

FIREFLIES:

Nature's nightlights

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By Jodie Provost

Learning more about fireflies has been on my list ever since experiencing the awe of these tiny creatures on a warm summer night after a rain. Their blinking lights in the moist air were like dancing fairies. It's a magical spectacle that everyone should have the chance to delight in. Soon, the nights of June and July will be alive with fireflies, bringing the opportunity.

Around the world

The miniscule night light of fireflies are distributed worldwide in about 2,200 species, with thousands of species yet undescribed. In North America, about 170 species have been identified. They live in an array of habitats from forests, fields and marshes to more arid areas after rainy seasons. Warm, humid environments and tall grass are preferred. In day, they hide in ground cover. By night, they venture to the tips of grass blades and into trees to blink for mates. The element that all firefly species need is standing water - whether vernal pools, ponds, streams, marshes, river or lakes.

Shining ones

Also known as lightning bugs, moon bugs or glow worms, fireflies are really beetles in the family *Lampyridae*, which means "Shining ones" in Greek. Their bioluminescence is a cold light produced by combining a chemical called luciferin with luciferase (an enzyme) and oxygen in their abdomen. The light is typically used by male fireflies as they fly to attract mates, but

may also be used to deter predators, assert territory, and communicate with others of their species. Different species can be distinguished by light color (yellow, green or amber), flash pattern, season and variations in flight. Some firefly species are protected by chemicals that make them repulsive to predators. Female Photuris fireflies, which lack these defensive chemicals, are dastardly in their lure of Photinus males. They display the flash pattern of female Photinus to capture and devour the males to obtain their defensive chemicals.

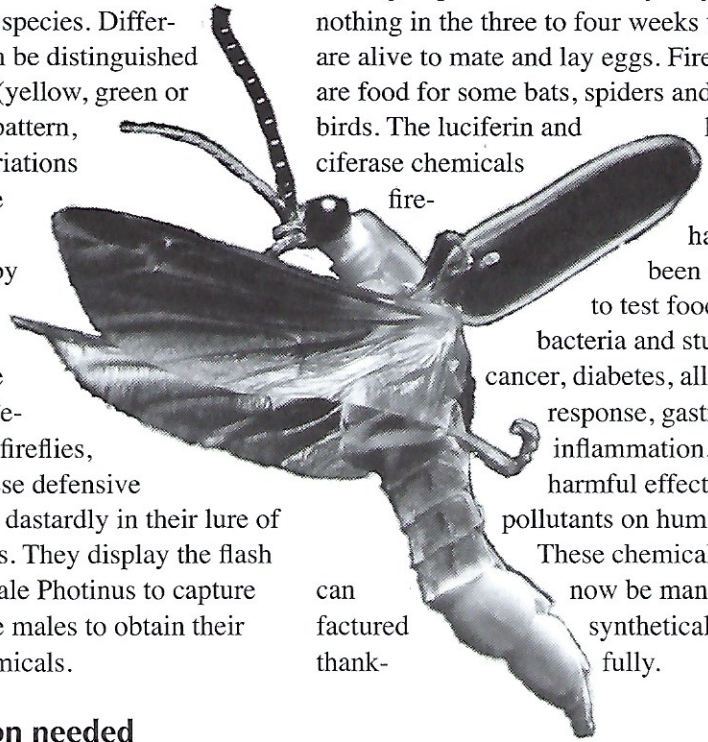
Conservation needed

Unfortunately, opportunities may become fewer due to a decline in firefly numbers. Reports from around the world tell of shrinking or even disappearing firefly populations and an urgent need for habitat conservation. Threats include pesticides, habitat loss, light pollution and a long history of collection by the biomedical industry for their light-producing enzymes.

Tiny, yet important

Though tiny, fireflies play an important role and provide services in our ecosystems like all native creatures. Larvae dwell on the ground one to two years, aiding pest control, eating slugs, snails, worms, aphids and other insects. It is not clear what adults eat.

They may feed on pollen or nectar, serving as pollinators. Or they may eat nothing in the three to four weeks they are alive to mate and lay eggs. Fireflies are food for some bats, spiders and birds. The luciferin and luciferase chemicals in fireflies have been used to test food for bacteria and study cancer, diabetes, allergy response, gastric inflammation, and harmful effects of pollutants on humans. These chemicals can now be manufactured synthetically, thank-fully.



Tips to keep nature's lights on

We can benefit fireflies and other wildlife by using these tips in our backyards to our back forties:

- Turn off outside lights and close your blinds at night. Human light pollution may disrupt their blinking communication and thus ability to mate and reproduce.
- Create water features. Even small depressions full of water can make a difference.
- Let leaf litter, branches and rotten logs accumulate under trees, giving firefly larvae a home.
- Avoid use of chemicals, whether to treat insects like mosquitoes, kill

weeds or fertilize your lawn. Go natural. Fireflies and their larvae may ingest these chemicals and come in contact with insects that have been poisoned.

- Mow your lawn less, cut it at a taller height, and leave areas undisturbed. This reduction in lawn care (yay!) will disturb fireflies on the ground less, and make more habitat available.
- Plant native trees. Pine, in particular, can provide the shade and low light that increases the amount of time fireflies have to mate.
- Do not introduce earthworms, such as dumping unwanted bait worms. They are not native, and diminish plant diversity and leaf litter. Cover and food available to insects such as fireflies is reduced. In turn, fewer insects means less food for reptiles, amphibians, birds and small mammals.
- Join Firefly Watch at <https://www.massaudubon.org/get-involved/citizen-science/firefly-watch>. This citizen science project encourages people around the country to report firefly sightings for a database on distribution and abundance.
- Spread the word to neighbors, friends and family to magnify your effort, creating even more firefly habitat.

By implementing these tips, we can each do our part to increase the odds that the enchantment of nature's night lights and the services they provide will endure.

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Jodie Provost is a private land habitat specialist with the Minnesota DNR.

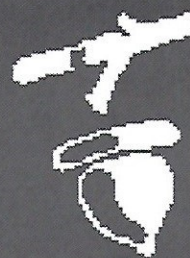
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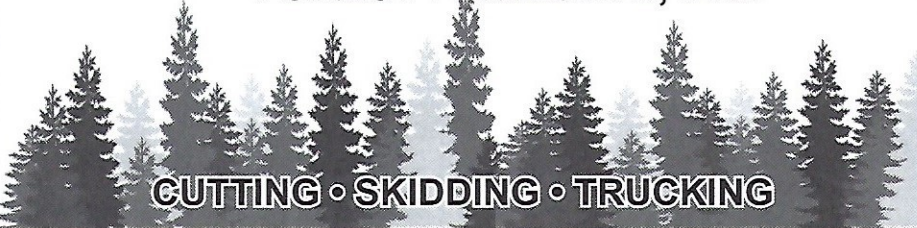
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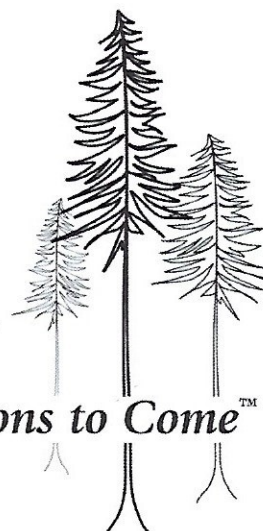
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