



In preparation for the performance of its life, a periodical cicada emerges from its nymphal exoskeleton. The dark spots behind the eyes are clusters of pigment that will spread across the body as the insect ages. Photo credit: Don Cornett/iStock

## Good Natured: Cicadas' Performance of a Lifetime

*Pam Otto, Outreach Ambassador for St. Charles Park District 5/7/2024 6:00AM*

If you've ever attended a theater production, you're probably familiar with playbills—those little booklets that list the acts and scenes as well as the cast and crew.

As we approach the debut of one of the biggest, if not THE biggest, natural events of the year, we thought those of you who wish to take in the performance might like a little guide to what they're about to witness

**Prologue:** In May and June of 2007, females of periodical cicada Brood XIII deposited their eggs—as many as 400 per Lady Cicady—beneath the bark of twigs on trees. In July and August of that year, the wee baby cicadas, known as nymphs, fell to the ground and dug down 6 to about 18 inches, until they reached a tree root.

\*Time Passes\*

During the intervening years, the cicada nymphs use their piercing and sucking mouthparts to feed on the watery sap present in the trees' roots. On their way to adulthood each nymph will pass through five developmental stages, called instars, shedding their exoskeleton or outer skin each time. After their internal clock records 17 winters and leaf-bud breaks, they use their powerful forelimbs to dig their way to the surface.

**Act One, Scene One:** Soil Beneath or Near Trees

Holes about the size of an adult pinky finger appear. Cicadas climb out, one per hole.

**Scene Two:** Tree Trunks and Other Vertical Surfaces

Cicadas, still encased in their nymphal exoskeletons, climb upward. Sufficiently spaced apart, they split their shells one last time. Wing veins fill with fluid and new skin hardens.

There Will Be a 4 to 6 Day Intermission in between Acts.

**Act Two, Scene One:** Amid the Tree Branches

Male cicadas begin singing their species-specific songs and form groups, or choruses, to increase the volume of their calls. Females flick their wings and males sing in response. [Audience participation opportunity: Finger snaps mimic the sounds of wing flicks and may compel a male cicada to sing in response.]

**Scene Two:** CENSORED (But this how we'll be assured of more cicadas in 17 years.)

**Scene Three:** Twigs at the End of Branches

Female cicadas use their ovipositors, or egg-laying organs, to create shallow grooves and deposit eggs.

There Will Be a 6 to 10 Week Intermission in between Acts

**Act Three, Scene One:** Beneath or Near a Tree Again

Teensy cicada nymphs, measuring less than  $\frac{1}{4}$  in. and nearly weightless, waft to the ground and search for roots on which to feed. Easily accessible grass roots can provide the fluids for their first meals.

**Scene Two:** Underneath the Ground

Nymphs move about, moving around as they seek other roots on which to feed and grow.

**Epilogue:** Many changes will occur between Brood XIII emergences. Tree removals and development will erase large numbers of developing nymphs. Predators and parasites take their toll too, while the fungal pathogen *Massospora cicadina*, a.k.a. the Zombie Fungus, lurks in the soil, waiting to infect emerging nymphs during the next performance, 17 years from now.

## The Cast and Musical Numbers

**Linnaeus's 17-year Cicada**, *Magicicada septendecim*: Nicknamed Pharaoh for the sound of its song ("PHAAA-rho"), *M. septendecim* is the largest of the periodical cicadas and in some areas the most common. It prefers upland woods and isn't particularly fussy about tree species. Septendecim would like to thank those folks who appreciated this year's performance, and encourages everyone to limit their use of pesticides and lawn chemicals.

**Cassin's 17-year Cicada**, *M. cassini*: Cassini is smaller, and sings a song that features lots of clicks as well as a buzz that sounds like the drag on a fishing reel. Also called the lowland cicada, it does well in floodplains. Like Septendecim, Cassini is a slow flyer and doesn't travel far from where it emerges. Other insects, including caterpillars, would like to thank Cassini et al for 'taking one for the team' and serving as food for a large variety of animals like birds, mammals, reptiles, amphibians and fish, as well as arthropods like spiders.

*M. septendecula*: A no-show in performances in the Chicago region, *Septendecula* does occur in areas downstate and shows a preference for depositing eggs on hickory trees. *Decula*'s rhythmic call includes buzzes and ticks. It and the songs of other castmates can be heard at <https://songsofinsects.com/cicadas/periodical-cicada>.

### Reviews

Every production deserves an evaluation, and periodical cicadas are no different. You can add to the ever-growing body of knowledge about these 17-year wonders by participating in a community science project. Several Illinois-specific efforts can be found at <https://www.inaturalist.org/> although you'll need to create a free account to learn and take part. Another mapping project, Cicada Safari (<https://cicadasafari.org/>) even has its own app!

Don't feel left out if you're not seeing cicadas in your area. Knowing where they aren't is just as important as knowing where they are, so please enter that data too. Your contributions will be much appreciated by the attendees of Brood XIII's 2041 performance.

*Pam Otto is the outreach ambassador for the St. Charles Park District. She can be reached at [potto@stcparks.org](mailto:potto@stcparks.org).*