PERIODICAL CICADAS IN NEW JERSEY
By Wade Wander

The next statewide emergence of Brood II is coming in 2030. For more info on this, the smaller Brood X (2038), and cicadas in general, visit cicadamania.com.

Looking through old photographs is a trip down memory lane. So it was for me when I found a slide photograph of a periodical cicada clinging to a Common Mugwort that I took in White Township, Warren County, in May 1996. Intrigued, I did a little research and learned that this individual was part of Brood II and that broods are identified by Roman numerals. It is my first memory of encountering the phenomenon of the mass emergence of the 17-year periodical cicada. But my most vivid memory occurred, not coincidentally, 17 years later and is of the incredible 2013 emergence that Sharon and I went to see at Willowwood Arboretum in Morris County. On that lovely May day we bobbed and weaved among squadrons of frantically flying cicadas—some landing on us and others making strafing runs. And the noise generated by literally tens of thousands of males (use ear plugs if you got 'em), all intent on attracting females, drowned out the loudest of bird songs. The entire experience turned out to be unforgettable.

As spectacles of nature go, a cicada emergence falls far short of a major volcanic eruption but may go toe-to-toe with a breaching whale, the frenetic feeding of tens of thousands of shorebirds on Delaware Bay, and the synchronous, swirling murmurations of thousands of European Starlings and blackbirds. Besides, an emergence occurs only once every 13 or 17 years, which makes it even more special. Periodical cicadas are definitely one of New Jersey's underappreciated natural wonders!

There are 12 broods of 17-year periodical cicadas. Each of the two broods that occur in NJ consists of three species—*Magicicada septendecim, M. cassini,* and *M. septendecula*. However, multiple species do not necessarily occur at every emergence site. But where will they emerge? Whereas Brood II (1996, 2013, and 2030) occurs pretty much throughout NJ, Brood X (2021, 2038) is mostly confined to the western counties from Hunterdon south to Salem. But distribution even within this range is very spotty, and most mature deciduous woodlands will not resound with the telltale high-pitched buzzing.

Most of the following photographs of the life cycle of Brood II were taken at night in Blairstown Township, Warren County, in May 2013, in a mature deciduous forest that was aggressively posted NO TRESPASSING. I arrived just after dark, and my flashlight immediately revealed dozens of ghostly white figures that looked like scary Halloween decorations. As luck would have it, I arrived at just the right time to photograph that night's emergence. If you are interested in observing future broods, my advice is to keep checking internet sources to find out where the big emergences have been reported and then don't dawdle, as the peak of the phenomenon may last only a week or two.

The last 2 photographs are of a Dog-day Cicada (*Tibicen canicularis*) that I happened to find emerging on my house foundation while I was (what else) checking my lights for moths. This species is one of many that are referred to as "annual" cicadas. Although these species have 2- or 3-year cycles the emergence is not synchronized, so some individuals emerge every year, whereas the highly synchronized emergence of periodical cicadas results in spectacular mass gatherings. You can find much more information on periodical and annual cicadas at cicadamania.com.

Photo 1. After 17 years of sucking on roots 1-2 feet below ground, mature 5th-instar nymphs begin excavating tunnels and wait just below the surface for the soil temperature to reach about 64ºF (in New Jersey, late April into May). They emerge at night, leaving nearly round holes.

Photo 2. Before molting into adults, nymphs will climb tall herbaceous and woody plants, including large trees like this American Beech.

