Browntail Moth

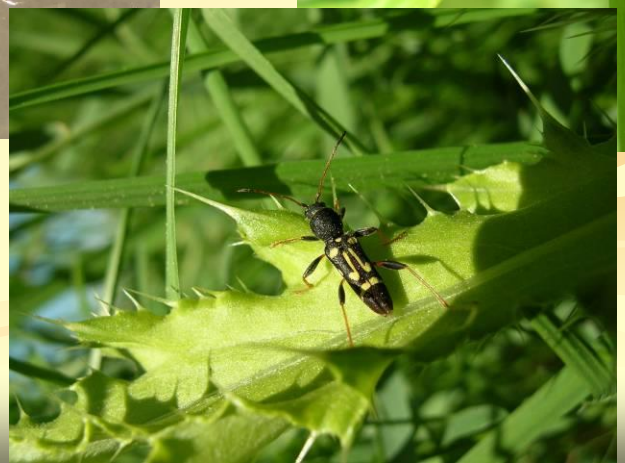
Maine

Department of Agriculture, Conservation & Forestry

Maine Forest Service

Lots of Insects That Do No Harm

>20,000 species in Maine



A Few Insects Cause Problems
The Browntail Moth is one

Browntail Moth Caterpillar

Browntail Moth

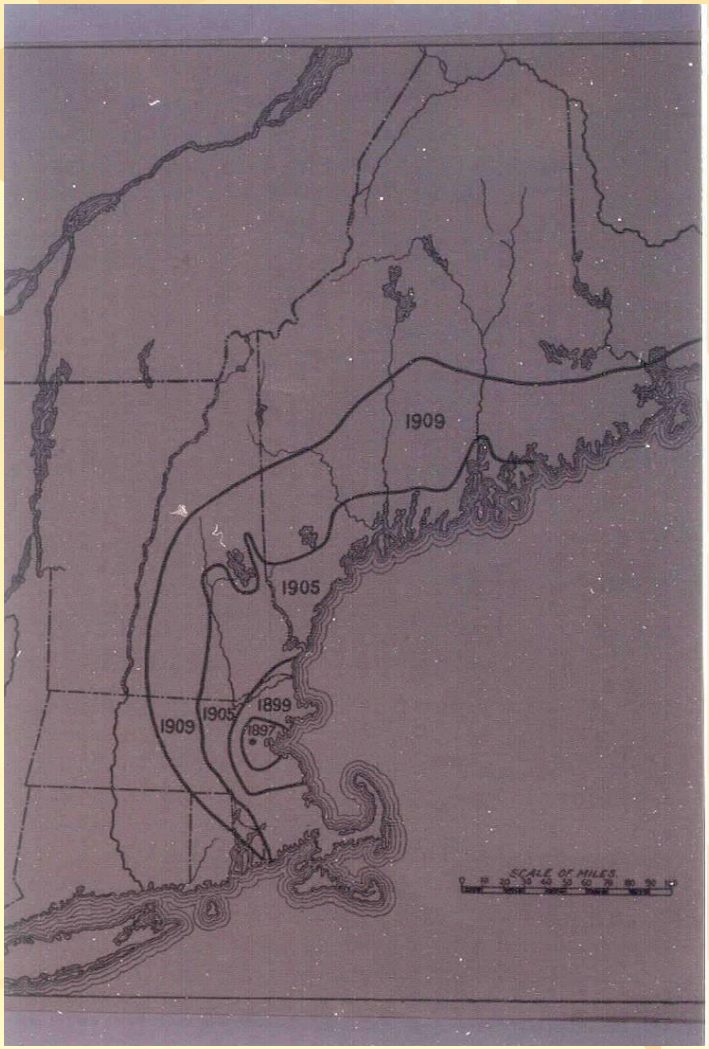
- Caterpillars have toxic hairs that cause:
  - Rash
  - Respiratory distress
- Caterpillar feeding causes
  - branch dieback
  - tree mortality

Browntail Moth - History

Euproctis chrysorrhoea

- First established in Somerville, Massachusetts in 1897

- By 1914 found from Vermont and Connecticut to New Brunswick and Nova Scotia



Browntail Moth Expansion by Year

Browntail Moth - History

- **Extensive efforts were made during the early 1900's to control BTM:**
- Winter webs clipped and burned by the 10,000's
- Spray projects initiated
- Apple trees cut down
- A federal quarantine imposed
- A huge biological control program instituted
  - Parasatoids & predators released

Pupils of Farm School, Thompson's Island, destroying winter webs of brown-tail moth, Dec., 1902.
From photo kindly loaned by Chas. Bradley, Supt.

