Phenomenal Image: Cicada Synchronicity

Look closely at this illustration from “The Periodical Cicada,” by Charles L. Marlatt, **1907**, via the Biodiversity Heritage Library to answer the questions on the right.

What is the illustration depicting?

- **Circle** the cicada nymph in the illustration.
- Place a **square** around the adult phases of the cicada on the illustration.

What is one difference between the adult and nymphal phases of the cicada lifecycle?

Why do you think the cicada changes color?

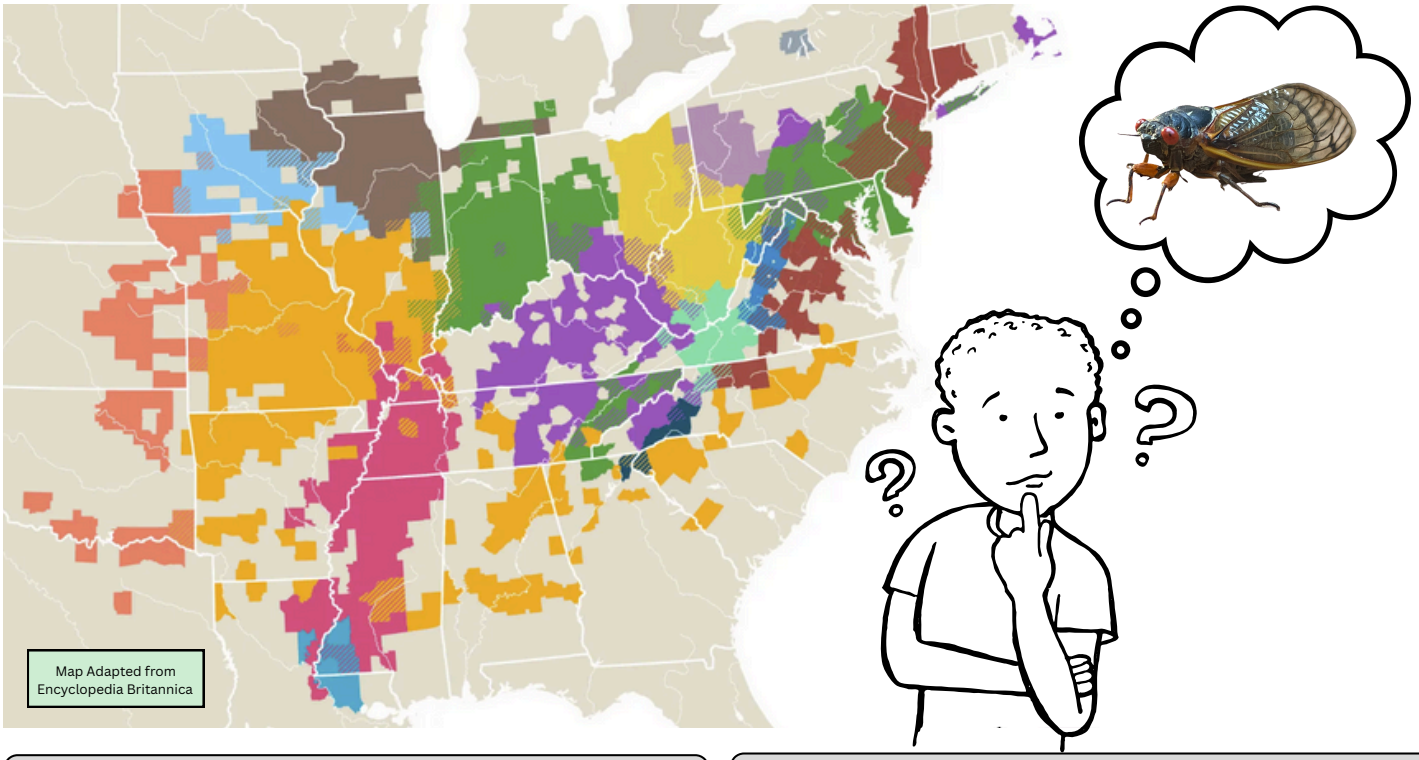
Looking at a tree you notice a brown shell, it's surprisingly light since it's empty inside. Does the shape give you clues of where it came from?

Where did the “shell” come from?

Why did the shell’s occupant leave it behind?

What happened to the shell’s former occupant?

What's that Cicada Map *Mapping*?



What do you notice? List 3 observations	What do you wonder? List 5 quesitons

Make a prediction: What do you think the map is *communicating* to the reader?

Conduct a Quick Survey

Ask your peers, “What was that cicada map *mapping*?” Move around the room in 5 minutes or less and complete the thought bubbles in the image below with a simple sketch or phrase.

