

# Periodical Cicada Brood X (10): Apocalyptic or Just Ho-Hum?

Montgomery County  
Virtual Gardening Series

**Joe Boggs**

Ohio State University Extension  
OSU Department of Entomology



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,  
AND ENVIRONMENTAL SCIENCES

# What is a Cicada?





# Some Mildly Taxing Taxonomy

## ■ KINGDOM: Animalia



Cicadas



Aphids



Plant Hoppers



Seed Bugs



Leaffooted Bugs



Stink Bugs





# Some Mildly Taxing Taxonomy

■ KINGDOM: Animalia



This is the end that causes damage!



They all have piercing-sucking mouthparts



# Some Mildly Taxing Taxonomy

■ KINGDOM: Animalia

– PHYLUM: Arthropoda (Arthro-Poda)

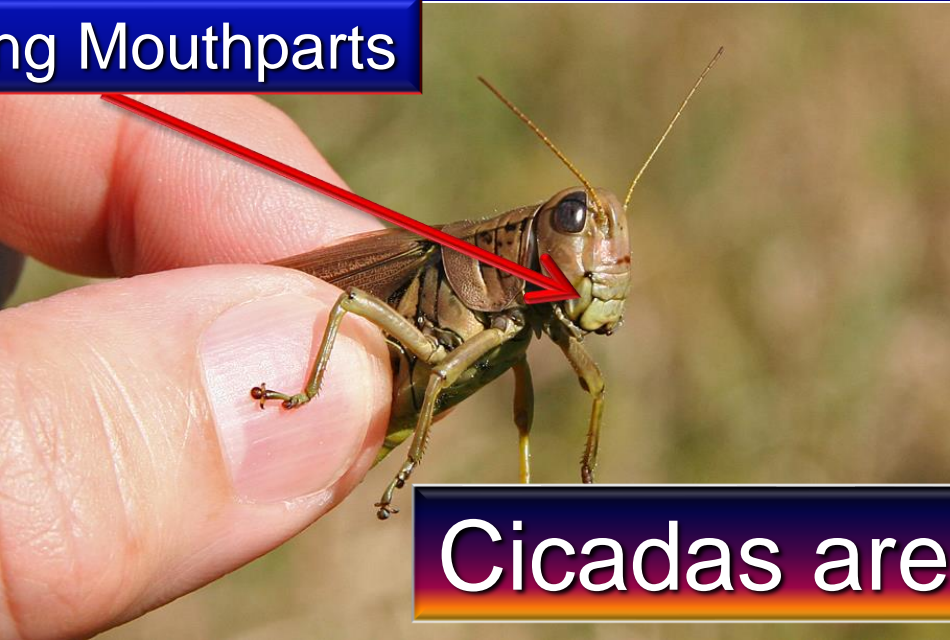
■ CLASS: Insecta (Hexapoda)

– Order: Orthoptera (Grasshoppers, Crickets)



Chewing Mouthparts

Stink B



Cicadas are Not Locusts



Some

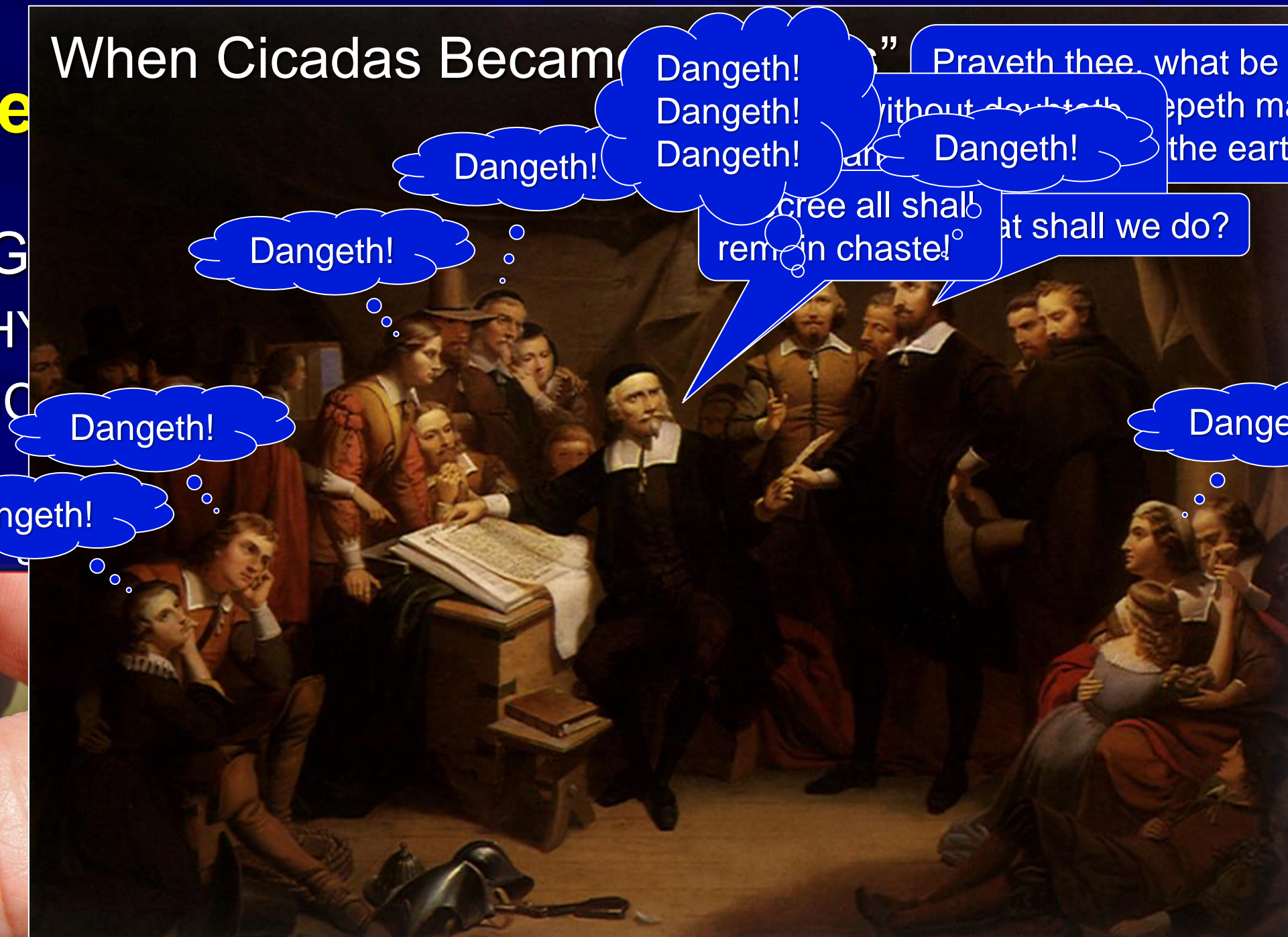
■ KING

– PHY

■ C

CH

# When Cicadas Became



Dangeth!  
Dangeth!  
Dangeth!

Praveth thee, what be these foul  
without doubt to the  
Dangeth!  
epeth many fold as  
the earth?

Dangeth!

Dangeth!

free all shall  
remain chaste!  
at shall we do?

Dangeth!

Dangeth!

Dangeth!



# Locusts are Grasshoppers



Speaking Mouthparts

A Plague



# Some Mildly Taxing Taxonomy

- KINGDOM: Animalia
  - PHYLUM: Arthropoda (Arthro-Poda)
  - CLASS: Insecta (Hexapoda)
    - Order: **Hemiptera**