Browntail Moth - History

- The Browntail Moth population collapsed in the 1920's
- Possibly due to a combination of weather and a fungus, *Entommophaga aulicae*

Infected browntail moth caterpillar

Browntail Moth - History

Population retreated to:

- a few islands in Casco Bay, ME

  and

- Cape Cod, MA

- Periodic outbreaks over next 60 years

Browntail Moth - History

- Population began expanding on Little Diamond Island in 1988.
- Numbers continued to rise
- Spread from Kittery to Gouldsboro inland to Augusta by 1999

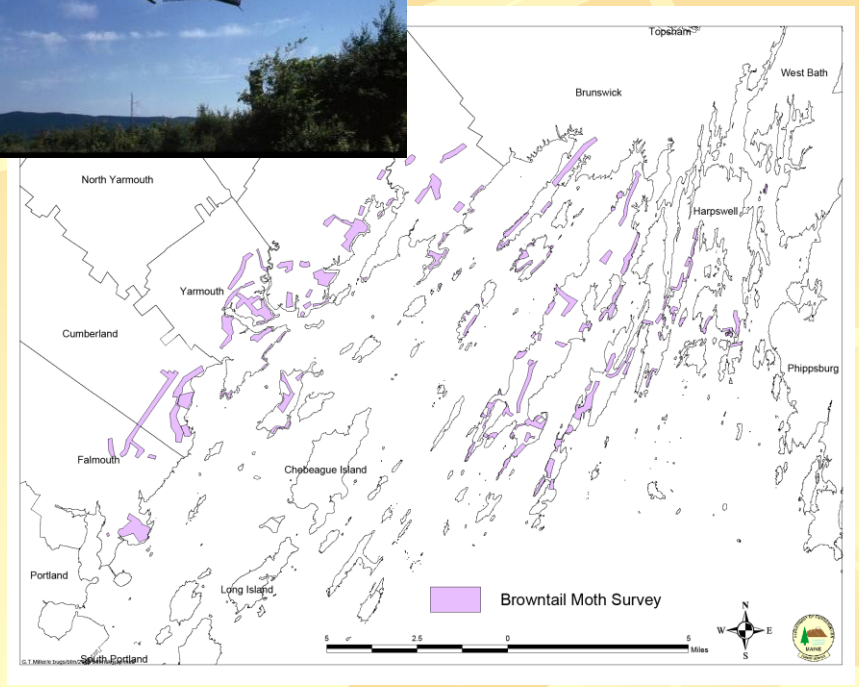
Browntail Moth Webs

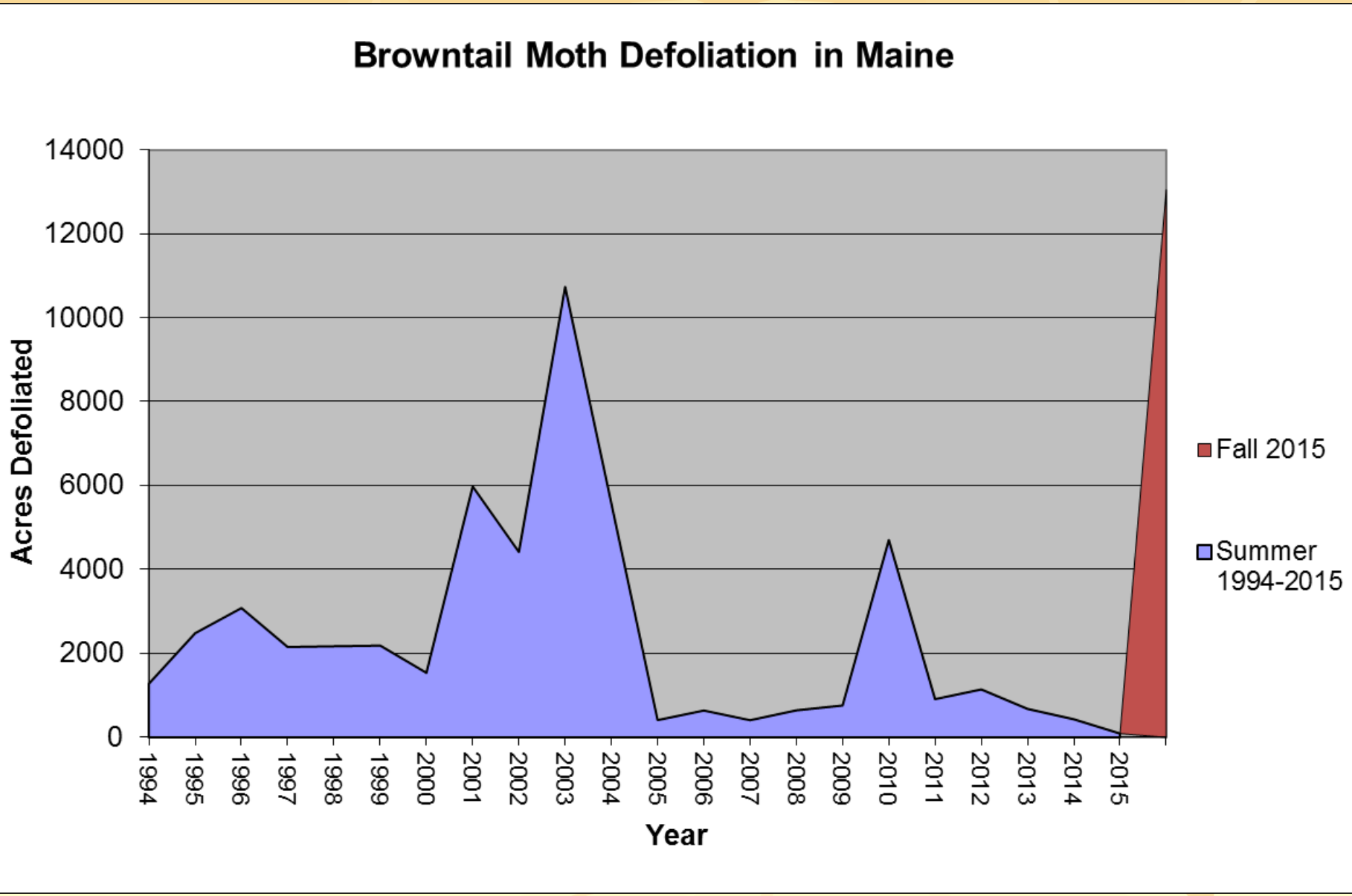
Browntail Moth - History

- Public Health
  - In 1997 legislation passed to allow municipalities to control for BTM if declared a public health nuisance by Bureau of Health Director
  - This allows municipalities to conduct control projects

Browntail Moth - History

- Municipal aerial control projects 1992-2002
  - Peak acreage of 5120 A. sprayed in 1999
  - Casco Bay Region from Portland to Harpswell
  - Insect Growth Regulators used
  - B.t. – a bacterial insecticide ineffective
  - Became highly controversial
- Private ground projects continue




Browntail Moth Defoliation in Maine
Acres Defoliated
14000
12000
10000
8000
6000
4000
2000
0
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Year
Fall 2015
Summer 1994-2015

Browntail Moth - History

- Population crashed in 2004-05 over most of infested area
- Cool wet springs in 2004 & 2005
- Caterpillars huddle together, did not feed
- Caught a fungal disease and died
- Parastoids and predators took advantage of sick caterpillars and further reduced population

Browntail Moth - History

- Remnant remained in Brunswick area
- **Population increasing again along coast**
- **Inland** in: Augusta, Gardiner, Lewiston, Monmouth, Turner, Vassalboro, Waterville and Whitefield

Browntail Moth - Life Cycle

- Caterpillars emerge in late April and May
- Feed on foliage until late June
- Molt five times
- Cast skins have toxic hairs on them

Browntail Moth - Life Cycle

- In late June – early July
  - Caterpillars move around looking for a good place to spin a cocoon and pupate
- They make cocoons in leaves, on branches, on buildings, under eaves and boats
- Cocoons are full of toxic hairs!

