

THE FIREFLY CONSERVATION HANDBOOK

From fireflyconservation.org



Important Factors For Creating A Firefly Sanctuary

Also a habitat for monarch butterflies and pollinators

1. Control of the Watershed

Pure water is critical with no fertilizer, pesticide or herbicide. Be aware that there can be chemical runoff from uphill neighboring properties.

2. Ecotone

Choose a meadow that is surrounded by a mixture of deciduous and pine trees. It blocks light pollution and remember the males need trees to look for the females in the tops of the grasses in the meadow. A source of water is a plus and a nearby river, pond or wetland works well.

3. No Light Pollution

Floodlights on nearby houses or in trees disrupt the mating of the fireflies. Pine trees blocking streetlights work well.

4. Food Chain

It's all about feeding the firefly larva their favorite foods which are snails, slugs and worms. In order to do that you grow and feed the snails their favorite food which is native asters. The combination of asters, goldenrod, Joe Pye weed and Black Eyed Susans works well. The meadow will also be full of color and double as a pollinator pathway. We also plant milkweed because we like to raise monarch butterflies and monarch caterpillars can only eat milkweed. I have seen fireflies eat milkweed pollen but in general they eat nothing in their short lives as adults.

5. Fallen Logs and Leaf Piles

The woods should be left uncleared as the fireflies winter over under logs and leaf litter and in the ground.

6. Meadow Cutting

The native flowers must bloom to be effective. The meadow can be cut only once in the late fall or winter. Some land trusts mow in late winter on frozen ground which allows the migrating and wintering birds to continue to forage the meadow's seeds.

7. Existing Fireflies

If possible choose a site with a small preexisting population of Photinus and Photuris fireflies. The management of the food chain can grow the firefly population by 10 times a year because each female lays 100 eggs and fireflies have very few predators. Seeding a site with pregnant females does work, but I believe working with the local population should come first.

8. Parking or Busing

Choosing a site with preexisting infrastructure for parking, trails, and toilets for visitors makes sense where possible, if the site will be open to the public

9. Viewing

In the northeast firefly viewing is from approximately 9pm to 11pm, from around June 27 to July 10.

10. Culling the Invasive Plants

Because you are cutting the meadow only once a year invasive plants become a problem. Plan on it because it will happen. To keep the food chain working you will require a mechanical plan to deal with porcelain vine, Canada thistle, Asian bittersweet, and Indian hemp. It is time consuming because chemical means of control don't work in a firefly meadow. It is a labor intensive job. Think spot cutting not spot spraying.

The effort is worth it to be able to share the joy of 10,000 fireflies.

ABOUT FIREFLY SANCTUARIES

There really is a place where you can find happiness. It's in the firefly meadow where you can see the joy of fireflies.

There's a feeling of wizardry there with flashing fireflies everywhere. Their flashing bodies are their language of love, like smiles and kisses in the dark.

The blinking males in the tops of the trees are looking for a response from the females in the tall July meadow.

When you open the door to your firefly meadow's heartbeat you can remember warm childhood summer nights with your friends chasing fireflies. Seasons change in the firefly meadow, but you can find beauty in its changing colors throughout the year.

May the joy of fireflies bring you happiness.

Bill McDonald

October 2022

THE FIREFLY DISPLAY TIMELINE – NEW CANAAN, CONNECTICUT

May 15- The treetops and flashbulb fireflies show up in significant numbers.

May 29- Lots of glowing larva and some displaying fireflies.

June 1 through June 10- The blackout period with virtually no displays until the fireflies eclose starting June 14.

June 16- The start of the strong display nights with the femme fatale Photuris comets beginning to streak through the displays of the males of the other firefly species.

June 21 through July 10- The strongest display period with the peak July 7. The Photinus pyralis are the last of my species to eclose.

July 17- The Photinus pyralis big dippers and photuris comets still going strong while the other species end their displays. The Photuris comets continue into August and are the last to flash, often just a single fast firefly streaking through the night.

MORE INFORMATION ABOUT THE DIFFERENT SPECIES WITHIN THE TIMELINE

The Photinus pyralis are active for the whole month of July. They are the only species to display at dusk at 8:30 pm and are finished at about the same time the other species start at 9pm.

In late June the species' displays overlap and it is entertaining to pick out from their flash patterns the Photuris comets, versicolor triple flashers, Photinus pyralis, and what may be Photuris hebes, known as Heebe Jeebies.

My favorite fireflies are the male comets that stay lit floating in the air like Tinkerbell, the triple flashers, the speedy female comets, and the big dippers.

The longest lived fireflies here are female comets that display June through August. It's not surprising because they are the only adult fireflies eating protein, other fireflies.

While on the topic of eating, it is interesting that fireflies here eat blueberries and raspberries. The firefly population here is so dense you can observe them in the day.

