Submitted Abstract

ID IMC22-FSAbstr- 244

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Country	India
Region	Asia
Title	Assessing Fireflies As Bioindicators For Changing Landscape In Doon Valley, Uttarakhand, Western Himalayas, India.
Keywords	Fireflies, Bioluminescence, Bioindicators, Ecosystem, Landscape.
Type	List Of Focus Session
Focus Session ID	65

Abstract

Fireflies are flashing beetles, under the family Lampyridae, forming a recreational part of a natural landscape and ecosystem health. Their population is declining rapidly, while the status is still data deficient in India. Several factors have been highlighted and held responsible for their decline, from which night pollution stands out as a new threat, as fireflies reproduction depends on their bioluminescence. Fireflies can present a good model, to explore the night light effect on nocturnal wildlife. However, not much attention has been given to these magnificent beetles. The current study was conducted in tropical moist and tropical dry deciduous forest dominated by Sal (Shorea robusta), semi-urban and urban areas of Doon valley. Total 48 sampling plots (100m X 100m) with nested quadrate (25m X 25m) were laid to monitor species diversity, abundance, and vegetation types of the sampling plots. Fireflies diversity and abundance were evaluated using sweep net, handpicking, manual counting, and digital photography methods. Three species belonging to two genera (Assymetricata circumdata, Assymetricata ovalis, and Lamprigera tenebrossa) were found in the sampling areas from which L. tenebrossa and A. circumdata were only recorded from the semi-urban area. Abundance was highest in the forest edges, as it does not receive much human interference while the population in semi-urban and urban areas was restricted to agricultural fields and small patches of Lantana camara and Parthenium hysterophorus respectively. The valley is facing high pressure of urbanization resulting in changes in the landscape due to habitat fragmentation and night light intensity impacting the population of fireflies. Thus, the fireflies population can be used as bioindicators to evaluate the changes in an ecosystem.