They have **incomplete metamorphosis**





**Metamorphosis:**  
**“Change in Form”**

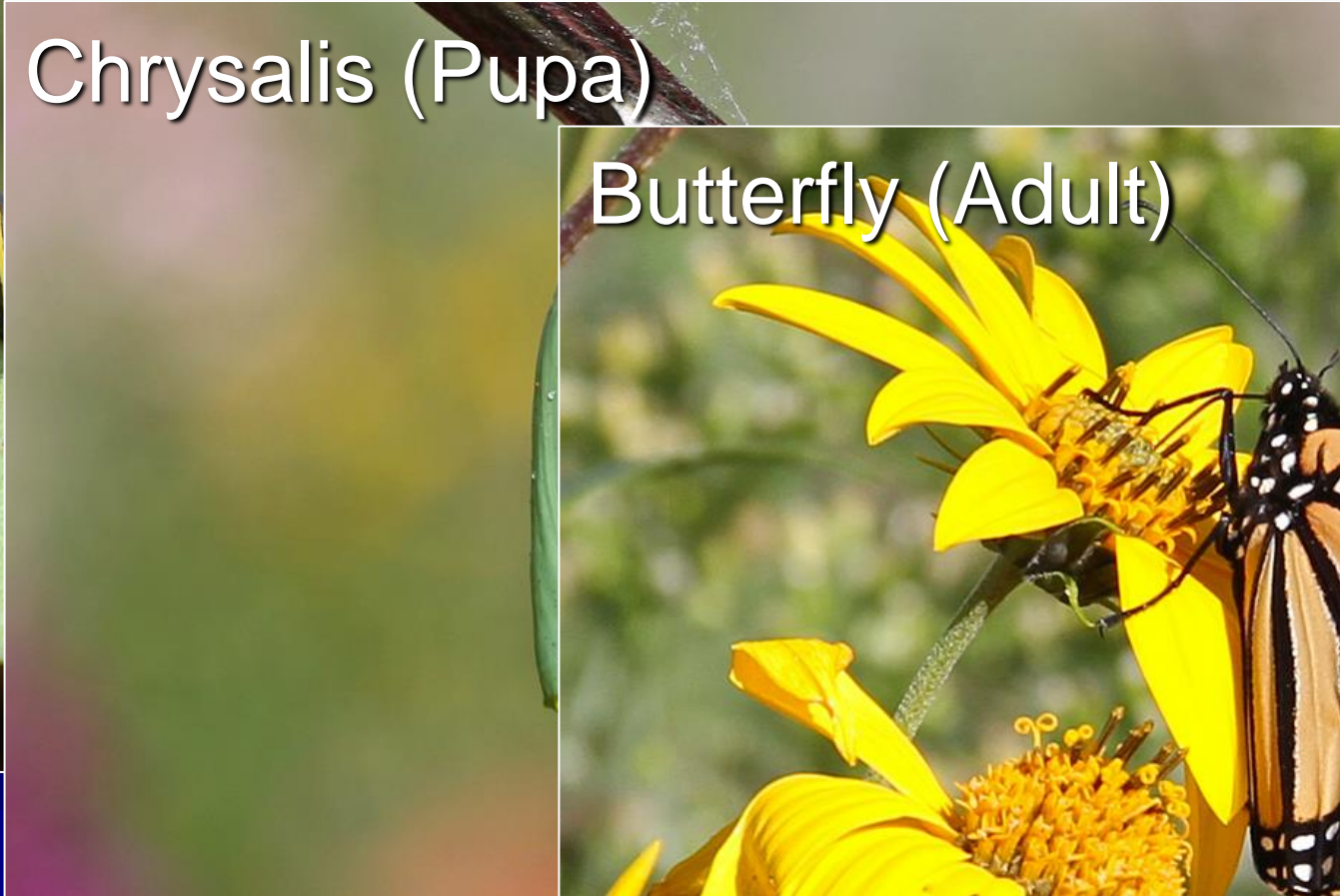


# Complete Metamorphosis

Caterpillar (Larva)



Chrysalis (Pupa)



Butterfly (Adult)





# Incomplete Metamorphosis

A Different Type of Insect Development



Milkweed Bug



# Incomplete Metamorphosis



This is as large as  
the insect can get!



Newly Molted

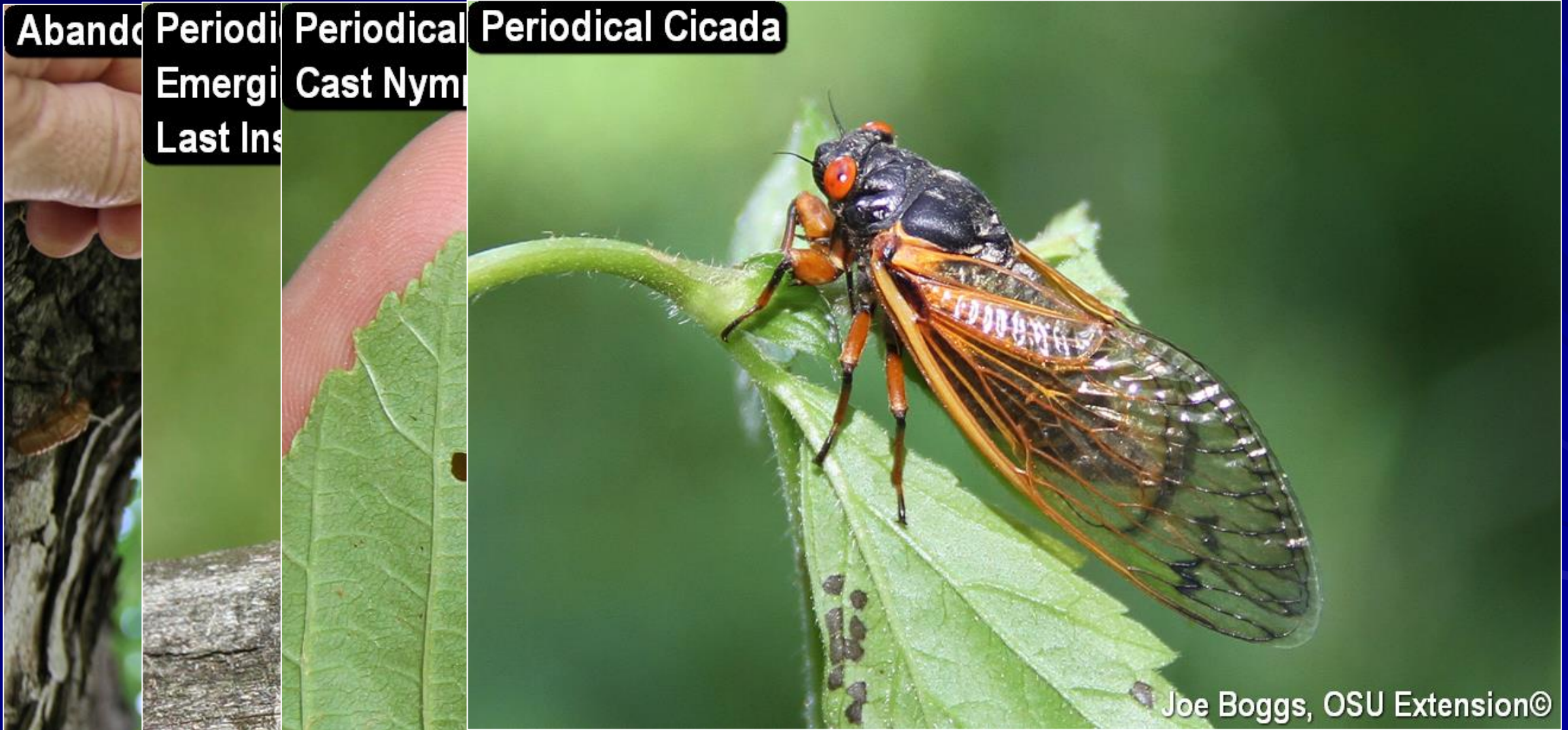


Hardened" Adult

Periodical Cicada Nymphs: 5 Instars



# Periodical Cicada Metamorphosis





# Not the Same Cicadas

Annual Dog-Day Cicada  
*Neotibicen canicularis*



Appears Every  
Year

Periodical Cicada  
*Magicicada* spp.



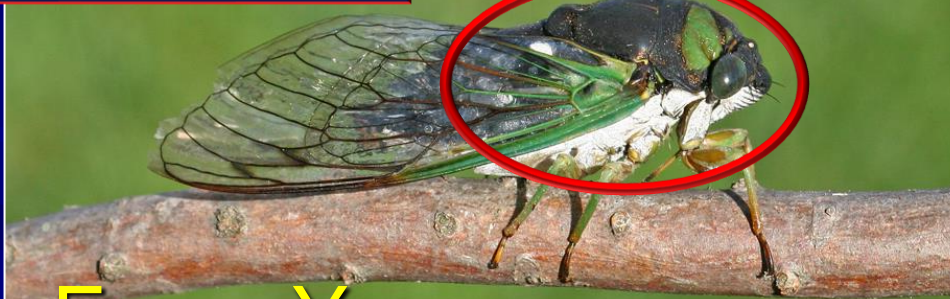
Appears Every  
17 or 13 Years

# Some Mildly Taxing Taxonomy

- KINGDOM: Animalia
  - PHYLUM: Arthropoda (Arthro-Poda)
  - CLASS: Insecta (Hexapoda)
    - Order: Hemiptera