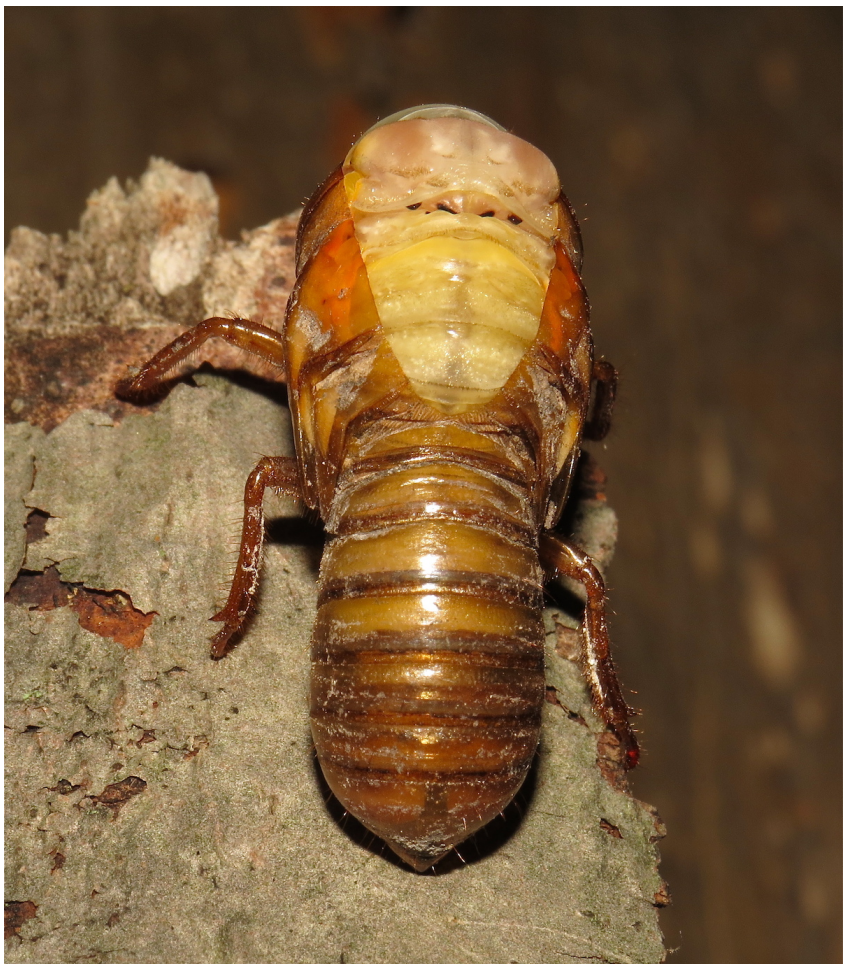

Photo 3. Once the nymph climbs to a suitable spot, its skin, or exoskeleton, splits along the head and thorax.

Photo 4. The teneral (newly emerged) adult begins wriggling out of its larval skin.

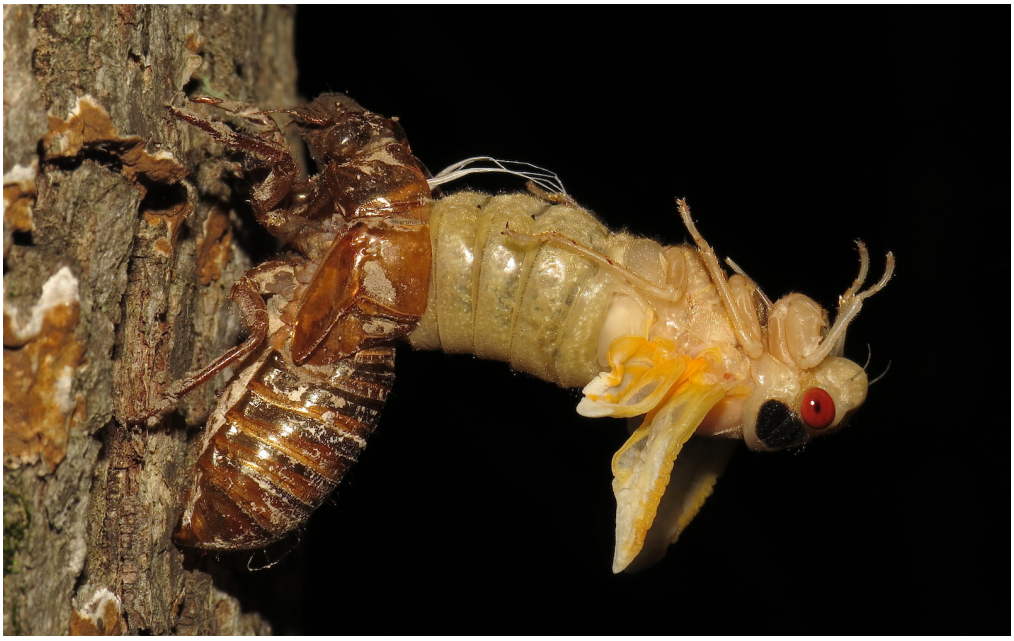

Photo 5. Almost out—but wings haven't started to expand.

