

Periodical Cicadas

Life Cycle and Biology

Periodical cicadas, *Magicada spp.*, are among the longest-lived insects on the planet, living for 13 or 17 years. They spend the vast majority of that time living underground, feeding on tree roots. Once the soil warms enough in the spring to be 64 F at 8 inches deep, they will begin to emerge.



Holes in the soil created by periodical cicada nymphs. Photo by Ken Johnson, Illinois Extension.

In Illinois, emergence tends to occur in May and June and lasts about four weeks. Typically, nymphs emerge from the soil in the evening and will climb up trees or other objects and molt, leaving behind the familiar cicada shells or shed exoskeleton.



Periodical cicada nymphs prior to emergence. Photo by Ken Johnson, Illinois Extension.

Contrary to popular belief, adult periodical cicadas do feed on plants, usually woody plants. Typically their feeding doesn't cause significant damage to plants. However, they will spend most of their time above ground reproducing.

Male cicadas will start singing four or five days after they emerge. They will gather in trees and sing together to attract females. Females lack structures known as tymbals that produce sound, so only males will sing. Each species of cicada has a distinctive song they produce.

After mating, female periodical cicadas will lay their eggs in the new growth of woody plants. They prefer branches that are about the width of a pencil or a little larger, up to a ½ inch in diameter. They will use their saw-like ovipositor, or egg-laying organ, to cut into branches and lay 10 to 20 eggs before moving further down the branch. In total, each female will lay around 500 to 600 eggs.



Periodical cicada on a hydrangea leaf. Photo by Ken Johnson, Illinois Extension.

After about a month, the adult cicadas will begin to die. Large piles of cicadas can accumulate under trees and can smell rather unpleasant, similar to roadkill. However, their decaying bodies will serve as fertilizer for plants.

Six to ten weeks after they are laid, the eggs will begin to hatch. The tiny cicada nymphs will drop to the ground and begin feeding, often on grass roots. Over time, they will dig down into the soil, 8 to 12+ inches deep, and feed on tree roots for the next 13 or 17 years.

Identification

Adult periodical cicadas around $\frac{3}{4}$ to $1\frac{1}{2}$ inches long. After they emerge, the adults are white, soft, and squishy but will darken and harden overnight. The adults have black bodies with orange wing veins and legs and red eyes.



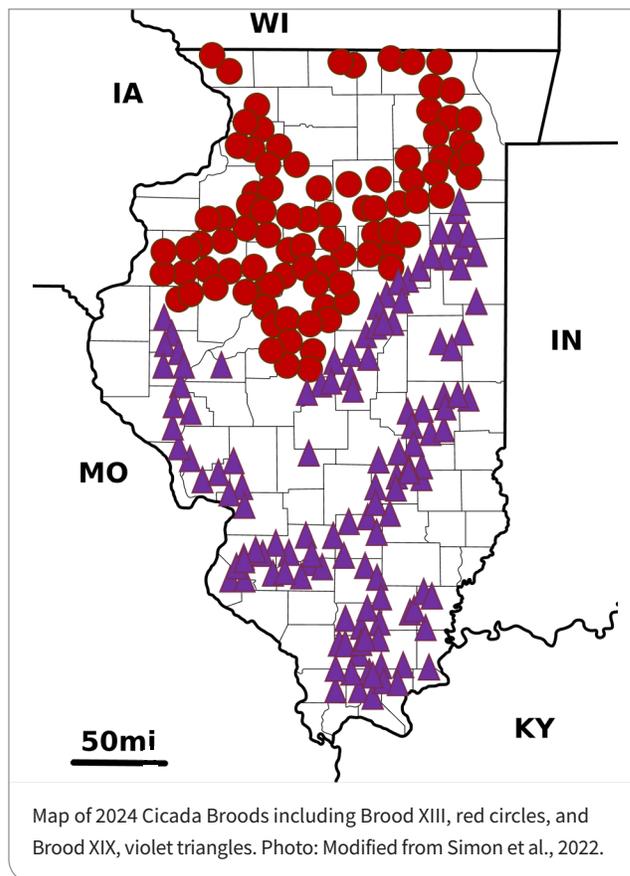
Periodical cicada emerging from shell or exoskeleton on the side of a tree. Photo: Adobe Stock.

Cicada Broods

A cicada brood is simply a group of periodical cicadas that emerge in a given year, and there can be multiple species. There are 12 broods of cicadas with 17-year life cycles and three broods with 13-year life cycles. Each brood is assigned a Roman numeral. For example, Brood XIII is a group of periodical cicadas that emerge every 17 years, including 1973, 1990, 2007, 2024, 2041, etc., and Brood XIX is a group of cicadas that emerge every 13 years, including 1985, 1998, 2011, 2024, 2037, and beyond.

