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2010 Cranberry Management Update: Winter Moth Warning

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UMass Cranberry Station Research Update
Plymouth, MA January 20, 2010

**Winter Moth Warning
for Cranberry!**



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Thanks to
Robert D. Childs and Joe Elkinton
Plant, Soil, and Insect Sciences Dept.
University of Massachusetts, Amherst

Winter Moth:

- **Native to Europe, including England**
- **Has been in Nova Scotia for decades (1949) - in apples and oaks**
- **British Columbia (Vancouver 1976)**
- **Only other finds in USA:**
 - **Washington state and Oregon.**
 - **in commercial blueberries.**
- **Now, well-established in eastern MA and RI**

Winter Moth: where did it come from?



Life Cycle



Eggs over-winter,
larvae hatch early
spring



Larvae feed all
spring and pupate in
late May



Pupae in soil
all summer
and fall until
adult
emergence



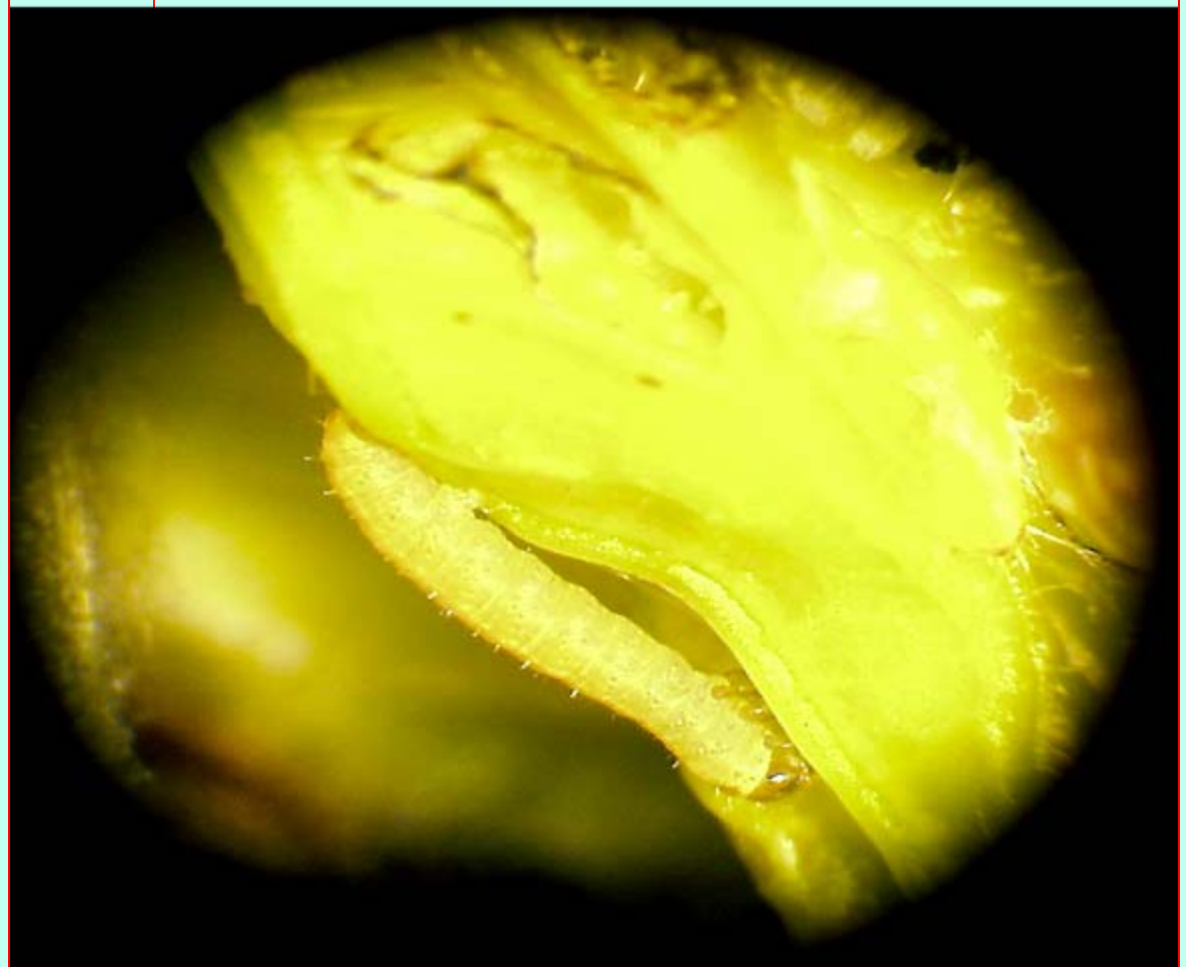
Adults emerge
November-January,
mate, lay eggs and die



