RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

RECORD

2025
Ornamental IPM Program Webinar

Contemporary IPM Topics and Management

April 22, 2025

Bill Errickson & Steve Rettke (Monmouth)
Tim Waller (Cumberland)
Support: Erin Quinn

TODAYS SPEAKERS

Bill Errickson (Ag. Agent - Monmouth County RCE)

Steve Rettke (IPM Program Associate – Monmouth County RCE)

Tim Waller (Ag. Agent – Cumberland County RCE)

Erin Quinn (IPM Program support)

Updates

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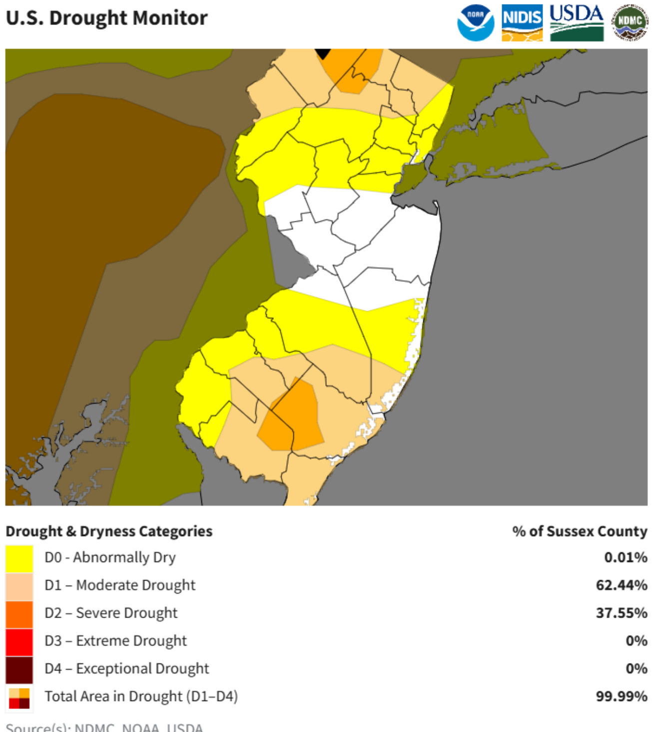
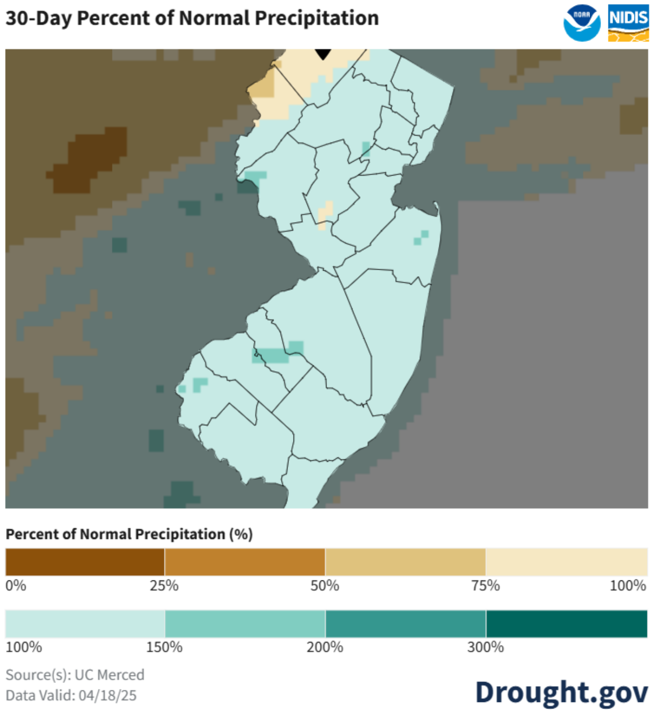
Miticide materials clarification:

- Oils/Soaps/Neem Oil
- Hexythiazox – MGR
- Etoxazole – MGR
- Spiromesifen
- Bifenazate
- Acequinocyl
- Abamectin
- Pyrethroids
  - Lambda-cyhalothrin
  - Fluvalinate
  - Bifenthrin

Projected GDD50 accumulation as of 4/21/2025 (April-MAY)							
CODE	**Location**	**21-Apr**	**28-Apr**	**5-May**	**12-May**	**19-May**	**26-May**
NJ50	Upper Deerfield (South)	147	232	305	392	489	603
NJ10	Howell (Central)	106	173	226	292	369	464
N79	Wantage (North)	67	114	150	202	264	345
*USPEST.ORG - Model: **simple average/growing degree-day**, Min: 50F - Max: 95F, NMME forecast*							
*Forecast: 7-month NMME based seasonal climate forecast (USPEST.ORG) - **Subject to change regularly = Check Often***							



Replenishing precipitation-deficit



Boxwood blight

Boxwood Blight Risk MODEL

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Models

SOUTH

Station NJ50, UPPER DEERFIELD NJ, 2025

Date	Risk index (2025)	Risk class (2025)
Apr 21	0	Very Low Risk
Apr 22	169	1st Infec. Susc. Vars.
Apr 23	0	Very Low Risk
Apr 24	0	Very Low Risk
Apr 25	54	Very Low Risk
Apr 26	117	Low Risk

CENTRAL

Station NJ10, HOWELL NJ, 2025

Date	Risk index (2025)	Risk class (2025)
Apr 21	14	Very Low Risk
Apr 22	145	Low Risk
Apr 23	0	Very Low Risk
Apr 24	0	Very Low Risk
Apr 25	0	Very Low Risk
Apr 26	76	Low Risk

NORTH

Station NJ79, WANTAGE NJ, 2025

Date	Risk index (2025)	Risk class (2025)
Apr 21	0	Very Low Risk
Apr 22	92	Low Risk
Apr 23	0	Very Low Risk
Apr 24	0	Very Low Risk
Apr 25	0	Very Low Risk
Apr 26	0	Very Low Risk

USPEST.ORG

Fungicides applied at regular intervals

- **[M05]: Chlorothalonil**
- **[M05 + 1] Chlorothalonil + Thiophanate methyl**
- **[11] Trifloxystrobin + [7] Fluopyram**
- [11] Trifloxystrobin + [3] Triadimefon
- [M03] Mancozeb
- [12] Fludioxonil
- [3] Tebuconazole

Ambrosia beetle (*Xylosandrus*)

Photos: Sabrina Tirpak, Rutgers PDL

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5-Day Weather Forecast — **Northern NJ – Charlotteburg**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
4/21/2025	4/22/2025	4/23/2025	4/24/2025	4/25/2025	4/26/2025
57 39	73 50	69 47	70 52	67 52	63 53

5-Day Weather Forecast — **Central NJ – Howell**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
4/21/2025	4/22/2025	4/23/2025	4/24/2025	4/25/2025	4/26/2025
59 38	77 53	69 52	67 51	65 50	67 55

5-Day Weather Forecast — **Southern NJ – Upper Deerfield**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
4/21/2025	4/22/2025	4/23/2025	4/24/2025	4/25/2025	4/26/2025
63 45	78 57	72 52	73 50	69 50	71 55

HIGHLY LIKELY

https://newa.cornell.edu/

Adult flight triggered by successive 70F days

Avoid transporting infested plants

Reduce plant stress

Contact insecticides:

Pyrethroids [3]: permethrin, bifenthrin

- Spray on lower stems before peak beetle flight

Systemics don't work

Current GDD: 4/22/25
North NJ: 60 GDDs
Central NJ: 120 GDDs
Southern NJ: 165 GDDs

Agenda

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1. Boxwood leafminer
2. Holly leafminer
3. Eastern tent caterpillars
4. Evergreen lace bugs
   - Andromeda lace bug
   - Azalea lace bug
5. Clearwing borers
   - Lilac clearwing borer
   - Dogwood clearwing borer
6. Spongy moth
7. Red-headed flea beetle
8. Fire blight
9. Rust diseases

Current GDD: 4/22/25
North NJ: 60 GDDs
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Boxwood leafminer (*Monarthropalpus flavus*)

GDD Window (base 50): 290+ (adult emergence)**, 448-700** (larvae emergence)

- Overwinters in the leaves as larvae
- Larvae are bright yellow or orange and become active in spring, feeding on leaves from the inside, creating yellow or brown blisters which become clear as larvae grows, making the leaf swell and look puffy
- Heavily infested leaves sound like they're crackling
- Blistered leaves weaken the plant and cause leaf drop, plants appear sparse
- Gnat-looking adults emerge by early summer and are yellow-orange in color, leaving behind a pinprick-sides hole in the underside of the leaf
- Females lay eggs on upper surface of new leaves
- Eggs hatch and larvae mine leaves throughout summer
- One generation per year
- **Host plants**: Boxwoods

Photo via Steve Rettke, Rutgers RCE

TRAPS AVAILABLE

Current GDD: 4/22/25
North NJ: 60 GDDs
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Southern NJ: 165 GDDs

Photo credits Steve Rettke, Rutgers RCE

Boxwood leafminer (*Monarthropalpus flavus*)

TRAPS AVAILABLE

Current GDD: <u>4/22/25</u>
North NJ: 60 GDDs
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Boxwood leafminer (*Monarthropalpus flavus*)

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GDD Window (base 50): 290+ (adult emergence)**, 448-700** (larvae emergence)

Management

- **Cultural Practices:**
  - **Natural predators:** lacewings, ladybugs, hover-flies, parasitic wasps, spiders, birds
  - **Companion plantings:** lavender, marigolds
  - Monitor throughout the season, sticky traps
  - Reduce plant stress
  - Choose resistant varieties
  - Manually crush insects
  - Heavy pruning for first-year growth after egg-laying in early summer
    - Destroy clippings

Materials

- **Contact insecticides:**
  - Avermectins [6]: abamectin
  - Pyrethroids [3]: -thrins
  - Carbamates [1A]: carbaryl
- **Systemic insecticides:**

  -Organophosphates [1B]: acephate (translaminar);

  -Neonicotinoids [4A]: imidacloprid, dinotefuran, clothianidin, acetamiprid
- **Considerations:**
  - Contact insecticide application must be timed with the emergence of adult flies

- **Biorationals:**
  - Insecticidal soap
  - Horticultural oils
  - Insect growth regulator: Pyridayl [UN]: azadirachtin
  - Spinosyns [5]: spinosad

TRAPS AVAILABLE

Current GDD: 4/22/25
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Holly leafminer (*Phytomyza ilicicola*)

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GDD Window (base 50): 147-265

- Overwinter as yellow larvae, 1.5 mm long
- Eggs hatch into tiny maggots within the leaf mine, causing the most damage in early spring
- Adults are small, 0.8-1.6 mm long black flies
- Maggots pupate in the spring
- Adults emerge from leaves in May, mate, and female deposits eggs in slits on the underside of new leaves
- One generation per year
- Mines are narrow in the fall but expand during the spring, causing leaves to have yellow serpentine or blotch mines
- Causes premature leaf drop, defoliation, leaf growth stunting and distortion
- **Host plants:** American holly and cultivars

Photo: Charlie Eiseman via BugGuide

TRAPS AVAILABLE

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North NJ: 60 GDDs
Central NJ: 120 GDDs
Southern NJ: 165 GDDs

Holly leafminer (*Phytomyza ilicicola*)