Browntail Moth - Life Cycle

- Moths emerge from cocoons in July
- Lay eggs on leaves of host trees
  - Oak, birch, apple other hardwoods & shrubs
  - 200-400 eggs
  - Covered with toxic hairs
- Eggs hatch in August

Browntail Moth - Life Cycle

- Caterpillars skeletonize leaves
- Tie leaves together with silk
- Spend winter in webs
- 25-400 caterpillars/web

Browntail Moth - Problem

- Hairs are on caterpillars, cast skins, cocoons
  - Microscopic
  - Blow around
  - Stay toxic for 1-3 years
- Cold winter temperatures do kill browntails
  - Wet, cool springs when populations are high allow diseases to kill caterpillars

Browntail Moth - Precautions

- June through August:
  - **Avoid places heavily infested by caterpillars**. Campers should plan their stays on un-infested islands.
  - **Take a cool shower and change clothes** after any activity that might involve contact with browntail moth hairs.
  - **Dry laundry inside** during June and July to avoid having the hairs become impregnated in clothing.

Browntail Moth - Precautions

- Use caution cleaning debris left by caterpillars because the **toxin is extremely stable and remains a hazard for a number of years**. Summer residents should bear this in mind when opening cottages that have been closed all winter as the hairs frequently settle over the winter and may be contacted when spring cleaning. Wet mopping prior to vacuuming or dusting is advised.
- **Consult your physician** if you develop a severe reaction to the browntail moth.

Browntail Moth - Precautions

- **Wear respirator, goggles and coveralls** tightly closed at neck, wrists and ankles when performing activities that stir up caterpillar hairs such as:
  - mowing
  - raking
  - weed whacking
  - removing pupal webbing from eaves and boats.
- **Perform the above tasks above on damp days or wet down material** with a hose as moisture helps keep the hairs from becoming airborne there by minimizing contact.

Browntail Moth - Control

- Low winter webs can be clipped and burned
- Chemical control in the spring – BEFORE the end of May
  - Later spraying does not reduce exposure to hairs
- Must have widespread control to be effective

Browntail Moth - Control

- Protection for lobsters
  - Lobstermen became concerned about BTM spraying
  - Board of Pesticide Control regulation passed in 2008 restricts BTM spray near coastal waters

Browntail Moth - Control

- Pesticide applications for control of browntail moths **within 250 feet** of the mean high tide mark adjacent to **coastal waters** and extending upriver or upstream to the first bridge are subject to the requirements of this section
- The prohibitions and restrictions do **not** apply to:
  - biological pesticides
  - injection of pesticides directly into the soil or trees
  - application of pesticides by licensed commercial pesticide applicators using **non-powered** equipment.

Browntail Moth - Control

- Prohibitions and Restrictions
  - A person may not apply a pesticide to control browntail moths on shade or ornamental trees within 50 feet of the mean high water mark.
  - A person may not apply a pesticide to control browntail moths on shade or ornamental trees in coastal areas located between 50 and 250 feet from the mean high water mark except in accordance with this subsection.
    - Only products with active ingredients specifically approved by the Board for this purpose may be applied. (Permethrin, diflubenzuron IGR,
    - tau-fluvalinate, cyfluthin)
    - Applications may be performed only with a hydraulic hand-held spray gun or air-assisted sprayers.
    - Applications may be performed only in a manner in which the applicator directs the spray away from marine waters.
    - Applications may not be made when the wind is blowing toward marine waters.
    - Applications may be performed only when the wind is equal to or greater than 2 miles per hour and blowing away from marine waters.

Browntail Moth - Control

- Research by Maine Forest Service
  - Chemical control
  - Biological pesticide control
  - Biological control
  - Mating disruptant control
  - Mechanical control
  - Numbers of webs that cause rash
  - Numbers of webs that affect tree health
  - Precautionary measures to reduce exposure to hairs

Questions?

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