

FIREFLIES (*Lampyridae* spp.)



John Maxwell photo

One of our most beloved insects, fireflies do more than make summer nights sparkle. The bugs also can inspire medical research and exercise.

By *Barbara Tibbets*

Fireflies play an important role in nature beyond providing pyrotechnics.

They loosen soil, allowing oxygen, sunlight and water to penetrate. They maintain balance by eating impressive quantities of food while in the larval form. Although toxic to many potential diners, they are eaten by spiders, frogs and other insects.

Their light-producing chemicals (luciferin and luciferase) have been used in research on multiple sclerosis and cancer. And they have been synthesized to make glow-sticks.

They also provide beauty and entertainment, even serving as a source for exercise while being pursued by children on summer evenings.

Fireflies, or lightning bugs, belong to the beetle family *Lampyridae*. Like all beetles, they have two sets of wings. The top wings are tougher and shorter, covering the insect while at rest and providing balance during flight. If lifted, the second set of longer wings unfolds

to propel the firefly through the air.

In spite of the name, some adults don't produce light. In Indiana, 13 varieties fly only during the day—we call them lightning bug fireflies, and they attract mates by scent.

At least 30 other types of “dark” fireflies emerge when the summer sun sets in Indiana, flashing patterns and colors to find mates. Many also flash rapidly when caught in a spider web or placed in a jar, a stress reaction that others recognize as a danger signal.

The light is produced by chemicals mixing with oxygen in the insect's abdomen. The color, intensity and duration of the flashes, along with movement, allow fireflies to find each other. Although most of Indiana's fireflies don't have common names, the one known as the Big Dipper, *Photinus pyralis*, is our most readily seen variety. It regularly graces lawns and roadsides as summer darkness falls. Its yellow flash lasts up to three quarters of a second, and it flies upward as it glows.

The fireflies darting through our

summer evenings are male. Females rest on grasses and shrubs, watching and flashing back. Attracted males approach and mate. The female of the genus *Photuris*, known as a tiger firefly, uses the same method but adds a twist. After it mates, it imitates flash patterns of other firefly species to set a trap. Then it eats the eager male.

A few days after mating, females move to damp areas in meadows, forest edges, along streams, or near wetlands, depending upon species. They lay up to 200 glowing eggs in moist soil. The eggs hatch three to four weeks later when a small brown segmented larva emerges. The larva's eighth segment produces green light, earning the common name glowworm. Some scientists say the glowing eggs and larva announce to predators that they are toxic or distasteful.

Firefly larvae spend much of their time eating and growing. Like spiders, the larvae inject prey (other insect larvae, slugs and snails) with digestive enzymes, then feed on the resulting slurry. They can even kill earthworms, after which several glowworms might share the spoils. In autumn they burrow underground to hibernate through winter, coming out in spring to feed for a few more weeks. They burrow again to pupate, emerging in June or July as adults. Mature fireflies live a few weeks, long enough to restart the cycle.

Fireflies make good ambassadors to the insect world for children. Use summer evenings to share your firefly knowledge with them. Make humid, firefly-friendly catch jars by inserting a slice of apple and not punching holes in the lid.

After kids enjoy this natural lantern, encourage them to release their catch, so the insects can heed the mating lightning. ■

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