Photo: Steve Rettke, Rutgers RCE


Photo: Lynn Harper via iNaturalist


Photo: UGA Extension


Photo: UGA Extension


Photo: Steve Rettke, Rutgers RCE

TRAPS AVAILABLE

Current GDD: <u>4/22/25</u>
North NJ: 60 GDDs
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Southern NJ: 165 GDDs

Holly leafminer (*Phytomyza ilicicola*)

RUTGERS

GDD Window (base 50): 147-265

Management

- **Cultural Practices:**
  - **Natural predators:** parasitoid wasps, green lacewings, spiders
  - Reduce plant stress
  - Avoid overuse of insecticides
  - Pull off and destroy mined leaves before May in light infestations on small hollies
  - Sticky traps to monitor for adults
  - Destroy prematurely dropped leaves

Materials

- **Contact insecticides:**
  - Avermectins [6]: abamectin
  - Pyrethroids [3]: -thrins
    - Will only suppress adults
  - Carbamates [1A]: carbaryl
    - Will only suppress adults
- **Systemic insecticides** (larvae only, ~June application):
  - Organophosphates [1B]: acephate
  - Neonicotinoids [4A]: imidacloprid, dinotefuran
- **Considerations:**
  - Can harm non-target species

- **Biorationals:**
  - Neem oil
  - Insecticidal soap
  - Spinosyns [5]: spinosad

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Current GDD: 4/22/25
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Eastern tent caterpillar (*Malacosoma americanum*)

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GDD Window (base 50): 90-190

- Overwinter as eggs, black masses that wrap around small twigs of host plants and hatch in the early spring, using web tents in the forks and crotches of branches as protection and feeding on leaves
- Young caterpillars are dark with two thin yellow stripes on backs
- Mature caterpillars are two inches long with a white stripe and two yellow stripes on their backs, the rest of their body being blue, yellow, and black
- Cocoons are white to yellowish and are spun in dry, protected places
- Adult moths are fluffy, tan to light brown, with two white stripes on the wings
- Can cause complete defoliation, consuming all fresh buds and leaves
- Host plants: Rosaceous trees – cherry, crabapple, apple
    - Occasionally other deciduous shrubs and trees

Photo via Steve Rettke, Rutgers RCE

Current GDD: 4/22/25
North NJ: 60 GDDs
Central NJ: 120 GDDs
Southern NJ: 165 GDDs

Photo credits Steve Rettke, Rutgers RCE

Eastern tent caterpillar (*Malacosoma americanum*)

Current GDD: <u>4/22/25</u>
North NJ: 60 GDDs
Central NJ: 120 GDDs
Southern NJ: 165 GDDs

Eastern tent caterpillar (*Malacosoma americanum*)

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GDD Window (base 50): 90-190

Management

- **Cultural Practices:**
  - **Natural predators:** many birds, insects, and parasitoids
  - Prune out egg masses in the winter before they hatch
  - Remove silk tents using a disposable object
  - Do not use fire – fire will cause more damage to the tree than the insect itself

Materials

- **Contact insecticides:**
  - Carbamates [1A]: carbaryl
  - Pyrethroids [3]: -thrins
- **Systemic/translaminar insecticides:**
  - Organophosphates [1B]: acephate
- **Considerations:**
  - Use with caution, can impact non-target species

- **Biorationals:**
  - Horticultural oil
  - Insecticidal soap
  - Spinosyns [5]: spinosad
  - Microbial disruptors of insect midgut [11]: *Bacillus thuringiensis (Bt)*

Current GDD: <u>4/22/25</u>
North NJ: 60 GDDs
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- Evergreen Lace Bugs
- Clearwing Moths
- Spongy Moth

Photo credits Steve Rettke, Rutgers RCE unless otherwise noted

Evergreen lace bugs (*Stephanitis* spp.)

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Azalea Lace Bug: 118 GDDs (egg hatch)

Azalea lace bug eggs. Egg covered by excrement (white arrow), egg with excrement removed (blue), and egg extracted from leaf (green).

Photo by J. R. Baker

Azalea lace bug on lower surface of azalea leaf.

Photo by J. R. Baker

Azalea lace bug adults in January! Photo taken in Wake County.

Photo by J. R. Baker

Andromeda Lace Bug: 115 GDDs (egg hatch)

Pieris damaged by the andromeda lace bug.

Photo by Alison Arnold, NC State University

The andromeda lace bug can be a major pest of Japanese andromeda.

Photo by http://insectoid.info/bugs/lace-bugs/andromeda-lace-bug/

Current GDD: <u>4/22/25</u>
North NJ: 60 GDDs
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Evergreen lace bugs (*Stephanitis* spp.)

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Azalea Lace Bug Symptoms

118-372 GDDs (1st gen nymphs)

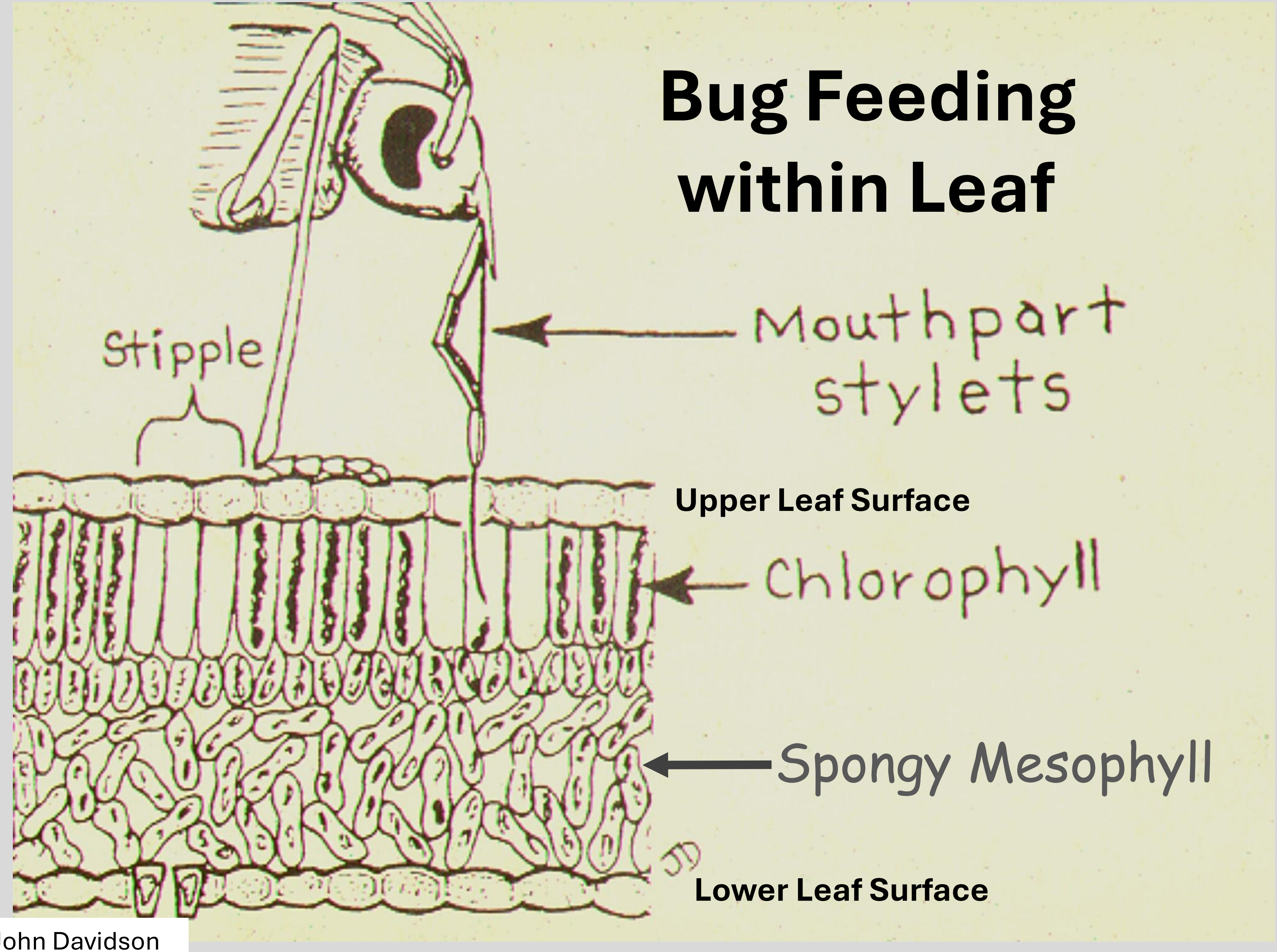
Andromeda Lace Bug Symptoms

115-279 GDDs (1st gen nymphs)

Current GDD: 4/22/25
North NJ: 60 GDDs
Central NJ: 120 GDDs
Southern NJ: 165 GDDs

Photo Credits: Steven K. Rettke, Rutgers Coop. Ext.

Bug Feeding within Leaf



Drawing Credit: John Davidson

Azalea Lace Bug Overwintering Eggs

GDD Window (base 50): <u>118</u> GDD (eggs hatch)

Oils will not control eggs!

