Plt	Aroostook	MFS-SAJ	0.7
T11 R8 WELS	Aroostook	SI-118	0.3
T17 R4 WELS	Aroostook	IRV-174-56	0.3
T9 R9 WELS	Aroostook	SI-99	0.3
TC R2 WELS	Aroostook	IRV-TC2-05	2.3
Wallagrass	Aroostook	IRV-WAL	0.3



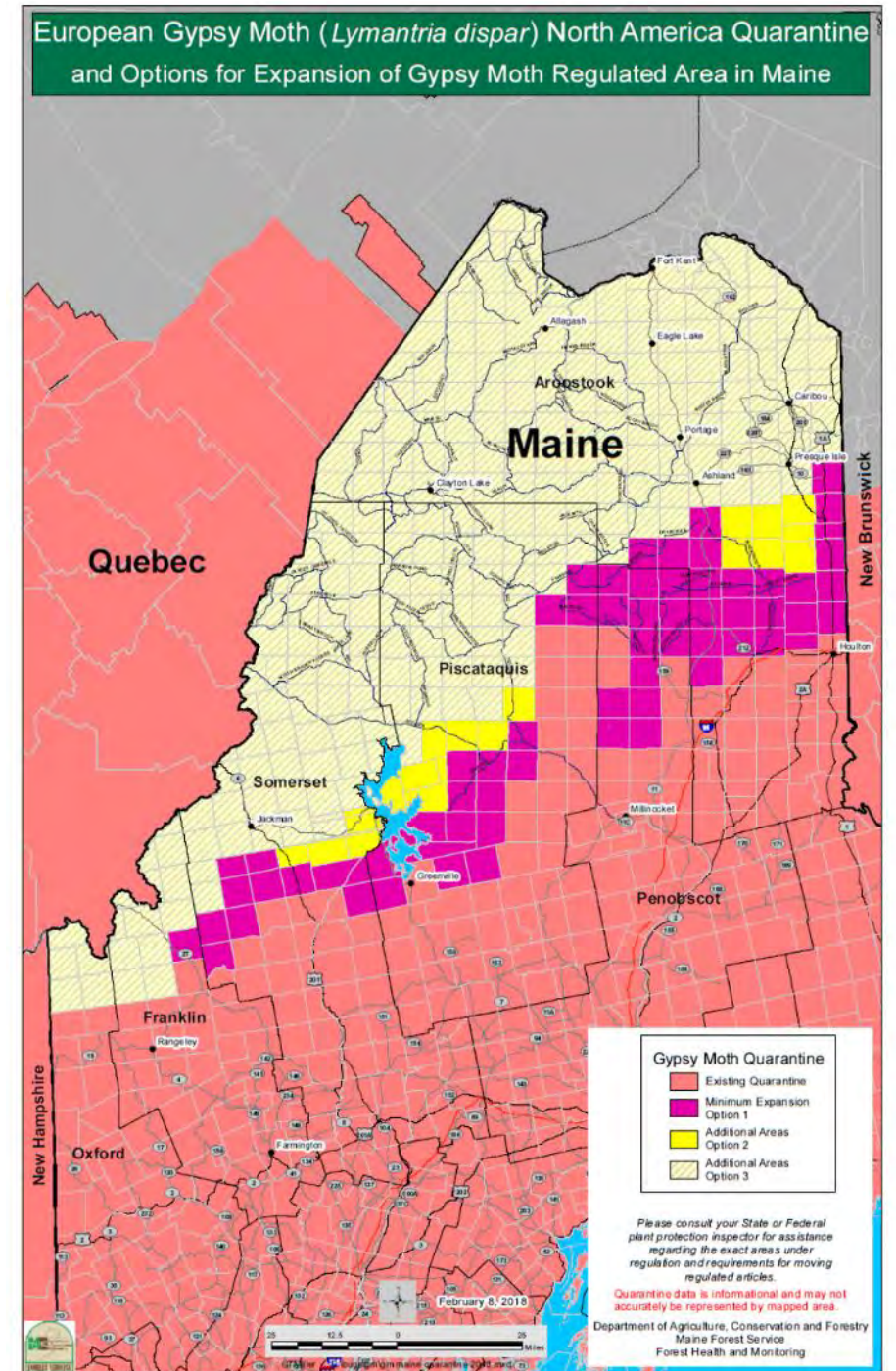
European Gypsy Moth

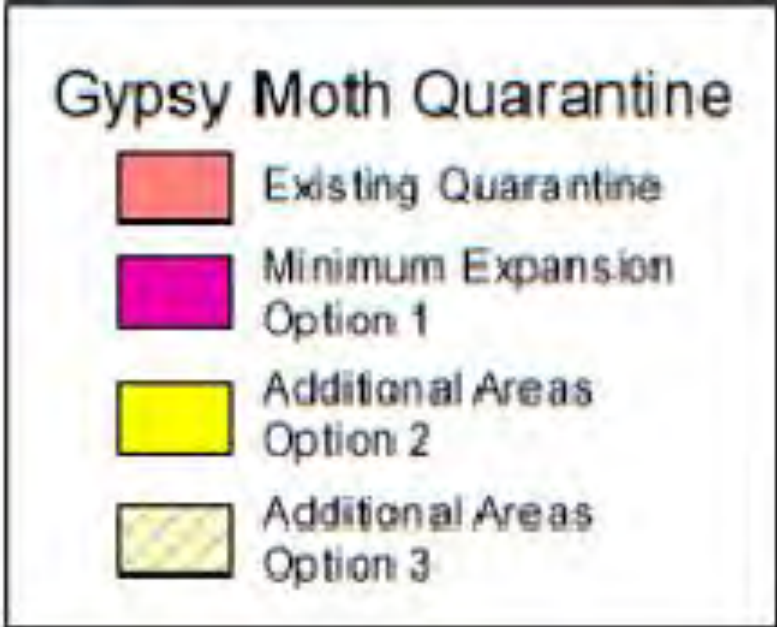
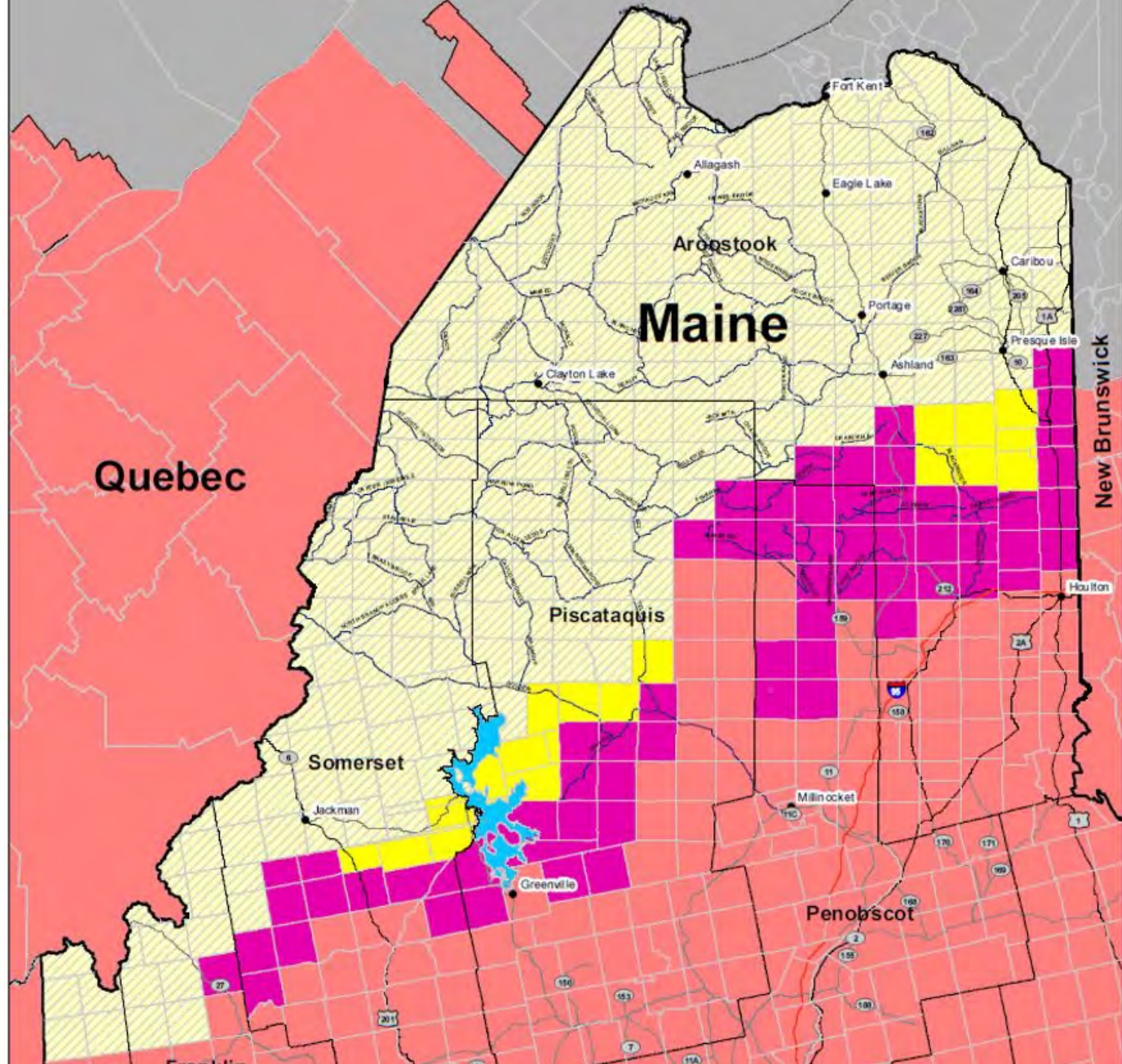
- Outbreak Conditions in Southern NE
- Still no Defoliation in ME (Feeding with FTC in Blue Hill)
- One to watch for; especially with dry spring



