



Parts of the United States are gearing up to say hello to billions – or even one trillion – periodical cicadas this spring.

That’s a lot of bugs.

Entomologist Dr. Floyd Shockley, of the National Museum of Natural History in Washington, D.C., did the math. Lined up end-to-end, one trillion periodical cicadas could reach the Moon and back 33 times.

A BROODING BUG

Periodical cicadas spend most of their lives as **nymphs** underground. Adult insects are black and orange. They have bright red eyes and clear wings with black veins. They are about 2.5 centimetres long. Their wingspan is around seven centimetres – on the large side.

The bugs are harmless to humans, although their nests can damage young, vulnerable

trees not protected by netting. Cicadas don’t bite, sting, or carry disease. They feed on xylem, or plant juices. Still, U.S. residents in the Midwest and Southwest might need earplugs! Cicadas are known for their high-pitched buzzing.

Two main types of cicadas exist: periodical and annual. Annual cicadas emerge from underground every year. Periodical cicadas emerge either every 17 years or every 13 years.

More than 3000 species of cicadas have been identified worldwide. Nine species are periodical cicadas. Seven of them are found in North America. Four are 13-year cicadas and three are 17-year cicadas.

We call cicadas that emerge on the same cycle “broods.” For example, Brood X was the largest brood of 17-year cicadas

to emerge in 2021. It will emerge again in 2038.

Most broods contain all seven species. But not all species in a brood live together. In a brood’s given year, it can emerge over a wide territory across several U.S. states. Different parts of the brood’s range will be home to different species of cicada.

A TALE OF TWO BROODS

If cicadas appear every year, why is 2024 so special? Crunch the numbers.

There are three broods of 13-year cicadas and 12 broods of 17-year cicadas in existence. They’re all in the United States. Sometimes, the emerging year for a brood of 13-year cicadas will coincide with that of a brood of 17-year cicadas. Even more rarely, the same year will see a brood of 13-year cicadas and a brood of 17-year cicadas that are right beside each

DEFINITIONS

ENTOMOLOGIST: a person who studies or is an expert in the branch of zoology concerned with insects

NYMPH: a young insect that has almost the same form as the adult



other. That’s happening this spring, when Brood XIX and Brood XIII are set to emerge. Brood XIX is on a 13-year cycle and Brood XIII is on a 17-year cycle. The two emerge together only once every 221 years. The last time was 1803 – 64 years before Canada was born! The next time that will happen? 2245.

Brood XIX has a larger range than Brood XIII. Brood XIX cicadas range through southern Illinois, Missouri, Arkansas, and the southeast U.S. Brood XIII, the 17-year brood, is found mostly in northern Illinois.

Cicadas fly poorly so they don’t travel far from where they emerge. If there are overlaps in Illinois and eastern Iowa, they will be small. Scientists will be watching those areas with interest, though. They want to test theories about what might happen if cicadas from different broods mate.

A LONG LIFECYCLE

While they are underground, cicada nymphs feed on the sap of tree roots. They go through several stages before emerging.

First, they wait until the soil warms up. Then, they tunnel close to the surface, staying there until the temperature reaches 18

degrees Celsius or so. When that happens – sometimes as early as late April – the nymphs surface.

Once above ground, the nymphs climb on a tree or a lamp post and moult, turning into adult cicadas with wings. That’s when the party begins.

“It’s this big spectacular **macabre** Mardi Gras,” says expert Jonathan Larson of the University of Kentucky. “A lot of singing, lots of **paramours** pairing up. Then lots of dying.”

The adults fly into the tree canopy. Males call to females by vibrating their tymbals – special organs on either side of their body. Their hollow abdomens amplify their calls, which can reach about 96 decibels. The noise level can be the same as that of a jet, motorcycle, or jackhammer. Females respond with wing flicks, adding to the **cacophony**.

As soon as they meet and mate, the male cicada dies. The female cuts tiny slits in tree twigs and branches. There, she lays about 500 eggs before also dying.

In the forest, branches that host these eggs can break – nature’s way of pruning a tree’s weak arms. That makes way for stronger branches and bigger

THE GOOD, THE BAD, AND THE B-UGLY

Humans have been fascinated by cicadas for millennia. The bugs appear in our literature, music, and art. They are seen as symbols of resurrection or happiness.

Cicadas help the environment. They aerate the soil. They prune and strengthen trees. When they die, the nutrients in their carcasses enrich the earth. They’re an important source of nitrogen for trees. They’re food for birds and small mammals. Pets even snack on them.

But the bugs can be a nuisance. So many emerged in Northern Illinois 17 years ago that “Chicagoans had to remove them with shovels, to clear sidewalks and roads,” said Dr. Shockley.

fruit. Annual cicadas stay for the summer. But the periodicals have had their moment in the sun and by June, it’s all over for them. Their **carcasses** pile up at tree bases. They leave behind a “delicate, rotten Limburger cheese” smell, says one scientist.

In six to ten weeks, the eggs hatch into tiny nymphs that burrow underground to avoid predators. The lifecycle repeats.

And in 221 years, Brood XIX and Brood XIII will meet again. ★

DEFINITIONS

CACOPHONY: a harsh or jarring mixture of sounds

CARCASS: the dead body of an animal

MACABRE: disturbing and horrifying because of involvement with or depiction of death and injury

PARAMOUR: a romantic or sexual partner



COMPREHENSION QUESTIONS

1. How many species of cicadas are there in the world?

2. What are the two main types of cicadas?

3. List at least three ways cicadas benefit the environment.

4. List at least four important characteristics of periodical cicadas.

5. Describe the conditions necessary for cicada nymphs to emerge.

6. What happens after they leave the ground?

7. Why do adult cicadas make so much noise?

8. What is a **brood** of cicadas?

9. Approximately how many periodical cicadas are scientists expecting to emerge shortly?

10. Why is 2024 a special year for cicadas?



QUESTIONS FOR FURTHER THOUGHT

1. As you see it, what might be some of the advantages and disadvantages of the double emergence of periodical cicadas in the spring of 2024 for people who live in the region? Give examples.

2. There are many scientists who study entomology (the study of insects), including some who specialize in the study of cicadas. Would you ever consider a career in entomology? Why or why not? Explain.

3. For some, cicadas are a delicacy. Would you ever try eating a cicada? Why or why not?
