

## Fireflies



Adult fireflies rest on foliage during the day.

The adults rest on foliage during the day and fly around between dusk and midnight. Females lay their eggs in the soil, particularly in damp places. The larvae that hatch from the eggs are carnivorous. The larvae of some species glow, and are called glowworms (but so are some wingless female fireflies and the larvae of another closely related beetle family, the Phengodidae). The larvae overwinter in the soil, then pupate the following spring and eventually emerge as fireflies.



Image: European Physical Society

This firefly show how bright the light can be from these beetles.

Most people are fascinated by how these insects produce light, but we should also be aware that fireflies and their relatives are beneficial insects, in that they help to control pests. Although the adult stage is very familiar to most people, it's actually the larval stage which is most beneficial. The larvae are active at night, usually on the soil surface or under vegetation, and so are often overlooked by most people. However, many are bioluminescent and therefore

It's been a great year for fireflies; they got started earlier in June than normal this year, and they seem to have been more numerous than normal. "Firefly" or "Lightning Bug" is the common name for nocturnal luminous insects that are neither flies nor bugs, but beetles belonging to the family Lampyridae. There are 23 genera and about 200 species of fireflies in North America, most of which are about an inch or less in length. There are many more tropical and subtropical species. In the U.S., fireflies are almost never seen west of Kansas. Unlike most beetles which have hardened elytra (forewings), their elytra are soft and flexible.

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Photo courtesy of Lenhard, Gerald. Louisiana State University, from [www.forestryimages.org](http://www.forestryimages.org).

Adult fireflies have soft elytra (front wings).

Both male and female fireflies produce greenish-yellow to reddish-orange light from special organs on the underside of the abdomen. The flashes are "cold light" because almost no heat is produced. The light is created when oxygen combines with a substance called luciferin in the presence of the enzyme luciferase, in special cells called photocytes. The rhythm and intensity of the flashes vary with the species and probably serve to identify males and females to each other. Synchronized flashing is characteristic of some tropical species.



Photo courtesy of Lenhard, Gerald. Louisiana State University, from [www.forestryimages.org](http://www.forestryimages.org).

Firefly larvae feed on slugs, snails and other soil-dwelling insects.

called glowworms. The larvae feed on things like snails and slugs, and also soil-dwelling insects such as cutworms.

Here in the United States firefly larvae are primarily terrestrial, and therefore beneficial as predators of crop and garden pests. In some tropical parts of the world there are also species that have aquatic larvae that prey on aquatic snails. These are thought to be important in helping control some human parasites that use snails as an obligate host in part of their life cycle.

So, when you see fireflies flashing, remember that they're not just interesting, but also beneficial natural enemies!

– *Dan and Susan Mahr, University of Wisconsin - Madison*

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### **Additional Information:**

- 🟩 Fireflies (family Lampyridae) – a profile by the Minnesota DNR at [www.dnr.state.mn.us/volunteer/julaug02/fireflies.html](http://www.dnr.state.mn.us/volunteer/julaug02/fireflies.html)
- 🟩 Firefly Lights – links to many other sites devoted to fireflies at [www.fireflymagic.com/fireflies/fireflies\\_information.html](http://www.fireflymagic.com/fireflies/fireflies_information.html)