Submitted Abstract

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Title	Impact Of Forest Fire On Invertebrates: Ecological Monitoring And Management Implications In Western Himalayan Landscape, India.
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Abstract

Repeated occurrences of forest fires have been affected the forest ecosystem and organisms significantly. Invertebrates, one of the most ecologically important taxa, have also been affected in several ways. Forest fire can affect individual fitness and population dynamics within a habitat by altered vegetation structure and composition, quantity and quality of coarse woody debris, and geophysical alterations. High temperatures, smoke, and oxygen depletion can cause mortality or impairment. To assess the impact of forest fire on biodiversity, long-term ecological monitoring is a prerequisite. Standardized protocols are urgently required, for better understanding of how different fire regimes influence the invertebrate abundance, diversity and species ranges. Considering all this, we have assessed the impact of forest fire on invertebrates, in western Himalaya. Western Himalaya is diverse in climatic features, particularly in temperature and precipitation associated with the alignment and altitudes of ranges, which determine the altitudinal growth and variety of floral and faunal diversity. Various forest types and urban habitat were classified into different forest fire regimes. We have categorized the sampling plots into high, medium and low forest regimes based on frequency of fire occurrence and hypothesized that community composition and species diversity would differ between these regimes. From this study, about 225 species of invertebrates falling into eleven orders have been identified that is Blattoida, Coleoptera, Dermaptera, Diptera, Hemiptera, Hymenoptera, Lepidoptera, Odonata, Orthoptera, Plecoptera and Araneae. Invertebrate diversity was highest in low fire regime while lowest in the high fire, may be due to absence of microhabitat and dense foliage, which provides nesting and breeding grounds for many insect species. In high regime sampling plots, where fire repeatedly occurs and severity is also maximum, less diversity was recorded. Diversity remains almost similar in low and medium regimes, which suggested that controlled fire burning is beneficial, suggested that it plays a vital role in the forest ecosystem dynamics and controlled burning can be useful land management tool. The results presented in this study will not only serve as a baseline for better understanding of existing taxonomic diversity but will also support future conservation and fire management programs. In conclusion, we suggest the use of long-term ecological monitoring and promotional/incentives in policy framework for the implementation of monitoring to facilitate the employment of long-term conservation strategies.