# Update from the UW Insect Diagnostic Lab: Wisconsin Insect Trends

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## The UW Insect Diagnostic Lab

- Lab established in 1978 to serve as a resource for Extension colleagues
  - Managed by Phil Pellitteri for 35 years
  - Currently in its 46th year
- Main service: arthropod diagnostics
  - Receive ~2,500 diagnostic requests annually
  - Samples from: general public, Extension colleagues, businesses, farmers, medical/public health, government agencies, and other groups.
- Other services: pest management consultations, outreach, teaching, *providing context*


Phil Pellitteri



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## Snapshot of Lab Activities in 2023

- 2,498 Cases
- Cases from 71/72 WI counties
  - ~95% of cases from within Wisconsin
  - Cases from 24 US states/territories; 9 foreign countries
- **Who:** General public (63%), Extension (18%*), green industry (10%), pest control (6%)…farmers/ag, medical, gov't/edu
- **Where:** Yard/landscape (54%), agricultural setting (9%*), buildings/structural (34%), med/vet (3%)
- **What:** 63% "digital" samples, 29% physical specimens, descriptions



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## Case Examples at the Diagnostic Lab




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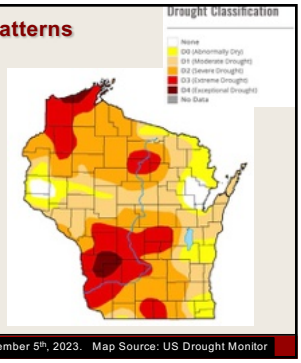
## Wisconsin's Weather Patterns

- Many part of Wisconsin experienced dry conditions during the warmer months in 2021, 2022, and 2023
- Dry conditions can directly affect certain arthropods
  - Boxelder bugs, spongy moth, etc.
- Weather patterns can indirectly influence insects via impacts on landscape plants




September 5th, 2023. Map Source: US Drought Monitor



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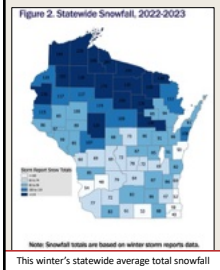
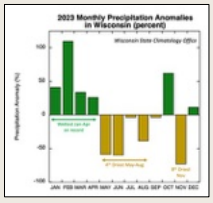
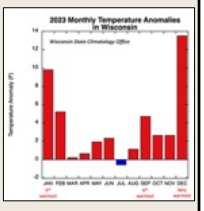
## Wisconsin's Recent Weather Patterns




Source: WI State Climatology Office

This winter's statewide average total snowfall was 100.6 inches, over 36 inches above last year.

Source: WI-DOT Report "Winter Maintenance at a Glance"



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## Occasional Invaders, Overwintering Pests and More



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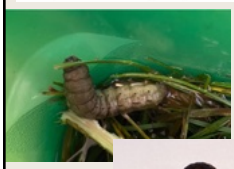
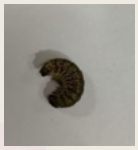
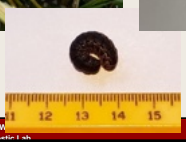
## Winter Cutworms (*Noctua pronuba*)

**Subject:** This is going to sound a little strange

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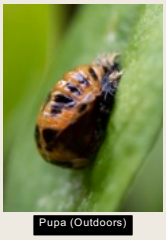
## Multicolored Asian Lady Beetles


Adults (Indoors)


Pupa (Outdoors)


Larva (Outdoors)



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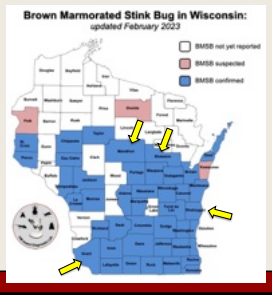
## Brown Marmorated Stink Bug



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## Boxelder Bugs



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## Elm Seed Bug (*Arocatus melanocephalus*)