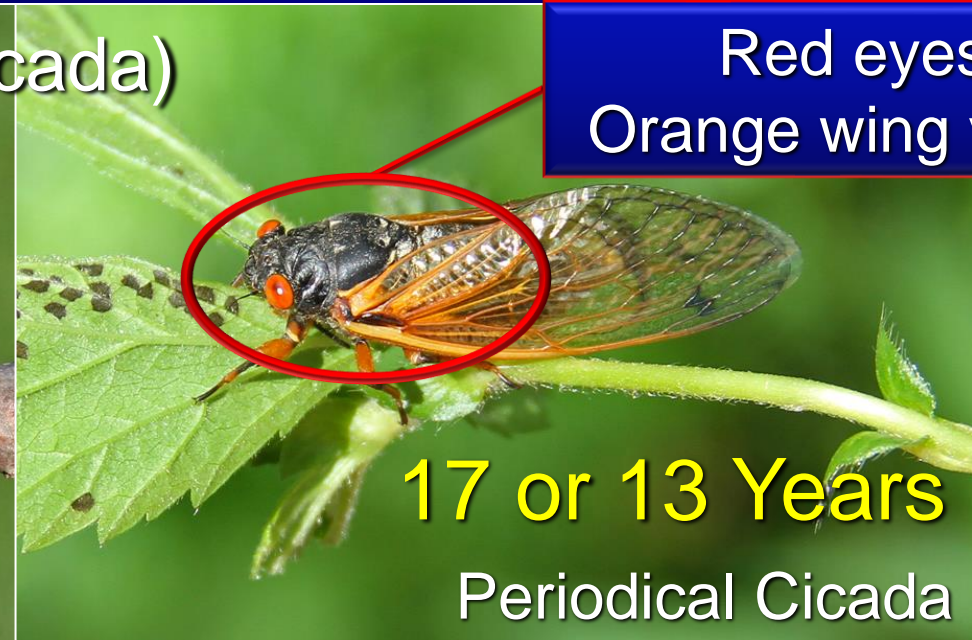
Dark green eyes  
Green wing veins  
Family: Cicadidae (Cicada)



Every Year

"Annual" Dog-Day Cicada

Red eyes  
Orange wing veins



17 or 13 Years

Periodical Cicada

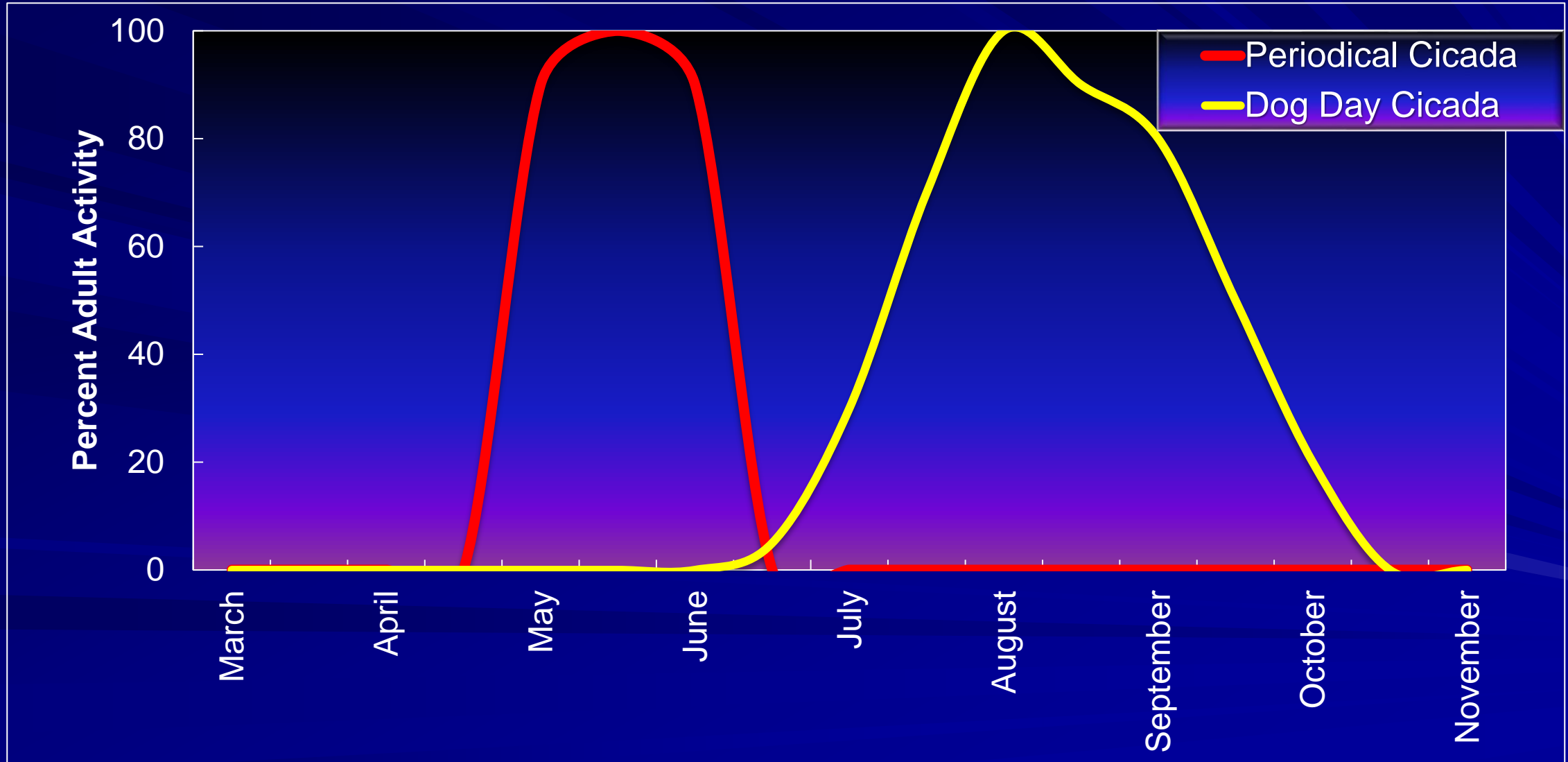


# Some Mildly Taxing Taxonomy

- KINGDOM: Animalia
    - PHYLUM: Arthropoda (Arthro-Poda)
    - CLASS: Insecta (Hexapoda)
      - Order: Hemiptera
      - Family: Cicadidae (Cicada)
        - ❖ Genus: *Neotibicen*
          - Species (Specific Epithet): *canicularis*
- Scientific Name:**  
***Neotibicen canicularis***
- Common Name: Annual Dog-Day Cicada**