European Gypsy Moth

- Not found in All of ME
- Partial State Quarantine
 - Expansion Overdue
 - Letter sent requesting feedback
 - Rulemaking process will happen this year.
 - No expansion is not an option



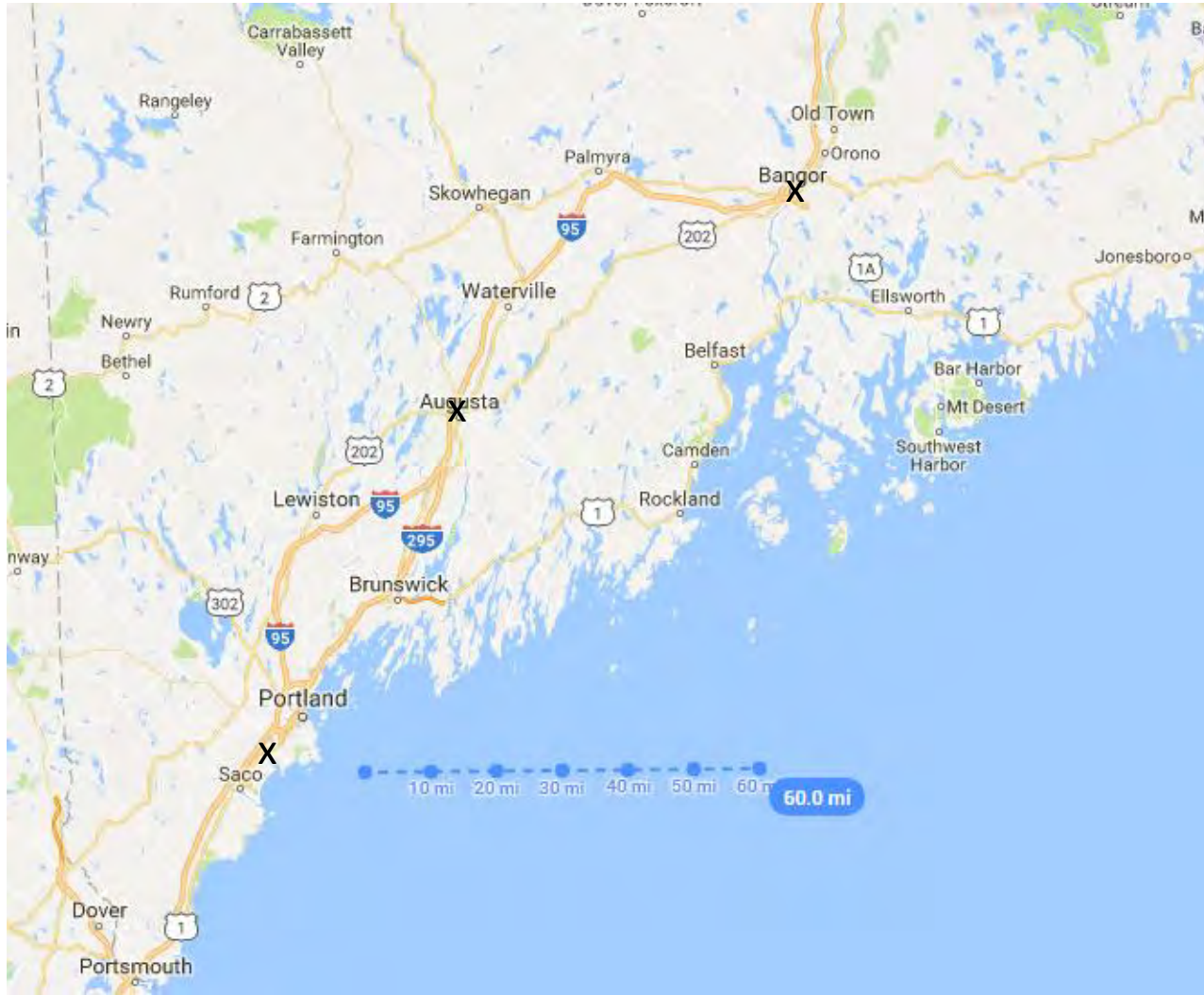


Browntail Moth

How far are we from the nearest:

Current Detection of BTM? <10, 10-20, 20-50, >50 Mi?

2017 Mapped Defoliation? <10, 10-20, 20-50, >50 Mi?



Heads up:

Bigger Footprint of:

