

RESEARCH LABORATORY TECHNICAL REPORT



Brood X Periodical Cicadas

By Kevin Chase, PhD

Directed by Kelby Fite, PhD

Brood X periodical cicadas are known for their 17-year synchronized life cycles and loud, droning noise. In 2021, Brood X will emerge across a large portion of the east coast. Males and females join dense aggregations, or leks, where the males search for the stationary females using short flights and calls. Some of the louder choruses reach 90+ decibels as measured under trees. In certain years, cicadas emerge from the soil in tremendous numbers, and extensive damage to trees is common. Three species are described from Brood X periodical cicadas. Annual cicadas (“dog-day cicadas”) are similar, but are larger and adults emerge in mid-summer. Although mistakenly called “locusts,” cicadas are not related to these grasshoppers.

Damage

In habitats such as suburban yards, parks, cemeteries, and orchards, periodical cicadas often reach higher population densities than they do in natural forests. Cicada populations may exceed 1.5 million per acre. Feeding by large numbers of nymphs over several years can reduce the vigor of small trees. Research in forests determined that feeding by cicada nymphs can reduce tree growth by as much as 30%. The twigs of trees and shrubs can be severely damaged through the egg-laying of the female cicadas (Figure 1). More than

eighty species of trees and shrubs are used by cicadas for egg laying. Oak, apple, hickory, dogwood and members of the rose family are among the preferred species. Females insert a saw-like ovipositor into the bark and wood of twigs and cut a pocket into which eggs are deposited (Figure 2). One female may produce as many as thirty-five bark punctures. In severe cases, repeated attacks may girdle twigs and cause branch dieback.

Figure 1: Cicada damage to oak trees caused by egg insertion into twigs



Figure 2: Cicada oviposition (egg insertion) damage on Norway maple



Life Cycle

Periodical cicadas have one of the longest life cycles of any insect. Adult cicadas begin to appear in late spring or early summer, once the soil temperature is consistently 64°F to 65°F degrees for several days. Adults live for only a few weeks, during which time they mate and lay eggs in twigs of trees and shrubs.

Eggs hatch into nymphs (Figure 3), drop to the soil, and burrow down in search of roots. Periodical cicadas spend their larval lives 6–24 inches underground, feeding on xylem fluid from rootlets and roots. The nymphs continue to develop within the soil for the next seventeen years. At the end of that period, the nearly mature nymphs emerge from the soil and immediately transform to adults (Figure 4).

Figure 3: Newly emerged nymph



Figure 4: Shed skin (left), nymphs emerging from twig (center), and adult (right)



Management

Applying pesticides to trees to prevent adult cicada damage is rarely successful. There is no known method of controlling the nymphs in the soil. In areas where peak adult emergence is expected, the branches of small, high value trees and shrubs can be protected with netting (Figure 5). Placing the net over a frame

protects branches from both cicada egg-laying and mechanical damage caused by the weight of the netting. Branches that grow beyond the netting may still be damaged.

Figure 5: Framed netting over tree



Female cicadas will not begin laying eggs until at least one week after they first emerge, so protection needs to be in place by that time. Fertilizing will increase plant vigor and help offset the debilitating effects from any twig and branch dieback that occurs. If damage occurs, a certified arborist should visually inspect the tree or shrub and develop a recovery plan. Please contact your Bartlett Arborist Representative for more information regarding this pest.



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