

# Protandry in *Photuris frontalis*: A Working Field Hypothesis

Male-First Seasonal Activity and Delayed Female Detectability in a Southeast Louisiana Population, with Supporting 2026 Congaree Observations

**Amber Elder**

Independent Field Researcher  
Southeast Louisiana

## Field Hypothesis

## Overview

Over four seasons of observing *Photuris frontalis* “Snappies” in Southeast Louisiana, the same general pattern has repeated: males become visible first, while confirmed female encounters occur later. In my Louisiana observations, confirmed female *P. frontalis* encounters have consistently occurred approximately 8–14 days after male activity was first confirmed or strongly established.

This document records that pattern as a working hypothesis for possible protandry in *Photuris frontalis*. At this stage, the strongest claim is not that true emergence protandry has been proven, but that males become active, visible, and detectable before females are reliably found.

One important caveat remains central: female *P. frontalis* are genuinely difficult to detect. Their flashes are faint, their activity is low to the ground, and they may remain tucked into leaf litter, grass, stems, or underbrush. Therefore, “present” and “findable” are not the same thing. That distinction matters. The observed lag could reflect true delayed female emergence, delayed female receptivity, delayed female detectability, or some combination of the three.

## Four Seasons of Louisiana Observations

Each Louisiana season followed the same basic sequence: male activity first, then confirmed female detection later.

Year	First confirmed male / strong male activity	First confirmed female	Approximate lag
2023	April 8–11	April 22	~11–14 days
2024	April 20–24	May 2	~8–12 days
2025	April 19–20	April 28	~8–9 days
2026	April 16	April 27	~11 days

Across all four seasons, the first confirmed female encounter occurred after males were already active and visible. The 2026 Louisiana season continued this same pattern. The first confirmed *P. frontalis* males appeared on April 16, and the first confirmed female was caught on April 27, giving an approximate lag of 11 days.

## 2026 Louisiana Season Summary

The 2026 Louisiana season provided a particularly useful continuation of the pattern because I was already watching for the possible female lag. Male *P. frontalis* activity began on April 16, when the first confirmed Snappy males were captured after repeated “Snap-Snap-Snap” flashes were seen around the property. Over the following nights, males increased in number and were repeatedly observed flying, flashing, and occasionally “faking me out” by flashing strangely in leaf litter, grass, or bushes.

No female *P. frontalis* was confirmed between April 16 and April 26, despite targeted searching in known female areas, including wooded edges, underbrush margins, driveway borders, and leaf litter. The first confirmed female of the 2026 Louisiana season was caught on April 27. Additional confirmed females followed on April 28, April 29, and May 3, bringing the Louisiana 2026 total to four confirmed females.

This matters because the 2026 season was not simply a casual observation year. I was specifically watching for females from the moment the males emerged. That makes the absence of confirmed females during the early male period more meaningful, though it still does not prove they were physically absent.

## Congaree 2026 Field Context

In May 2026, I also observed *P. frontalis* at Congaree National Park with Orit Peleg’s research team. Unlike my Louisiana site, I did not know the true first emergence date for the Congaree males. That limits how strongly the Congaree data can be used in the protandry argument.

However, the Congaree observations still support the broader detection problem. On May 10, males were observed at Sims Trail. On May 11–13, males were visible in increasing numbers, but no confirmed female was found despite targeted searching along trail edges, leaf litter, and underbrush. Several males and female fatales produced misleading flashes or behavior, creating repeated false leads.

On May 14, approximately 10–15 minutes after male flashing began, I found a copulating *P. frontalis* pair on a sliver of pine bark. This was the first confirmed Congaree female encounter during my observation period. Because the female was found already mounted by a male, this observation does not establish when she emerged or when she first became receptive. But it does show that females may be present and still remain nearly invisible unless courtship or copulation makes them detectable.

The Congaree observation should therefore be treated as supporting context rather than direct proof of protandry. It strengthens the point that female *P. frontalis* can be extraordinarily difficult to locate even when males are active and abundant.

## Two Possible Explanations

There are at least two possible explanations for the repeated male-first pattern.

### 1. True emergence protandry

Males may physically emerge or mature earlier than females. If this is the case, the observed lag represents a real difference in developmental timing between the sexes. Males would appear first, begin flying and flashing, and females would emerge or mature several days later.

This interpretation fits the repeated Louisiana pattern: across four seasons, female captures occurred 8–14 days after male activity was first confirmed or strongly established.

### 2. Detectability or receptivity lag

Males and females may emerge closer together than the observations suggest, but males are immediately conspicuous while females are not. Males fly higher, flash more brightly, and are easier to confirm. Females may remain low, hidden, unreceptive, faint-flashing, or behaviorally quiet until conditions are right.

This explanation also fits the data. In every season, females were detected only because of subtle clues: faint flashes in leaf litter, odd low pulses, males flying toward the ground, unusual flashes beneath male activity, or — in the Congaree case — a male already mounted on a female.

These explanations are not mutually exclusive. *P. frontalis* may show true protandry and delayed female detectability. Males may emerge first, while females may also remain difficult to find even after they are present.

## Why the Pattern Matters

The female side of *Photuris frontalis* behavior remains poorly documented compared with the male light displays. Male activity is obvious. Female activity is quiet, low, brief, and easily missed. That imbalance can distort how the species is understood.

If males are recorded first simply because they are brighter and more visible, researchers may overestimate the timing gap between the sexes. But if females really do emerge later, that has implications for when field teams should search, when specimens are most likely to be found, and how seasonal peaks should be interpreted.

Based on these four Louisiana seasons, the most productive female search window appears to begin roughly one week after confirmed male activity and may become strongest around days 8–14, though weather, temperature, rain, moonlight, and local habitat conditions can shift activity.

## Current Working Hypothesis

In the Southeast Louisiana population I have observed from 2023–2026, *Photuris frontalis* males become visible before females are consistently detectable. Confirmed female encounters have followed first confirmed or strong male activity by approximately 8–14 days across four consecutive seasons.

This pattern may indicate true protandry, delayed female receptivity, delayed female detectability, or some combination of these factors.

The most cautious wording is:

In this observed Southeast Louisiana population, male *Photuris frontalis* activity consistently precedes confirmed female detection by approximately 8–14 days. Whether this reflects true emergence protandry, delayed female receptivity, delayed detectability, or a combination of these mechanisms remains unresolved.

## 2026 Addendum

The completed 2026 observations strengthen the Louisiana pattern. The first confirmed male *P. frontalis* appeared on April 16, and the first confirmed female was caught on April 27, continuing the same 8–14 day lag observed in prior seasons.

Four confirmed female *P. frontalis* were documented in Louisiana during the 2026 season. A fifth confirmed female encounter occurred at Congaree National Park on May 14, when a copulating pair was found at Sims Trail. Because the true first male emergence date at Congaree was unknown to me, the Congaree observation cannot be used to calculate a reliable male-to-female seasonal lag. However, it does support the larger field problem: females may be present and still remain nearly undetectable unless their flash behavior, male attention, or copulation reveals them.

## Conclusion

At this point, the data do not prove protandry in *Photuris frontalis*, but they do justify the hypothesis.

Across four Louisiana seasons, the repeated sequence is too consistent to ignore: males first, females later. The pattern may reflect biological timing, behavioral concealment, detectability bias, or all three. The practical result is the same for fieldwork: researchers searching for female *P. frontalis* should not assume that female absence during early male activity means true absence. The females may not yet be mature, may not yet be receptive, or may simply be doing what they do best — sitting low, flashing faintly, and making everyone lose their minds in the underbrush.