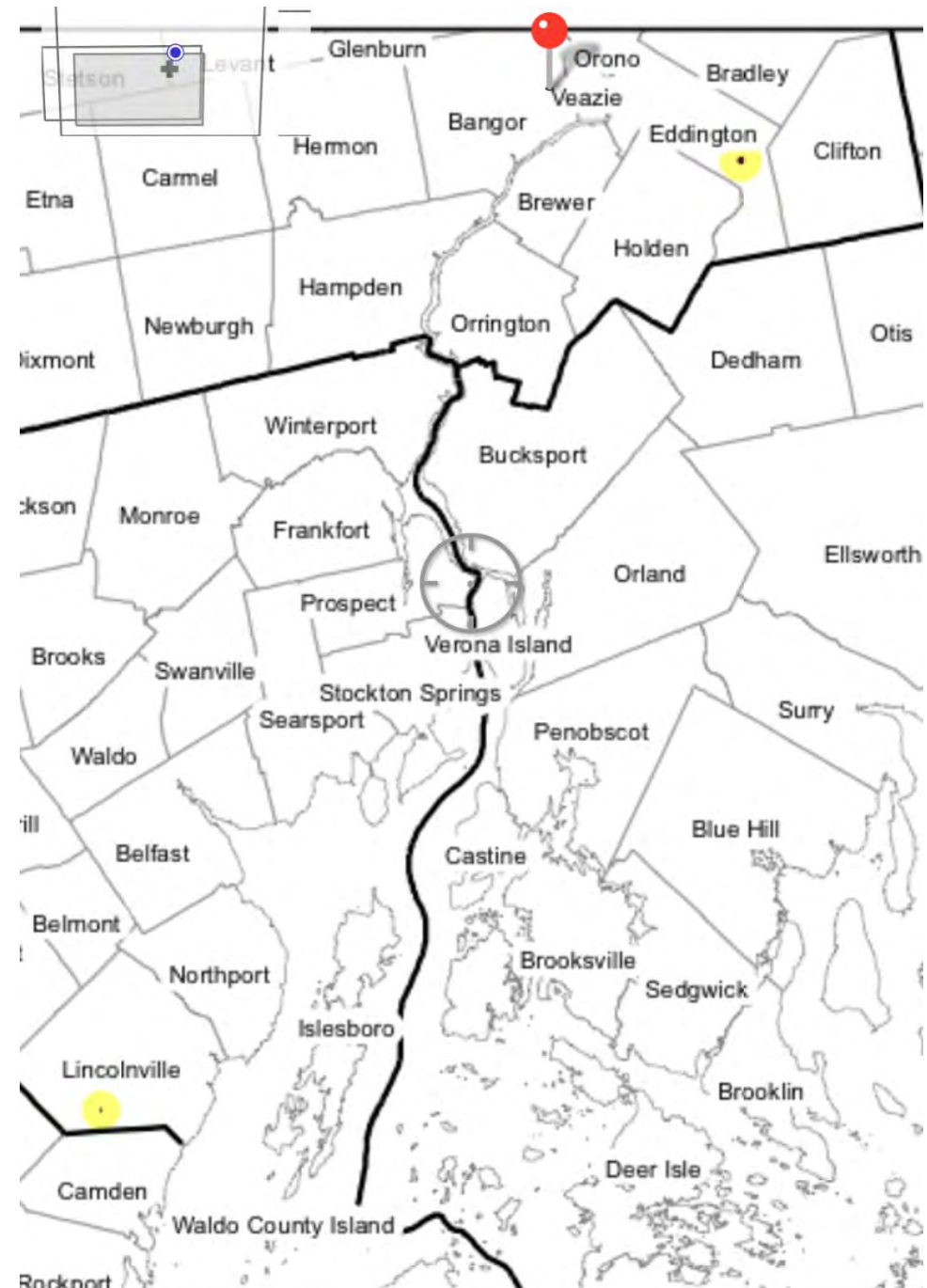
Web/Defoliation Detection

Adult Moth Detection

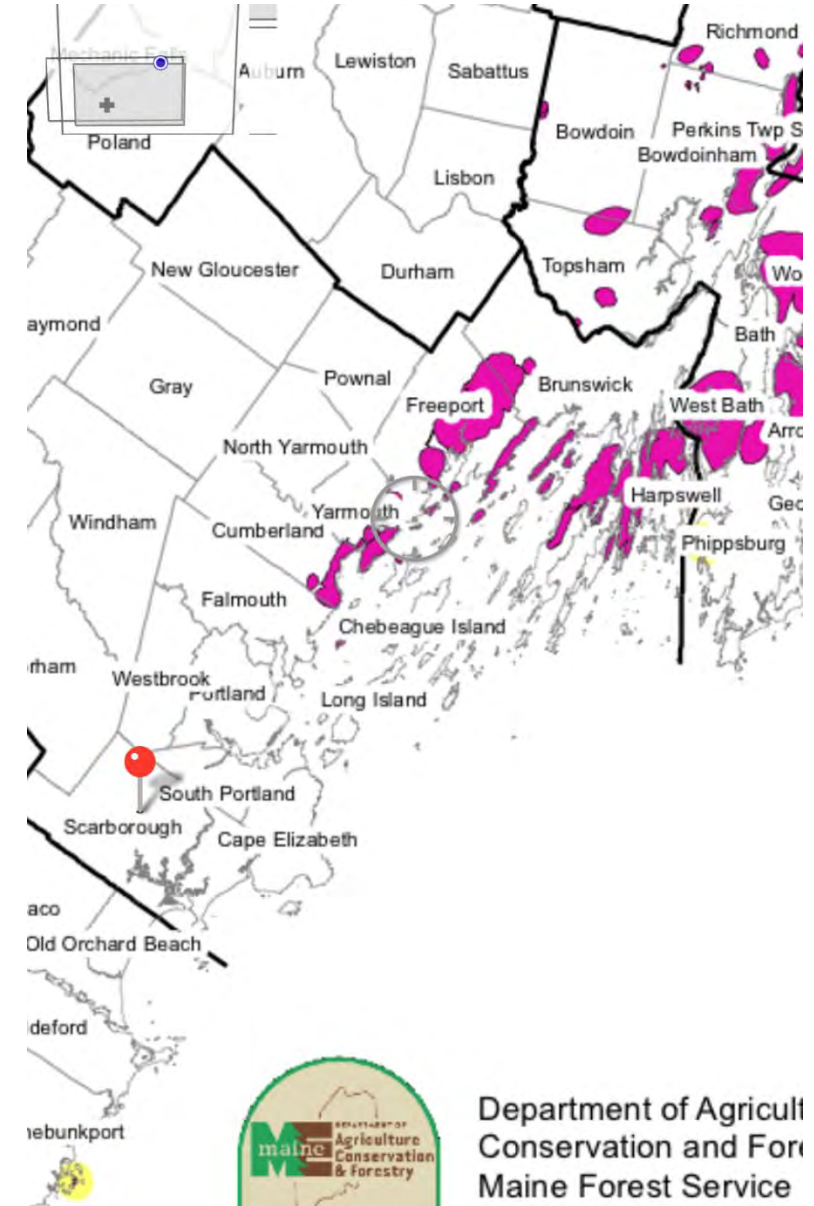
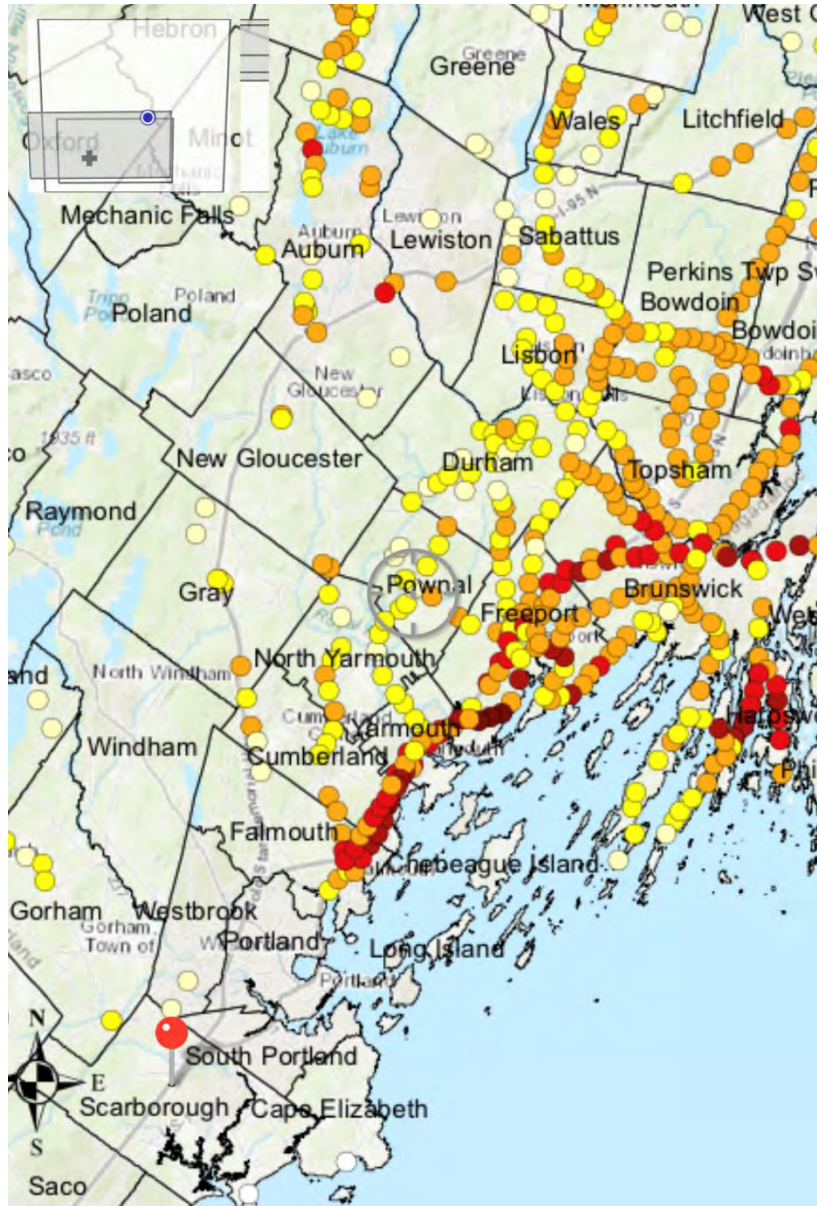
This one causes rash and other human health problems



