Periodical Cicadas

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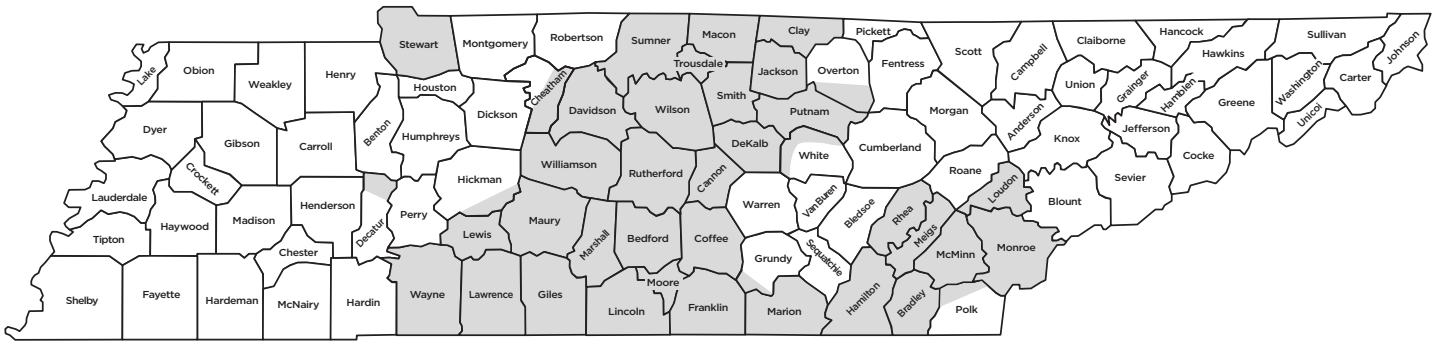
The periodical cicada, *Magicicada* species, has the longest developmental period of any insect in North America. There is probably no insect that attracts as much attention in eastern North America as does the periodical cicada. Their sudden springtime emergence, filling the air with their high-pitched, shrill-sounding songs, excites much curiosity.

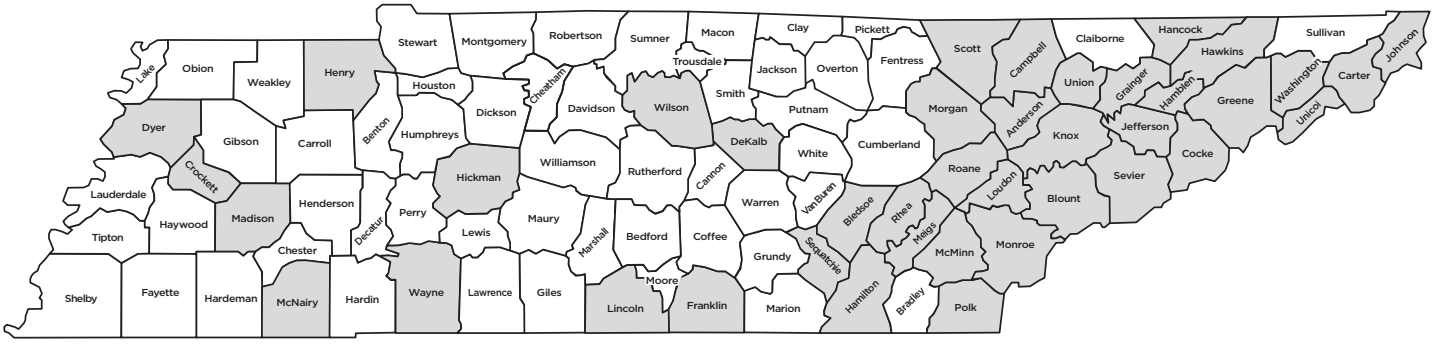
Two races of the periodical cicada exist. One race has a life cycle of 13 years and is common in the southeastern United States. The other race has a life cycle of 17 years and is generally more northern in distribution. Due to Tennessee's location, both the 13-year and 17-year cicadas occur in the state.