Describe any similarities or differences between the peer responses.

How did your prediction compare to your peers?

Update your prediction: What’s the cicada map *mapping*?

Mapping Periodical Cicada Broods

Periodical cicadas belong to the genus *Magicicada and* emerge from the ground in the eastern U.S. every 13 or 17 years in groups or Broods. Broods typically consist of multiple cicada species. There are 7 species of periodical cicada.

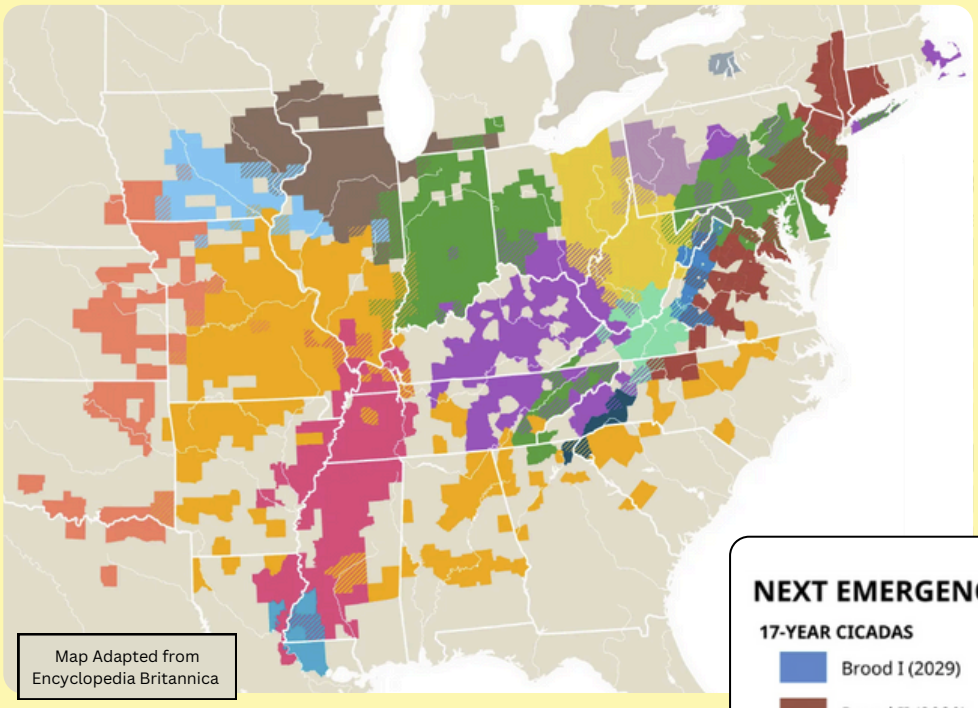
17-Year Cicada Species

- *Magicicada septendecim*
- *Magicicada Cassini*
- *Magicicada septendecula*

13-Year Cicada Species

- *Magicicada neotredecim*
- *Magicicada tredecim*
- *Magicicada tredecassini*
- *Magicicada tredecula*

Periodical cicadas can be distinguished from annual cicadas by their red eyes.



Map Adapted from Encyclopedia Britannica

There are also four genera and nearly 100 species of **annual cicadas** across North America. Individual annual cicadas emerge from the ground in a given area every year after having spent 2 to 5 years living underground. They typically have brown or black eyes.

Look carefully at the map and the map key. What are two things we know about periodical cicada emergence based on the data illustrated by this map?

Using the map data, do different periodical cicada Broods ever emerge at the same time in the same place? How can you tell?

If you answered yes above, which periodical cicada Broods overlap? Where will they overlap? When will they overlap?

Who?	When?	Where?

The Biology of Periodical Cicadas

To learn more about cicadas, check out this conversation between Neil deGrasse Tyson and American Museum of Natural History entomologist, Jessica Ware.

https://edpuzzle.com/media/663e63f6535767749f3bfb63

How might the distinct Brood range affect the cicada's ability to reproduce?

How might the synchronized emergence of periodical cicadas affect the cicada's ability to avoid predators?

How might synchronized emergence and limited Brood range affect the cicadas' ability to find a nesting site?

Cicada Broods are defined by time (length of life cycle and year of emergence) and recognized by their location. Why do you think time and place are important for the cicadas' survival?

In 2024, the 13-year and 17-year cicadas emerge at the same time? How do you think a co-emergence could affect the local ecosystem?

Describe human behaviors that could negatively impact cicada populations?

What is the most interesting thing you learned about cicadas?

What questions do you still have about cicadas?