Bangor: Both <10

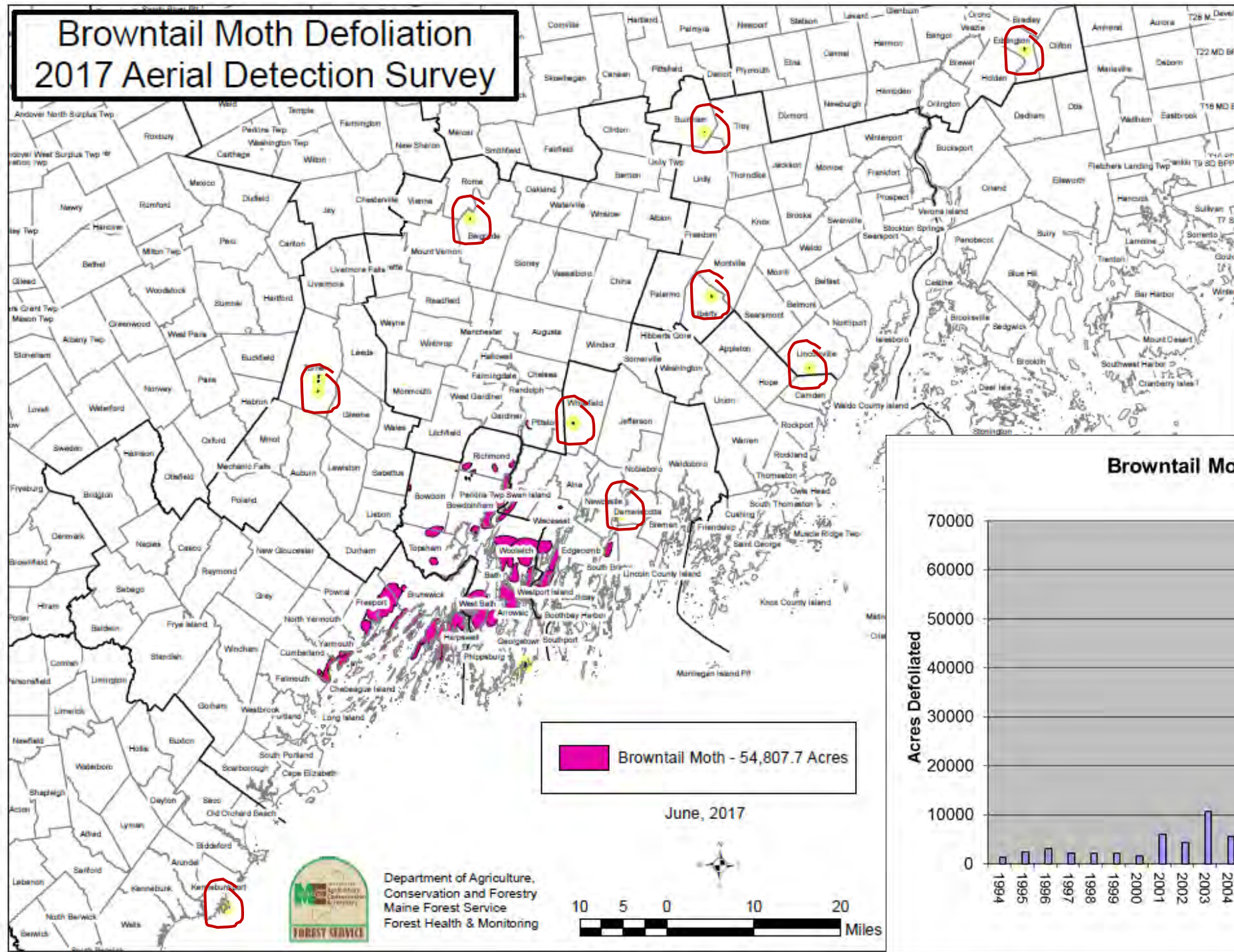


Scarborough Webs: <10, Defoliation 10-20 (<12)