After 50 years of work in the meadow, the firefly population is at its maximum carrying capacity which was reached about 10 years ago. There is some variation year to year in the individual

species but they appear to be in equilibrium with the versicolor triple flashers perhaps increasing.

THE FIREFLY FOOD CHAIN

My firefly meadows are managed for the food chain of the larva, both above ground and below ground.

The native perennial asters are an important component of the food chain as they appear to be the favorite food of the snails that the firefly larva eat after emerging in the spring. Here the snail, slug, spider, and worm populations are very large due to the native biomass of the meadow.

It is important to spot cut invasive plants several times during the growing year and to cut the meadow only once a year after the first hard frost.

FIREFLY MEADOWS AND FIREFLY CONSERVATION

Firefly meadows are all about conserving fireflies and creating and preserving firefly habitat and the firefly food chain.

My meadows double as pollinator pathways and the butterflies and flowers are a colorful delight.

Without firefly habitat it goes without saying there is no future for fireflies. One of the striking things about the firefly displays here is there are a “million” fireflies in the meadows and trees but zero fireflies in the surrounding properties, with the exception of the excellent attached New Canaan Land Trust Firefly Sanctuary. A special mention for Chris Schipper who helped preserve the land.

The New Canaan Land Trust has done an excellent job in establishing and promoting its firefly sanctuary. The visitor registration process and firefly dinner fundraiser have made a real impact in educating the public about the natural world and the preservation of fireflies.

If enough land trusts had firefly sanctuary programs the conservation of fireflies would be assured.

Creating and preserving firefly meadow habitat is an important step in conserving fireflies. Thank you New Canaan Land Trust for helping save the firefly.

THE FIREFLY MEADOW KIT PROGRAM

For qualifying land trust properties, supplying Firefly Meadow Kits could help the conservation of fireflies. The idea is similar to the efforts of Johnny Appleseed— thank you John Chapman for your successful apple conservation efforts.

The meadows here in New Canaan are a firefly oasis in an otherwise dead zone due to lawn

chemicals, development, and home floodlights. The “dozen” firefly species that live here never cross the borders of this property, perhaps because they can smell the chemicals. All the fireflies here are born here, mate here, lay their eggs here, and die here. It is truly their sanctuary.

There is a special colorful beauty in firefly meadows with their constantly changing native perennial flowers. I hope I have been able to convey this beauty in my art and photography and that it inspires others to give up some of their lawn to save the firefly.

New Canaan Land Trust Firefly Sanctuaries

The Simple Joy of Fireflies

The Firefly Sanctuary is a unique open space preserve made possible by neighbors and friends who pooled resources to buy and donate the land to the NCLT. The abundant population of fireflies living in the meadow is due to the efforts of one man, Bill McDonald.

A lifelong nature lover, Bill delights in creating natural habitats for butterflies, bees, birds, and especially fireflies. He lives next door to our preserve and has devoted fifty years to cultivating wildflower meadows around his home. Early on, he began raising firefly larvae and estimates he grows one million of them a year!

Bill explains that fireflies are beetles, and like all insects, go through a multi-phased life cycle. Fireflies spend the majority of their life

(one to two years) living underground as larvae preying on other insects. "They particularly like snails and snails like asters, so I grow many kinds of asters to attract snails to feed the firefly larva."

Fireflies pupate in early June and turn into the adults we see lighting up the summer sky. The females flash low in the meadow while the males signal from the nearby trees. The flashing sequences are courtship rituals, and each species has its own pattern.

Fireflies are abundant on Bill's land and especially in our adjacent preserve. When asked what makes our sanctuary so unique, Bill replied, "It's a natural oasis in a suburban neighborhood. It meets the requirements the adults need to display. It's a small space

On a hot and sultry evening, a young family makes their way up the woodland path to the meadow at the top of the hill. As darkness falls, the children call out, "Look, I see one in the grass, and there's another in the tree, and there's another and another...." They continue their exclamations until the entire meadow twinkles with thousands of lights to the delight of all who have come to witness the simple joy of fireflies.



with low plants surrounded by tall deciduous and evergreen trees, and there is minimal light pollution." Darkness is essential for fireflies to carry out their courtship. He added, "Spotlights around houses interfere with firefly signaling and are death to pollinating moths and other night-flying insects."

The other side of caring for fireflies is to preserve their habitat 365 days a year. While we don't see the larva living underground, we follow Bill's lead to protect their nursery. That means no pesticides, herbicides, or chemical fertilizers and minimal soil disturbance. We mow the meadow once a year after a hard frost to ensure the insect life has gone to bed for the winter. With Bill's efforts and our own, we are well rewarded come early summer when the sky lights up with the fireflies' amazing bioluminescence.

Why does Bill raise fireflies?

"People ask me that question all the time," he responds. "Children know the answer right away. It is happiness." —Bill McDonald



Bill McDonald among the pollinator plants in his yard across from the Firefly Sanctuary. Photo by Susan Bergen



Firefly Sanctuary by day.