# Cicada Adult Activity (General)





# What About Cicada Killer Wasps?

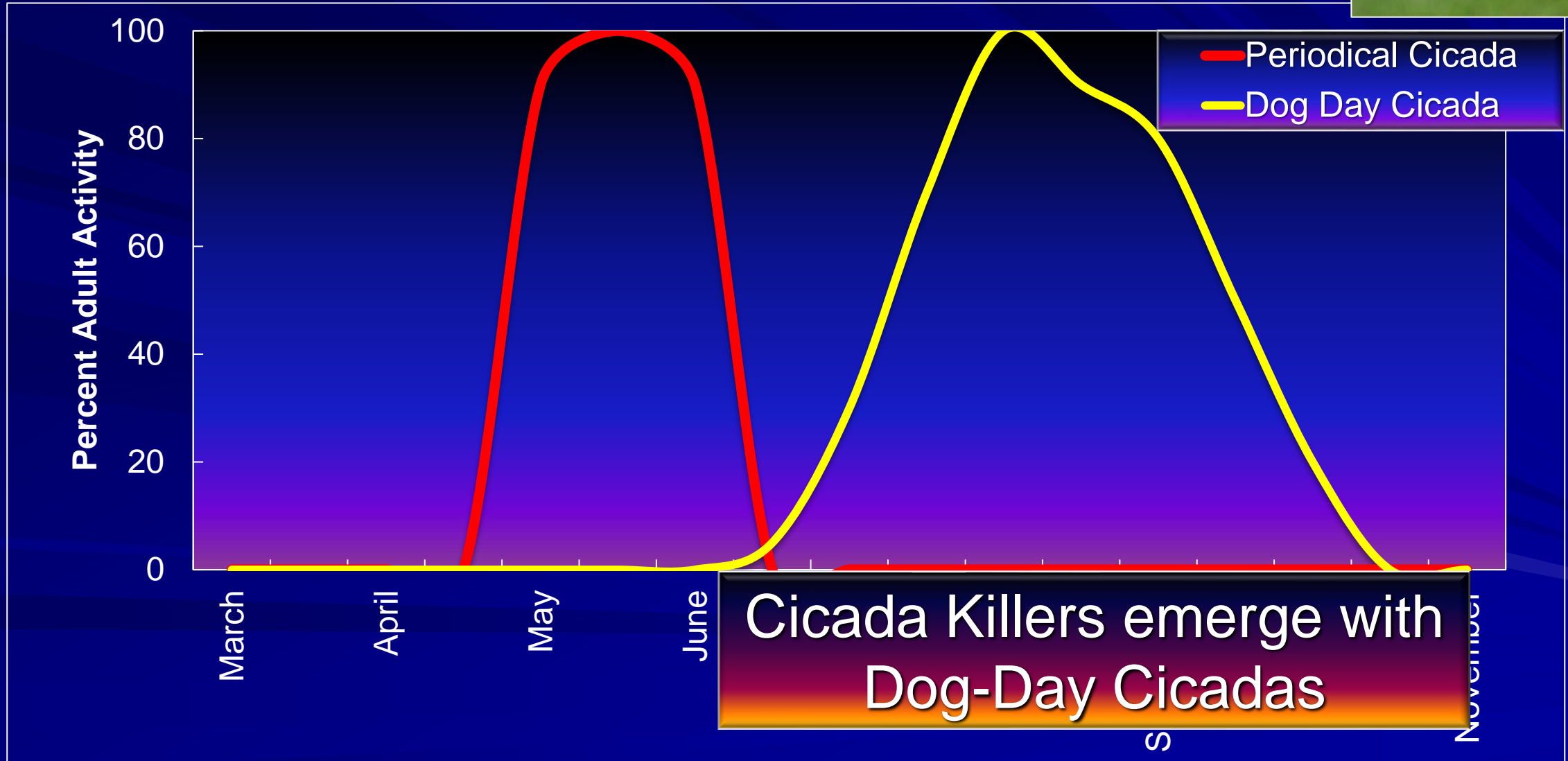
*Sphecius speciosus*



Joe Boggs, OSU Extension©



# Cicada Adult Activity (General)





# Some Mildly Taxing Taxonomy

- KINGDOM: Animalia

- PHYLUM: Arthropoda (Arthro-Poda)

- CLASS: Insecta (Hexapoda)

- Order: Hemiptera

- Family: Cicadidae (Cicada)

- ❖ Genus: *Magicicada*

- Species (Specific Epithet): *septendecim*

- Species (Specific Epithet): *cassini* (= *cassinii*)

- Species (Specific Epithet): *septendecula*



# Brood X: Three Species

*M. cassini*



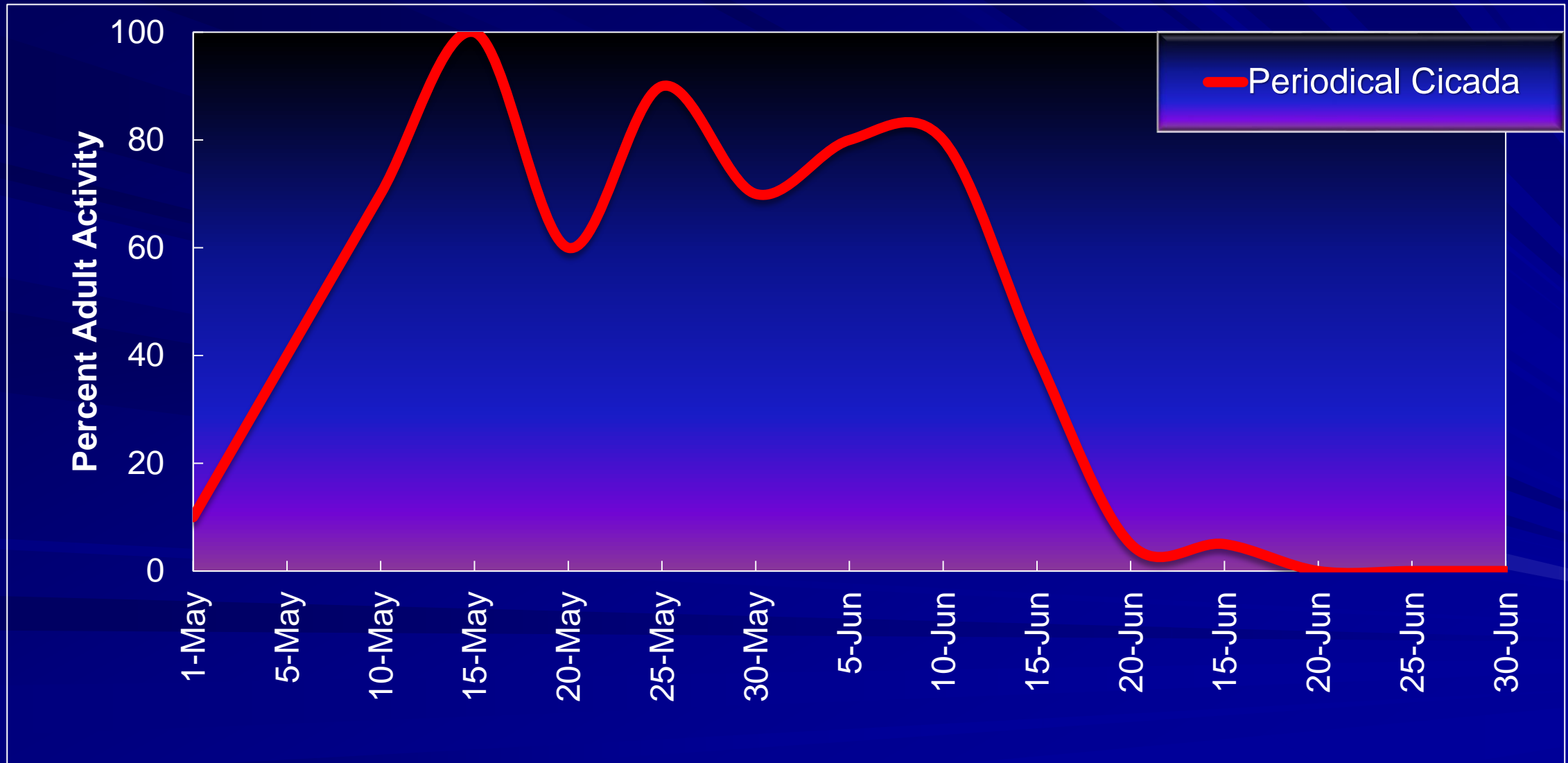
Joe Boggs, OSU Extension©

sim

cula



# Cicada Adult Activity (General)



# Periodical Cicada

*Magicicada* spp.

- Mass emergence in large numbers
- “Predator satiation”

I can't eat another cicada!





# Periodical Cicada

*Magicicada* spp.



- Emergence "Broods" are designated by Roman numerals and are classified by:
  - Geographical locations
  - Years when adults emergence
- Ohio:
  - Four 17-year Broods (V, VIII, X, XIV)
  - One 13-year Brood (XXII); only in Clermont and Brown Counties in Ohio
- Ohio's 2021 emergence is: **Brood X (10)**

