

Field Observations on the Elusive Females of *Photuris frontalis*

Behavioral Patterns, Courtship Dynamics,
and Habitat Notes from 2023-2025

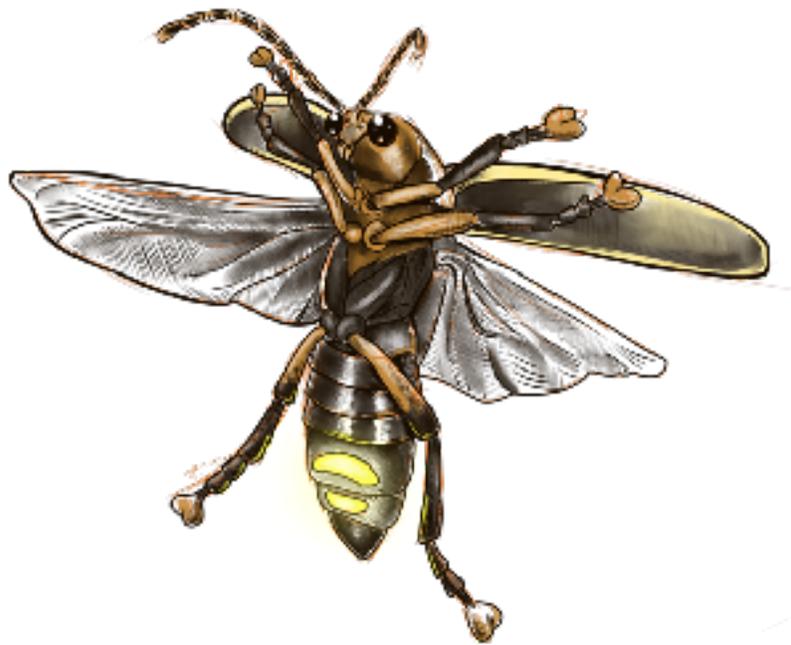


Illustration: Female *Photuris frontalis* in Flight

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with guidance and informal consultation from Lynn Faust

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Field Observations on the Elusive Female *Photuris frontalis*: Flashing and Flight Behavior in Southeast Louisiana (2023–2025)

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*I didn't set out to prove anything. Something about fireflies reawakened that childhood spark I thought I'd lost. I wanted to capture the wonder—especially of those elusive females so rarely documented. Unlike their more conspicuous relatives in the **Photuris versicolor** group, **Photuris frontalis** females are cryptic, faint-flashing, and extraordinarily hard to find. Even well-equipped research teams and documentary crews have spent weeks searching for them—often with little success, finding only the rare few caught in spider webs. I didn't realize what I was seeing mattered until Lynn Faust told me it did. Between 2023 and 2025, I captured and confirmed eight female **Photuris frontalis**—a small but significant field-based sample for a species so difficult to study. Some were perched. Some tucked into leaf litter. Others were flying—and all of them were flashing. Each one added a piece to the puzzle, and every encounter stirred more questions. I've simply tried to keep my eyes open, write it all down, and follow where the flashes lead. I don't know how this fits into the scientific puzzle—but I do know that questions are worth asking, and wonder is worth chasing. Maybe this is for the next generation. Maybe it's for the few who care about the quiet lives that light up the night.*

These findings are based on direct observation, including live captures, field photography, and video documentation.

*High-resolution photographs and video documentation of **Photuris frontalis** females—including rare footage of flash-flying behavior and copulation with male—are available upon request. While in-flight clarity varies, recordings support behavioral and positional observations discussed in this paper.*

Study Area & Timeframe

Observations primarily took place on private property in Southeast Louisiana between April and May during the *Photuris frontalis* firefly activity seasons of 2023, 2024, and 2025. My primary observation zone includes wooded edges, leaf litter, and underbrush bordering the grass-covered yard near my home, where *P. frontalis* activity is regularly seen.