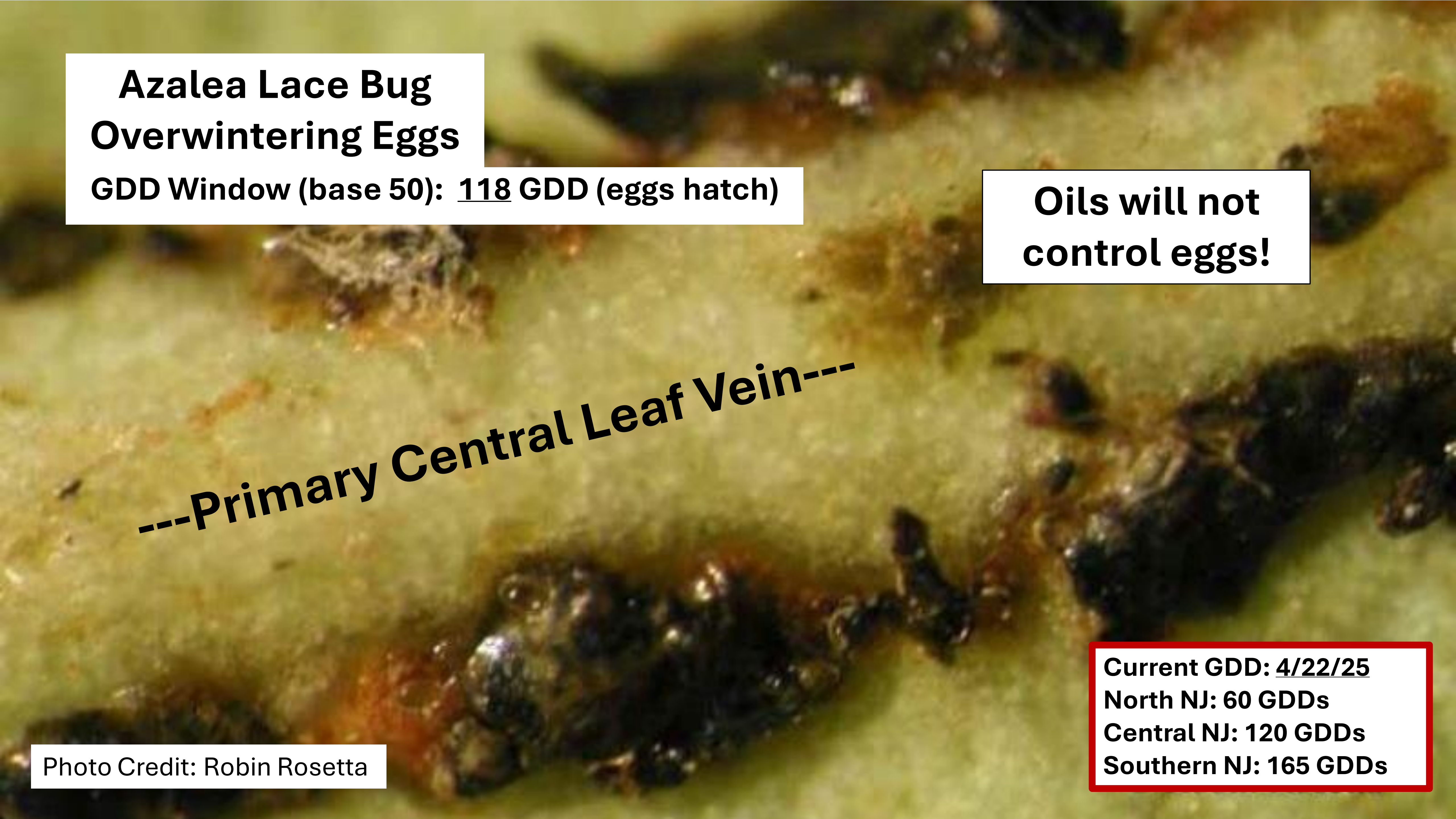


Photo Credit: Robin Rosetta

Current GDD: <u>4/22/25</u>
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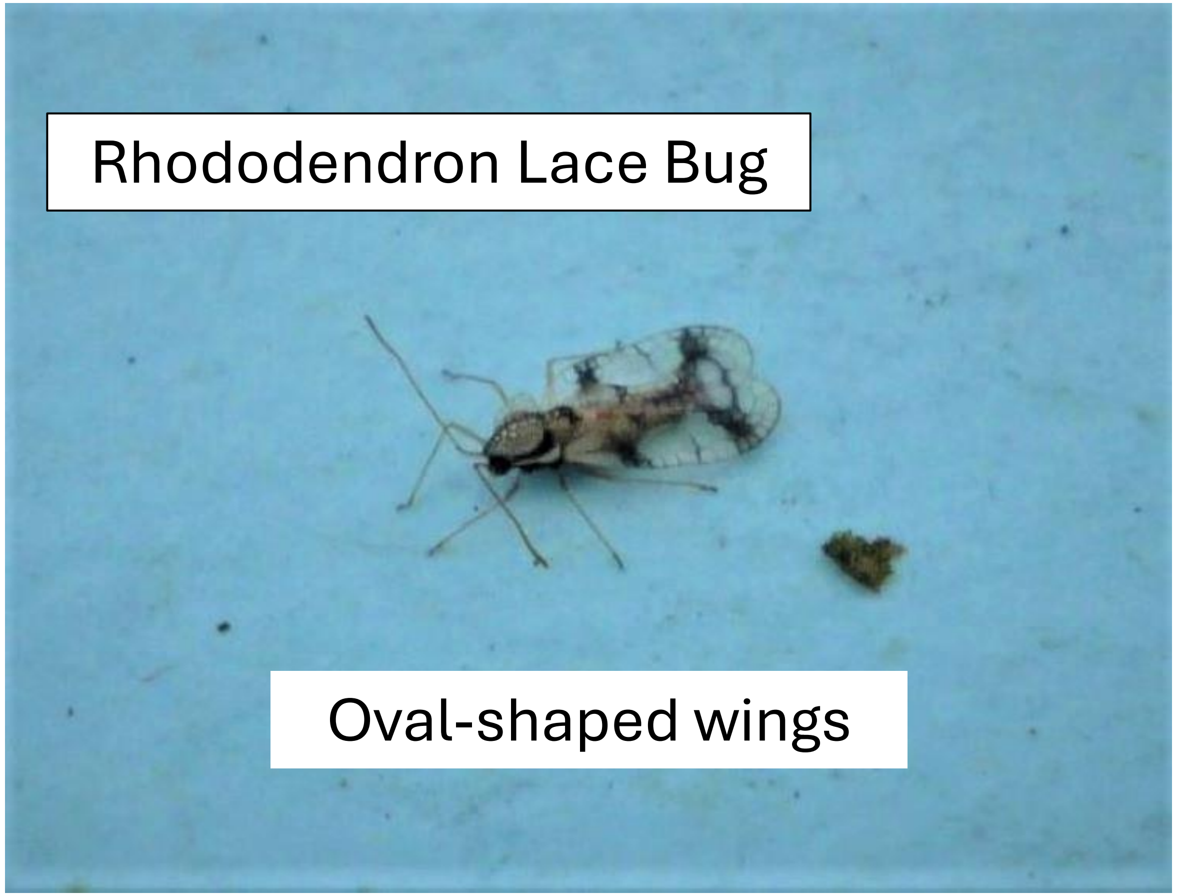
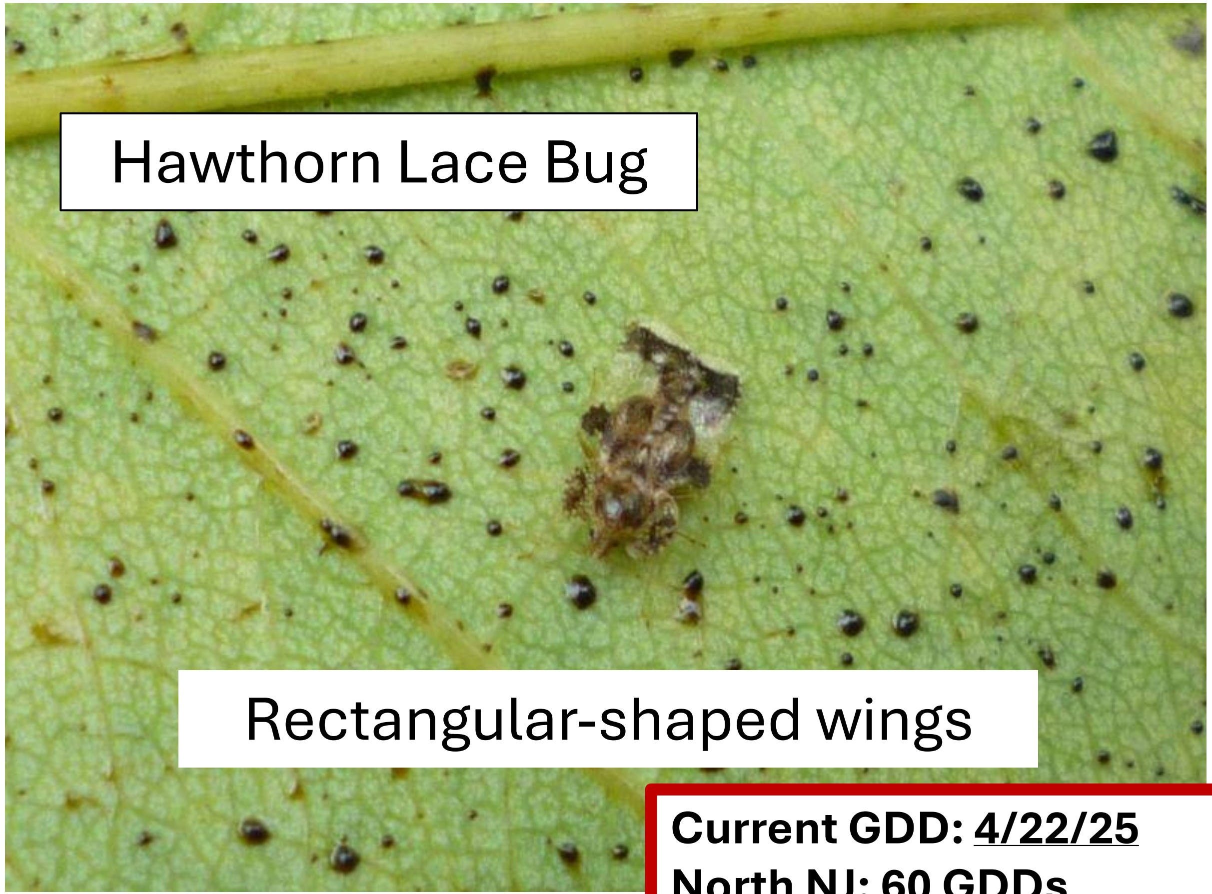
Evergreen and deciduous lace bugs

Evergreen (*Stephanitis* genus)



Deciduous (*Corythuca* genus)



Current GDD: 4/22/25
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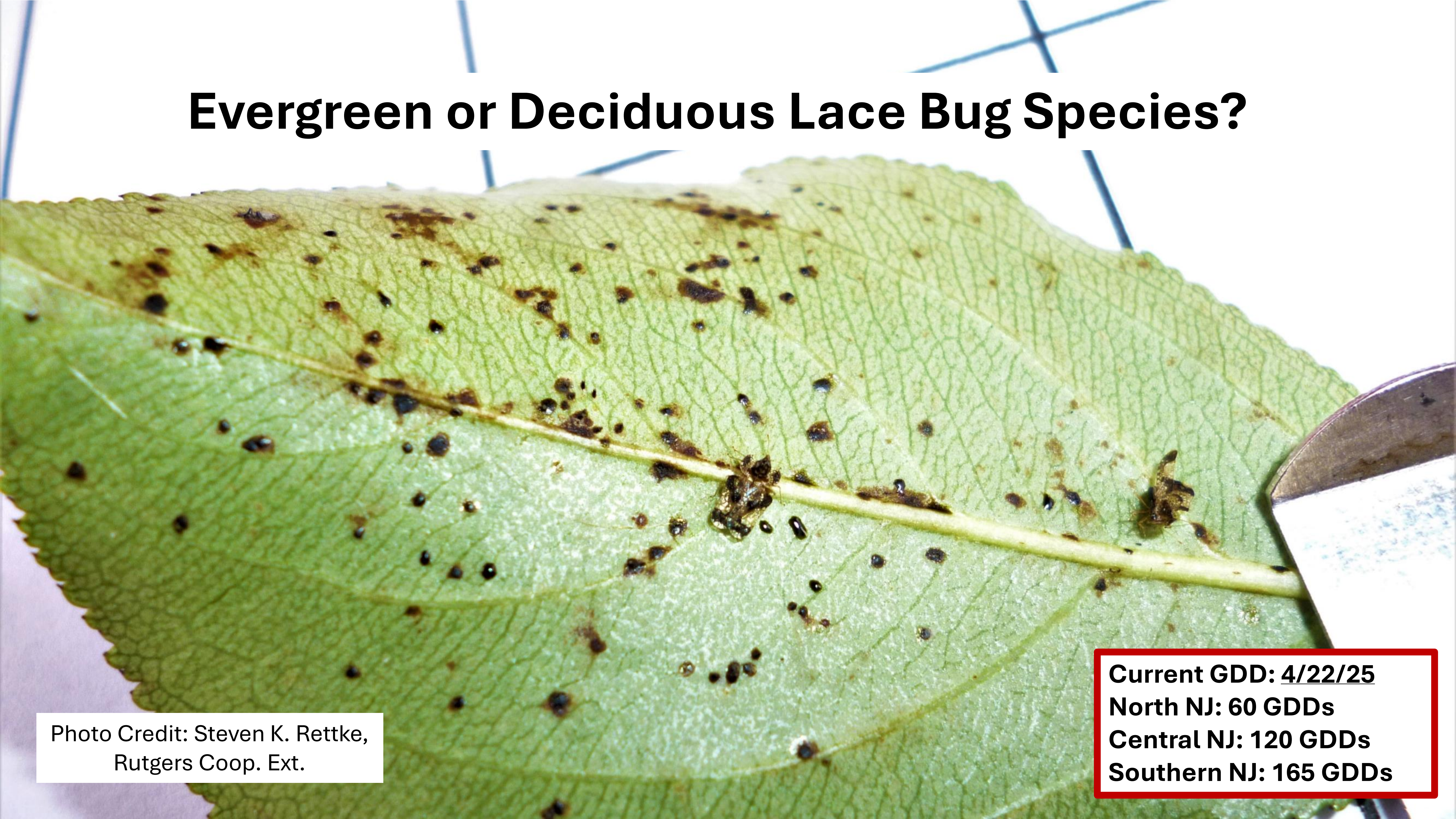
Photo Credits: Steven K. Rettke, Rutgers Coop. Ext.

