

Colorado Fireflies

Photuris spp. | Photunis spp.

Fireflies in the Roaring Fork Valley

The glow of fireflies (also known as lightning bugs) are often associated with warm summer evenings, but here in Colorado sighting one of the more than 150 species of North American firefly is rare. Fireflies that do flash in Colorado's dry climate belong to the Genera photuris and photunis and the Family Lampyridae. Many people do not know that the state is also home to plenty of "day fliers" that use pheromones to locate and communicate with potential mates.

While the flash of fireflies may be few and far between here in the Roaring Fork Valley you may find luck near hot springs and other sources of water with plenty of cover from tall grasses and other vegetation.

Life cycle and breeding

The life cycle of a firefly is typical of most insects. Females lay eggs and then the eggs hatch into larvae that spend a good deal of their life eating their way through maturation. After emerging as adults they mate and most likely die soon after.

Female fireflies lay their eggs in the soil or trees which hatch within a month. The larvae (glow worm) may work together to feed, or scavenge, on other insects earthworms, snails, or slugs for up to two years. For large prey both larvae and adults inject an anesthetic to immobilize them before beginning their feast. Each winter larvae dig tunnels in the soil to wait out the cold season.

In the spring once the soil has begun to warm the larvae emerge, feed, pupate and become adults. Like all insects an adult firefly has antennae, six legs, and three body parts (head, thorax and abdomen). The ability to glow comes from the photic organ located at the base of the abdomen. The flash, or glow, of this insect is called bioluminescence and is a defining characteristic of the Lampyridae family.



Although common in the eastern United States, the few Colorado firefly species can be found near wetlands and rivers.

While adults possess mouthparts that imply predation observations of adults feeding on other prey items are practically non-existent. They may not prey on other insects, but a few species of females mimic the flashing patterns of other species of female fireflies. This

mimicry lures males close enough to be pounced on and eaten! Scientists believe that the females benefit from necessary chemicals they receive from the male.

Bioluminescence

The glow or flash from a bioluminescent insect is a very efficient "cold light" that releases very little heat. In contrast, if you hold your hand up to a light bulb it will quickly get very warm. The warmth is the energy being lost in the process of creating light.

At some point in their life cycle all Lampyrids glow. As larvae and eggs all fireflies glow continuously but only some species carry the ability to glow- transformed to a flash- into adulthood. It is also interesting to note that while there are other beetles that possess

bioluminescence, adult fireflies have the unique ability to flash.

Scientists are not sure of the process(es) Lampyrids use to glow. They believe that the insect may be able to control either the oxygen flow to the photic organ, or the nerves that control structures releasing messenger chemicals to the photic organ, thus producing light.

While little is known about the glow's source, scientists have several theories about why they glow. The intensity or frequency of the glow from the photic organ increases when the larvae have been disturbed. All known firefly larvae use their ability to glow to warn potential predators that they have defensive chemicals that taste bad.

Flashing is also used to attract mates, each species uses its own specific pattern. Females perch on tall vegetation to communicate with the males who move closer and closer to the female. Whatever the reason, fireflies' flashing can bring back child-like nostalgia to the adult viewer.

Habitat and observation

The greatest numbers of these insects are

found in tropical Asia and Central and South America. It makes sense then that Fireflies are most likely to be found in warm humid areas. More specifically larvae tend to make homes in rotting wood or forest litter along streams and ponds, and adults can generally be found in the same areas as larvae.

If you are interested in attracting fireflies

to your property (because they also eat aphids and scale insects) here are a few tips you can use:

- Cut down/eliminate using chemicals on your lawn.

- Reduce "extra lighting" on your property; as this light interferes with the signaling insects. (Moonlight, however, may even interfere.)

- Low overhanging trees, tall grass, or similar vegetation will provide adult fireflies a place to rest during the day and remain cool.

For more information on where to see fireflies in the Roaring Fork

Watershed contacts us at Roaring Fork Conservancy at (970) 927-1290.



Firefly larva (top) over-winter in tunnels dug in the soil. After metamorphosis, larvae become an adult (bottom) and are ready to begin their evening light shows.

Written by Krista Prokosch

August 2005



ROARING FORK CONSERVANCY

P.O. Box 3349, Basalt, Colorado 81621
(970) 927-1290
www.roaringfork.org