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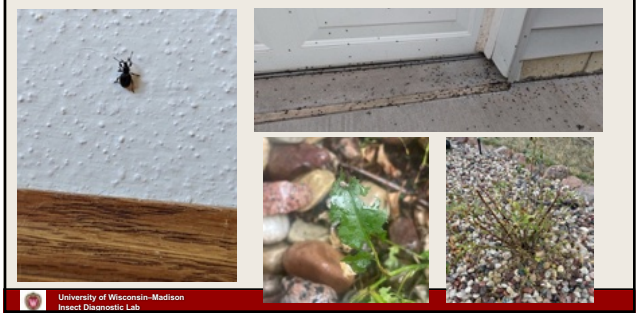
## Broad-Nosed Weevils (Curculionidae: Entiminae)



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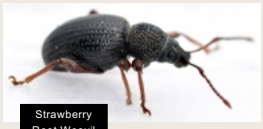
## Commonest Broad-Nosed Weevils





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## Millipedes



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## Springtails

Springtails along a basement window



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## Foreign Grain Beetle



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## "Secondary" Bark Beetles & Other Borers

*Pseudopityophthorus minutissimus*

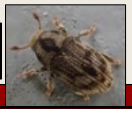
Associated w/really stressed oaks & cut branches/wood

*Pityogenes hopkinsi*

Associated w/smooth barked portions of dead/dying white pines

*Hylesinus aculeatus*

Associated w/dead, cut or seriously-weakened ash trees





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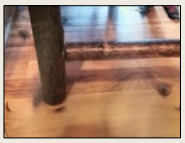
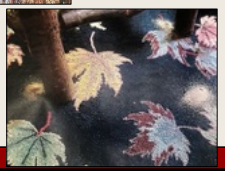
## Velvet Longhorned Beetle (*Trichoferus campestris*)

DEPARTMENT OF AGRICULTURE 2016

RUSTIC LOG FURNITURE ALERT



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## Flies & ants

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## Top Small Flies at the IDL:

Typical *Drosophila* spp. Fruit Fly


Dark Fruit Fly
(*Drosophila repleta* group)

Phorid Fly

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## Fungus Gnats



Fungus Gnat Larvae

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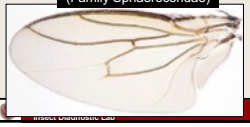
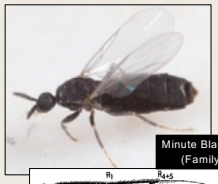
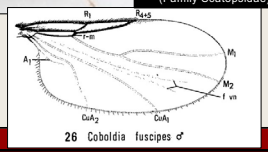
## Less-Common Small Flies

Lesser Dung Fly
(Family Sphaeroceridae)

Minute Black Scavenger Fly
(Family Scatopsidae)

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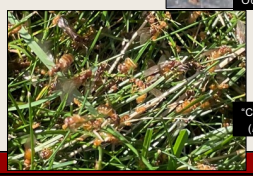
## Top Ants at the IDL

1. Carpenter ants
2. Odorous house ants
3. Pavement ants
4. Cornfield ants (outdoors)

Pavement Ant

Odorous House Ant

Carpenter Ant



"Cornfield" ants
(*Lasius* spp.)

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# Medically Important Arthropods

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## Bed Bugs & Relatives

Bed Bug
(*Cimex lectularius*)

Photo credit: Gilles San Martin via Wikipedia

Bat Bug
(*Cimex adjunctus*)

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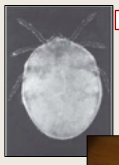
## Biting Mites:

Bird Mites

Size Compared to Coin

Chiggers



Chigger Bites

Pyemotes Itch Mite

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## Ticks

Deer Tick

American Dog Tick
(Wood Tick)

Lone Star Tick

Bat Ticks

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Photos: CDC

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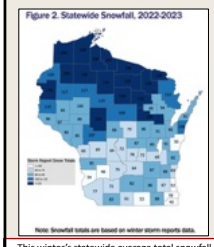
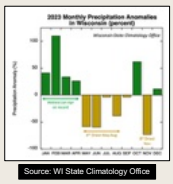
## Weather Patterns & Mosquito Activity

Figure 2. Statewide Snowfall, 2022-2023



This winter's statewide average total snowfall was 100.6 inches, over 36 inches above last year.