Although periodical cicadas have a 13- or 17-year cycle, there are various populations, called broods, that emerge at different 13- or 17-year intervals. Fifteen broods have been described by scientists and are designated by Roman numerals. There are three 13-year cicada broods (XIX, XXII and XXIII) and 12 17-year cicada broods (I-X, XIII, and XIV). Also, there are three distinct species of 17-year cicadas *(M. septendecim, M. cassini,* and *M. septendecula)* and three species of 13-year cicadas *(M. tredecim, M. tredecassini,* and *M. tredecula).*

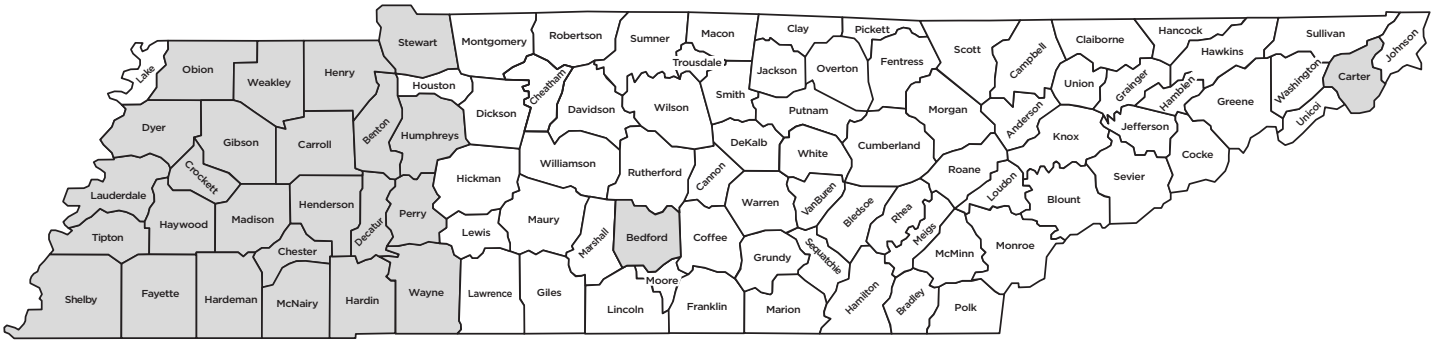
In Tennessee, Brood XIX of the 13-year cicada had a spectacular emergence in 2011 (Map 1). In 2004 and 2021, Brood X of the 17-year cicada primarily emerged in East Tennessee (Map 2). Brood X has the largest emergence of individuals for the 17-year cicada in the United States. Brood XXIII of the 13-year cicada last emerged in West Tennessee in 2015 (Map 3). Brood XIV of the 17-year cicada emerged in 2008 and will emerge again in 2025 (Map 4).



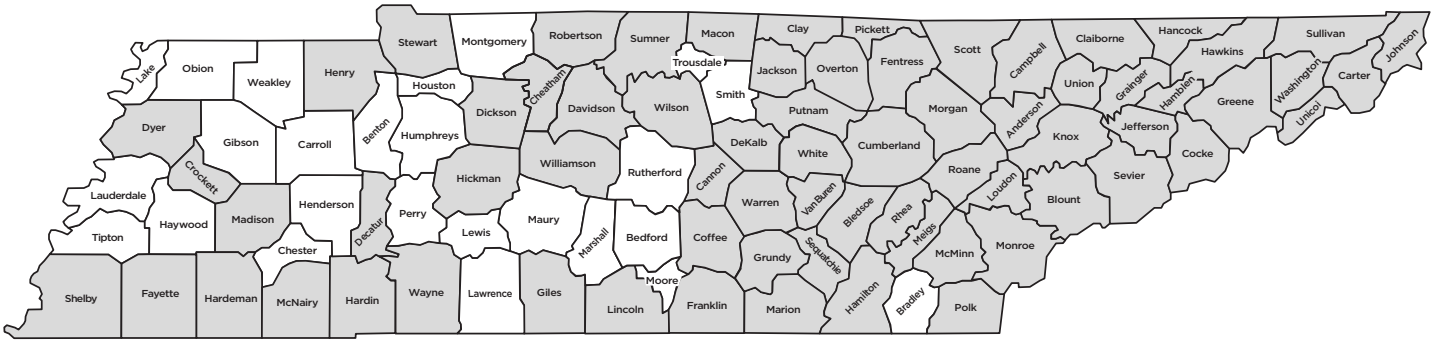
Map 1. *Brood XIX, 13-year cicada distribution. Last emerged May 2011. Projected to re-emerge in 2024.*



Map 2. *Brood X, 17-year cicada distribution. No significant detections occurred in Middle and West Tennessee counties in 2004. Due to emerge in May 2021.*



Map 3. *Brood XXIII, 13-year cicada distribution. Last emerged May 2015.*



Map 4. *Brood XIV, 17-year periodical cicada distribution. Last emerged in 2008 and will emerge again in 2025.*

Common Misconceptions

There is much curiosity and superstition regarding cicadas. American Indians believed that the large cicada emergence had evil significance. Early American colonists were familiar with the Biblical story of locust plagues in Egypt (they had never seen periodical cicadas until the insects suddenly appeared by the millions). The colonists immediately thought a "locust plague" was punishing them. Today, people still confuse cicadas and locusts, and cicadas are commonly called locusts. The term "locust" correctly refers to certain species of grasshoppers.