Photo 6. Making progress…

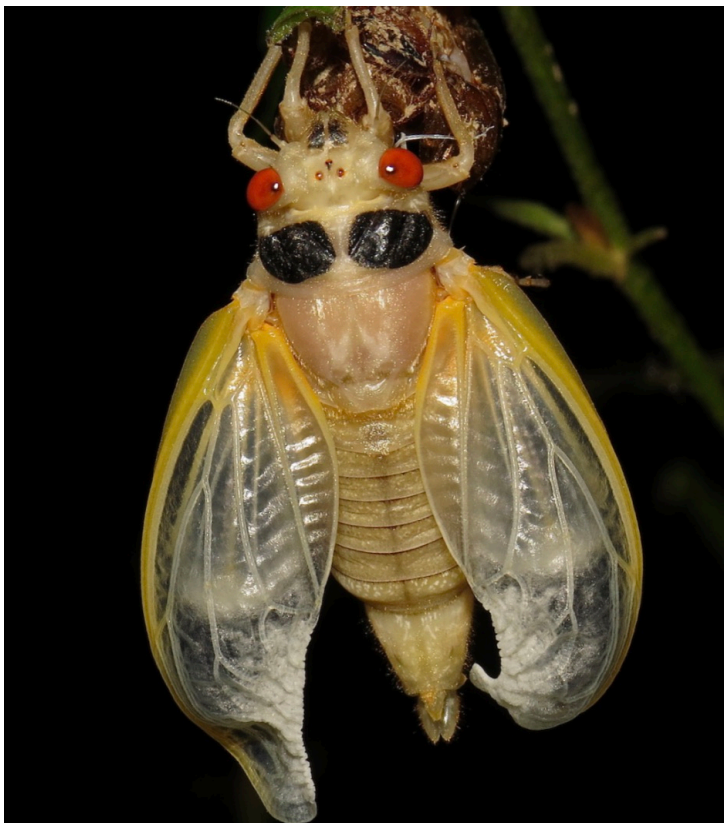

Photo 7. After full emergence the teneral adults begin the process of drying by hanging onto the nymphal skin. This individual has not quite completed the process of pumping fluids into its wings. I call this the “Groucho Marx” phase.

Photo 8. A fully emerged and healthy-looking teneral adult waiting to fully dry. Its pale new exoskeleton will begin to darken within 1 hour.

Photo 9. Hundreds or even thousands of old nymphal skins eventually fall to the ground and may accumulate inches deep under some trees.

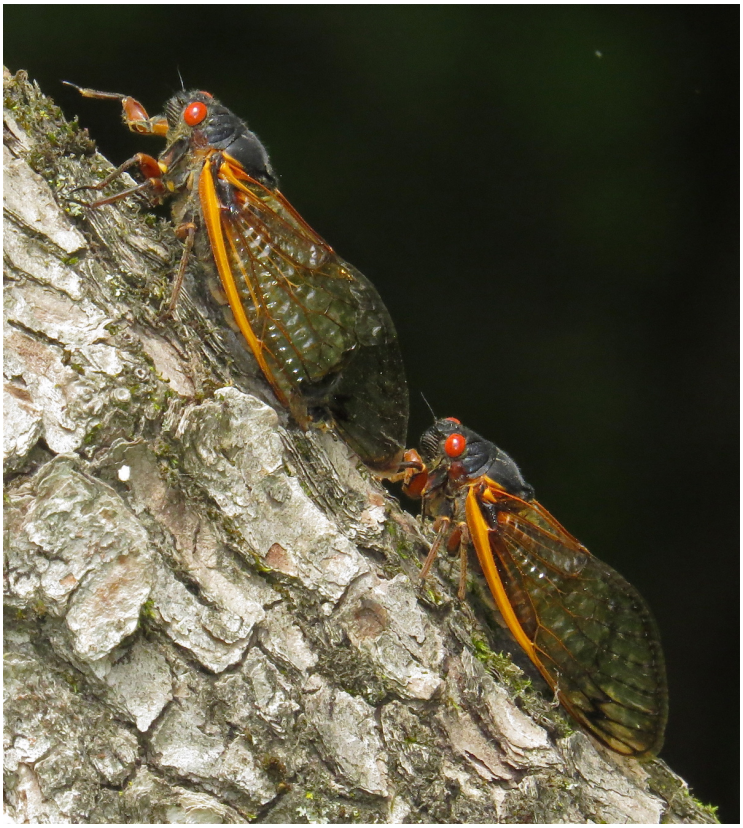

Photo 10. Adults beginning to climb higher into a tree, where their exoskeletons will continue to harden over several days