# Periodical Cicada Broods in Ohio

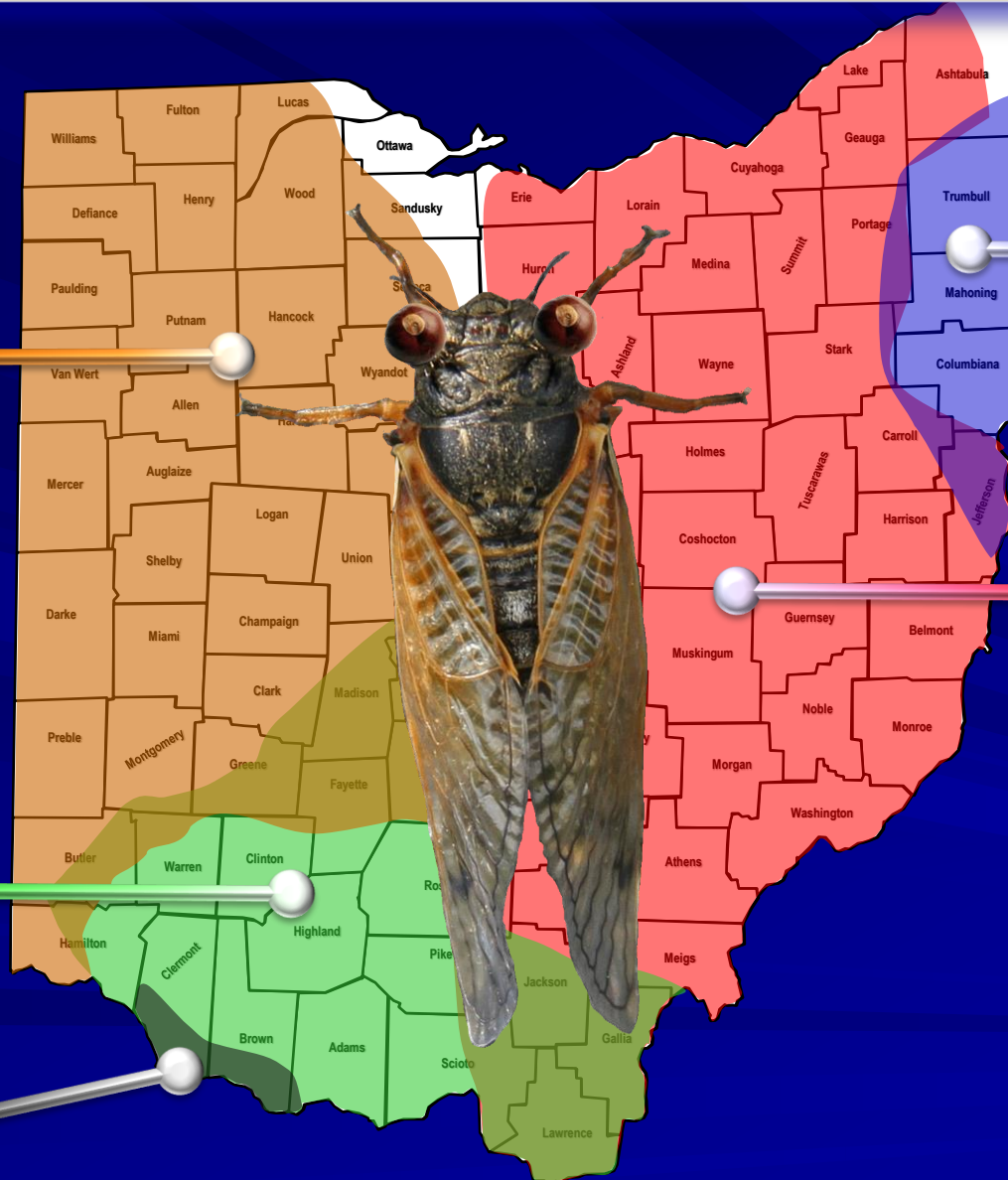
**17-Year  
Brood X (10)  
2004-2021**

**17-Year  
Brood VIII (8)  
2019-2036**

**17-Year  
Brood V (5)  
2016-2033**

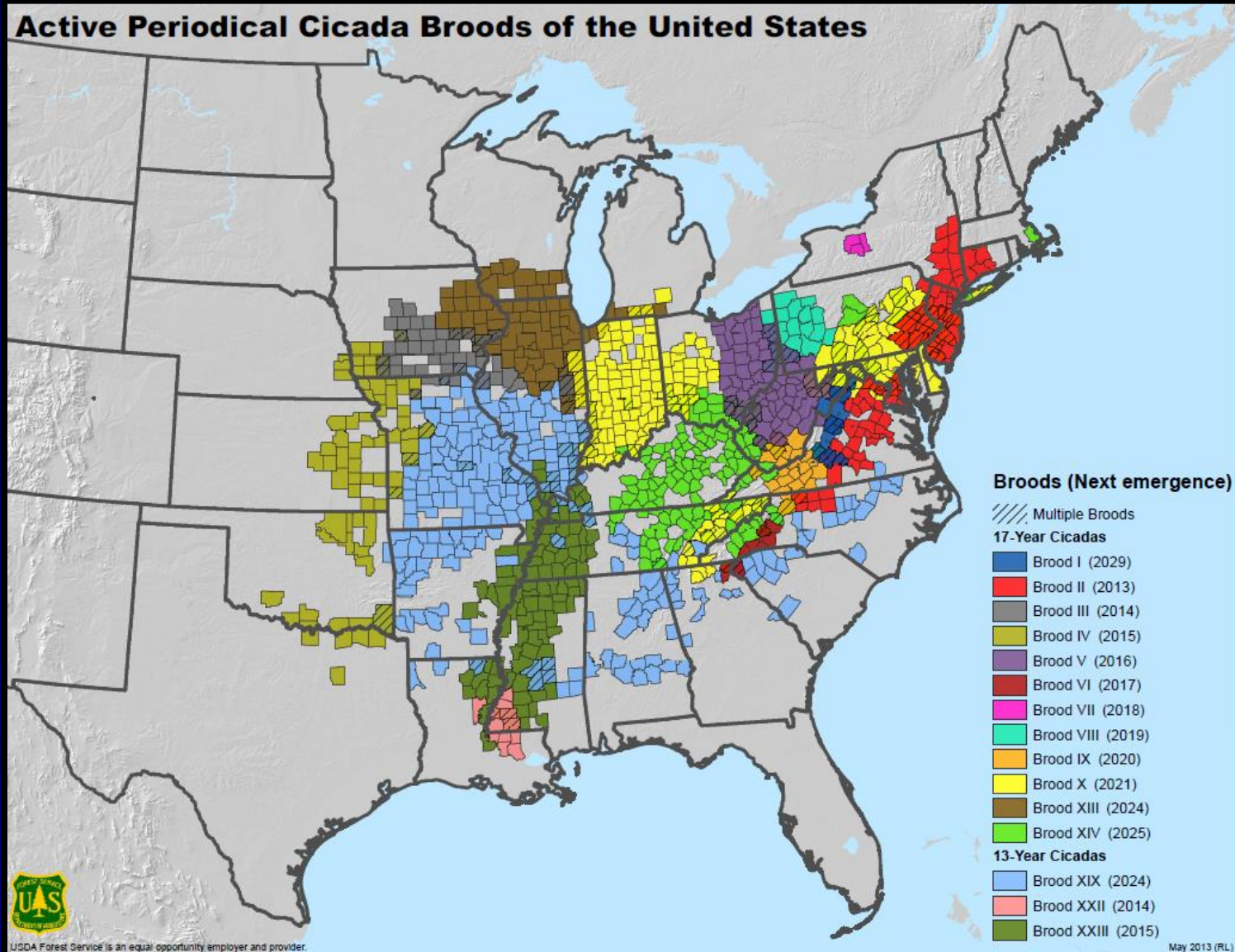
**17-Year  
Brood XIV (14)  
2008-2025**

**13-Year  
Brood XIV (14)  
2014-2027**





# A Connection to Hardwood





# Periodical Cicada Tree C

- Nymphs: suck xylem fluids from tree roots
  - No Hardwood Trees = No Periodical Cicadas
  - Trees had to have been around, undisturbed, for at least 17 years
  - Highest populations where trees were around for multiples of 17 years