Lace Bug Signs:
Adults, nymphs, & frass

Photo Credit: Steven K. Rettke, Rutgers Coop. Ext.

Evergreen or Deciduous Lace Bug Species?



Current GDD: <u>4/22/25</u>
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Photo Credit: Steven K. Rettke, Rutgers Coop. Ext.

Evergreen lace bugs (*Stephanitis* spp.)

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GDD Window (base 50): 115 (eggs hatch)

- Andromeda lace bug (*Stephanitis takeyai)* and azalea lace bug *(Stephanitis pyrioides)*
- **Overwinter as eggs in the lower leaf veins**
- **Oval shaped wings with rounded corners**
- Top of wings, head, and thorax are composed of many raised ridges, which give a lacelike appearance
- Adults are cream-colored with patches of black or brown
- Dark X-shaped mark on the wings
- Nymphs are tiny and much darker in color than adults, casting skins on lower leaf surfaces
- Cause foliar discoloration from sucking, reduced plant vigor, premature leaf drop, chlorosis or stippling on upper leaf surface
- **Nymphs and adults can hide on underside of leaves**
- **Excrement on underside of leaves is black**
- **Damage can be more severe in sunny sites**
- **Host plants**: Evergreens (andromeda, azalea, rhododendron, mountain laurel)

Adult lace bug
Photo via UMass Extension

Current GDD: 4/22/25
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Southern NJ: 165 GDDs

Evergreen lace bugs (*Stephanitis* spp.)

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GDD Window (base 50): 115 (eggs hatch)

Management

- **Cultural Practices:**
  - **Natural predators:** green lacewings, mites, assassin bugs
    - **Lacewing larvae** can be released to reduce damage
  - Reduce plant stress
  - **Avoid planting in sunny locations**
  - Keep the soil beneath the plants bare
  - Syringing

- **Contact insecticides:**
  - Carbamates [1A]: carbaryl
  - Pyrethroids [3]: permethrin, bifenthrin
  - Organophosphates [1B]: acephate (translaminar)
- **Systemic insecticides:**
  - Avermectins [6]: abamectin
  - Neonicotinoids [4A]: imidacloprid, dinotefuran
    - Soil injection of imidacloprid will be effective for 1-2 years

- **Biorationals:**
  - Horticultural oils
    - **Will not control eggs**, but can suppress **nymphs** and adults
  - Insecticidal soaps (same as above)
  - Diamides [28]: Chlorantraniliprole
  - **Considerations:** apply to the underside of leaves

Current GDD: <u>4/22/25</u>
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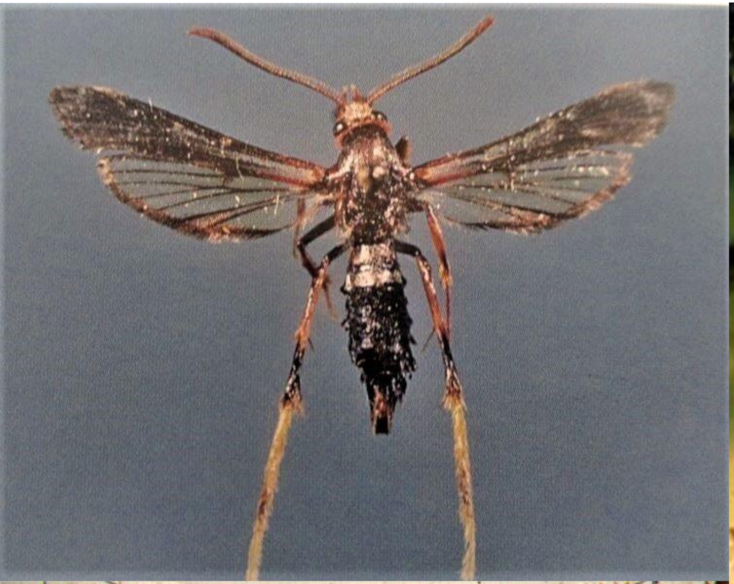
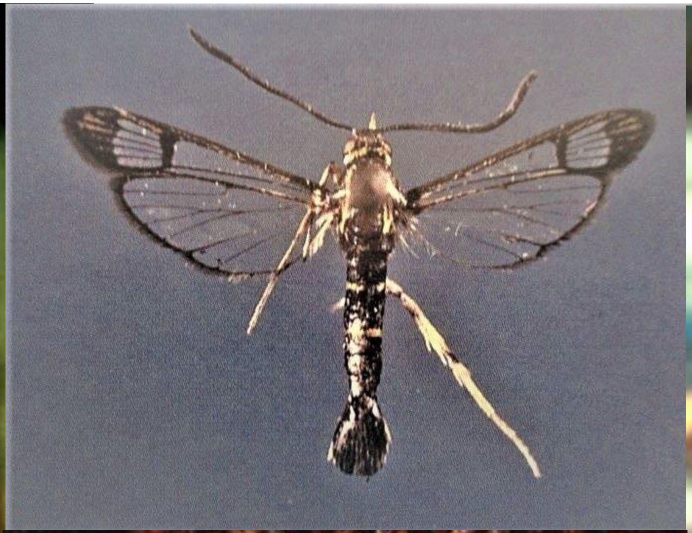
Clearwing borers

Photo credits: Steve Rettke, Rutgers RCE unless otherwise mentioned

Lilac Clear Wing Borer: 148-299 GDDs (adults emerge)

Dogwood Clear Wing Borer: 148-700 GDDs (adults emerge)





Photos: Cornell CALS

Current GDD: 4/22/25
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Clearwing Moth Borer
Infested Tree
Photo Credit: Steven K. Rettke,
Rutgers Coop. Ext.

Clearwing Moth Borer Caterpillar Larva

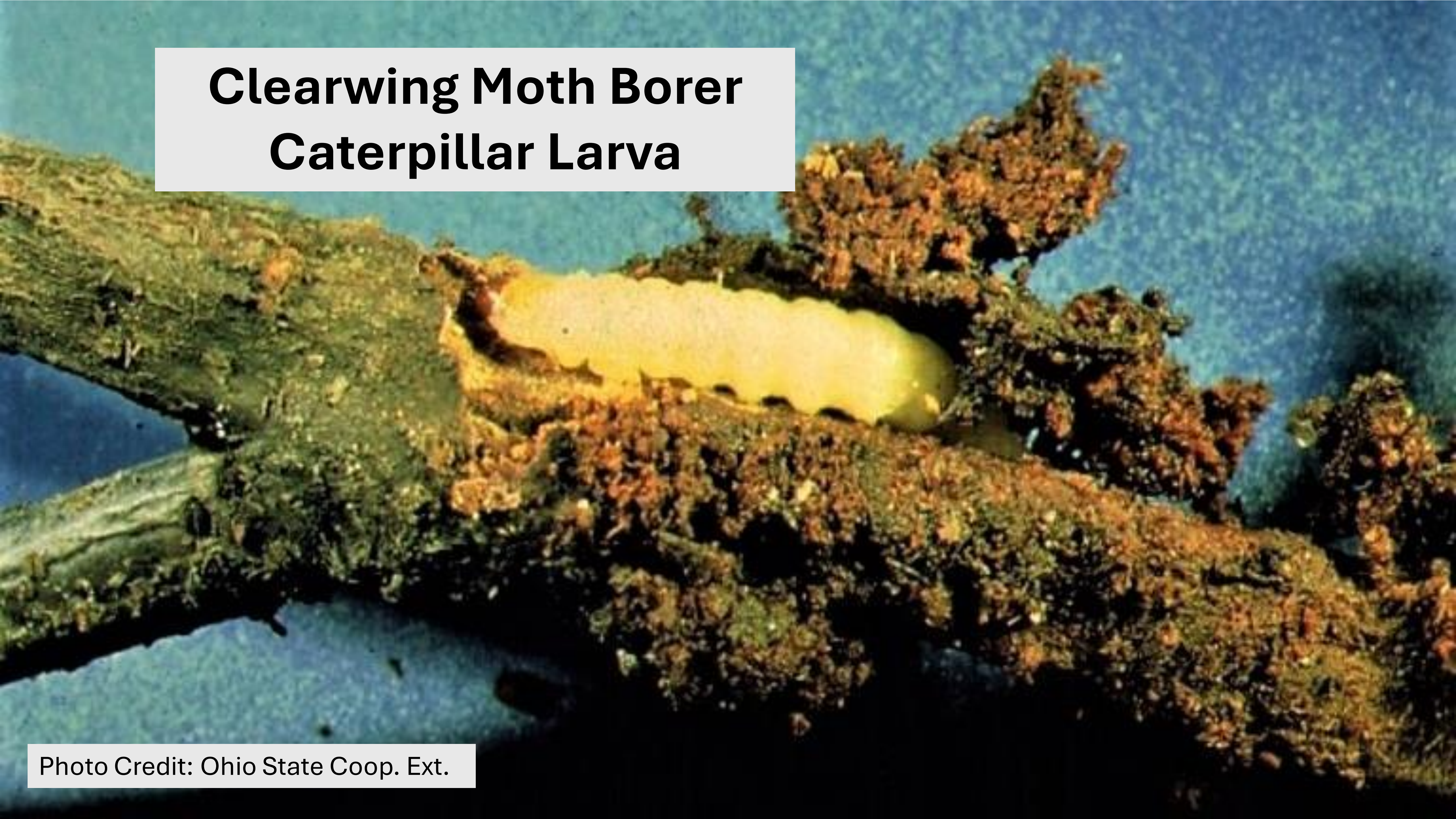

Photo Credit: Ohio State Coop. Ext.

Clearwing borers

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CW Moth Pupation Skin

CW Moth Exit Hole

Photo Credits: Steven K. Rettke,
Rutgers Coop. Ext.