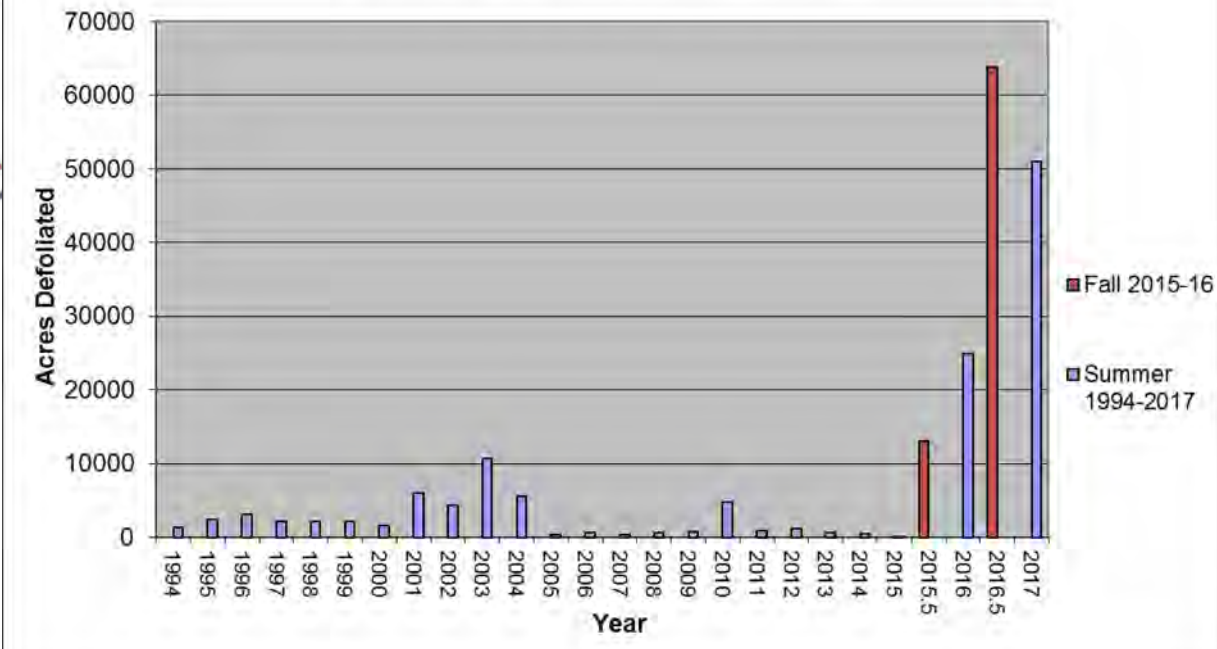


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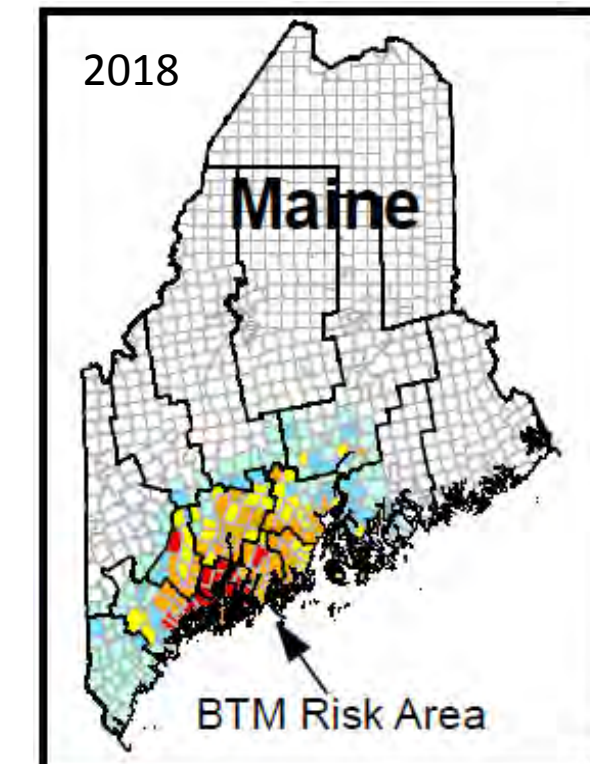
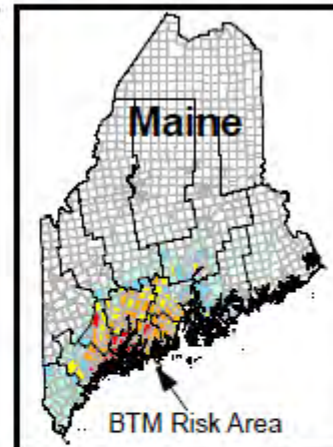
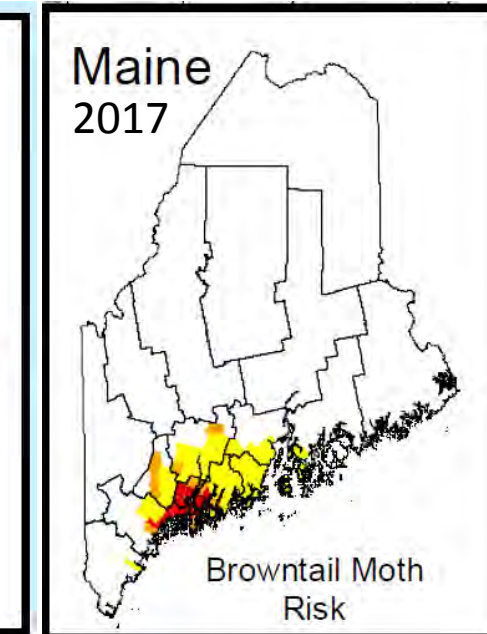
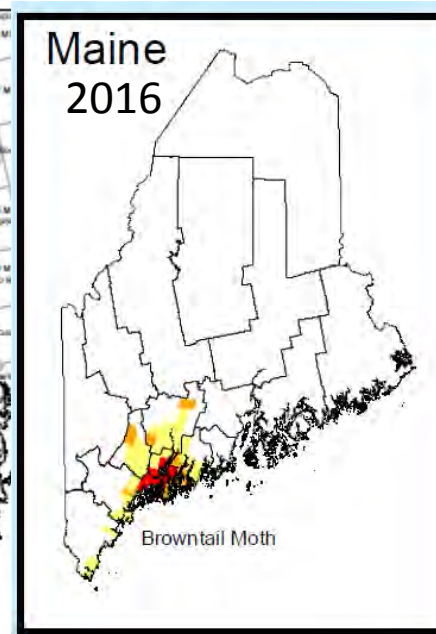
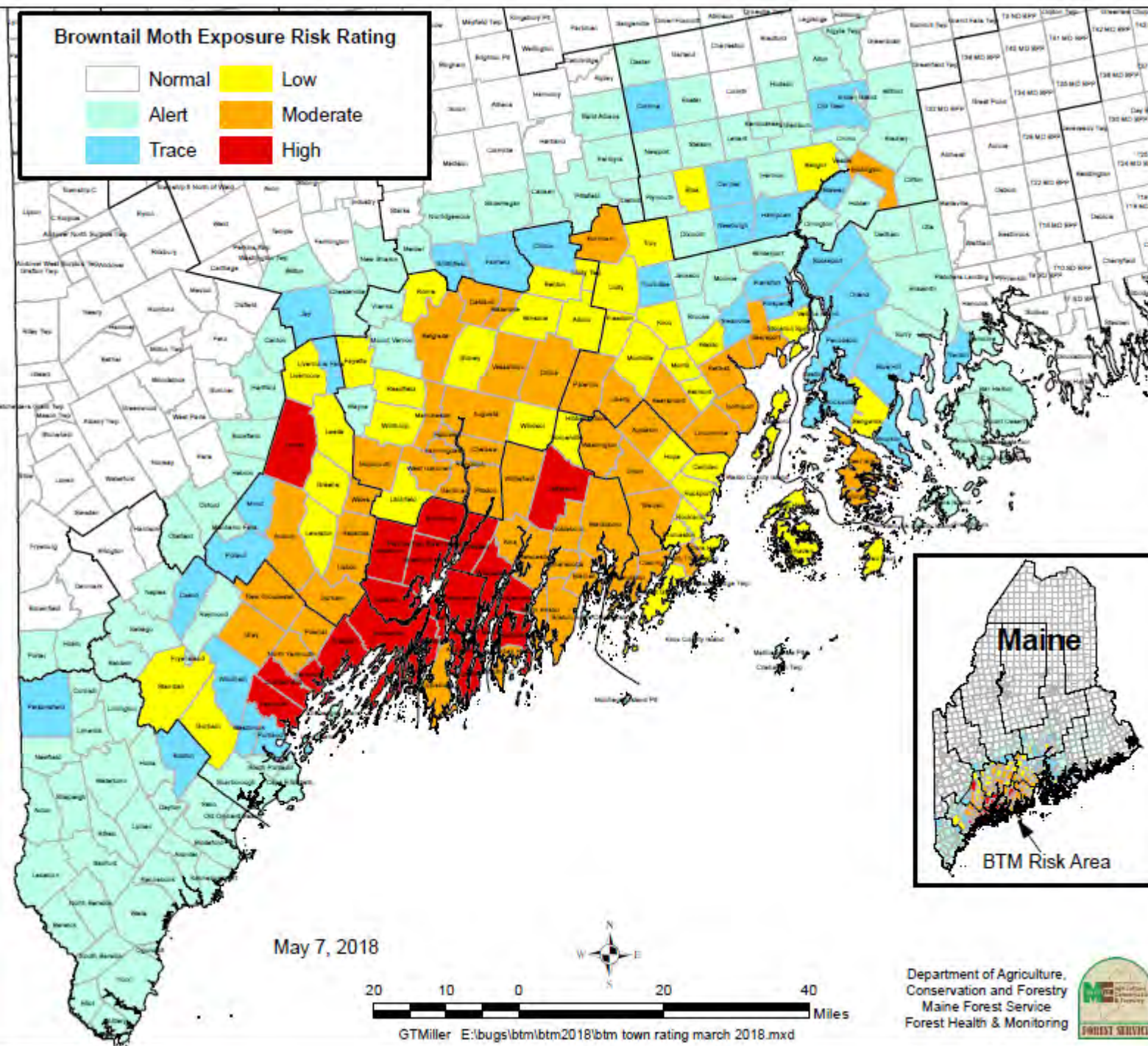
Browntail Moth Defoliation 2017 Aerial Detection Survey



Browntail Moth Defoliation in Maine



Browntail Moth Exposure Risk Rating



May 7, 2018



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



GTMiller E:\bugs\btm\btm2018\btm town rating march 2018.mxd

Browntail Moth Timeline

Survey, Clip and Destroy Webs, Line up Insecticide Treatment

Insecticide Treatment BEFORE June, Personal Protection Precautions

Personal Protection Precautions

Personal Protection Precautions, Limit Outdoor Lights

Insecticide Treatment (Newer Approach)





* Toxin in hairs is extremely stable (3+ yr); exposure most likely in dry conditions