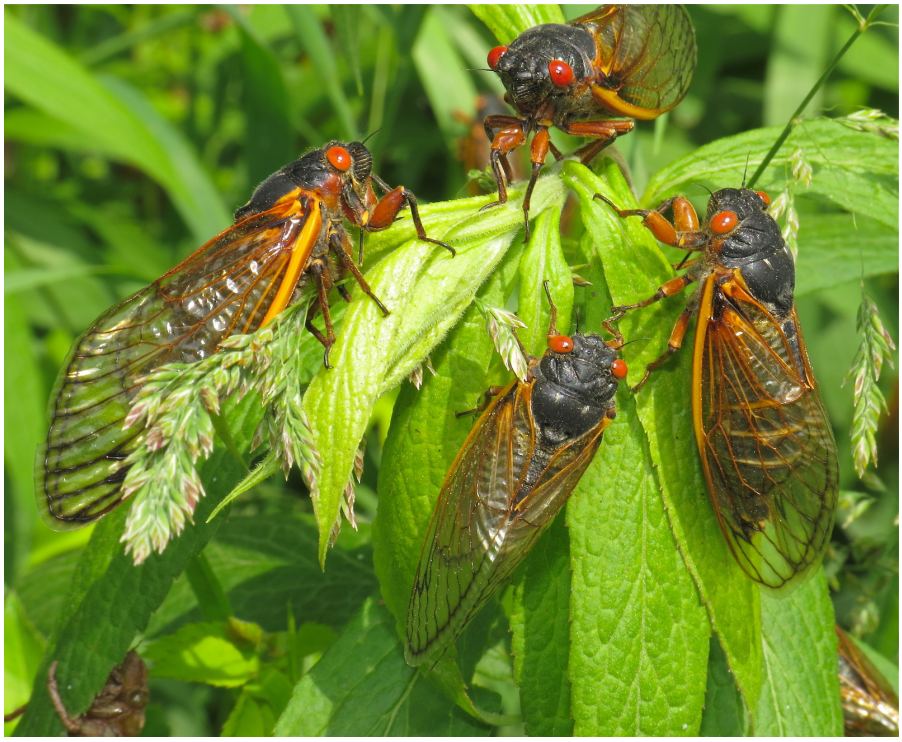

Photo 11. Adult males begin singing to attract females. They often form choruses consisting of several individuals, like this quartet.

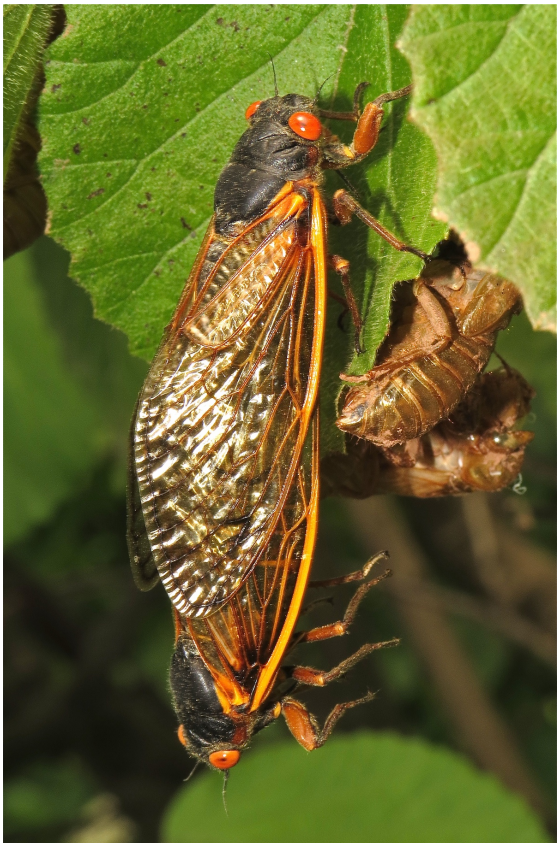

Photo 12. Successful males attract females and mate while clinging to vegetation.

