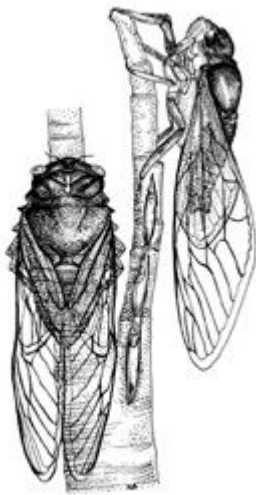


Creature Feature: Spring 2016

By W. Scott Douglas

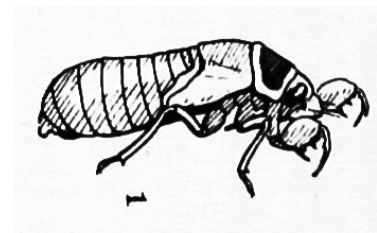
Cicadas



There is no sound so reminiscent of the dog days of summer than the high pitched whine of a cicada calling from the high branches of your favorite shade tree. Cicadas are very common throughout the United States, with thousands of species worldwide ranging in size from less than an inch to over 6 inches. Cicada fossils of even larger species date back to over 125 million years ago, making them a “living fossil”. There are actually two major groups of cicadas; the annual cicadas and the periodic cicadas. Annual cicadas, like the common Dog Day Cicada (*Neotibicen, spp.*), can be found throughout PA every year. Periodic cicadas, however, are much rarer and as their name suggests, do not appear every year. The *Magicicada* are a genus of usually long-lived insects that spend most of their 13 to 17-year life underground. While their underground lifestyle is pretty uninteresting, their adult phase is anything but.

Periodic cicadas are called so because their life cycles are timed so that ALL the nymphs in a particular “brood” emerge at the same time. This may not seem particularly amazing until you learn that this can mean as many as *1.5 million* insects will be emerging, *per acre, on the same day*. There are so many of these insects appearing at once that many animals that normally do not eat insects will change their diets to take advantage of the bounty. You would think that this would result in problems for the cicada, but the sheer number of individuals means that the predators actually get sick of them before they are gone. This is known to biologists as “predator satiation”. The surviving nymphs and adults are left to mate and lay eggs in peace.

This summer, one of the eight broods of periodic cicadas that live in Pennsylvania is scheduled to emerge (there are 21 named broods in the US). This “Brood V” was last seen in 1999 in the very southwest corner of PA, below Pittsburgh and in Ohio and West Virginia. Although there seems to be some confusion in the popular press and social media, they



will not be seen in Bucks County. Our last visitation from periodic cicadas was in 2008. Our next scheduled emergence in the Watershed will not be until 2021 when “Brood X” is due. There are two other broods in Bucks County, “Brood II” and “Brood VI”. These are not due until 2030 and 2034, respectively.

You can easily tell the two types of cicadas apart, at least here in Pennsylvania. The Dog Day cicada has black eyes and green highlights on the body and wing veins, whereas all three species of 17-year cicada have red eyes and orange highlights. The adults each have a unique mating call, emitted by the males at the astounding volume of up to 120 decibels (actually loud enough to cause hearing damage). They make this sound through a unique set of ribbed membranes on their backs, and use their mostly empty abdomen as a resonating and amplification chamber. The adults feed on the sap of the trees on which they land and lay their eggs. While the egg laying process often results in leaves dying and some twig damage, it is rarely detrimental to the trees. However, young, freshly transplanted or ornamental trees can be irreversibly damaged by large periodic emergences, so do not plant in the fall before or spring of the year an emergence is predicted.

When the eggs hatch, the tiny nymphs fall to the ground and quickly burrow into the ground. There they will undergo 5 molts, or instars, until they are ready to emerge. During this time, they will suck sap from the tree roots. Scientists have never documented any damage to the trees from this activity – given the volume of sap I have taken from trees for making maple syrup, I’m not at all surprised. The nymphs may live underground for three to four years (annual cicadas), or as long as 13-17 years (periodic cicadas). When they are old enough, and the soil temperature in their burrows reaches about 65 degrees, they dig a tunnel to the surface and emerge. They climb up on the nearest trunk where they will cling tightly until the skin along their back splits, which allows the adult to emerge. The adult is white at first, and its wings shriveled, but it quickly pumps up its wings and darkens. The cycle continues.

With the minor exception of young ornamental yard trees, cicadas are harmless to crops and people. They can bite, if they mistake your arm for a tree branch, but they are not aggressive. In fact, all cicadas are edible; some are even collected for specialized culinary delicacies. The Chinese have eaten them for centuries, as did Native Americans. They are best deep fried until crunchy and are purported to be tender and sweet. While you may find this disgusting at first, remember that they spend their lives six to eight inches underground feeding only on the sap of tree roots. It’s pretty clean living compared to other multi-legged food organisms such as the shrimp or lobster. On a trip to Ecuador, my wife and I were treated to the grubs of the Palm Weevil, which looks and tastes much the same. I found them to be reminiscent of a chewy shrimp soaked in butter . . . yum!