Nature's fireworks show: Glowing fireflies lighting up Utah

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In more than 30 years of collecting insects in Utah, BYU entomologists say they had not found fireflies until last year. Credit: Brian Wilcox

(Phys.org) —Thousands of pyrotechnic, flashing fireflies are making a rare appearance in Utah this summer, evidence that these bioluminescent insects may be establishing larger populations in the west, according to Brigham Young University researchers.

"People don't think they're here in the west because fireflies are traditionally an eastern species," says biology professor Seth Bybee, who studies firefly and dragonfly populations. "But we definitely have

flashing fireflies now in Utah."

In more than 30 years of collecting insects in Utah, BYU entomologists say they had not found fireflies until last year, when Spanish Fork residents reported the flickering fliers hovering over a hay field.

This month, Bybee collected flashing fireflies from a large population in a marshy area near Goshen; other populations have been seen in Ogden, the Uinta mountains, Escalante and St. George. Although the light show will be gone this year in a flash (since the species only flashes during mating season), fireflies may soon be more common in the west.

"I anticipate that we will probably find more populations now that we know the kind of environment to look in and the time of year," says BYU biology professor Michael Whiting. "The sightings have thus far been very rare and it is a mystery why they have gone so long without detection."

The light of the firefly, itself an anomaly in nature, is a rare and beautiful sight, says Bybee. "I think of them as nature's pyrotechnics show because they come out in large numbers and explode randomly. They produce their own light and it's something that captivates us. They come in greens and oranges and yellows."

Fireflies create their bioluminescence by combining two molecules inside a photic organ, the flashing part of the abdomen. During mating season, male fireflies send out a flash as they fly, and females flash back in response.

Although the population may have been here for years, Bybee says it's relatively small and only flashes for a couple of weeks so it hasn't been studied. To identify the species, the BYU team is sequencing DNA and collecting video of the fireflies in flight. Each firefly species has a

distinctive flash pattern; some fireflies flash in loopy J-shaped patterns while in flight, while others may flash in zigzags or waves.

With his students, Bybee collects firefly specimens around the world to compare DNA and physical characteristics. Bybee, whose research specialty is in vision genes, will sequence DNA from the firefly eyes and photic organs to see if these dispersed western species have adapted by producing brighter flashes or more sensitive eyes.

"This is a big find for us and something that we hope to study pretty closely," he says.

Provided by Brigham Young University