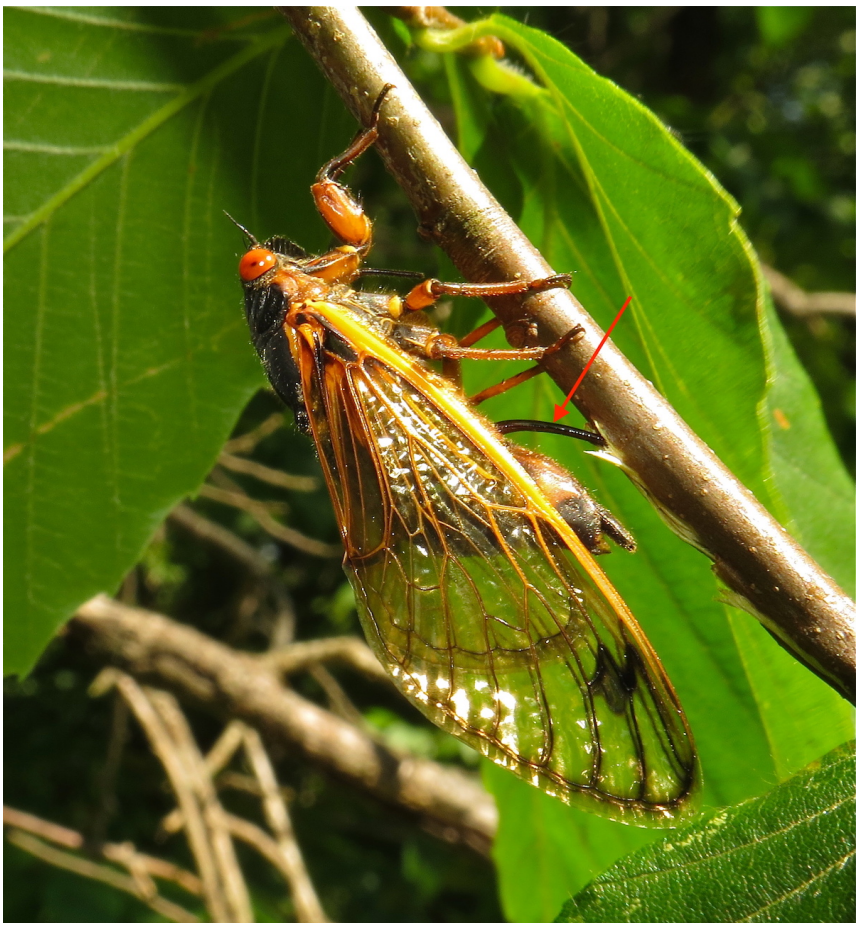

Photo 13. This female has found a suitable twig of a deciduous tree and has used her ovipositor (red arrow) to create a slit into which she will deposit eggs.

Photo 14. Female cicadas lay about 20 eggs in each twig and can produce as many as 600 eggs. The pale, shiny eggs seen here are about the size of a grain of rice. They hatch after about 2 months and the tiny nymphs drop to the ground and burrow into the soil, starting the life cycle anew.

Photo 15. Dead or dying twigs in late spring and summer (known as flagging) are obvious clues to where cicadas have laid eggs. Usually trees are not significantly harmed by cicada activity.

