

Heterophotinus vittatus Olivier, 1790

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Kingdom: Animalia

Phylum: Arthropoda

Class: Insecta

Order: Coleoptera

Suborder: Polyphaga

Superfamily: Elateridae

Family: Lampyridae

Genus: Photinus

(<http://bugguide.net/node/view/12418>)

Species: *Heterophotinus vittatus* – Olivier 1790

Some people think *Photinus vitiosus* Gemminger 1870 and *Photinus vittatus* Gorham 1898 refer to the same species. In such case the valid name is *Photinus vitiosus* Gemminger 1870, because of the priority rule of the ICZN 1999 (Caballero-Zaragoza pers. com.)

1. Geographic Range – Observed in Puerto Rico in the following municipalities: Adjuntas, Aguadilla, Arroyo, Bayamón, Cabo Rojo, Caguas, Canóvanas, Cayey, Coamo, Guayanilla, Isabela, Manatí, Mayagüez, Ponce, Río Piedras, San Germán and Toa Baja. *Photinus vittatus* is uniformly distributed throughout the island of Puerto Rico. (Observed from collection in the Entomology Lab. at the UPRM biology department)

P. vittatus has also been observed through the Hispaniola and Virgin Islands. Other species of this genus have been observed throughout the Antillean islands. (Leng & Mutchler)

2. Habitat – *Photinus* fireflies' habitat is varied, but these species typically are found in grassy fields or along the brushy banks of streams and marshy areas. These species are adapted to mesophyll tropical forests, secondary growths, marshy areas, and open fields. (<http://iris.biosci.ohio-state.edu/projects/FFiles/habitat.html>)

Photinus fireflies are nearly all mesic forest and forest-margin (ecotone) species, with some populations thriving at the edges of lawns and mowed roadsides, along streams, and at the edges of agricultural fields. (Lloyd, J. E. 2006.)

3. Physical Description – 6-14 mm elongate, rather slender beetles, antennae slender, feebly compressed, second segment one-half to one-third as long as third; pronotum entirely covering head and not carinate medially, anterior margin obtusely rounded; light organs well developed, largest in male, occupying all the ventral abdominal segment behind the third or fourth and with stigmatic pores on the fifth and sixth segments; smaller in females, located medially on the

segments, but the stigmatic pores are scarcely or not at all visible. Pronotum is rosy pink with dull yellow edges Elytra are mostly blackish brown with dull yellow on sides and down middle. Both sexes have flashing yellow lights, smaller in female. *Photinus vittatus*' genital apparatus is what differentiates it from other species of the same genus. (Caballero-Zaragoza pers. com.)

4. Development => *Photinus spp.* firefly eggs, which also emit a slight glow, hatch after four weeks into flightless larvae, the longest stage of the firefly life cycle. After passing through the larval stage, the developing firefly moves into chambers in the moist soil and pupates.

5. Reproduction => During mating males of several *Photinus* species transfer a complex, protein-rich spermatophore to females. After release of sperm bundles into the female spermatheca for storage, the spermatophore moves into a specialized compartment within the female reproductive tract, where it subsequently disintegrates.

In *Photinus*' firefly species with single pulse flashes females preferentially respond to flashes of greater intensity and duration. Male *Photinus* provide a nuptial gift to females at mating in the form of a spermatophore and flash duration serves as a good predictor of spermatophore mass for males collected early in the season.

Photinus' spermatophore mass decreases with subsequent matings. In response, nutrient-limited females may stop preferentially responding to longer duration flashes, increasing their overall responsiveness later in the mating season as they forage for spermatophores. Therefore, the evolution of male courtship signals in *Photinus*' fireflies is the product not only of female preference for male flash characteristics, but also the costs and benefits of female choice that shape these preferences. (Cratsley, C.K. 2004.)

6. Lifespan/Longevity – Larvae live one to two years and adult *Photinus* live 5 to 30 days. (McKenzie, J. 2001.)

7. Behavior => Mostly nocturnal. Both larvae and adults exhibit bioluminescence. (Lloyd, J. E. 2006.)

8. Communication and Perception => Adult fireflies use their glow to both ward off predators and proceed with mating courtship. *Photinus* emit bioluminescence in neurologically precise flashing patterns. (Lloyd, J.E.2006)

9. Food Habits – *Photinus* fireflies do not feed as adults, so spermatophore mass decreases with subsequent matings. In response, nutrient-limited females may stop preferentially responding to longer duration flashes, increasing their overall responsiveness later in the mating season as they forage for spermatophores. (Cratsley, C.K. 2004.)

10. Predation – observed only on larval stage. Larvae feed on other insect's larvae, slugs, and snails. Primary diet: insectivore, molluscivore, vermivore. (McKenzie, J. 2001.)

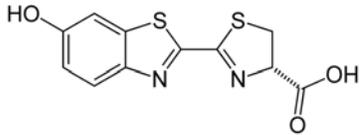
11. Ecosystem Roles – unknown.

12. Economic Importance for Humans: Negative – There is no known negative economic importance for humans.

13. Economic Importance for Humans: Positive - There is no known positive economic importance for humans.

14. Conservation Status => *P.vittatus* is not under any conservation status currently.

15. Other Comments => Luciferin is a chemical substance found in the cells of various bioluminescent organisms. When luciferin is oxidized under the catalytic effects of luciferase and ATP, a bluish-green light is produced. Because the reaction is dependent on ATP, it allows researchers to determine the presence of energy or life. Firefly luciferin is a particularly good reporter for in vivo biophotonic imaging due to properties of its emission spectra.



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Additional References

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