Photos by MFS except: Adult: Anne Burton, Egg mass: Bath Division of Forestry

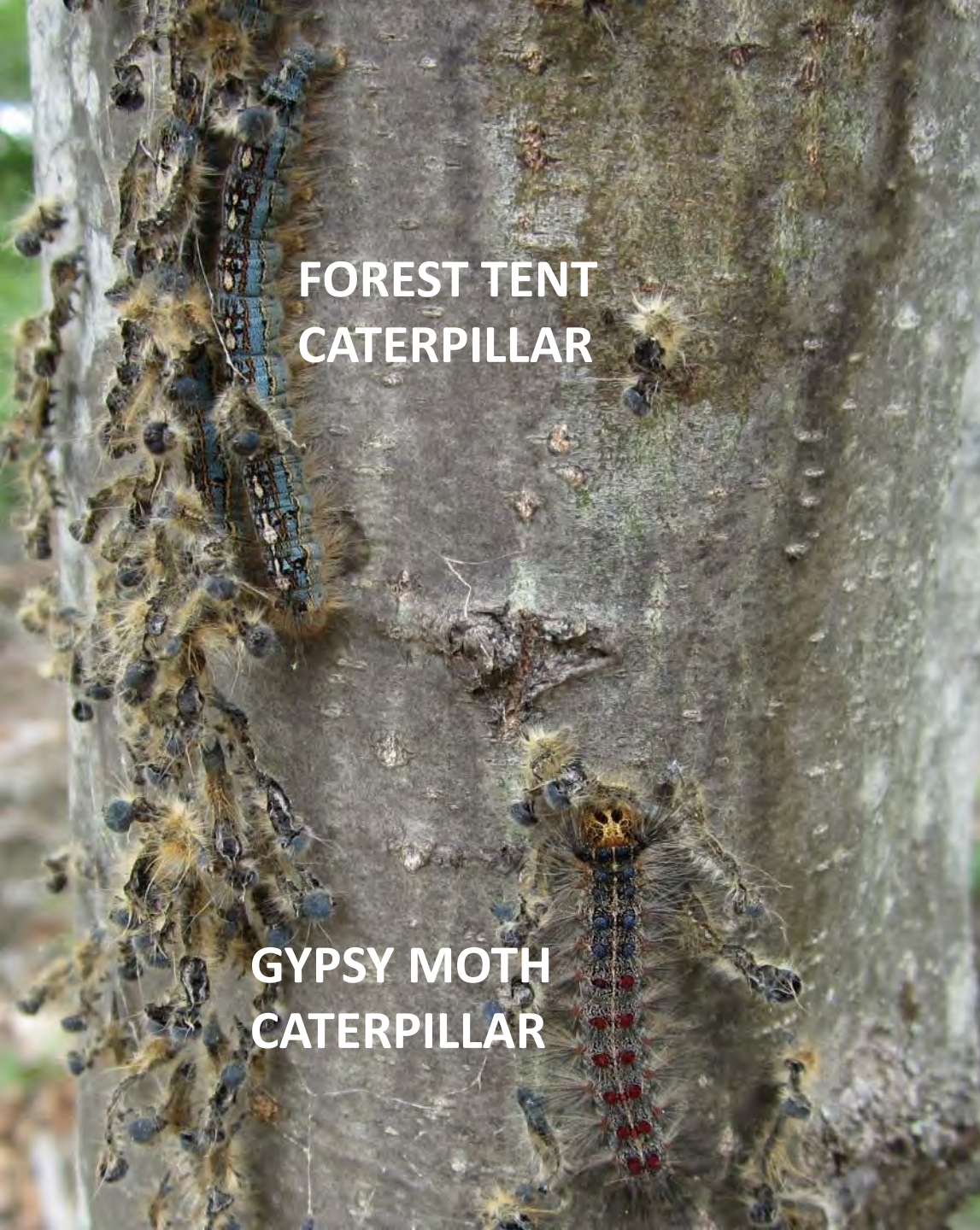
Tent-makers

No Tents

Browntail Moth	Eastern Tent	Forest Tent	Gypsy Moth
<p>Look for Overall brown color; White tufts along sides; <u>Red-orange dots on tail-end</u></p> <p>DANGER!!</p>	<p>Look for <u>White stripe</u> down center of back Blue spots like the "eye" in peacock feather along each side of stripe</p>	<p>Look for White or <u>off-white footprint-shaped marks</u> down the center of the back Blue body coloration in later instars</p>	<p>Look for Prominent knobs with hairs on each side of head capsule. Five pairs of <u>blue- and six pairs of red- spots along back</u> (4th instar and later).</p>
			
<p>Invasive Human & Forest Health Impacts</p>	<p>Native Mostly aesthetic impacts</p>	<p>Native Occasional outbreaks</p>	<p>Invasive Forest Health Impacts Quarantined pest</p>



BEWARE of HAIRS
(microscopic, 5/1000")



**FOREST TENT
CATERPILLAR**

**GYPSY MOTH
CATERPILLAR**

More Fuzzy Caterpillars

- Forest tent caterpillar
- <70 ac
- Oaks stripped in Blue Hill
 - Also Gypsy moth
 - Also BTM in area
- Dry growing seasons could allow population growth

Winter Moth

- Defoliate hardwood trees and shrubs in early spring i.e. May
- Favored hosts:
 - oak
 - apple
 - maple
 - birch
 - basswood
 - blueberry
 - And others

Photo: Maine Forest Service



Photo: P. Johnson



Photo: P. Johnson



Photo: Maine Forest Service

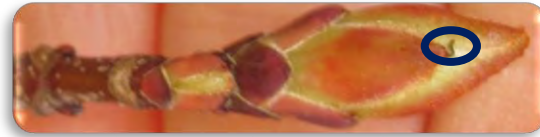
One last lep...

Winter Moth Defoliation 2017 Aerial Detection Survey

Hungary
Forest
Research
Institute,
Bugwood.org



Eggs:
November-
April



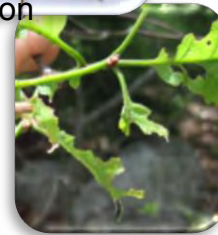
Larvae:
April - June



Photo: P. Johnson



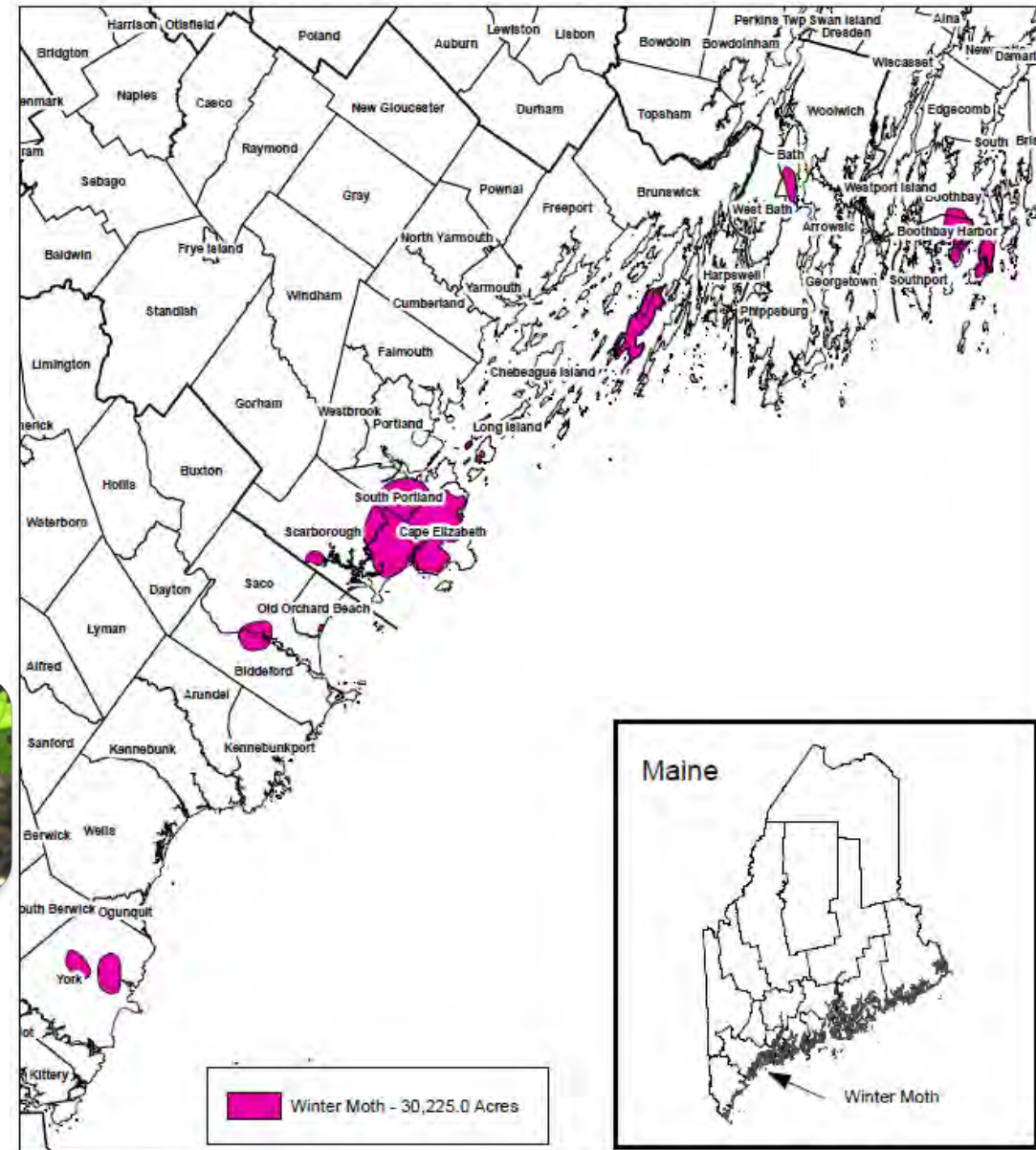
Pupae:
June-
November



Adults:
November-
January



Photo: P. Johnson



Department of Agriculture,
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Maine Forest Service
Forest Health & Monitoring



