Doon Watch Nature Series for Dehradun Live Hindustan Times by Sanjay Sondhi

Published on 1 May 2009

Jugnu-The Firefly

Darkness descended on Dehradun. The Shivaliks in the distance slowly dissolved as the sun set. The twinkling lights of Mussoorie soon began to appear, peppering the silhouette of the dark hills. Even as I watched the flickering lights in the distance, a light began to blink in the foliage very close to me. Intrigued, I forgot about Mussoorie's lights and watched closer home. The light near me went on and off, like the indicator of the car. Abruptly, the light moved and gracefully flew past my nose. Hey-its a car, no its a plane, oops, its a firefly!

I was watching the season's first appearance of the Firefly, commonly known as the *Jugnu*. Fireflies are beetles belonging to a family of insects called Lampyridae. The Firefly is an interesting insect that emits light. While the purpose of this adaptation is not entirely understood, it is believed that the fireflies do so to attract prey, as well as to attract the female. That sounds interesting, doesn't it? Imagine if we humans had a light switch on our bodies which we could turn on and and blink away. I am sure we would attract loads of females! On many occasions, the fireflies actually synchronise themselves. Watching a whole bunch of insects, blinking away together, in complete harmony, is amongst the prettiest sights you can see at night.

One of the challenges that I have yet to overcome, is to figure out how to photograph these insects. These insects are nocturnal, and they emit light only during the night, which is insufficient to take a picture. Hence in order to photograph them, I need a flash, which in turn wipes out the “glow” in the firefly photograph. I have attempted low light photography with limited success, so the readers will have to make do with a photo of the beetle, but unfortunately without the glow!

The life cycle of the Firefly is really interesting. After the fireflies mate, the female lays her eggs. From the eggs emerged firefly larva, which are actually worm shaped creatures commonly called glow-worms. These glow-worms also emit light just like the adult firefly. The first time I saw these glow-worms, I was excited to see that worms emitted light. It was only after further investigation that I realised that the glow-worms were actually the larval form of the adult firefly. Even more interestingly, I saw the glow-worms feeding on snails, which forms their main diet! In some species of fireflies, the female remains worm-like and does not fly at all.

The light that fireflies emit is produced by a chemical process called bio-luminescence. Interestingly, bio-luminescence is a very energy efficient process . So approximately 90% of the energy the firefly uses to emit light, is converted to visible light. In an incandescent light bulb, approximately 10% of the energy get converted to visible light, while 90% is given off as heat. So these tiny insects are showing us the way to energy efficiency as well!

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Making a difference: Be energy efficient like the firefly. Switch to CFL bulbs, which consume only 1/6 the energy of normal bulbs.