No Cicadas





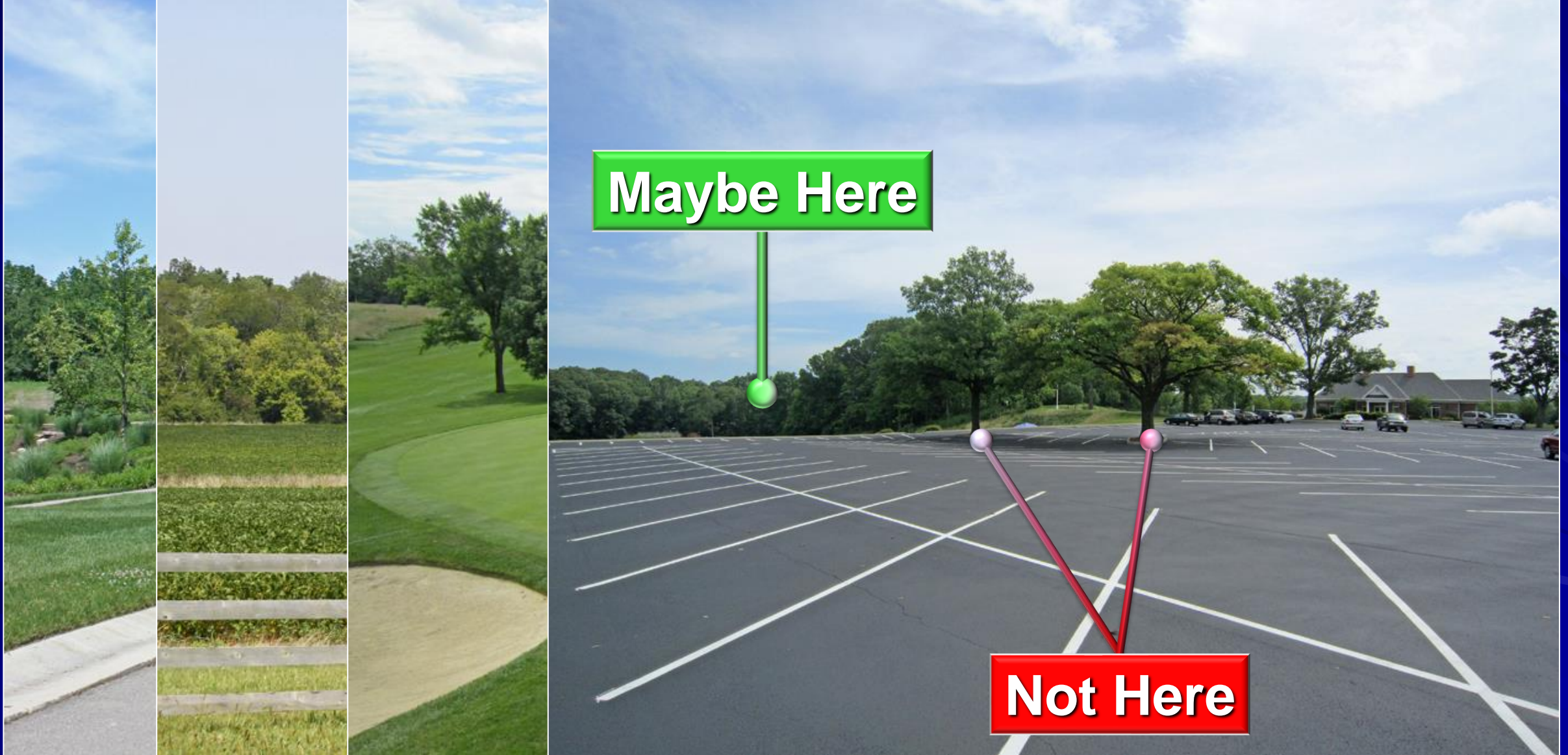
# Periodical Cicada Tree Connection

Cicada



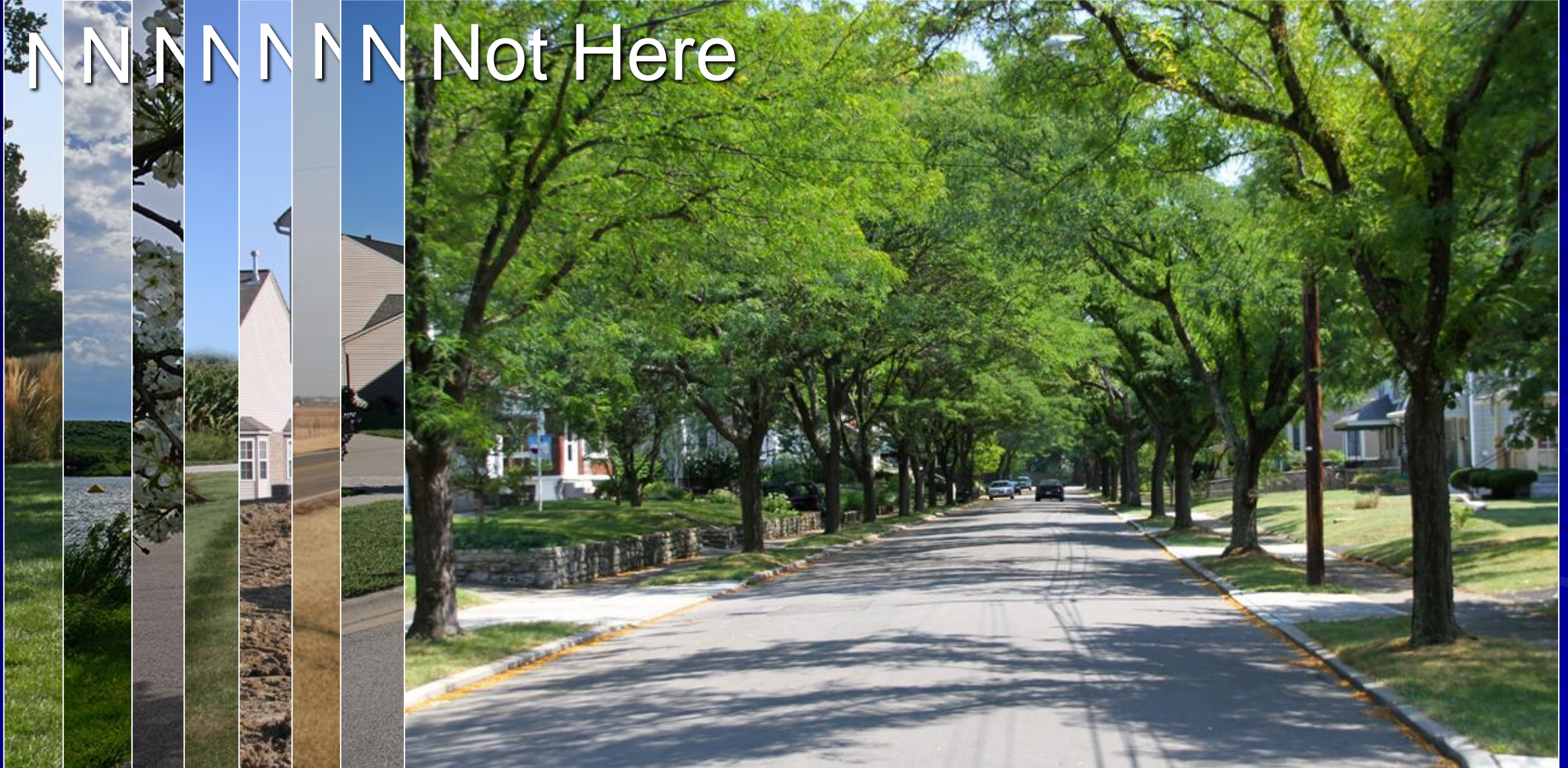


# Periodical Challenges





# Periodical Challenges





# What's Going to Happen?





# Periodical Cicada Life History

- Cicadas emerge after the soil temperature exceeds 64° F, which is usually in May
- Emergence precursor: mud “chimneys”
- Then exit holes as nymphs leave the soil





# Periodical Cicada Life History

Thanks for the assist!

- Emergence occurs at night and into the morning hours
- Cicadas emerge from the ground as mature nymphs: they are really “adults wrapped in the last instar nymph’s exoskeleton”
- The nymph’s exoskeleton splits, and the adult emerges out of the spent exoskeleton
- The adult’s wings extend, harden, and the adults take flight





# Periodical Cicada Life History

■ How about a little privacy!

■ During the

■ Each type

– Alarm/c

– Pre-ca

– Calls to

– Chorus

and att

– Courtin

Voyeur!

g centers



Joe Boggs, OSU Extension©



# Periodical Cicada Life History

- Female
- Up to 4 sites.





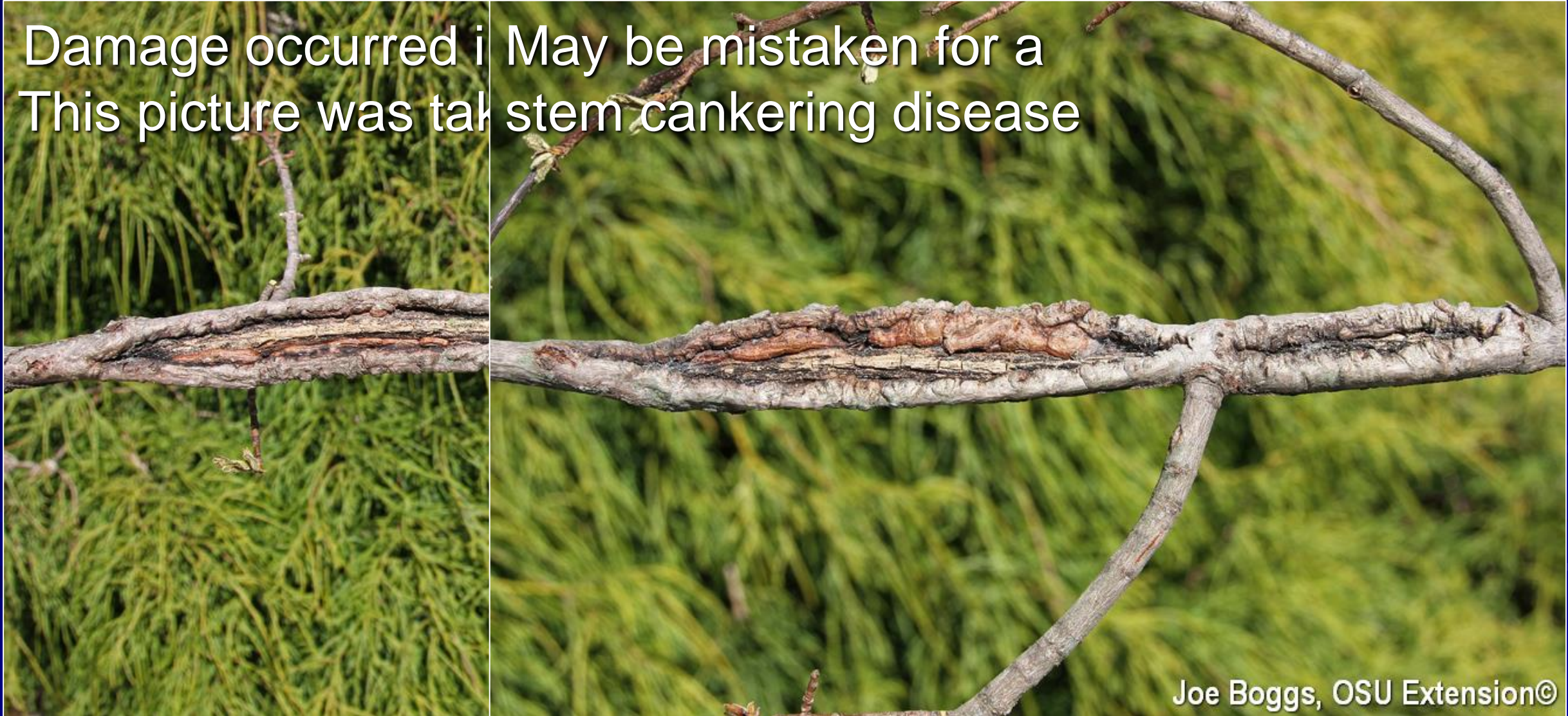
# Cicada Egg Laying





# Damage Can Last Many Years

Damage occurred in May be mistaken for a  
This picture was taken stem cankering disease