10 5 0 10
Miles

GTMiller D:\flightlines\2017\winter moth 2017.mxd

Invasive Beetle Update

Emerald Ash Borer

Asian Longhorned Beetle

Brown Spruce Longhorned Beetle

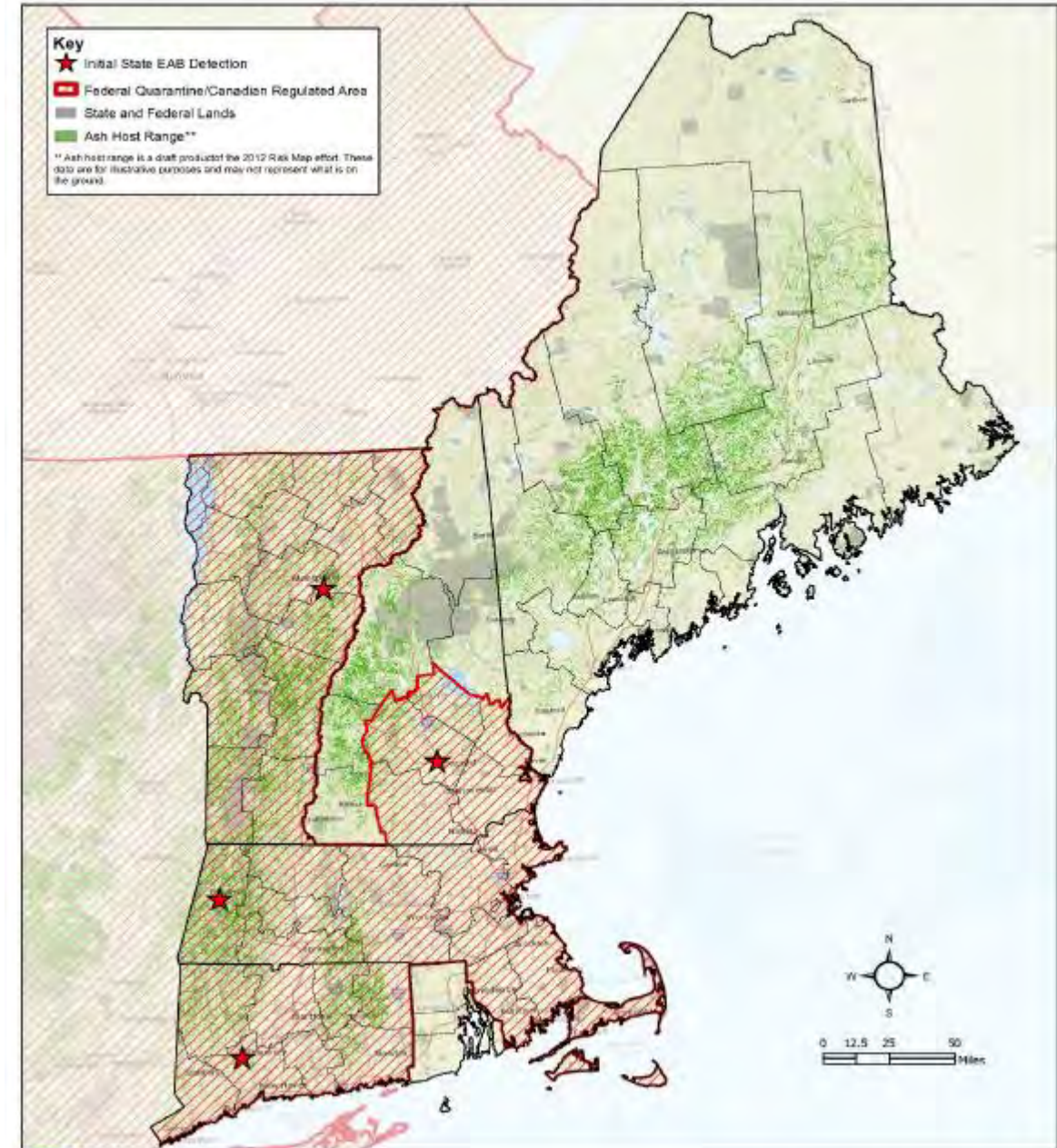


Emerald Ash Borer

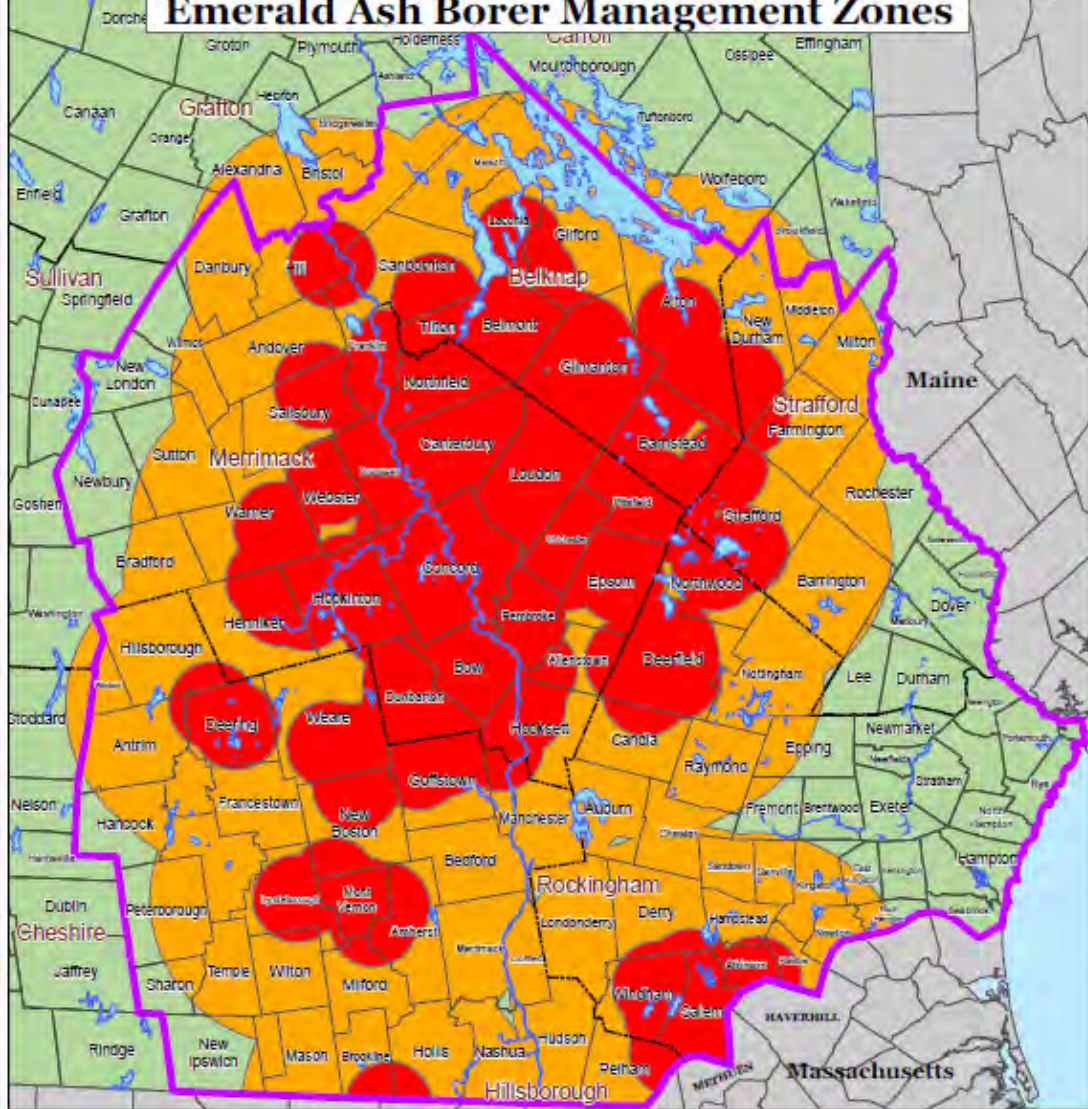
- Not found in Maine (Yet)
- Recent Detection in VT (entire state quarantined)
- Quarantine Expansion in QC
- 2018 Trap Surveys (~650) by Delta 21 (USDA Contractor) in SW ME and MFS in rest of state



