

Bethany Beach Firefly (*Photuris bethaniensis*): Much More Than a DE Music Festival

The Bethany Beach Firefly lives within a 20-mile long narrow band of landscape along the Atlantic coast in Delaware, which includes Bethany Beach and areas to the north and south. This rare and unique species of firefly was first identified and reported in ca. 1949. According to the [Xerces Society](#), *“The Bethany Beach firefly is a habitat specialist associated with threatened freshwater interdunal wetlands that occur along Delaware’s Atlantic coast. These habitats form in barrier beach systems in the shallow depressions found between sand dunes. While brackish swales can be found all along the east coast, freshwater swales are less common, characterized by saturated soils that are seasonally inundated by freshwater from aquifers and recharged with rainfall. Organic matter that builds up in the swales provides habitat for Bethany Beach firefly larvae, which hunt along the soil surface and pupate in chambers just under the soil surface or under logs.”*

Studies have shown that adult fireflies are active primarily in late June through July. Males emit a distinctive bright **green** double flash about every five seconds. This flash contrasts with the bright yellow flash emitted by other species of fireflies. This unique species is under threat of extirpation, primarily due to habitat loss and fragmentation, but there are other natural and human-induced causes.

- Construction on, over, and through firefly habitat (including piers, walkways, pads, etc.)
- Decreased water quality, due to human-induced pollution, saltwater intrusion
- Climate change-induced sea level rise which floods habitat, temporarily and permanently
- Increased incidence of severe storms which degrades/buries habitat and fireflies
- Increased temperatures affect both larvae and adults
- Invasive plants crowding out native plants, and eliminating natural habitat

On May 20, 2019, a petition was filed by the Center for Biological Diversity and the XERCES Society asking the U.S. Fish and Wildlife Service (USFWS) to consider an Emergency Listing of the Bethany Beach Firefly under the Endangered Species Act. The petition also asked that the USFWS designate the known range of the firefly in the Bethany Beach area as Critical Habitat, thereby adding Federal protections from development, filling, polluting, and other impacts. Those interested in tracking progress on the petition can do so online on the Environmental Conservation Online System (ECOS) [website](#). The petition is still under review. Listing petitions can take up to 12 years to process.

The emergency petition was filed partially in response to the **Breakwater Beach** development just north of downtown Bethany Beach, along the east side of Route 1. To avoid regulation and environmental impact assessment by the U.S. Army Corps of Engineers (USACE) under section 404 of the Clean Water Act (discharge of fill material into waters/wetlands of the United States), the developer constructed an elevated road, and pads for new homes over a predominately wetland tract (several acres in size). In the process, according to scientists and

Federal officials, the development was constructed over one of the few remaining freshwater wetland swales that serves as habitat for the Bethany Beach Firefly. *“The Bethany Beach firefly is on Delaware’s endangered species list, but that makes it illegal only to transport, possess or sell them. The state has been unable to stop the building project because, unlike other states, Delaware doesn’t regulate most freshwater wetlands. State environmental secretary Shawn Garvin suggests that should [change](#)”*. Chris Bason, Executive Director for the Center for the Inland Bays, agrees that, while the project may follow the letter of the law, it’s a death sentence for the wetland underneath. *“The permitted impacts have significantly [degraded](#) the function of the wetland,” he says. “And what we care about is the function, the provision of habitat for rare plants and animals.”*

You can read more about this controversy in an October 21, 2021 article [published](#) by the Courthouse News Service and another article from June 21, 2019 published in the Delaware News [Journal](#).

What can we do to help protect this firefly? Again, the XERCES Society provides excellent information:

- Help protect this species’ habitat by accessing the beach using established trails; do not walk on or otherwise trample fragile dune and wetland habitats that may be supporting this species.
- Habitat restoration and monitoring of freshwater aquifers at known sites will help ensure this species remains extant.
- Turn off your outdoor lights at night so the lights of this firefly aren’t diminished by light pollution. You can read more about firefly-friendly lighting in the XERCES [fact sheet](#).
- Avoid pesticide use, which could harm this firefly, its habitat, or its prey.

If you want to learn more about fireflies, in general, check out these websites.

- [Fireflies, Glow-worms, and Lightning Bugs](#) by Lynn Faust
- [Silent Sparks](#) by Sara Lewis
- [Field Guide to Western North American Fireflies](#) by Larry Buschman