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Pheromone Traps to Time Treatments

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GDD Window (base 50): Lilac: 148-299, Dogwood: 148-700

Pheromones for Clearwing Moths ("Wing-Trap")

Captured Male Clearwing Moths

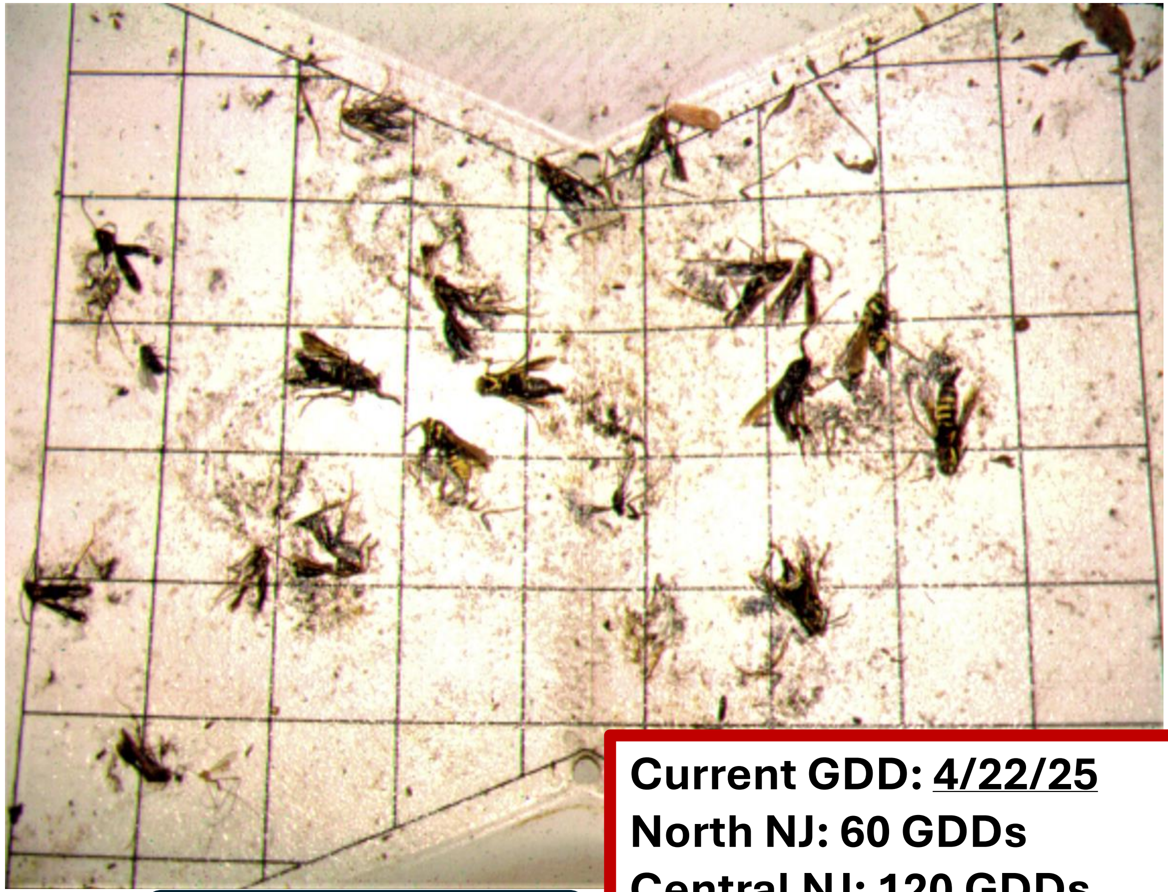

Photo Credits: Steven K. Rettke, Rutgers Coop. Ext.

TRAPS AVAILABLE

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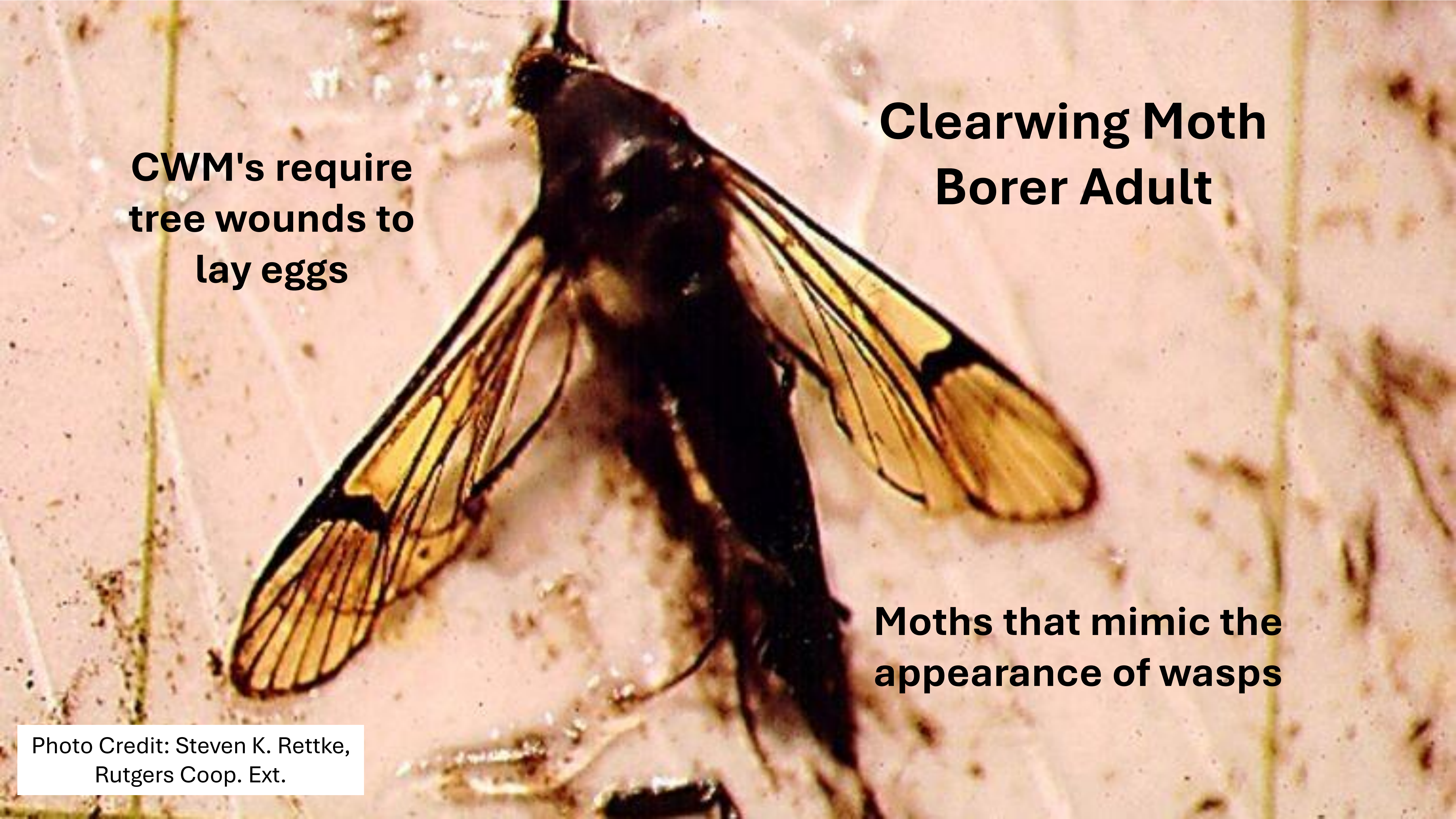
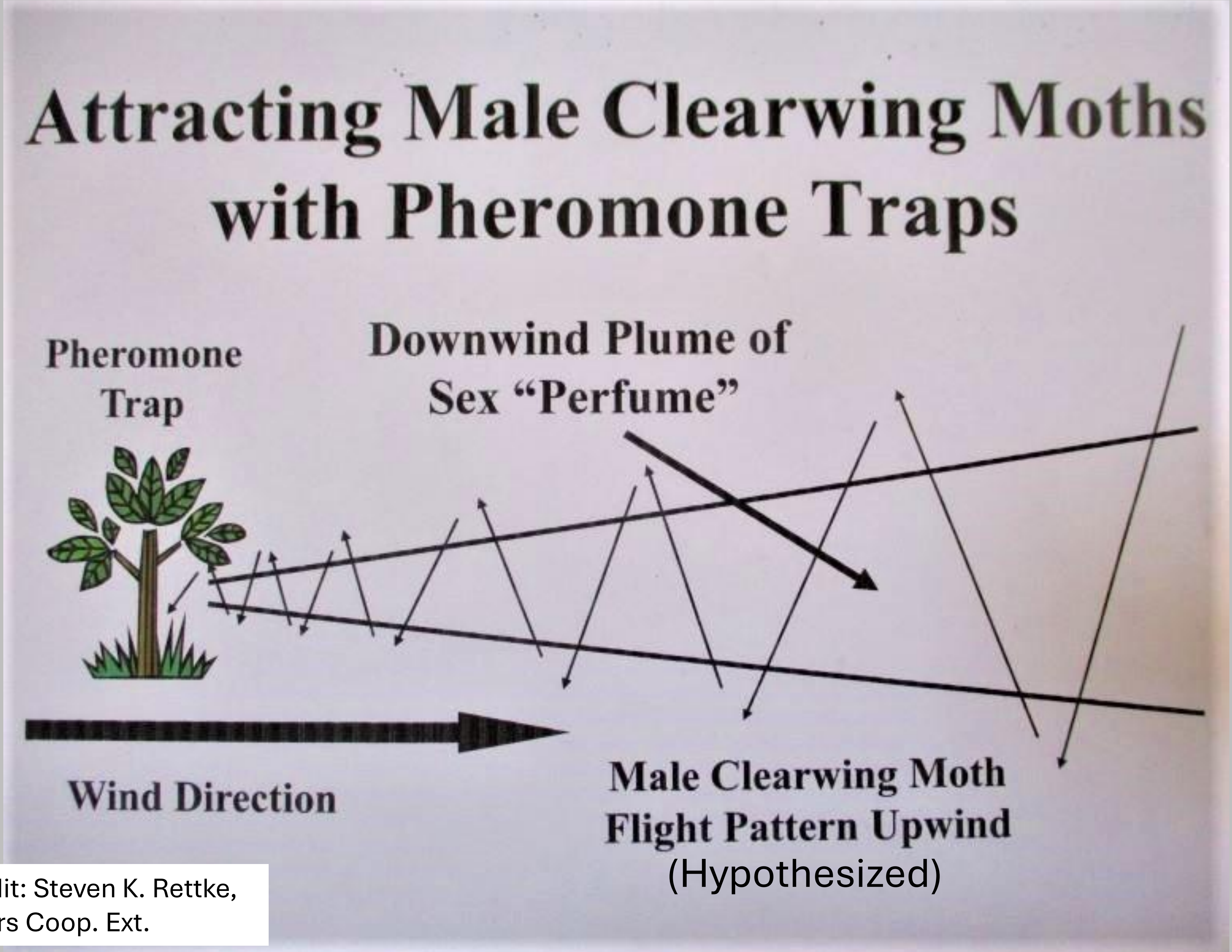

Clearwing Moth
Borer Adult
CWM's require
tree wounds to
lay eggs
Moths that mimic the
appearance of wasps
Photo Credit: Steven K. Rettke,
Rutgers Coop. Ext.



(Hypothesized)

Drawing Credit: Steven K. Rettke,
Rutgers Coop. Ext.