Potential Host Plants

Winter Moth

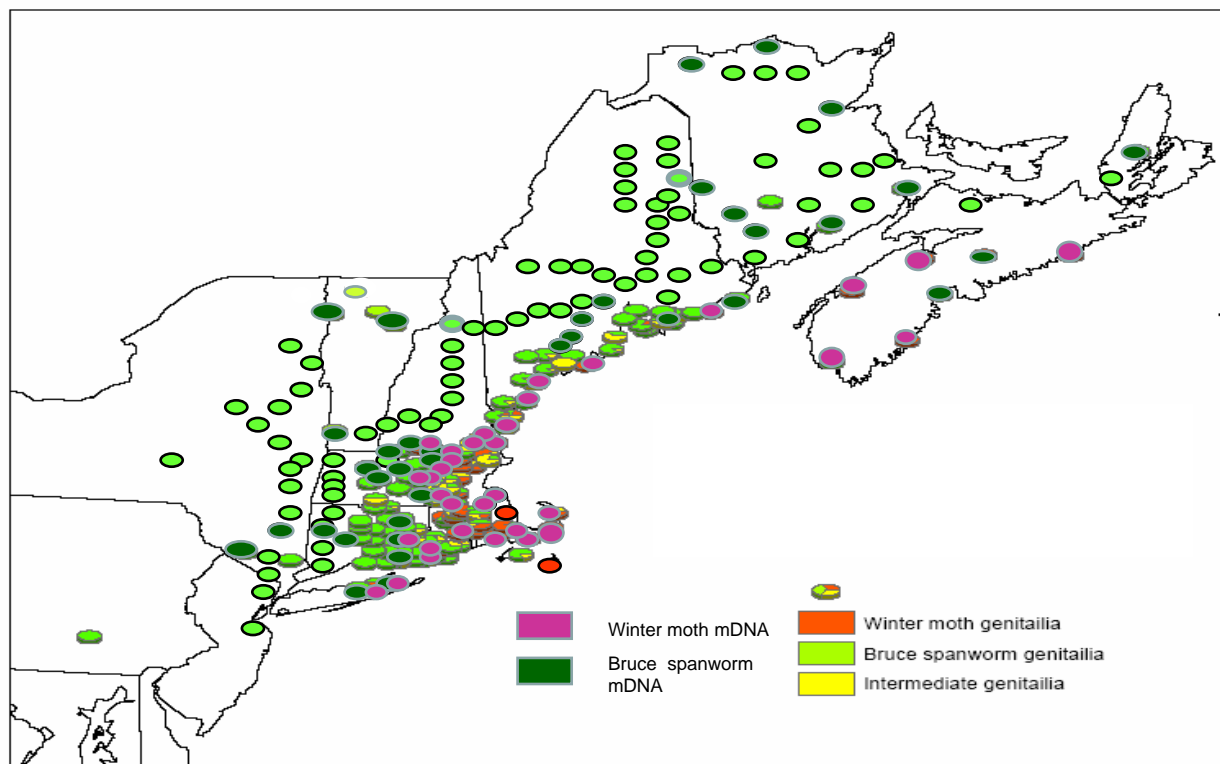
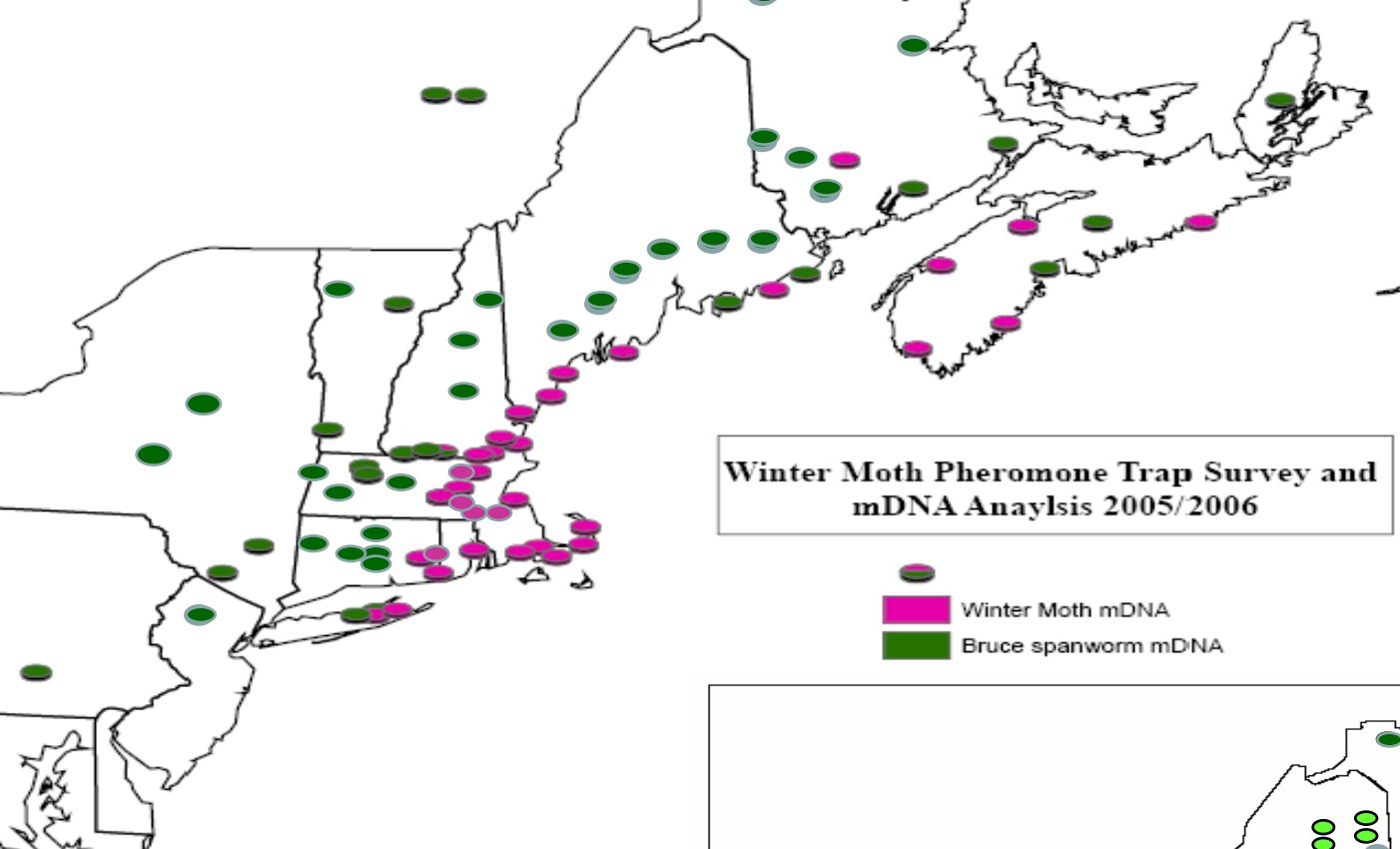
- Oaks
- Maples
- Birches
- Crabapples
- Apple
- Blueberry
- Cranberry...