Source: WI-DOT Report "Winter Maintenance at a Glance"



Source: WI State Climatology Office

Temporary Meltwater Pool

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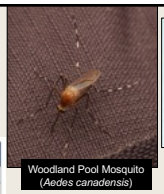
## Mosquitoes

- 2023: Mosquito activity varied greatly around the Midwest
- Moderate WNV cases

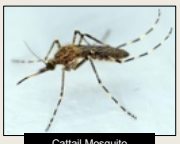
Wisconsin 2023 WNV Data Source: DHS

| Type | Number of cases |
|---|---|
| Human confirmed | 12 |
| Human probable* | 6 |
| Deaths** | 1 |
| Hospitalizations** | 17 |
| Mosquito pools | 35 |
| Equine (horse) | 5 |
| Avian (bird) | 5 |
| Counties reporting West Nile virus activity | 14 |

*Probable cases have presumptive positive laboratory results without confirmatory testing at CDC.
**Deaths and hospitalizations are included among the confirmed and probable cases.



Woodland Pool Mosquito
(*Aedes canadensis*)



Cattail Mosquito
(*Coquillettidia perturbans*)

Asian Rock Pool Mosquito
(*Aedes japonicus*)

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## Murder Hornets in the News

| Insect | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|
| *Sphecius speciosus** | 12 | 5 | 4 | 27 | 32 |
| *Sphex ichneumoneus** | 2 | 0 | 2 | 12 | 18 |
| *Tremex columba** | 9 | 2 | 6 | 21 | 19 |
| *Sphex pensylvanicus* | 0 | 2 | 1 | 4 | 3 |
| *Dolichovespula spp.* | 11 | 13 | 11 | 14 | 15 |
| *Vespula spp.* | 25 | 30 | 36 | 39 | 26 |
| *Megarhyssa spp.* | 4 | 7 | 5 | 7 | 7 |
| *Bombus spp.* | 15 | 11 | 13 | 19 | 29 |
| *Vespa crabro* | 0 | 0 | 1 | 1 | 3 |
| **Totals:** | **78** | **70** | **79** | **144** | **152** |

* = Top AGH look-alikes in Wisconsin

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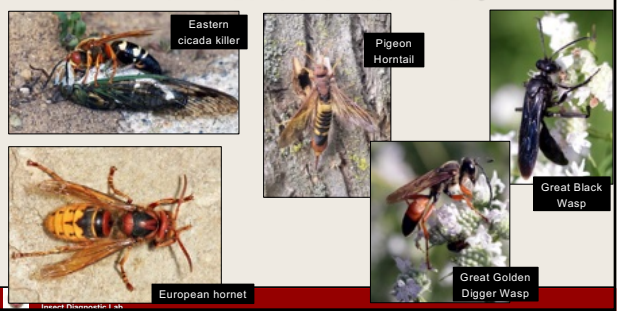
## Murder Hornets....*Mistaken Identity*

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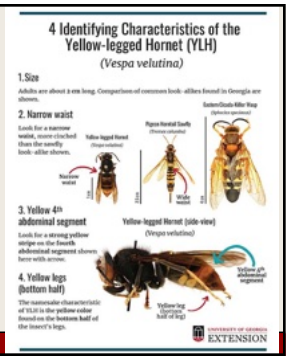
## Yellow-Legged Hornets