Clearwing borers

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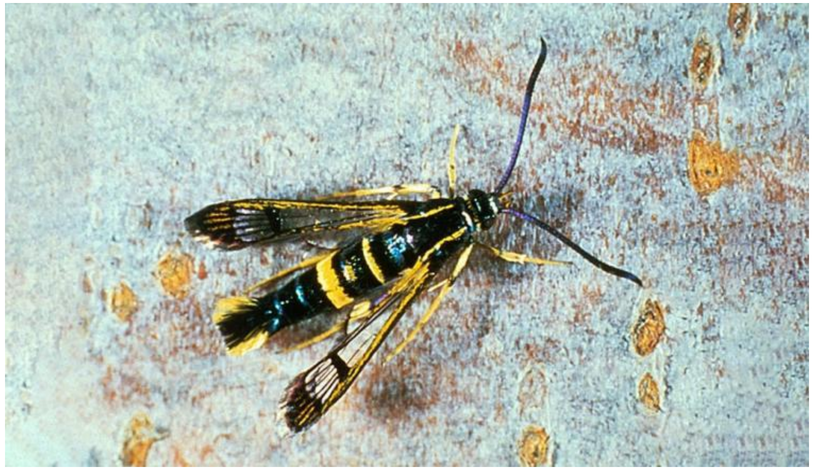
GDD Window (base 50): Lilac: 148-299, Dogwood: 148-700

- **Lilac clear wing borer** (*Podosesia syringae)*
  - **>1 inch long**, drab black and brown in color, wings more opaque than other species. More common earlier in the season.
- **Dogwood clear wing borer** (*Synanthedone scitula)*
  - **Smaller in size**, **(> ½ inch)** can be trapped with pheromones, two pairs of wings that contain very few scales and are clear in appearance. Two yellow bands around the abdomen.
- Overwinter in tunnels under tree bark as larvae
- **Pupate in spring, emerging as adults two weeks later**
- **Adults resemble wasps in both appearance and action, lay eggs in bark wounds**
- Causes dying limbs, rough and gnarled bark, trunk and branch swellings, sap exudation, sawdust-like frass, brownish pupal cases emerging from the bark near the tree base
- **Host plants:**
  - **Lilac Borer:** ash, lilac, olive, privet trees
  - **Dogwood Borer:** apple, dogwood, pecan, elm, hickory, willow trees



Dogwood CWB
Photo: Cornell CALS

TRAPS AVAILABLE

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Clearwing borers

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GDD Window (base 50): Lilac: 148-299, Dogwood: 148-700

Management

- **Cultural Practices:**
  - **Natural predators:** braconid wasps, nematodes (*Steinemema carpocapsae, S. Feltiae*)
  - Reduce plant stress (especially drought stress)
  - **Whitewash to reduce light exposure and sunburn**
  - Crush or puncture larvae to kill
  - **Pheromone traps –** lure males to establish presence of adults, used to time contact treatments

Materials

- **Contact insecticides:**
  - Pyrethroids [3]: -thrins permethrin, bifenthrin
- **Systemic insecticides:**
  - Macrocyclic lactones [18]: Emamectin benzoate
  - Glycosides [6]: Abamactin
- **Considerations:**
  - **Application of systemic insecticides have not been found to control clearwing moths or their larvae**

- **Biorationals:**
  - Diamides [28]: Chlorantraniliprole

TRAPS AVAILABLE

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Photo credits Steve Rettke, Rutgers RCE

Spongy Moth (*Lymantria dispar*)

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Photo: Jane Lindholm/VPR

Photo: Milan Pernek

Photo: Louis-Michel Nageleisen

Current GDD: 4/22/25
North NJ: 60 GDDs
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Southern NJ: 165 GDDs

Spongy Moth
(~ 5th instar)

Photo Credit: Steven K. Rettke, Rutgers Coop. Ext.


Hatching 1st Instar
Spongy Moth
Caterpillars
GDD Window : 90-448
Photo Credit: Steven K. Rettke,
Rutgers Coop. Ext.
Current GDD: 4/22/25
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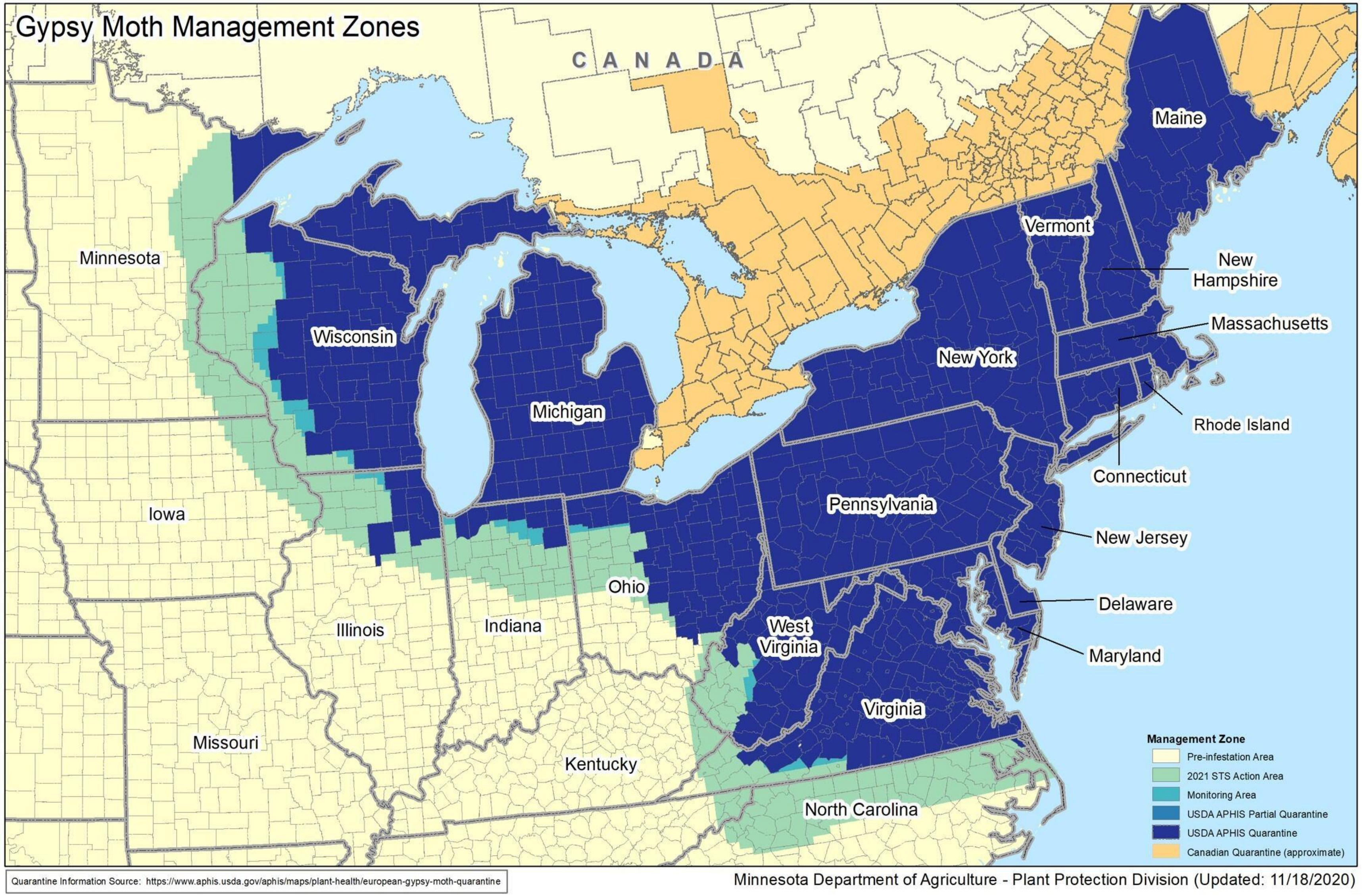
Spongy Moth (*Lymantria dispar*)



150-year spread of Spongy Moth throughout the Northeastern United States

Current GDD: 4/22/25
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NJ Acres Defoliated by Spongy Moth by Year