The large number of cicada adults that emerge often arouses fear that crops will be destroyed. However, adult cicadas do not feed on foliage. Adults may feed on twig sap to a limited degree. The most immediate and noticeable damage results when females make injurious slits in twigs and limbs of trees as they deposit eggs.

It was thought that the distinct black "W" on the outer end of the front wings foretold of war. This mark is characteristic of these species and is caused by deeper pigmentation on the veins. Cicadas cannot sting; therefore, any story that mentions cicadas poisoning fruit by stinging is a myth.

Description and Life Cycle

The adult periodical cicada (Figure 1) is 1-1.5 inches long. The body is black, while the legs, eyes and wing veins are reddish-orange. Adults usually emerge in early May in large numbers when the soil temperature eight inches deep is 64 degrees F. Four or five days after emergence, the males start "singing." This high-pitched, shrill call is produced by two drum-like membranes on the side of the abdomen. This song serves as a mating call to attract females. Mating then occurs and females begin laying eggs. The female cicada has a knife-like ovipositor that she uses to slit twigs of woody plants. Apple, pear, dogwood, oak and hickory are favorite hosts; however, many others have been reported. In each slit, the female lays 24 to 28 eggs. She then moves forward to cut another slit and deposits more eggs. This continues until five to 20 slits have been made in the twig and then she seeks another twig. Twigs or branches with a diameter the size of a pencil are most often damaged. Each female can lay a total of 400 to 600 eggs.

Egg punctures made by the females can damage young, transplanted trees in nurseries and orchards (Figure 2). These punctures cause the twig tips to wilt and often die. The wounds serve as a point of entry or shelter for woolly apple aphids and other insects. Adult cicadas live for only four to five weeks.

Eggs hatch in six to seven weeks. The newly hatched nymphs (immatures) are white and ant-like in appearance. They drop to the ground and work their way into the soil until a suitable root is found. Nymphs grow slowly and their feed by sucking sap from the roots of trees. This has no noticeable effect on trees, even where roots have been reported to be infested with thousands of nymphs. They continue to feed and develop until the spring of the 13th or 17th year (depending on the race). In May of those years, the nymphs burrow upward and leave the soil. This large emergence of nymphs usually occurs after sunset. Nymphs then seek upright structures, such as trees, posts and even weeds, on which to molt. The new adults emerge several hours later. At first, adults are soft and white but become harder and darker in a short period of time. Adults then take flight, and the life cycle continues.

A smartphone app, called Cicada Safari, is available through the App Store to report sightings of cicadas.

Figure 1. Adult Cicada
Bob Rabaglia, Maryland Department of Agriculture, www.forestryimages.org

Figure 2. Damaged Twig
Jim Occi, BugPics, www.forestryimages.org

Figure 3. Eggs and Nymph
Lacy L. Hyche, Auburn University, www.forestryimages.org

Adult Cicada Control

In areas having a previous history of high populations of periodical cicadas, certain preventative measures should be followed. In young fruit tree plantings, delay pruning fruit trees until after cicada emergence so damaged branches can be removed and a proper scaffolding of branches established. If pruning is done before the eggs hatch (five weeks or less after eggs are laid), burn the damaged twigs. When feasible, small, valuable shrubs, trees and ornamentals may be covered with cheesecloth or tobacco canvas (spun row cover) for protection while cicadas are present.

Insecticide spray applications have not been an effective option in preventing egg-laying damage to plants from female periodical cicadas. When they land on an insecticide-sprayed host plant, they can cause some egg-laying damage before they are killed by the insecticide residue. The high number of female periodical cicadas laying eggs over a period of several weeks will cause cumulative damage to plants whether insecticide is used or not.

Emergence
Bob Rabaglia, Maryland Department of Agriculture, www.forestryimages.org

Reference: Hyche, L.L. 1998. Periodical Cicadas ("The 13- Year Locusts") in Alabama. Bulletin 635. Alabama Agricultural Experiment Station, Auburn University, Alabama.

Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label. Persons who do not obey the law will be subject to penalties.

Disclaimer Statement

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication. Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others that may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product. The author(s), the University of Tennessee Institute of Agriculture and University of Tennessee Extension assume no liability resulting from the use of these recommendations.

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