

## “Not so Uncommon Invertebrates (at least for now!)” Fireflies, Lightning Bugs, Glowworms, by Brenda Barrett

**Latin Name:** *Photinus pyralis*

**Family:** Lampyridae

The Lampyridae are a family of insects in the beetle order Coleoptera with over 2,000 described species. They are found all over the world except extremely cold places like the North Pole, Antarctica and extreme north Canada and Siberia. Despite their name, only some species produce adults that glow. Fireflies in the western United States, for example, lack the ability to produce light. I am grateful to live in a region where they do glow.



Fireflies are certainly not uncommon, but I think we all find them to be somewhat magical. How can something so tiny create so much wonder and entertainment? In early June of this year I had seen an abundance of fireflies on my plants during the day, so I knew they were here. I would look out my window at night but did not see much activity, so I was disappointed. My husband called me into the backyard and said *look up*. And there they were, hundreds, if not thousands up in the trees. It was an incredible sight and I enjoyed them every night for almost two weeks.

Fireflies are bioluminescent which means they are living creatures that produce light, a trait shared with a handful of other terrestrial insects, including click beetles and railroad worms. The light is used to attract members of the opposite sex and to warn off predators. Lightning bugs taste bad to birds and other potential predators, so the warning signal is memorable for those that have sampled before. Each species has its own communication patterns: different flash rates and durations, color tones and intensities.

We don't often see fireflies before they reach adulthood. I did not know that they glow in all life stages. Bioluminescence begins with the egg and is present throughout the entire life cycle. All firefly eggs, larvae and pupae known to science can produce light. Some eggs emit a faint glow when disturbed.

At the end of summer, adult females lay about 100 eggs in soil or near the soil surface. The worm-like larva hatches out in three to four weeks and forages for food throughout the fall. They are carnivorous and worms, slugs and snails are some of their favorite foods. They should be very happy in my yard! In winter they will hibernate during the larval stage, some species for several years. Some do this by burrowing underground, while others find places on or under the bark of trees. At different points during the spring and summer, depending on the species, they enter a brief pupae stage and then emerge as the flying insects we all know. They stay close to where they are born and lay their eggs there. Adult fireflies live only another two months, spending the summer mating and performing for us before laying eggs and dying.

Studies indicate that firefly numbers may be decreasing. One theory is light pollution. Another theory is loss of habitat. Once their habitat is destroyed, the fireflies are gone, too. If a breeding population is disturbed, they are unlikely to relocate somewhere else. Also, insecticides designed to kill grubs will kill firefly larvae and broad-spectrum sprays are bound to harm adult fireflies that rest on vegetation. We can help larvae by leaving undisturbed areas of leaf litter and wood debris in corners of our yard. For adult fireflies, don't mow the lawn too often or too short. You can also turn off your outside lights if only for a week or two when you know they are there.

I did not know that Fireflies are used in medicine. Scientists have developed uses for firefly luciferase, the enzyme that produces bioluminescence in fireflies. It has been used as a marker to detect blood clots, to tag tuberculosis virus cells and to monitor hydrogen peroxide levels in living organisms. Hydrogen peroxide is believed to play a role in the progression of some diseases, including cancer and diabetes. Scientists now can use a synthetic form of luciferase for most research, so the commercial harvest of fireflies has decreased.

Because they are so noticeable, lightning bugs have always been a part of human culture and they have often been the subject of myth, legend and folklore. Europeans once believed that if a lightning bug flew in a window, a person would soon die. The Chinese believed that lightning bugs were produced by burning grass. Native Americans smeared glowing lightning bugs on their faces for decorations. Japanese believed that fireflies represented the souls of the dead.

And lastly, they are cousins of the Soldier or Leatherwing Beetle. They look very similar, but the Soldier/Leatherwing Beetle does not glow. Both are beneficial insects..... *but that was another article!*

Photo Credit: Clemson.edu – Light Up the Night Event

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