

What are Periodical Cicadas?



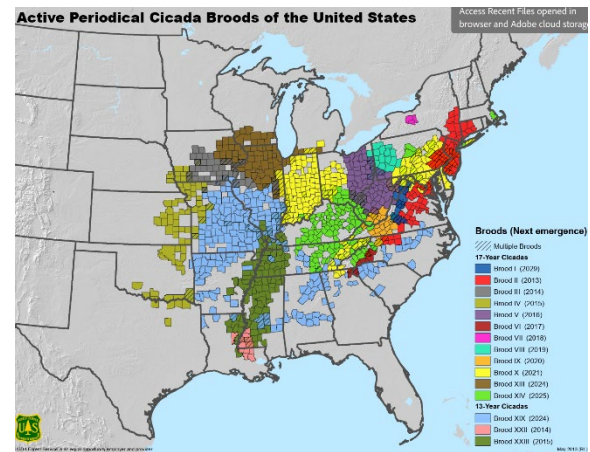
Periodical Cicada Adult; Susan Ellis, Bugwood.org

Periodical cicadas (*Magicicada spp.*) are a unique genus of insect in the order Hemiptera, the “true bugs”. Cicadas are members of the suborder Homoptera which include leafhoppers, scale insects, spittlebugs, and aphids. Adult periodical cicadas are about 1.5 inches long, mostly black with reddish-orange eyes and wing veins. The larger dog-day cicada (*Neotibicen spp.*) can be distinguished by dark green wings veins and brown/black eyes.

Periodical cicadas are native to eastern North America which is the only region on earth where periodical cicadas occur. There are seven different species which have a life cycle of either 13 or 17 years. The lengthy life cycle leads to synchronized mass emergences. In contrast, the shorter two to five year life cycle of dog-day cicadas results in overlapping generations so that some adults are seen every year.

The mass emergence of a group of periodical cicadas during a one-year period is described as a brood and roman numerals are assigned to help distinguish between different broods.

In 2025, parts of southeastern Massachusetts, including portions of Cape Cod, are expecting the emergence of Brood XIV, which last emerged in 2008. Areas of the upper and mid-Cape are expected to experience the largest emergence.



Courtesy of A.M. Liebhold, M. J. Bohne, and R. L. Lilja, USDA Forest Service

What is the life cycle of Periodical Cicadas?

The 17-year periodical cicada species are *Magicicada septendecim*, *M. cassini*, and *M. septendecula*. Cicadas have three life stages: egg, nymph, and adult. Nymphs live underground feeding on the roots of woody plants.



Nymph ready to emerge; Pennsylvania Department of Conservation and Natural Resources - Forestry

After 17 years, the nymphs emerge in late May or early June and immediately climb nearby structures like trees, shrubs, buildings, or herbaceous plants where the nymphs then molt and become adults. The adults move to trees to feed and mate. Male cicadas make sound, “buzzing” at levels from 80 to 100 decibels to attract a mate. After mating, females seek out young twigs of woody plants and create Y-shaped nests to lay eggs. Females lay up to 20 eggs in each nest and can lay up to a total of 600 eggs. After six to 10 weeks, the eggs hatch and the new cicada nymphs immediately move to the ground and dig down to start feeding on woody plant roots, beginning the cycle again. Adults live for about 3-4 weeks before dying, resulting in a relatively brief period for mating and laying eggs.

Do Periodical Cicadas damage plants?

The primary damage caused by periodical cicadas occurs when females lay eggs in young twigs of woody plants. The females create slits that can cause small twigs to be killed and creates wounds where pathogens may enter. Damage can cause tip dieback and leaf death on branches and produce a symptom known as flagging.



Flagging on oak; Linda Haugen, USDA Forest Service, Bugwood.org

Oaks (*Quercus spp.*) are the preferred host, but females will oviposit on any number of other species including apple (*Malus spp.*) and other fruit trees, ash (*Fraxinus spp.*), birch (*Betula spp.*), black locust (*Robinia pseudoacacia*), dogwood (*Cornus spp.*), hawthorn (*Crataegus spp.*), hickory (*Carya spp.*), and maple (*Acer spp.*). Conifers are not impacted.

Mature trees are generally able to tolerate the damage and recover. Very young or newly planted trees are at a higher risk of more serious damage. The most effective method of protection is to apply netting that has a mesh size no bigger than one centimeter. The netting should be secured just below the bottom of the canopy and installed no later than mid-May, prior to the beginning of the emergence. Some minor damage may occur on twigs that are touching the netting directly because females can still reach those twigs by laying directly through the netting. Around the beginning of July, once the adult cicadas have stopped flying, the netting may be removed. Pesticide applications are difficult and costly because of the repeat applications that are required to be effective, therefore, are not recommended in most situations. Consider waiting to plant new trees until fall or after adult activity to avoid damage in areas with high populations of periodical cicadas



Twig damage; Tim Tigner, Virginia Department of Forestry, Bugwood.org

Other than the damage caused to twigs, periodical cicadas are primarily considered a nuisance pest due to the high number that emerge all at once. Densities can be in the tens to hundreds of thousands of cicadas per acre in some areas. Plant feeding by nymphs and adults is considered minor and doesn't warrant protective measures. After the nymphs molt, the exoskeletons often remain attached to the structure that was climbed. The exoskeletons can create a messy appearance, especially on herbaceous perennials. Cicadas are poor fliers, don't bite or sting, and are not poisonous, therefore, cicadas don't pose a threat to humans or pets. However, pets should be discouraged from eating large quantities to avoid digestive problems. The extremely loud buzzing produced by cicada males can also be irritating. The buzzing is loudest during the warmest and sunniest part of the day.

Conclusion

Periodical cicadas have evolved with the forests of eastern North America over many generations. Cicadas play an important role in the ecosystem by providing a nutritious food source for many animals and returning valuable nutrients to the soil after death.

If you are in an area that will be experiencing the emergence this year, please take photos and share your observations for the Massachusetts Department of Agricultural Resources's iNaturalist Mass Cicadas: Brood XIV project: www.inaturalist.org/projects/mass-cicadas-brood-xiv.

Citations:

Liebhold, A. M., Bohne, M. J., and R. L. Lilja. 2013. Active Periodical Cicada Broods of the United States. USDA Forest Service Northern Research Station, Northeastern Area State and Private Forestry. <https://www.fs.usda.gov/foresthealth/docs/CicadaBroodStaticMap.pdf>