

Did You Know? Synchronous Fireflies

Fireflies, lightning bugs, and glowworms – these bioluminescent beetles can be found on every continent except Antarctica and mesmerize humans with their magic-seeming illumination. The glow comes from a substance called luciferin, and the insects generally use this feature to attract mates.

Some species take the light show a step further, and instead of just individually lighting at random, they synchronize their flashes, creating a fascinating effect for anyone fortunate enough to see the spectacle.

In Thailand, Malaysia, and the Philippines, several species of *Pteroptyx* lightning bugs demonstrate this phenomenon, completely synchronizing their flashes so they all turn on and off at the same time. These beetles perch in mangrove forests and along riverbanks, and they light up entire trees at once.



Photo courtesy of Radim Schreiber, fireflyexperience.org

In pockets of the eastern United States, *Photinus carolinus* fireflies, like the one shown here, flash five to eight times at half-second intervals, followed by a period of darkness for about eight seconds before repeating the pattern. The individual flashes during the illumination are often scattered, but the dark stretch is uniform — all the lights go out together. The United States and Mexico are also home to other synchronous species such as *Photuris frontalis*, *Photuris knulli*, and *Macrolampis palaciosi*, all of which have their own flash patterns.

Some scientists hypothesize that unified flash patterns help females ensure they respond to male fireflies of their own species. Others say the synchronized dark period confuses predators and allows males to search, undistracted, for potential female partners.

Firefly tourism has introduced these species to hundreds of thousands of observers, but the influx of visitors around these delicate creatures can threaten their existence. Human viewers can avoid disturbing these species while observing them by staying on trails, eliminating light sources or covering them with red cellophane (no flash photography), and eschewing insect repellent in the field.

— *Danielle Phillippi*