

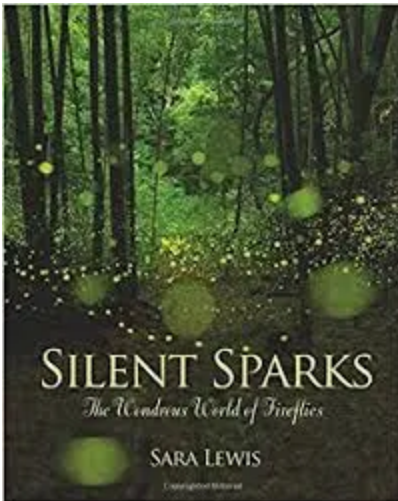
Silent Sparks: The Wondrous World of Fireflies

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by Sara Lewis, Princeton University Press, 2016



Many of us who grew up on the East coast or the Midwest grew up with fireflies. My sister and I caught them and put them into jars to light our bedroom in the middle of the night. Sometimes we squished a few for the glowing parts (sorry about that) and put them on our fingers. Sadly, our area of Colorado and has no fireflies, so we have to travel to enjoy them, now without destructive tendencies.

Sara Lewis tells us that she “grew up a wild child.” At eight years old, she was already a budding biologist. Her PhD research focused on coral reefs, working and sleeping in an undersea habitat. She is an evolutionary ecologist and a professor of biology at Tufts University.

But, more importantly, she is a “firefly junkie.” Luckily,

Silent Sparks is written for those of us who are not professional biologists but like Sara Lewis marvel at the magic of fireflies. There is still a lot of biology in this book but it also includes so much that is utterly amazing.

Americans are definitely firefly devotees. In June, more than 30,000 visit the Great Smoky Mountains to admire the performance of the synchronous fireflies. Even more visitors throng to Malaysia or Taiwan for firefly viewing. Perhaps most devoted are the Japanese, who have been intrigued by fireflies for at least a thousand years. I have a traditional painting of a firefly given to me by a good friend in Japan, the work of her artist father.

Lewis, of course, doesn’t stop at the wonder of fireflies. She provides us with great detail about their history, anatomy, and behavior. The firefly goes back at least 150 million years to the Jurassic dinosaur time. Now there are nearly 2,000 firefly species worldwide from Tierra del Fuego in the south to Sweden in the north. Georgia and Florida have the most firefly species in the US. Unfortunately, they are scarce in the Rocky Mountain west.

We learn from Lewis that both the males and females flash. Even the grub-like juveniles flash, probably to suggest to predators that they’re really not very tasty. Lewis takes us through the youthful life of the firefly from faintly glowing egg to adulthood. Adults focus

their entire existence on sex. The males flash to show off to females, who sit patiently in the grass waiting for the most attractive male. The females only flash back when they spot a male that looks especially attractive.

Lewis takes us through the entire reproductive sequence. Then she explains the source of the bioluminescence, explaining that the main star is the enzyme luciferase. Fireflies can switch their lights on and off. Some can even synchronize their flashes so that they flash together all night long. We also learn that fireflies are poisonous to birds, lizards, mice, and other insectivores. In fact, the flashing likely evolved to broadcast the poison.

Unfortunately, we learn fireflies are significantly endangered, declining like many insects worldwide. They are affected by habitat destruction and light pollution. They are also being destroyed for their light-producing chemicals. We can, however, create firefly friendly habitat like we can for butterflies, although not here in the mountains.

The most fascinating part of the *Silent Sparks* story takes place in the Great Smoky Mountains National Park in June each year. In the tiny town of Elkmont, thousands of visitors arrive for “The Light Show.” The shuttle bus reservations, available only online, sell out within minutes. People bring lawn chairs and wait quietly, “like visitors to a cathedral.” The first flash appears when the forest is completely dark. Soon other fireflies join the first. Thousands of males begin flashing in “lock-step synchrony. Together they flared out their six precisely timed flashes, and then they all ceased at once.” Lewis is mesmerized by the biological rhythm. She explains: “Alone in the silence save for a synchronous symphony played by a thousand fireflies, I felt like I’d fallen out of time.”

Lewis provides a field guide to the common fireflies of North America in an appendix to *Silent Sparks*. She tells us what to look for and even how to attract males by imitating females by holding a penlight near the ground. She suggests we venture out into the night to see the fireflies’ display.