Joe Boggs, OSU Extension©



# Periodical Cicada Life Hist

- Eggs remain in the branches 6 – 10 weeks before hatching
- The branch may die and turn brown, a process called “flagging”
- Heavily infested branches break and fall to the ground
- Once eggs hatch, nymphs crawl down and burrow into the ground, feeding on tree roots...for another 17 years





# Egg Laying and Damage



Greatest concern on newly planted trees

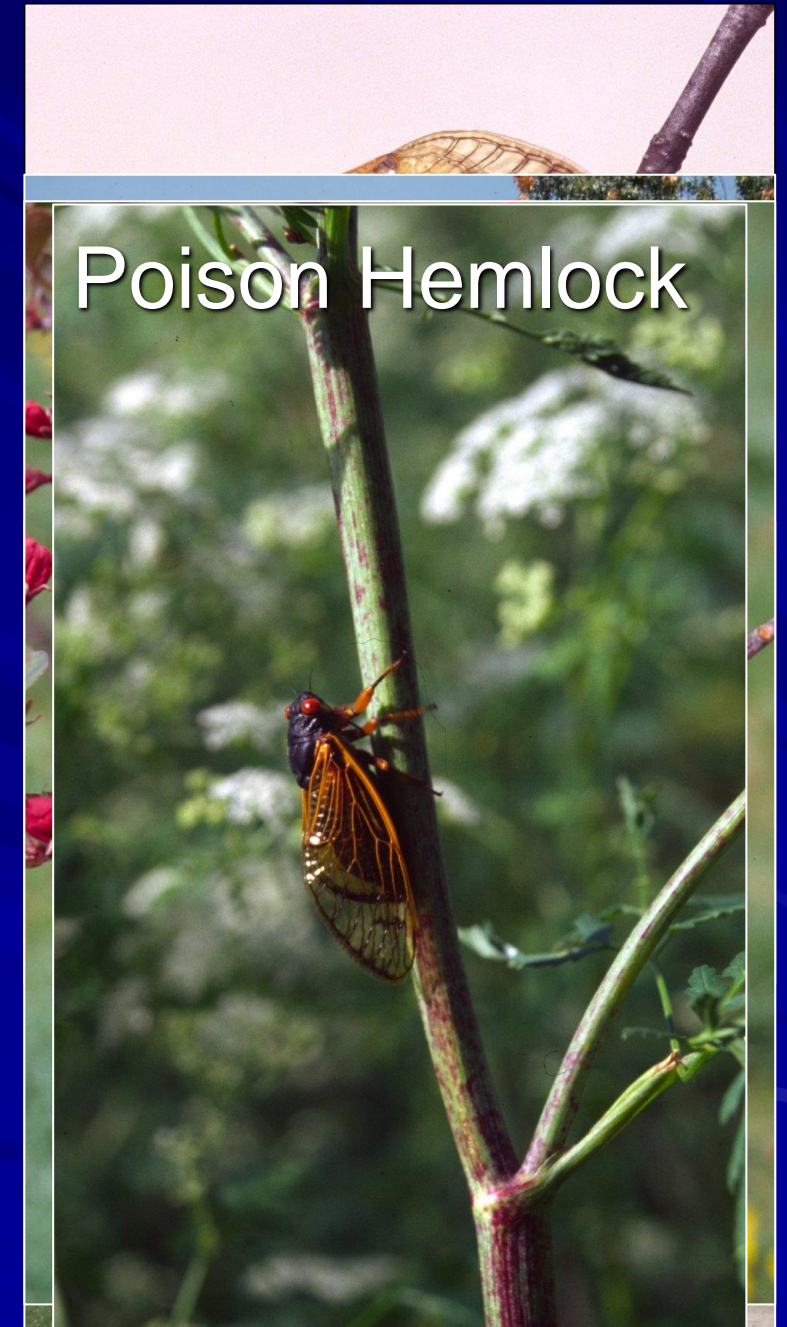


Joe Boggs, OSU Extension©



# Oviposition Hosts

- Overarching goal: a site to hold eggs until they hatch
- Hardwoods are the most preferred hosts (e.g., oak, maple, hickory, beech etc.)
- Fruit trees are also targeted
- Bottom line: if all “normal” sites are taken, desperate females will lay eggs on just about any plant



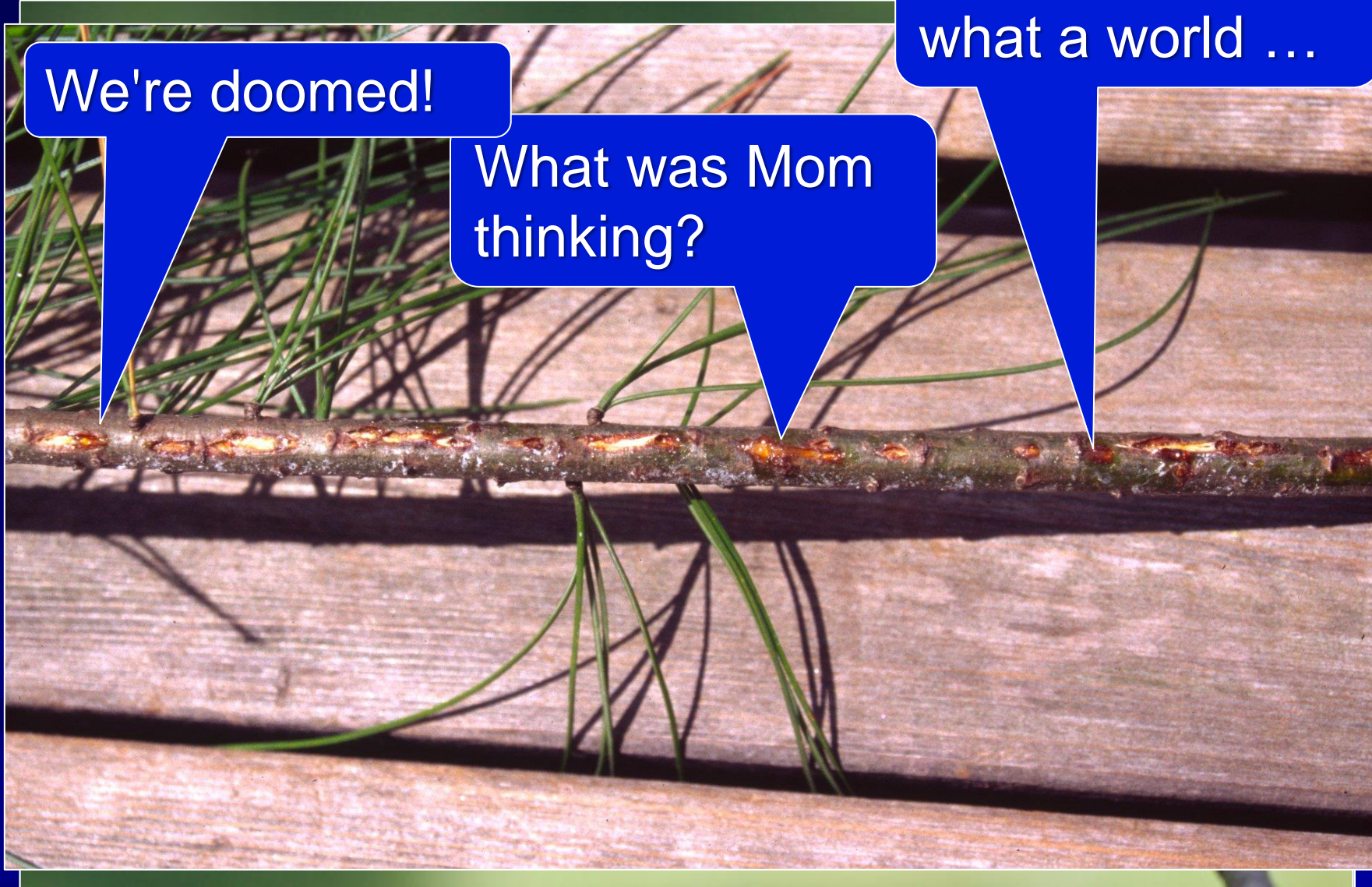


# Mistakes are Made!

We're doomed!