Observation Routine

Most observations were made between dusk and 9:15 PM. I conducted nightly walks through known activity zones, using a headlamp and/or red light to preserve visibility without disturbing behavior. I carried a butterfly net and a phone with a camera for recording both video and still images. Upon capture, I typically flagged the location with a bright fluorescent yard marker and immediately brought the specimen indoors in a zipped sandwich bag to document with photos or video under better light.

Capturing and Handling

I used a butterfly net—or sometimes simply scooped them into my hands using my headlamp for guidance—to catch flashing individuals suspected to be females. After initial photo and video documentation in zipped sandwich bags, the captured fireflies were transferred to mesh-topped jars containing apple slices and a mix of wet and dry crumpled unbleached coffee filters to help reduce stress. Males were occasionally introduced to observe courtship interactions in controlled settings such as jars or a mesh tent.

Identification

Potential females were first identified by observing unusual or faint flash patterns, often occurring low to the ground—in leaf litter, on twigs, or at the wooded edges of grassy areas. I also noted whether males were nearby and actively responding. When capturing by hand or net, I immediately assessed flash brightness and lantern size. Male *Photuris frontalis* typically have large, prominent lanterns and noticeably large eyes, while females display smaller, segmented lanterns and smaller eyes. Female fireflies also have larger lanterns, and their hoods show more color than those of *P. frontalis*. Their dorsal and ventral characteristics—particularly the hood pattern, coloring, and lantern layout—have become easily recognizable to me after repeated handling. Most identifications were confirmed indoors under better lighting during photo and video documentation, though in many cases I could identify females confidently in the field. While flash behavior and placement occasionally led to initial confusion, especially with female fireflies, direct visual inspection has proven consistently reliable in distinguishing *P. frontalis* females from other fireflies.

Environmental Notes

General weather and habitat conditions were noted nightly during the active firefly seasons of 2023–2025. In 2023, I primarily recorded temperature and estimated firefly abundance, occasionally noting moon phase and cloud cover. In 2025, as my observations became more focused on female *Photuris frontalis*, I expanded my logging to include temperature, humidity, wind, cloud cover, moon phase, and nearby storm activity. These factors appeared to influence activity levels, flash patterns, and visibility in both males and females. Over the course of three years, I have also noted broader weather patterns—such as the heavy rains of 2022, the severe drought of 2023, and their possible long-term impact on firefly numbers.

Results Summary

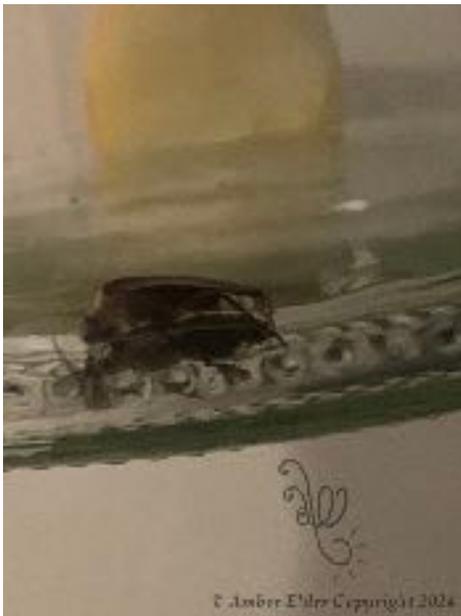
Between 2023 and 2025, I captured and confirmed eight female *Photuris frontalis*. Flashing behavior was observed in all individuals. Some were found perched on twigs or nestled in leaf litter, while others were caught mid-flight. In many cases, the flash was faint and initially difficult to detect. Most captures occurred along the wooded edge bordering my yard. In addition to confirmed captures, I encountered **multiple suspected females** whose behavior, location, or flash pattern strongly suggested female *P. frontalis*, but whose identities could not be verified through capture. While the sample size of confirmed individuals is small, the **total number of likely female encounters is higher**—supporting the idea that females may be more active and visible than previously assumed.