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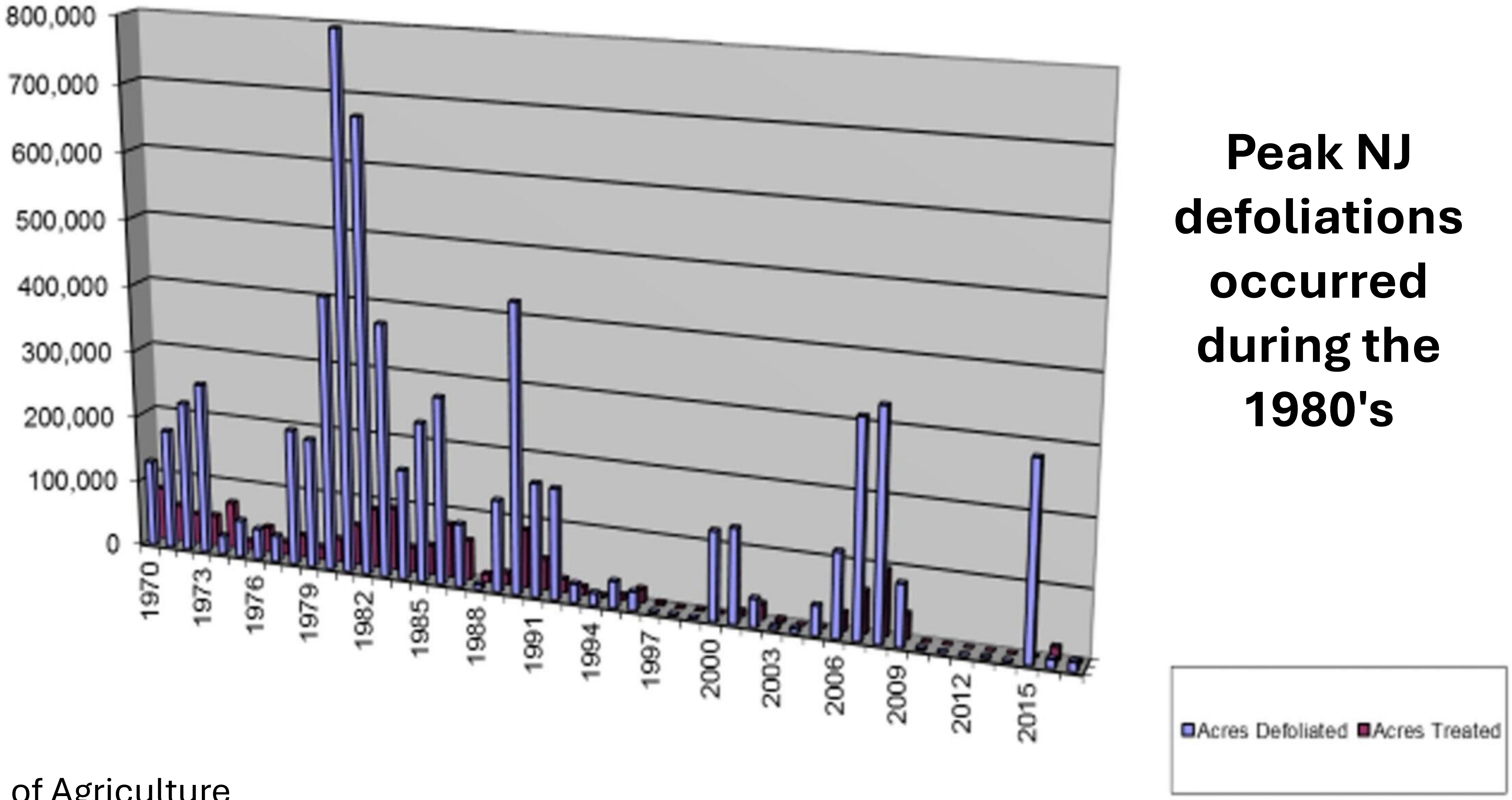
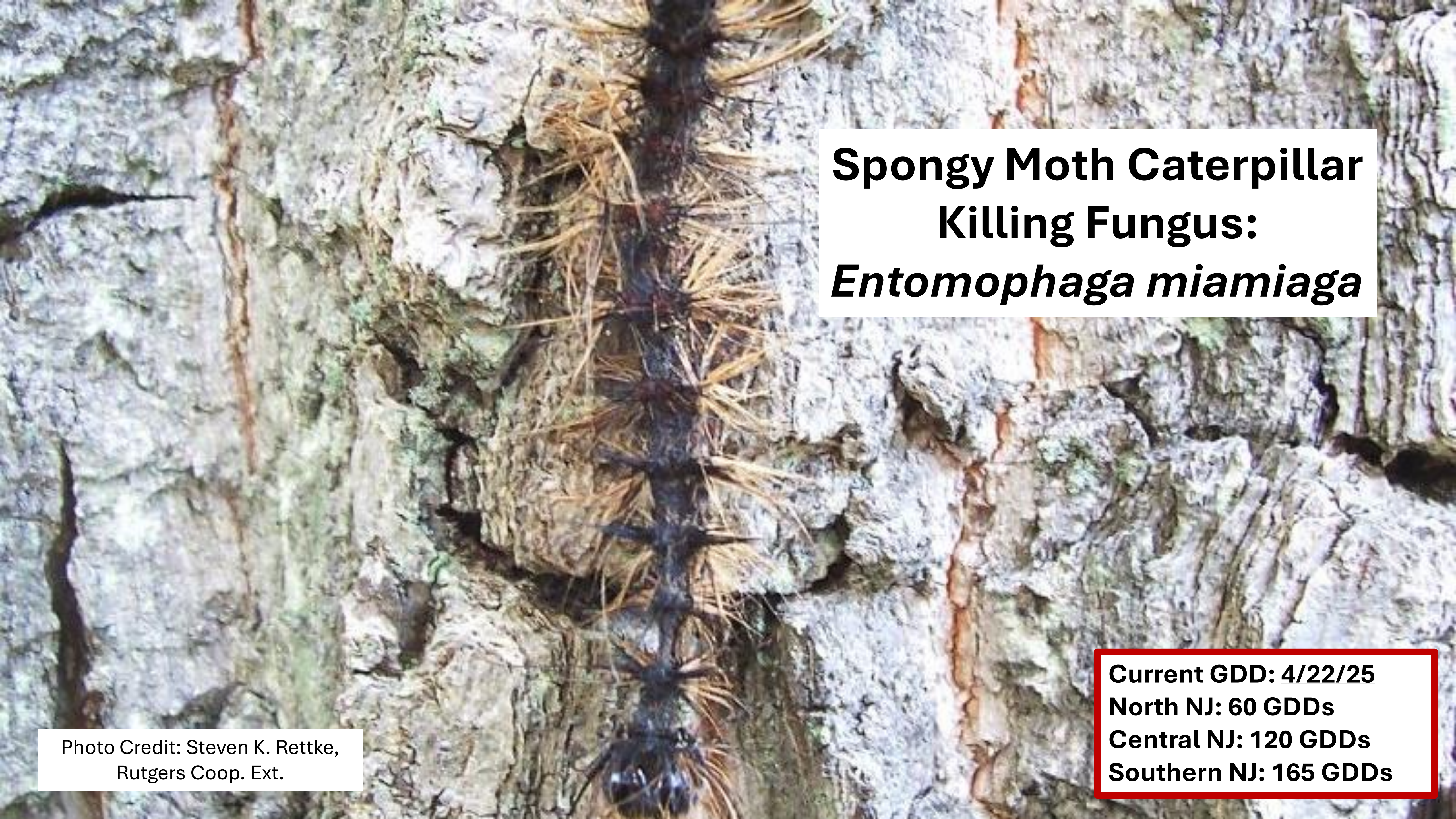


Peak NJ defoliations occurred during the 1980's

NJ Dept. of Agriculture



Spongy Moth Caterpillar Killing Fungus: *Entomophaga miamiaga*

Current GDD: 4/22/25
North NJ: 60 GDDs
Central NJ: 120 GDDs
Southern NJ: 165 GDDs

Photo Credit: Steven K. Rettke, Rutgers Coop. Ext.

Spongy Moth (*Lymantria dispar*)

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GDD Window (base 50): 90-448

- Overwinter as egg masses covered in yellowish fur, 1.5 inches long and ¾ inches wide on trees, stones, walls, furniture, etc.
- Young caterpillars are black and hairy
- **Older caterpillars are 2 inches long** with **5 pairs of blue dots and 6 pairs of red dots along their backs**
- Male moths are brown with a darker brown pattern on their wings
- Females are white, slightly larger than the males, and have wings but do not fly -Adults appear two weeks after pupae
- **Trees may be completely bare of leaves (3 conc. yrs of 75% defoliation will set trees up to be killed)**
- Heavy infestations will look barren and wintery in the summer
- **Host plants: over 300 species of trees and shrubs**

Photo via Steve Rettke, Rutgers RCE

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Spongy Moth (*Lymantria dispar*)

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GDD Window (base 50): 90-448

Management

- **Cultural Practices:**
  - **Natural Predators:** *Entomophaga maimaiga* fungus, *Nuclear polyhedrosis* virus (NPV), *Clostridium* bacteria
  - Report sightings to agriculture officials
  - Follow quarantine regulations
  - Crush pupae or brush it into a container or soapy water using a disposable object
  - Apply a trap/burlap banding or sticky banding to capture caterpillars
  - Soak egg masses in soapy water for a few days before disposing
    - Crushing eggs will not work
  - Reduce tree stress

Contact insecticides

- Pyrethroids [3]: -thrins
  - Permethrin, bifenthrin
- Carbamates [1A]: carbaryl

Systemic insecticides:

- Neonicotinoids[4A]: acetamiprid (reduced risk)(translaminar)
- Organophosphates [1B]: acephate (translaminar)
- Diacylhydrazines [1B]: Diflubenzuron (IGR)

- **Biorationals:**
  - ***Bacillus thuringiensis*** **(Btk)**
    - Microbial disruptors of insect midgut
    - Only for populations less dense than 1000 eggs per acre
    - Most effective when applied in the spring (1st & 2nd instars)
  - Insecticidal soap (young instars)
  - Spinosyns [5]: spinosad (translaminar)
  - Diamides [28]: Chlorantraniliprole

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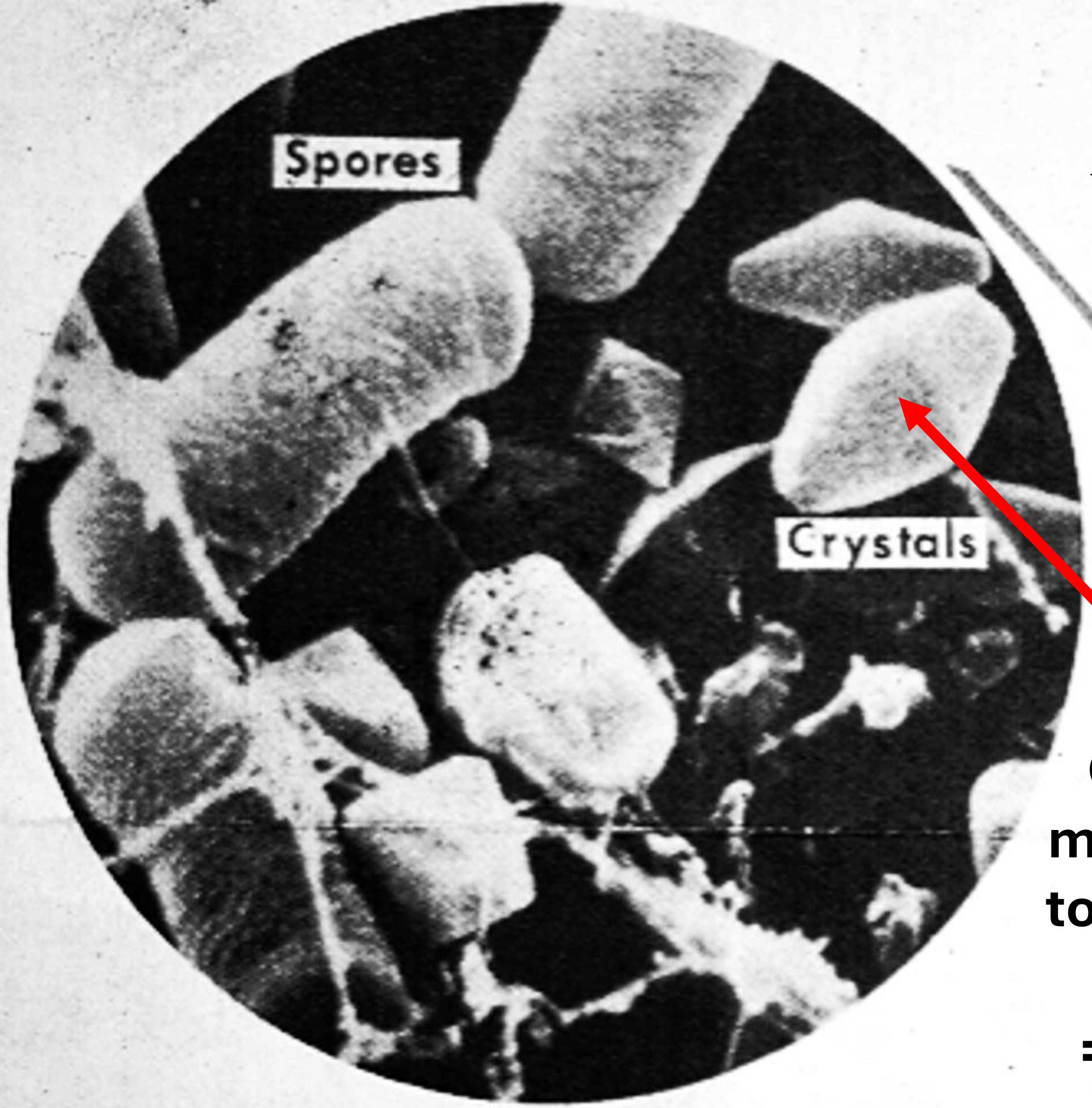
SEM Image



MAGNIFICATION of spores and crystals
Photo Courtesy of Abbott Laboratories

Caterpillars must consume toxic Bt protein crystals

= Stomach poison

Photo credits: Steve Rettke, RCE

Red-headed flea beetle (*Systena frontalis*)

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Make sure you are targeting the right pest / disease

Red-headed flea beetle (*Systena frontalis*)