What was Mom thinking?

What a world,  
what a world ...





# Cicadas in Perspective



- This is a native insect: it has been living in Ohio – with our trees – for tens of thousands of years
- **It has not killed them**
- Benefits as part of the forest
  - Oviposition damage is "natural"
  - Part of the hardwood forest ecology
  - Nymphs provide natural aeration
  - Dead cicadas return nutrients





# Cicadas in Perspective



## ■ Concerns:

- Main concern: young trees
- A forest insect:
  - High populations within or near forested areas
  - Less of a problem in new development
- We have a limited amount of information about exactly where we will see high populations



# How Should You Respond?

- Don't panic!
- Remain observant
  - Holes will appear
  - The emergence usually starts slowly
- Are there management options?
  - Insecticides?
  - Delayed planting?
  - Netting?



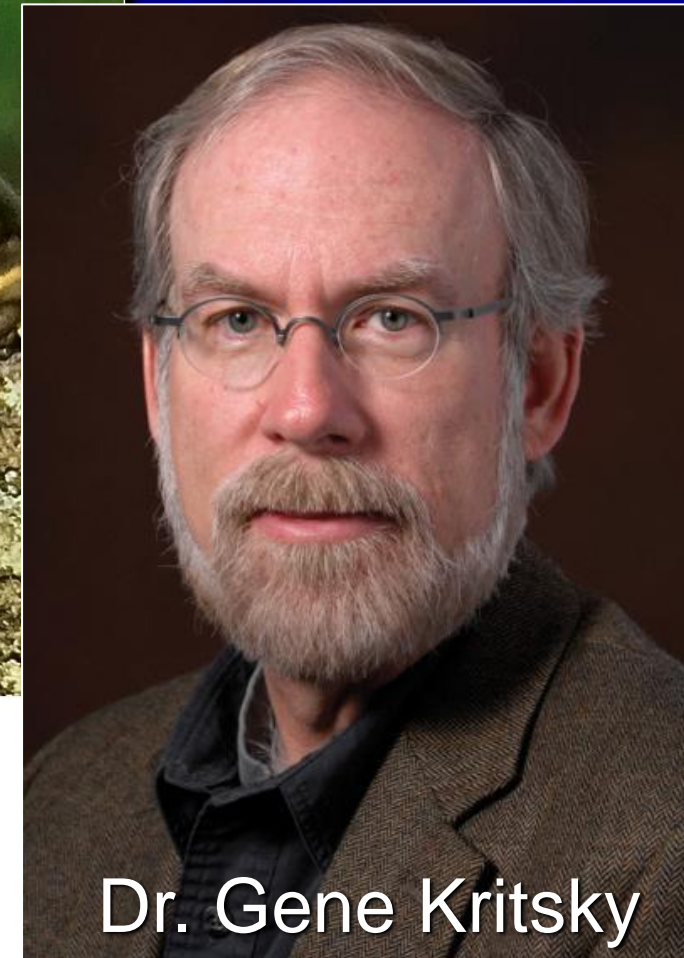
**Not without Problems!**



# Citizen Science: Become Involved!



Join Cicada Safari to help map the 2021 emergence of the periodical cicada Brood X. Simply download the free app from the [Apple app store](#) or [Google play](#), then go on a safari to find periodical cicadas. Photograph and submit the periodical cicadas to Cicada Safari, and after the photos are verified, they will be posted to the live map. Cicada Safari was created by [Dr. Gene Kritsky](#) working with the [Center for IT Engagement](#) at [Mount St. Joseph University](#) in Cincinnati.



Dr. Gene Kritsky



***Time  
flies like***



ThePeoplesCube.com

*banana*

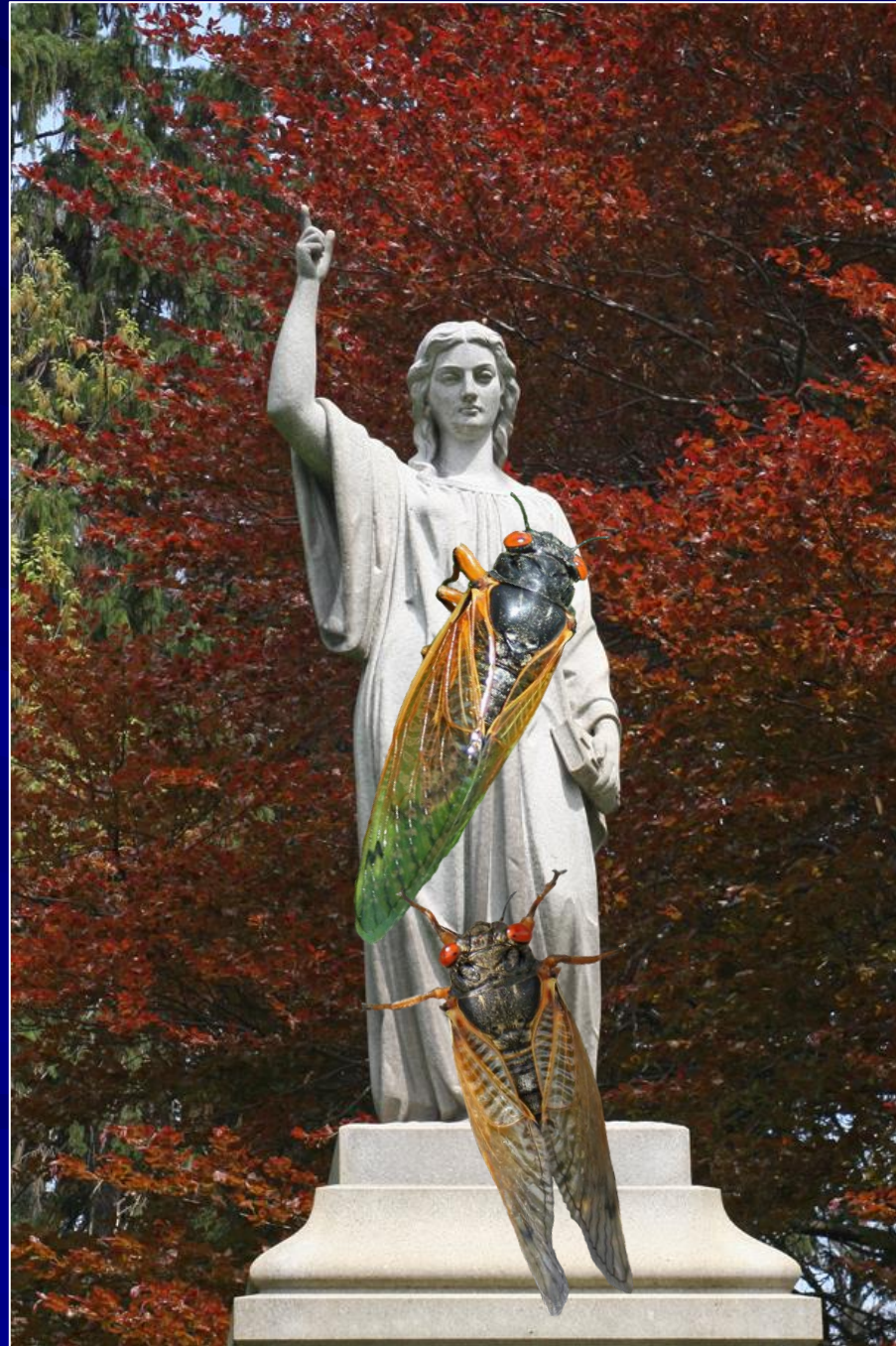


# I hope That I Kept Your Attention





# Some Final Points





# Stay Informed

<https://www.cicadamania.com/>

**Cicada**  
Dedicated to cicada  
ENHANCED BY G

**News & Facts**

17 Years Un  
& all I  
this t-



**BROOD**  
CICADA

January 9, 2  
Periodical cic  
Filed under: [Brood](#)



**BROOD X 2021**





Categories:  
Search for:  
  
  
[Categories](#)  
[Agriculture](#)  
[Anatomy](#)  
[Eggs](#)  
[Exuvia](#)  
[Eye Color](#)  
[Lymphs](#)  
[Specimens](#)  
[General](#)  
[Behavior](#)



# Stay Informed



**Avoid Myths and Mythconceptions!**





***"The true voyage of discovery  
Lies not in finding new landscapes,  
but in having new eyes."***

**- Marcel Proust**





The image features a sunset over a dark, textured ocean. The sun is a bright yellow-orange orb on the horizon, casting a shimmering reflection on the water. The sky is a gradient of orange and yellow. The text 'THE END' is positioned at the top, and 'QUESTIONS?' is at the bottom, both in a stylized, 3D font with a blue-to-orange gradient and a drop shadow.

THE END

QUESTIONS?