Winter Moth

They do
live on
cranberry!







Winter moth is a green spanworm.

Spanworms = Inchworms = GEOMETRIDS = 1000 different species!!

Winter moth is *Operophtera brumata*
Green Spanworm is *Itame Sulphurea*
Bruce Spanworm
Fall Cankerworm



Fall Cankerworm

Alsophila pometaria (Harris)



WINTER MOTH: ON CRANBERRY?

YES, YES, and YES

- Picked up in cranberry sweeps
 - 40-60 per sweep set
- Completed development on cranberry
- Big fall flight 2009

Multiple reports, Multiple regions

- Carver
- Plympton
- Plymouth
- Sandwich
- Harwich
- Brewster

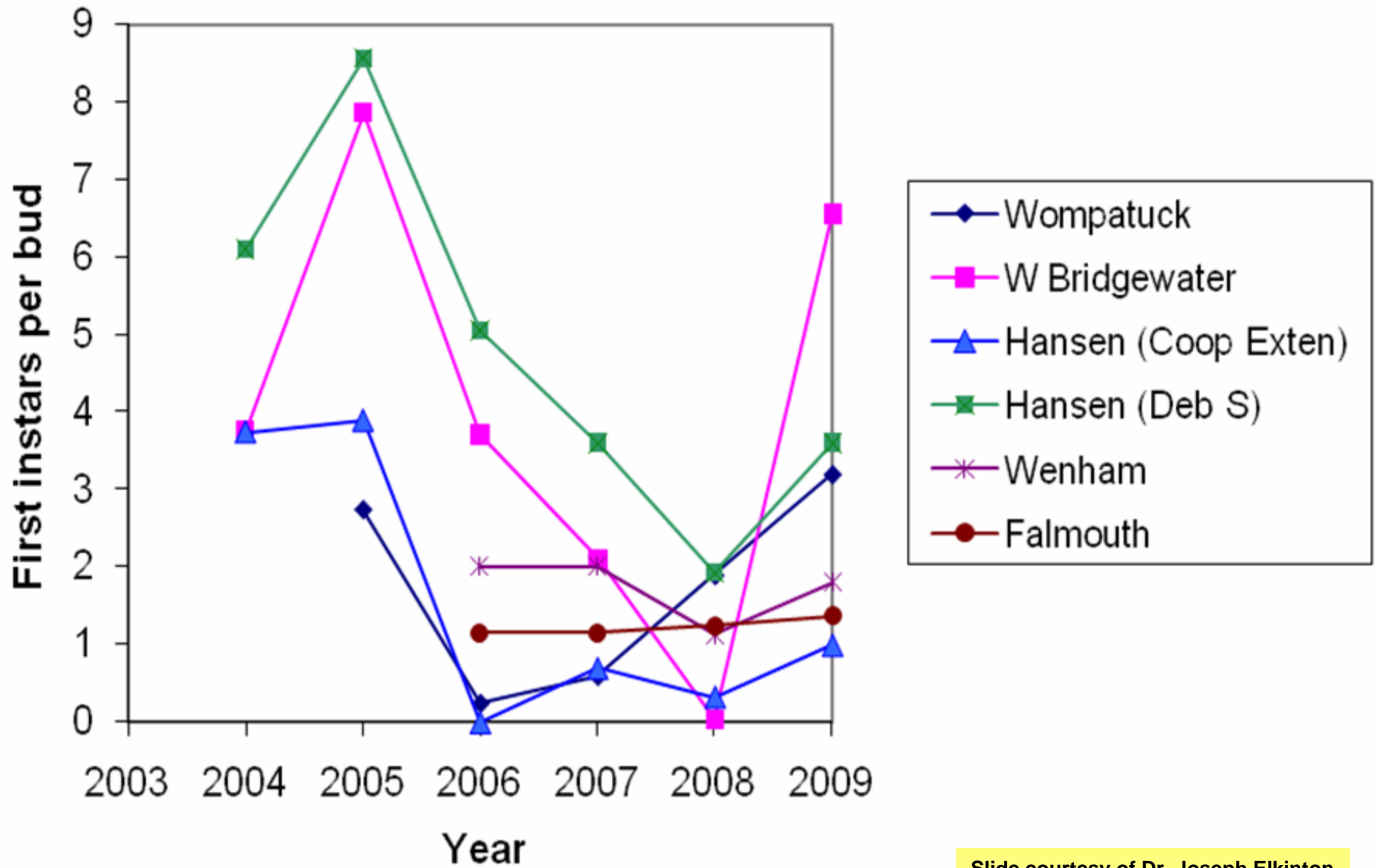


Flightless female

Winter Moth *Operophtera brumata*

- **Big infestation 2005**
- **Reduced numbers in 2006**
- **Flight in 2007 - 2008 was less than previous years (snow?)**
- **Countless dead and dying trees in southeastern MA**
- **Heavy flight seen in Fall 2009**
- **Watch your bog 2010!**

Winter moth larvae per bud (red oak)



Winter Moth

- Sampling is going to be difficult
- Hard to detect when small
- Very similar to black-headed fireworm when tiny!



Winter Moth Life Cycle

- Eggs hatch approximately mid-April
- Larvae weasel into buds and feed
 - Very hard to detect
- Become free-feeders once buds open
- Larvae drop to the soil to pupate late May into early June in MA.
- Adult moths start to appear from Thanksgiving...into January.

WINTER MOTH Management

- Intrepid
- Delegate
- Avaunt

- Flood during flight!



Introducing parasitoid from Europe: Release of *C. albicans* 2005-2009

2005 200 mated females
2006 200 mated females
2007 1200 at 3 sites
2008 3000 at 3 sites
2009 2040 at 1 site

Biological
control!