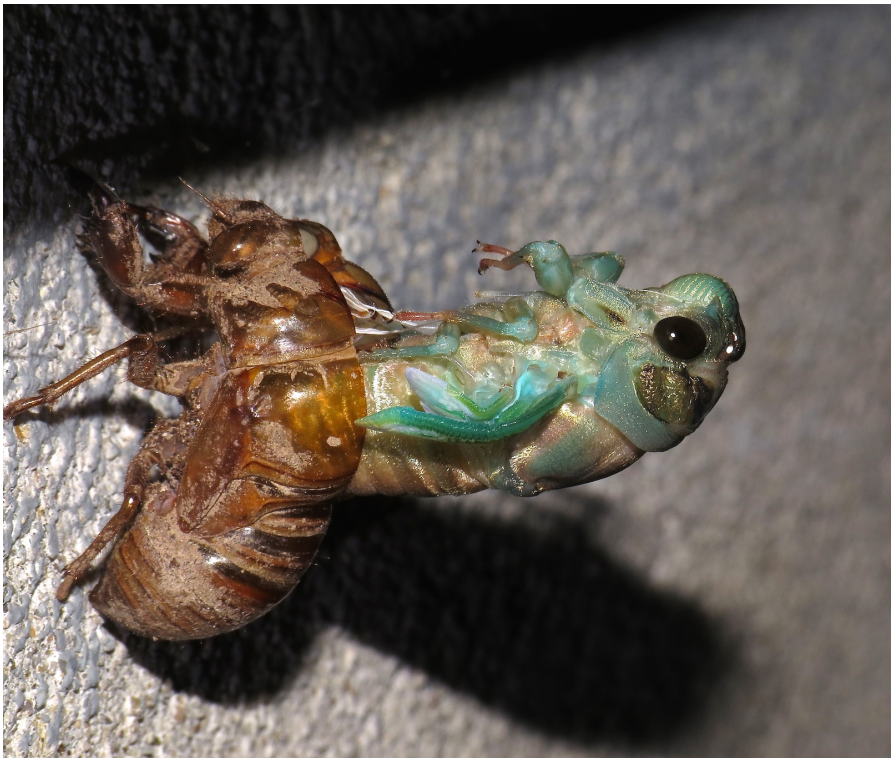

Photo 16. Unlike periodical cicadas, annual cicadas—like this teneral Dog-day Cicada (*Tibicen canicularis*)—do not have red eyes. Although "annual" species actually have 2- or 3-year life cycles, their emergence is not synchronized, so individuals are present every year in varying numbers.

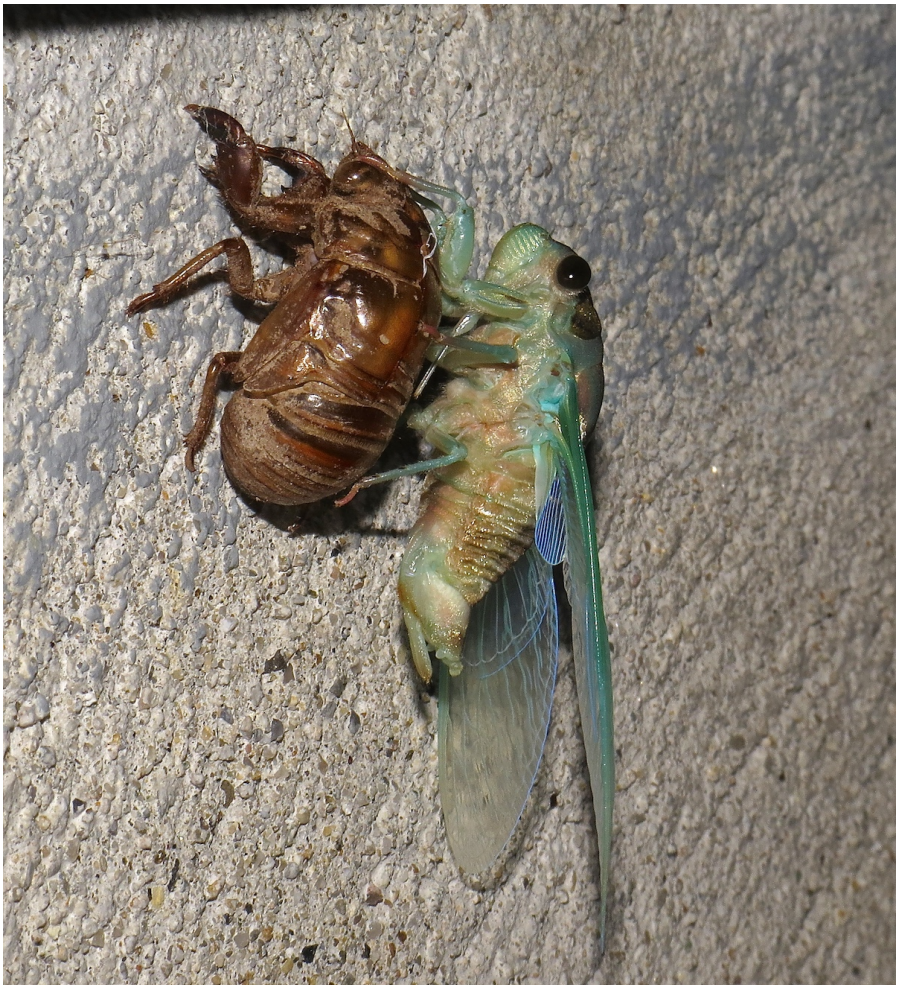

Photo 17. But just like periodical cicadas, annual species dry out by clinging to their old nymphal skins. The entire emergence only took 5-10 minutes..