

UNUSUAL MOVEMENT OF MOTHS AND BUTTERFLIES CAUSING A FLUTTER

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Winged beauties: *Arhopala ganesa ganesa*. Photo: Special Arrangement

The butterfly named Himalayan tailless bushblue (*Arhopala ganesa ganesa*) was known to occur at an altitude between 1,300 m to 2,400 m in Jammu and Kashmir and Uttarakhand. Recent studies however, have located the species at 3,577 m in Askot Wildlife Sanctuary in Uttarakhand, at least 1,200 m higher than its known range.

An upward habitat shift has also been found for the blue baron (*Euthalia telchinia*), a butterfly species protected under Schedule I of the Wildlife Protection Act, 1972. While earlier it was known to be found at an altitude of 1,500 m in the central Himalayas, north-east India and the Western Ghats, researchers recorded it at 2,100 m at Neora Valley National Park, West Bengal.

In the case of some species of moth, a similar uphill movement of habitat was recorded. The *Trachea auriplena* — described from Sri Lanka at about 300 m altitude — was recorded at 3,100 m in the Valley of Flowers National Park (Uttarakhand), an unusual occurrence for the species. Another moth species *Diphtherocome fasciata* was recorded at 3,300 m in the Govind Wildlife Sanctuary (Uttarakhand), at least 2,200 m higher than its previous range.

These occurrences have come to light in a publication titled 'Assemblages Of Lepidoptera in selected protected areas across Indian Himalaya through long-term ecological monitoring' released during the 6th Asian Lepidoptera Conservation Symposium organised in Kolkata. The volume, published by the Zoological Survey of India (ZSI), is a result of three years of study across 175 long-term ecological monitoring plots across six Himalayan regions, from the cold deserts of Ladakh to the tropical evergreen forests of Arunachal Pradesh.

The volume edited by ZSI scientists Kailash Chandra, Navneet Singh, Vikas Kumar, Angshuman Raha and Abesh Kumar Sanyal runs over 400 pages and also records 1,758 species of butterflies and moths.

The sites were systematically sampled for moth abundance by light trapping and butterfly abundance through systematic walks and vegetation study. Another significant outcome of the study, which involved more than a dozen of scientists and researchers, is that 89 species of Lepidoptera were recorded as new additions to Indian fauna.

"Lepidoptera (moths and butterflies) are known as potent ecological indicators and the ZSI through the publication has drawn attention to climate change and conservation of such species. The methodologies and the outcomes of this study can be adopted for other faunal groups elsewhere in the country," said Dr. Chandra, Director of ZSI.

Highlighting the intricate relationship between Lepidoptera and vegetation, Navneet Singh said that their distribution depends on and shifts with changes in vegetation. "During the study, we found that most of the species that were found at lower altitude had moved up. In rare cases, we have found a reverse trend," he said.

Scientists, including representatives of the Ministry of Environment and Forest and Climate Change (MOEFCC) who participated in the conference, said that the publication not only

records specific Lepidoptera species at different altitudes but also creates a baseline and long-term database of Lepidoptera assemblages of the Indian Himalayas required for assessing climate change.

Ravi Agarwal, Additional Secretary, MOEFCC, said that the publication has “bidirectional implications” to assess climate change impacts of the Himalayan ecosystem and generating awareness among nature enthusiasts about immense ecological roles of insects and their conservation significance.

Abesh Sanyal, another researcher who worked on the field, said that during the study it was observed that several species which were found in other parts of country had been reported in north-western, western, central and eastern Himalayan faunal composition.

“As climate change most pronouncedly influences species’ habitable range, whether these species were already flying in these sectors, or they are recent infiltrators due to climatic homogenisation, will be subject to further studies,” Dr. Sanyal said, adding that “such huge numbers of lateral movement of species can be a cause for concern”.

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