- From SE Asia
- Reported in Georgia (August)
  - *Not in WI…*

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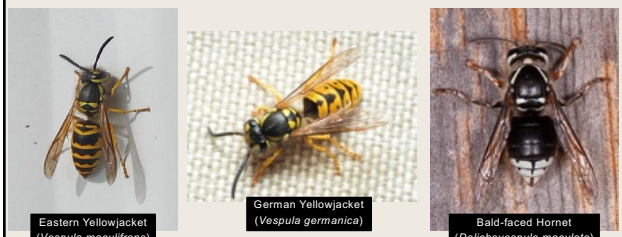
## Social Wasps

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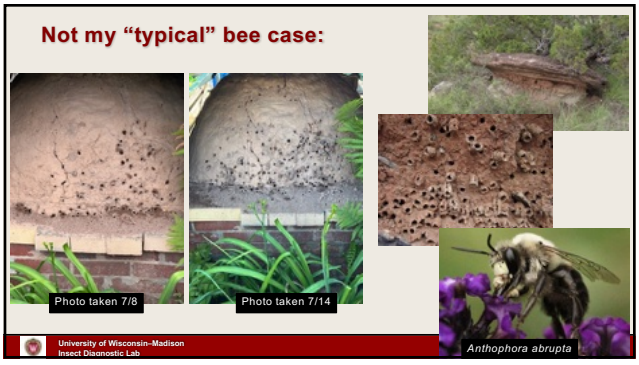
## Not my "typical" bee case:

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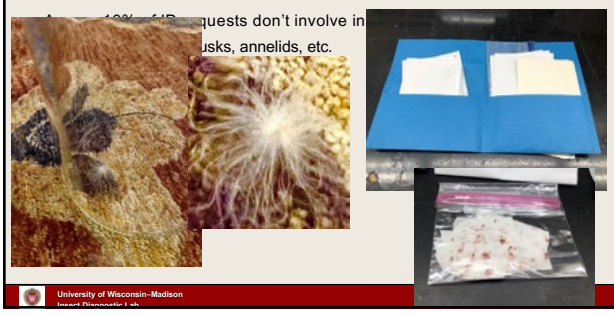
## When there are no insects…

- …quests don't involve in…
  - …usks, annelids, etc.



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## Outdoor Insects

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## Spongy Moth (formerly "gypsy moth")


Early instar spongy moth caterpillar


Spongy Moth Caterpillar


Spongy Moth Female & Egg Mass

Majority of reports submitted to UW IDL

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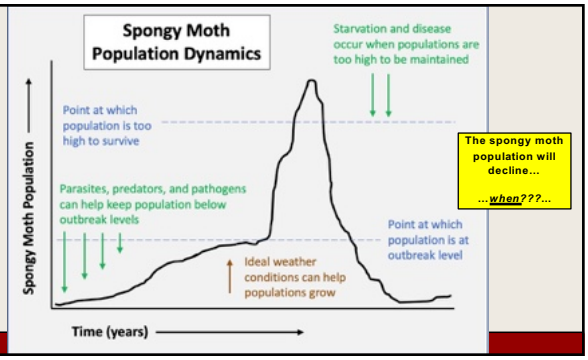
## Spongy Moth Population Dynamics




The spongy moth population will decline…

…*when*???…

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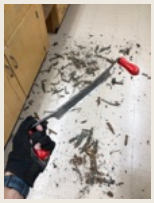
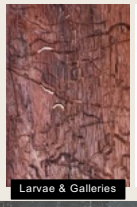
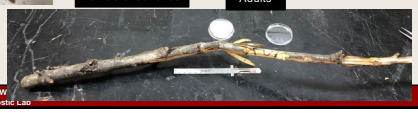
## Two Lined Chestnut Borer (*Agrilus bilineatus*)



Larvae & Galleries

Adults

| Year | Number of 2LCB Cases at UW-IDL |
|---|---|
| 2019 | 10 |
| 2020 | 11 |
| 2021 | 16 |
| 2022 | 26 |
| 2023 | 40+ |