Historic Brood Emergence

While historically, broods will be emerging at the same time, they won't be emerging in the same places. Brood XIII, also known as the Northern Illinois Brood, will be emerging in the northern half of the state. Brood XIII contains all three species of 17-year periodical cicadas, *Magicicada septendecim*, *M. cassini*, and *M. septendecula*. In addition to Illinois, this brood will be emerging in Indiana, Iowa, Wisconsin, and possibly Michigan.



Map of 2024 Cicada Broods including Brood XIII, red circles, and Brood XIX, violet triangles. Photo: Modified from Simon et al., 2022.

Brood XIX, also known as the Great Southern Brood, will be emerging in the southern half of Illinois. The four species of cicadas in this brood are 13-year cicadas, *Magicicada tredecim*, *M. neotredecim*, *M. tredecassini*, and *M. tredecula*. This brood is the largest of the 13-year broods, geographically speaking, and will emerge across Alabama, Arkansas, Georgia, Illinois, Indiana, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, and Virginia. Additionally, a 2028 group, the Mississippi Valley Brood, may contain some cicadas that emerge in 2024, called stragglers.

There may be a few places in central Illinois, around Springfield, where the two broods will be emerging in the same area. However, they aren't expected to overlap to any great extent.

What to Expect

Most of the state of Illinois will experience periodical cicada emergence in 2024. Besides the noise, which might be substantial in some areas, even reaching up to 90+ decibels, this large group of insects is harmless. Cicadas can be appreciated and enjoyed by nature lovers of all ages.



A group of periodical cicadas sitting on a large tree branch. Photo: Adobe Stock.

Protecting Trees and Shrubs

As female periodical cicadas lay their eggs, they will cut open branches with their ovipositor. This will result in a scar that can be several inches long. These damaged areas may sometimes break, which will cause everything past this damaged area to die. This is often referred to as flagging. Fortunately, this will not kill healthy, mature trees. The same can't be said for small trees or shrubs in a landscape or orchard.

Newly planted small trees and shrubs may have trunk diameters small enough for female cicadas to lay their eggs in. If this happens, the trees can be killed. These smaller plants also have fewer branches on them, and egg-laying can cause significant damage to the trees.

There are several things to do to prevent cicada damage to trees and shrubs in a landscape.

1. Avoid planting trees and shrubs the year before a periodical cicada emergence. Also, avoid planting trees and shrubs in the spring of an emergence year. If planting is necessary, choose plants that have a stem diameter of at least 2½ inches in diameter.
2. Place netting around small trees and shrubs, making sure it is secured around the base of the plant to prevent cicadas from crawling up the plant from the ground. The opening should be no larger than ¼ inch. It may be helpful to build a

frame around the plants as cicadas may still be able to lay eggs on branches touching the netting.

3. Twigs and branches that have had eggs laid in them can be pruned off to prevent the nymphs from reaching the ground and feeding. However, feeding by cicada nymphs does not seem to be harmful to the trees they feed on.
4. Insecticides are not recommended to manage periodical cicadas. Large, healthy trees are able to survive egg-laying with no long-term impacts, as this has been happening for thousands of years. Insecticides are not as effective in protecting smaller trees and shrubs from cicadas as netting. Additionally, applying pesticides to control cicadas may harm other organisms, including animals that eat cicadas.
5. Cicada killer wasps will not be of any help either. They emerge later in the year when annual or dog-day cicadas emerge, and by that time, periodical cicada adults will be dead.

Authors

[Kacie Athey](#), assistant professor, and Extension specialist, kathey@illinois.edu

[Ken Johnson](#), horticulture educator, kjohnso@illinois.edu

References

- Cooley, John. 2017. "General Periodical Cicada Information | Cicadas." Cicadas.uconn.edu. 16 February 2017. <https://cicadas.uconn.edu>.
- Kritsky, Gene. 2024. A Tale of Two Broods: The 2024 Emergence of Periodical Cicada Broods XIII and XIX. Columbus, OH: *Ohio Biological Survey*.
- Kirtsky, Gene. 2004. Periodical Cicadas the Plague and the Puzzle. *Indiana Academy of Science*.
- Simon, C., J. R. Cooley, R. Karban, and T. Sota. 2022. Advances in the Evolution and Ecology of 13- and 17-Year Periodical Cicadas. *Annual Review of Entomology*. 67: 457-482.
- Yoshimura, Jin. 1997. "The Evolutionary Origins of Periodical Cicadas during Ice Ages." *The American Naturalist*. 149 (1): 112-24. <https://doi.org/10.1086/285981>

Modified May 2024



Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

extension.illinois.edu