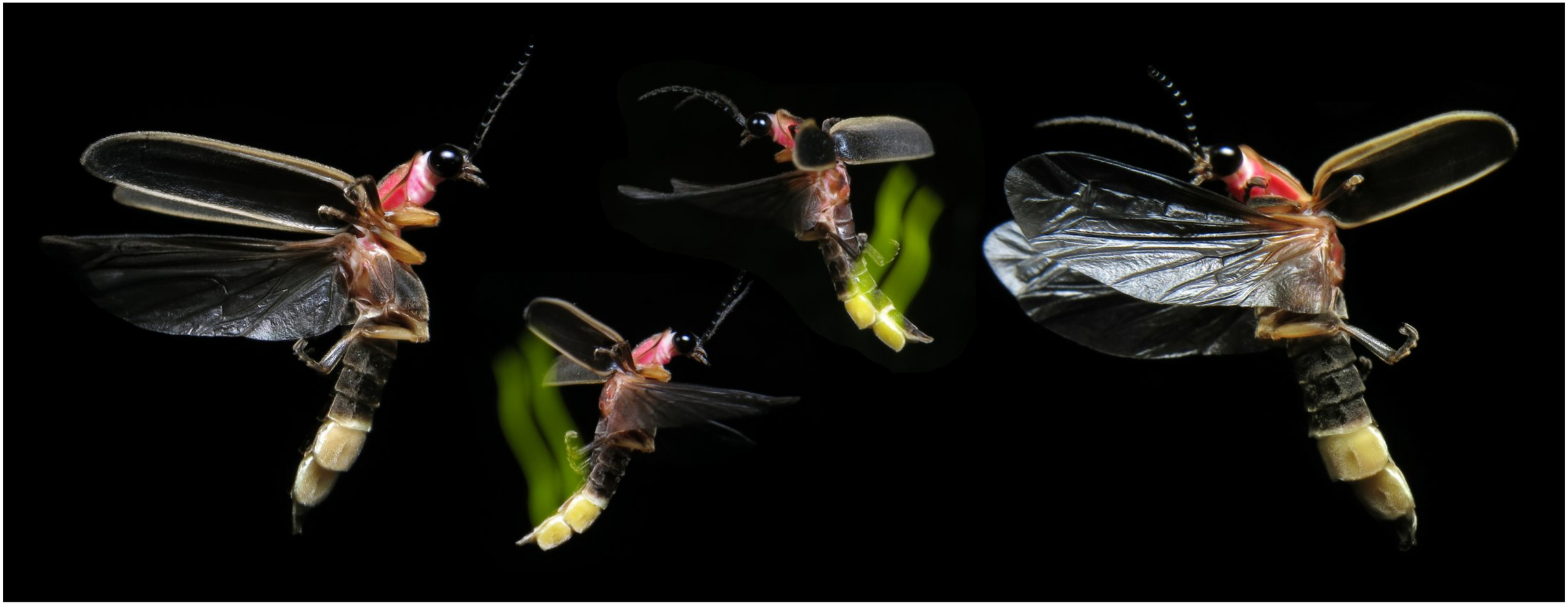
Photographing the Common Eastern (USA) Firefly - Photinus Pyralis



The firefly can be photographed mid-flight in focus because of the slowness of his flight, and the predictable pattern he makes. Only the males fly. This is the common eastern firefly in the U.S., photinus pyralis, native over the eastern half of the country. Even cheap cameras can accomplish this trick, if they can be set to all-manual control.

Say you hang a small fishing lure with string in a semi-darkened room. Can you set your camera to photograph it with all-manual settings? Set the manual focus so it is very close, 2-3 inches in front of the lens. Use your flash. The flash has to be set to its weakest value, or it will blot out the subject in a field of white. Flashes work by duration. They have only one strength. At their weakest setting, they are very fast. Much faster than the shutter. The shutter speed almost becomes irrelevant. The room is semi-dark, all the light is coming from the flash. The flash fires 10 times faster than the shutter. Virtually the same picture results from a shutter of 1/30 second or 1/500 second. Set it fast, it will be a little sharper. Its not completely dark.