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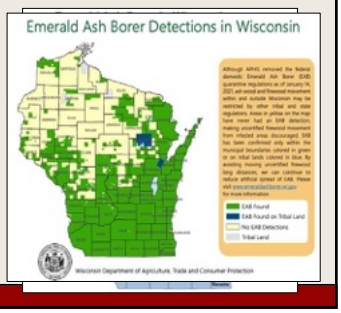
## Emerald Ash Borer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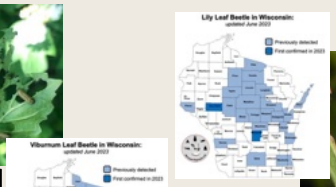
## Invasive Leaf Beetles


Viburnum leaf beetle




Lily leaf beetle

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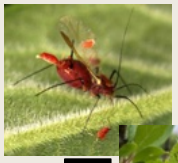
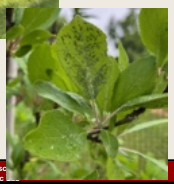
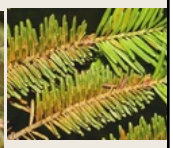
## Aphids & Spider Mites


Aphids




Spider Mites & Damage





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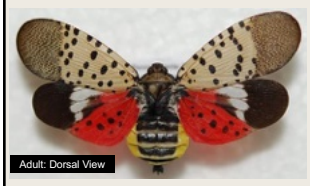
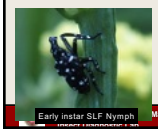
## For Your Radar: Spotted Lanternfly


Adult: Dorsal View

- Invasive planthopper from SE Asia
  - Detected in PA - 2014
  - Not yet in WI…


SLF Egg Mass


Early instar SLF Nymph


4th instar SLF Nymph



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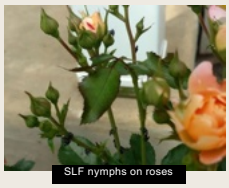
## Damage

- Feed on 100+ plant species
  - Tree of Heaven
  - Fruits: grapes & tree fruits; Hops
  - Landscape/forest trees (maple, walnut, poplar, willow, etc.)


SLF nymphs on roses


Fungal Growth at Base of Tree


SLF adults covering tree trunk



Photo Credits: Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org

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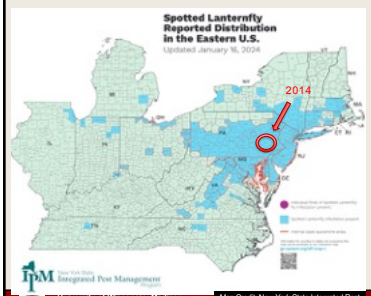
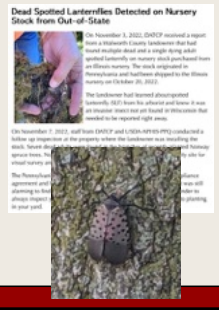
## Current SLF Distribution & Potential Range






Map Credit: New York State Integrated Pest Management Program & Google Maps

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## Periodical Cicadas

- Brood XIII 17-year periodical cicadas will emerge this year
  - Last emerged in 2007



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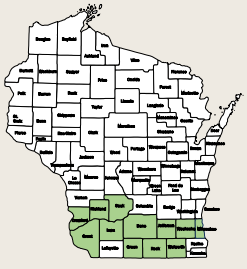
## Where will we see periodical cicadas? *When?*



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## Will we see any potential impacts to landscape plants?

- Females use ovipositor to cut slits into twigs/branches
  - Large trees: damage mainly cosmetic; "flagging"
  - Small trees: damage can be more problematic—*consider mesh netting*



Photo credits: CicadaMania website



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## Key Things to Know About Periodical Cicadas:

1. Distribution is restricted to very specific spots on the map
   - *Most of Wisconsin will not see these*
2. Site history is a key factor!
   - *Were they present at a site in 2007? If not, you won't see them in 2024 either…*
3. Periodical cicadas are generally harmless and don't need to be managed
   - Small trees would be the exception



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## Questions?

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