Emerald Ash Borer Quarantine in New England



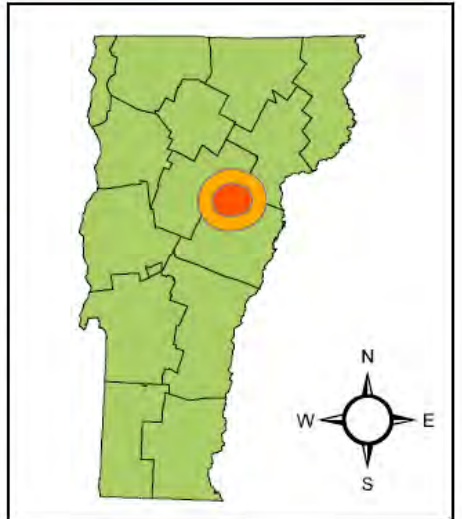
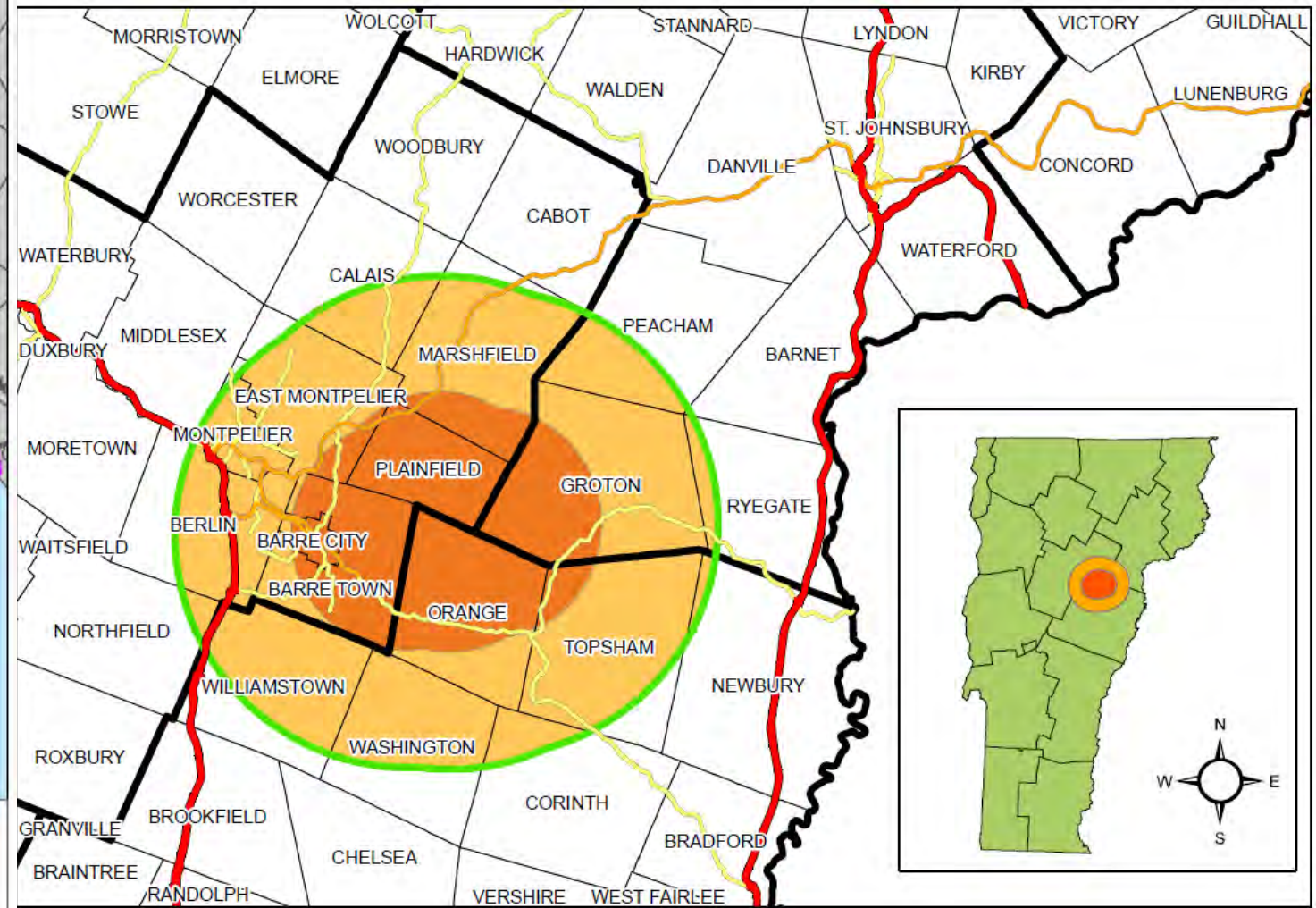
Emerald Ash Borer Management Zones



- EAB Generally Infested Area
- EAB Potential Expansion Area (10 Miles)
- EAB Alert Area (>10 Miles)
- Quarantine Area

0 2.5 5 10 Miles

Date: 3/2/2018



Asian Longhorned Beetle

- Eradicated from Chicago, Boston, NJ and Soon Queens/Brooklyn?
- Not found in Maine
- Out of state firewood still being brought up to camp
- Bugs stow away in firewood



Photo: Patricia Douglass, USDA APHIS-PPQ

Brown Spruce Longhorned Beetle

- Throughout much of Nova Scotia
- Established in Memramcook, NB
 - Not found outside of restricted area

Photos (L-R):
Stanislaw Kinelski, Bugwood.org,
Jon Sweeney, bugwood.org (Center,Right)





Conifer Diseases of Concern

White Pine Needle Diseases: Brown Spot Needle Blight & Others



- Needles shed in July
- Thin crowns
- Mortality
- Same effects on regen., but more severe.



Image from:
http://na.fs.fed.us/pubs/palerts/white_pine/eastern_white_pine.pdf

Red Pine Issues: Diplodia Shoot Blight & Sirococcus Shoot Blight

- Scattered tip dieback in the lower crown
- Abnormal growth form at branch tips: 'Lions tailing'
- Occasional mortality
- Reduces growth and vigor
- Secondary pests may take advantage of weakened trees



Needle Cast Diseases of Spruce



- Third-year needles are fully defoliated/absent
- Second-year needles are infected, show symptoms, partially defoliated
- Current-year needles are infected, but show no symptoms

Needle Cast Diseases of Spruce: Sign of the fungus

- Small, black spore-producing structures are seen in the gas exchange pores (stomata) on spruce needles.
- Stigmata: fuzzy looking with indistinct margins.
- Rhizosphaera: round with 'clean' margins.
- According to a 2-year survey of spruce trees in Maine, Stigmata is by far the most common causal agent.



Photo: NDFS



Email/SMS Updates

- www.maine.gov/dacf

Subscription Topics

- Department of Agriculture, Conservation and Forestry



- Bureau of Agriculture, Food and Rural Resources
 - Plant Health
 - Invasive Pest Outreach Information
- Bureau of Forestry
 - Forest Health and Monitoring
 - Insect & Disease Conditions Update
 - Forest Policy and Management
 - Licensed Foresters
 - Maine Loggers
 - Project Canopy
 - Woods Wise Wire
 - Woods Wise Wire Plus