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GDD Window (base 50): 242-600 (egg hatch) & 517-1028 (adults)

- Overwinter as tiny, pale yellow, oval-shaped eggs
- **Grubs hatch during the second half of May**
- Reddish head with shiny black thorax and abdomen
- Enlarged femur at the hind legs allows the beetle to "hop"
- **2-3 generations per season**
- Feeding on thinner leaves produces skeletonized symptoms or a shredded appearance
- On thicker leaves, feeding symptoms can mimic the light-colored leaf patterns seen from leaf miners
- Host plants: Extensive host range
    - ***Itea, Weigela*, Hydrangea,** *Rudbeckia,* Salvia, *Buddleia*, Veronica, *Coreopsis*
    - Corn, soybean, potatoes, cranberries, blueberries, smartweed, jewelweed, Joe-Pye weed

Photo via Steve Rettke, RCE

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Red-headed flea beetle (*Systena frontalis*)

RUTGERS

GDD Window (base 50): 242-600 (egg hatch) & 517-1028 (adults)

Management

- **Cultural Practices:**
  - **Natural predators:** solider beetle larvae, lacewing larvae, big-eyed bugs, damsel bugs, beneficial nematodes, entomopathogenic fungi
  - **Avoid placing susceptible plants in the same area year after year**
  - Avoid placing new crop next to 'hold-overs' from previous season
  - Systemic applications 3-4wk prior to 1st generation adults is effective

Materials

- **Contact insecticides:**
  - Pyrethroids [3]: -thrins
  - Carbamates [1A]: carbaryl
  - METI [21A]: Tolfenpyrad
- **Translaminar systemics:**
  - Organophosphates [1B] - Acephate
  - Diamides [28]: Cyclaniliprole, + Flonicamid [29]
- **Systemic insecticides:**
  - **Neonicotinoids [4A]: imidacloprid,** dinotefuran
  - Diamides [28] *(see biorationals)*
- **Considerations:**
  - Apply systemic 3-4wk prior to adult emergence (Adults = **517** GDD50)
  - Knock-down contact insecticides will harm non-target species, *and will require regular applications*

- **Biorationals:**
  - Horticultural oil
  - Insecticidal soaps
  - Azadirachtin [UN] - *larval treatments*
  - Diamides [28]:
    - Cyantraniliprole
    - Chlorantraniliprole

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Red-headed flea beetle (*Systena frontalis*)

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GDD Window (base 50): 242-600 (egg hatch) & 517-1028 (adults)

Systemic Target

Adult / Contacts

SOUTH

Date	DDs cumu	Events
Jan 1	0	* START *
Apr 17	107	* NOW *
May 2	243	Start Egg hatch and larvae gen one
May 23	522	Start Adult feeding gen one
May 28	609	END Egg hatch and larvae gen one
Jun 17	1042	END Adult feeding gen one
Jul 7	1582	Start Egg hatch and larvae gen two

CENTRAL

Date	DDs cumu	Events
Jan 1	0	* START *
Apr 17	71	* NOW *
May 12	251	Start Egg hatch and larvae gen one
Jun 1	520	Start Adult feeding gen one
Jun 6	611	END Egg hatch and larvae gen one
Jun 26	1042	END Adult feeding gen one
Jul 17	1597	Start Egg hatch and larvae gen two

NORTH

Date	DDs cumu	Events
Jan 1	0	* START *
Apr 17	43	* NOW *
May 22	253	Start Egg hatch and larvae gen one
Jun 10	524	Start Adult feeding gen one
Jun 15	611	END Egg hatch and larvae gen one
Jul 6	1045	END Adult feeding gen one
Jul 29	1585	Start Egg hatch and larvae gen two

USPEST.ORG

Systemic insecticide applications 3-4wk prior to 1st generation adults is effective in heavy infestations:

- **Neonicotinoids [4A]: imidacloprid,** dinotefuran
- **Diamides [28]:** Cyantraniliprole, Chlorantraniliprole

Gymnosporangium spp. rust diseases


Photo credits: Rutgers - Waller


Photo credits: UMN


Photo credits: Rutgers PDL


Photo credits: John Hartman, University of Kentucky


Photo credits: UMASS

Gymnosporangium spp. rust diseases

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Cedar-Apple Rust: *G. juniperi-virginianae*

Cedar-Hawthorn Rust: *G. globosum*

Cedar-Quince Rust: *G. Clavipes*


Photo credits: Rutgers PDL


Photo: UMN


Photo: UMASS


Photo: Waller

- Found on **Juniperus host - late fall** through early spring
- Found on **Rosaceous hosts – early spring** through late fall
- Produce two or more types of spores during the growing season
- Cannot grow in absence of a living host
- Spores are found in "rusty" aecia/ aecial projections (yellow, orange, and brown) pustules on leaves, distorted stems, and fruit
- Impacts aesthetic appeal / plant vigor

Gymnosporangium spp. rust diseases

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Management

- **Cultural Practices:**
  - Reduce humidity and leaf wetness
    - Avoid overhead irrigation
    - Space plants to lower humidity
    - Use fans and winds
  - **Use resistant plant materials**
  - Frequent scouting and purchasing disease-free plants
  - Remove the alternate host
  - **Sanitation**
    - **Remove infected leaves and debris**
    - **Discard or isolate infected plants**
  - Reduce plant stress
  - Reduce shade

Materials

- **Protectant Fungicides**
  - Chloronitriles [M05]: Chlorothalonil
  - Dithiocarbamates [M03]: Mancozeb, Maneb
- **Systemic Fungicides**
  - {DMI} Triazoles [3]: Myclobutanil, Propiconazole, Triadimefon, Imidazole
  - Thiophanate methyl [M1]

Considerations:
QoI - [11] fungicides can cause phytotoxicity to some Malus / Crataegus varieties. Check label before use. Trial small area first

- **Biorationals:**
  - *Bacillus amyloliquefaciens* strain D747*
  - *Bacillus pumilus*
  - *Bacillus subtilis*
  - *Reynoutria sachalinensis*
  - *Swinglea glutinosa*
  - *Streptomyces lydicus*

Fireblight (*Erwinia amylovora*)

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Photo: UMN Extension

Photo: Steven Rettke, RCE

Photos: UMN Extension

Photo: UMN Extension

Fireblight (*Erwinia amylovora*)

- **Caused by bacteria** *Erwinia amylovora*
- Onset in the spring as bacterial cells ooze in a yellow-amber liquid from existing cankers on infected plants
- Bacteria spread to flowers, leaves, fruit, and stems by insects, wind, rain, or pruning equipment
- Bacteria penetrates through pruning wounds and natural openings such as stomates and nectaries
- **Thrives in warm, wet weather in the spring**
- Twigs and branches die rapidly and appear scorched
- Tender shoots droop and bend as they die, causing "**shepherd's crook**"
- Cankers later form at the base of branches, and susceptible plants die
- Host plants: ***Rosaceae* family** – apple, crabapple, cotoneaster, hawthorn, mountain ash, pyracantha, pear
    - Highly associated with host bloom period per crop

Photo: USU Extension

Photo: OSU Extension

Fireblight (*Erwinia amylovora*)

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Management

- **Cultural Practices:**
  - Improve plant vigor, but avoid heavy spring fertilization that can promote succulent growth
  - In late summer (when oozing no longer occurs), **prune diseased wood 6-8 inches below the infection,** sterilizing the tools between cuts
  - Remove waterspouts
  - **Dispose of infected plant material**
  - Replace susceptible varieties with resistant ones

Materials

- **Contact bactericides:**
  - Copper [M01]: cuprous oxide, copper hydroxide, copper sulfate
  - Phosphonates [P07]: fosetyl-Al
  - Streptomycin sulfate [25]
- **Considerations:** Do not apply group [P07] and copper-based [M01] fungicides within 14d of one another, as phytotoxicity is likely to occur! **Rotation is critical to avoid resistance.**

NEWA

Fire Blight

NEWA is a partnership of New York State Integrated Pest Management, Northeast Regional Climate Center, and Rutgers, The State University of New Jersey

Management Guide

CYCLE	MANAGEMENT
Blossom blight	Blossom blight risk predictions begin at first blossom open. If bloom in your orchard has not yet occurred, continue to check fire blight risk predictions and monitor bloom daily. Infection cannot occur without open blossoms. Most serious fire blight epidemics begin with infection during bloom. Certain antibiotics can effectively protect against blossom infections when applied shortly before or immediately after they occur. The Cougarblight and Infection Potential risk levels are based on the principle that 1. a certain number of heat units must accumulate during bloom for a threshold level of inoculum to be reached; 2. a wetting event is necessary after this point to wash the bacteria to their infection sites; and 3. the average temperature is above 60F. **Marginal or Low risk**: If none of these conditions is met during bloom, risk is **'Marginal'** or **'Low'** and bactericides are not needed. **Moderate risk**: Infection Potential EIP risk is **'Moderate'** and it is advisable to watch the forecast closely for continuing warm weather and rain. **High risk**: If two conditions are met during bloom, risk is **'High'** and forecasted wetting events should be carefully considered and a bactericide applied just before (or after) a rain. **Extreme or Infection risk**: If all three conditions are met, risk is **'Extreme'** or **'Infection'** and an antibiotic should be applied just before (or after) a rain.

Traps: First Come, First Serve - Sign-up

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Sticky cards

Example uses:

- Aphids
- Leaf miners
- Leaf hoppers

Wing & Delta traps + Pheromones

Example uses:

- Clearwing Borers – IMPORTANT NOW
- + Dogwood Borer lures
- + More generic clearwing lures
- Box Tree Moth

Sticky tapes

(wht/blk/foam)

Example uses:

- Scale crawlers
- Mealybugs

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We are excited to work with everyone in determining what IPM tools we need now / in the future in NJ – *Please contact us!*

(Trap supplies currently only for commercial growers)

Thank you for attending

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Presentation will be available on our website.

Next session: May 13, 2025

Key pests for next time:

- Pine needle scale
- Cryptomeria scale
- Elongate hemlock scale
- Oystershell scale
- Boxwood mites
- Boxwood psyllid

- Hemlock woolly adelgid
- Red headed pine sawfly
- Horned and gouty oak galls
- Hawthorn lace bug
- Scale monitoring with double sided tape

- Volutella Blight
- Oomycetes
  - Pythium in nurseries
  - Phytophthora in conifers

Funding provided by:

USDA National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE

Implementation of IPM in New Jersey -Ornamental Crops 2025

Use the Rutgers Plant Diagnostic Lab

Enables us to learn more about specific issues

Mechanical damage	Abiotic / Environmental	Physiological / nutritional /	Arthropod pest	Disease

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Rutgers Plant Diagnostic Laboratory
Ralph Geiger Turfgrass Education Center
20 Indyk-Engel Way
New Brunswick, NJ 08901

Telephone: 732-932-9140
Fax: 732-932-1270
Email: rutgerspdl@njaes.rutgers.edu

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Online version >

Beta-version 2023
Contact: twaller@njaes.Rutgers.edu

Nursery & Landscape Pest Scouting
Scouting with growing degree-days

Rutgers Green Industry Working Group
Contact: Timothy Waller, Ph.D.
twaller@njaes.Rutgers.edu

Scan here to
Report pest GDD deviations
Comment on observations
Share pest / plant photos

WE R HERE WHEN YOU NEED US