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A Light in the Night – Fireflies

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A summertime favorite, which often brings back pleasant memories of childhood, is the firefly or lightning bug. How many readers can remember catching one in a jar and watching with wonder as flashes of light emerge from this fascinating creature? There are about 2000 species of fireflies that live in a variety of warm, humid environments throughout the Americas and Asia.

Fireflies are actually nocturnal members of a family of beetles called Lampyridae. Most species have wings and can fly. Adults seen now have developed from the larvae that overwintered. The adults mate and the females lay eggs in the ground in moist areas near water, woods or meadows. The eggs hatch and the underground larvae feed on slugs, snails, worms and other larvae. The larvae paralyze their prey by injecting them with a numbing fluid. Over winter, they may burrow into the soil or hide under the bark on logs or living trees. They emerge in the spring, feed and then pupate, turning into adults about 1 to 3 weeks later. Some adults are predatory, others feed on nectar and pollen while some species do not even have a mouth.

All life stages of fireflies give off light. This process of producing light is known as bioluminescence and takes place in a light emitting organ. Technically, what happens is that the enzyme luciferase acts on luciferin, an organic substance, in the presence of magnesium ions, ATP and oxygen to produce light. It is 100 percent efficient as no heat is emitted. Luciferase has been found to be quite useful to research scientists who have developed ways to use it to detect blood clots, tag TB virus cells and to monitor hydrogen peroxide levels in organisms. Fortunately, for fireflies, the scientists use a synthetic formulation.

The pattern of light flashes that are produced by the fireflies varies by species. These flashes are used to signal potential mates, defend their territory and perhaps to warn predators that they are unappetizing. The female of one species is referred to as the 'femme fatale of fireflies' as her flashing pattern attracts males of another species. When the males go to check her out, they become her next meal.

Many are concerned about what appears to be reductions in firefly populations over the past few decades. Ideal habitat for fireflies is rotting logs and leaf litter at the edges of streams, ponds and other water sources. They inhabit forested areas, moist meadows and marshes. The sizes of these areas have been reduced by both residential and commercial development. The larvae and adults tend to stay in one place so once their habitat is destroyed, they too are gone. Even increased recreational use by boaters, hikers and other outdoor enthusiasts may compromise their living quarters.

Light pollution is also thought to play a role in diminishing firefly populations in some areas. Fireflies use their light flashes to communicate and artificial lights whether from cars, houses, commercial buildings or street lights may effect these communications.

There are several ways in which we can make our yards more attractive to fireflies. Since they like moist and wild places, leave the grass at the edges of your property long and let some native plants move in. Mow these places as seldom as possible as adults often rest on blades of grass or other plant parts during the day.

Place a few logs in this area or make a small woodpile. Females may lay eggs on the moist ground close to the logs where the larvae can then find food and shelter and overwinter in. When adding trees to your yard, consider evergreens as they can help screen out some light pollution. Pines and hemlocks are good choices.

Moisture is also important to fireflies so if your yard does not have a natural water feature or marshy area, consider installing a small pool or pond. Fireflies are attracted to standing water but as we know, mosquitoes are too so one has to weigh the pros and cons.

Avoid using pesticides whenever possible. All too often pesticides kill more than just the target organism they were applied to stop.

Lastly, keep outside lighting to a minimum in July and August when firefly adults are around. If bright indoor lights are illuminating the outside at night, pull the shade or close the curtains. Those solar garden lights may be distracting to fireflies as well so consider their placement if your aim is to attract fireflies.

Fireflies are that quintessential summer treat, like going to the beach, cookouts and just picked tomatoes. It would be a shame to see their numbers diminish. Do your best to make your yard welcoming to these nighttime wonders.

For questions about fireflies or on other gardening topics can be directed to the UConn Home & Garden Education Center at (877) 486-6271 (www.ladybug.uconn.edu) or contact your local Cooperative Extension Center.