First female *P. frontalis* capture (ventral view), **Eve**



First female *P. frontalis* capture (dorsal view), **Eve**



Copulation of *P. frontalis* couple (2024)

DATE	FLIGHT	FLASH	MALE INTERACTION	NOTES
4/22/2023	No	Yes, beneath leaf litter	Male flew toward her	Crawled down into leaf litter at release (deep woods).
5/2/2024	No	Yes, in dewberry bushes	Successfully mated in jar	Slight post-mating afterglow. Released next day.
5/5/2024	Yes, after knock	Yes, erratic	No confirmed pairing	Flitted around flashing in jar; flew high into tree after release.
5/7/2024	No	Yes, on blade of grass	Rejected every suitor	Flashed males away; crawled into grass at release.
4/28/25	No	Yes, on pine sapling	No pairings observed	Flashed erratically; died due to fire ant intrusion.
5/3/2025	Yes, next night	Yes, in some ferns/pine straw	Mixed response	Lost track in observation tent; released into ferns.
5/6/2025	Yes, 3" off ground	Yes	No interaction	Released shortly after photos; flew away quickly.
5/11/2025	Yes, at release	Yes, low to ground	Rejected male	Released next day after faint flashing and avoidance.

Conclusions and Reflections

These observations are ongoing, and so is my wonder. What began as a simple curiosity has grown into a quiet passion. Every female seems to flicker with her own hidden story, and every one of them has taught me something new.

People say, “Grow where you’re planted,” but I believe we’re meant to do more than that. We’re meant to shine—to bring light, beauty, and wonder into the world around us. These fireflies have reminded me to hope against all odds. Nature endures. So should we.

If there’s one thing I hope readers take from this report, it’s this: stay curious. Ask questions. Don’t accept assumptions—go out and observe. It’s not uncommon to hear someone say, “I don’t see fireflies anymore,” and I always want to ask, *Why not?* Perhaps it’s time we made room for them again. Fireflies, like people, are resilient. With care and intention, they will return. And when they do, they’ll shine.

Suggested Reading:

Faust, L.F. (2017). *Fireflies, Glow-worms, and Lightning Bugs*. University of Georgia Press.

Lloyd, J.E. (2002). “On research and entomological wonder.” In: *American Entomologist*, Volume 48, Issue 4.

Note:

Extended field notes, raw nightly logs, habitat-specific observations, and ongoing seasonal updates from the 2023–2025 study period are maintained separately as part of a continuing field record. A static summary of observations through May 2025 is presented in this paper.

Supplementary material and subsequent observations are available at:

www.photurisfrontalis.org

Please note that materials hosted online include observational notes and documentation not yet formally synthesized or peer reviewed.

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This document is part of an ongoing independent field study on *Photuris frontalis* female behavior and courtship in Southeast Louisiana.

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**Appendix A. Summary of Confirmed
Female *Photuris frontalis* Captures (2023-2025)**

DATE	FLYING	FLASHING	MALE INTERACTION	NOTES
4/22/2023	No	Yes, beneath leaf litter	Male flew toward her	Crawled into leaf litter at release (deep woods).
5/2/2024	No	Yes, in dewberry bushes	Successfully mated in jar	Slight post-mating afterglow. Released next day.
5/5/2024	Yes, after knock	Yes, erratic	No confirmed pairing	Flitted in jar; flew into tree after release.
5/7/2024	No	Yes, on blade of grass	Rejected every suitor	Flashed males away; crawled into grass.
4/28/2025	No	Yes, on pine sapling	No pairings observed	Flashed erratically; killed by fire ant.
5/3/2025	Yes, next night	Yes, in ferns/pine straw	Mixed response	Lost track in tent; released into ferns.
5/6/2025	Yes, flying	Yes	No interaction	Released after photos; flew away quickly.
5/11/2025	Yes, at release	Yes, low to ground	Rejected male	Released after faint flashing and avoidance.