The aperture of the lens should be set for maximum depth of field, a larger number. At close distances, every lens has a very narrow range front to back of sharp focus. A smaller opening, which is a larger number, uses the center of the lens and maximizes the sharpness of near side and far side of a small object.

Looking at a small free hanging object, you can set your camera to make a good photo, from a very close distance, using flash, using exposure settings to your liking, using a manual focus, and simply moving the camera in and out to get a sharp focus. That is how you take a picture of a slow flying firefly also, except you don't look at the screen to get the focus right. You visually memorize how far in front of the lens he should be when you take the photo. Try 2-3 inches and take a couple hundred pictures at the same distance until you start to feel it. Practice on non-moving objects.

That is really the whole story. The extremely weak flash is also extremely fast. The darkened conditions make the flash predominantly the only light available. The insect is photographed as closely as possible to the lens, giving the greatest amount of detail, enabling the flash to be set to its weakest and fastest speed. You can stop his wings in mid-flight. You can move the camera in rhythm with his flight and the fast flash minimizes camera shake. The only issue is not looking at the back of the camera with manual focus, but looking at the front.

During the peak of the season, mid to late june around here, there is more than an hour from the first appearance of the fireflies until it gets too dark to track them. Only the males fly. They have about a 7 second pattern. Their flash only lasts a fraction of a second, but after they flash, there is an entirely predictable pause. Its pretty quick but either they are recharging or they are looking for an answering flash. The females do not fly. They sit on a leaf and when they see something that stirs something within them, they tilt their abdomen toward its source and give an answering flash. Then occurs another flash and closing the distance all the while signaling between the two. Its only an estimate, but there seems to be about 100 males to each female. Sometimes she gets a lot of attention.

The males fly, flash, hover, then up and over in an inverted hoop, a sharp upward flash and another hover. The hover is what you want to focus on. They sink, then suddenly shoot up and simultaneously fire their own flash. The effect looking over a field of fireflies is of rising sparks. Getting a picture of them in focus while they are glowing is more difficult than the hover shot, because they are accelerating upwards at their maximum flight speed.

The mature healthy fireflies in their prime fly a stable predictable pattern with long streaks of light. The babies and weakened ones may be erratic. Come up from behind them. They can see you jabbing a camera towards them from the side. I have experimented with guides sticking out in front of the camera which attempted to help me gauge the focus distance, but they scare the fireflies. I make a simple camera bracket with external flash, pointing directly at the subject. I have used several cameras. The easiest to use have a lot of pixels and no shutter lag. This is the only way to get a photo of the insect in glow, lots of pixels so the insect is relatively small in the camera's field of vision. It is my opinion obviously without an unlimited range of experience, that high end compact cameras take a better focus shot than DSLRs because the smaller lens has a natural deeper depth of field. The DSLR though is lightening fast and makes the timing easier.

When you master the hover shot, and you want to take the firefly as he is glowing and flying, set your shutter to very slow, about 1/30 second. That is all you have to do. And time the glow. Its not easy. Their glow is not predictable. There is no signal the glow is about to start, other than he is sinking. Then it starts accompanied by a swift upward flight. More pixels and a camera with no shutter lag will help. The flash of the camera will still freeze his flight, but the glow of the insect will form a streak on your image. I imagine the average glow is also about 1/30 second, maybe 1/10. You have to guess or have reflexes that fast. Somebody with better equipment will figure out an easier way. You can try it with almost any decent camera. Imagine how long you have to practice shooting 20 foot jump shots before you begin making a third of them.

This was the very first photo i took of a flying firefly. The rainbow colors were just accidentally generated in photoshop when i was trying to see if i could bring out any detail.