

# NIGHT POLLINATORS: HOW MOTHS HELP THE HIMALAYAS

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An erebid moth on a flowering plant. Special Arrangement

Moths are vital to pollination in the Himalayan ecosystem of northeast India, reveals a recent study. The study establishes 91 species of moths as potential pollinators of 21 plant families in Sikkim and Arunachal Pradesh in the northeastern Himalayas.

The results assume significance as a majority of the pollination-related studies are based on diurnal pollinators (bees and butterflies) and the role of nocturnal pollinators have so far received less scientific attention.

The details of the study were recently published in *Scientific Reports*, a publication from the Nature group of journals.

“In the present study about 65% moths (91 species) carried sufficient quantities of pollen grains to be considered as potential pollinators. *Teliphasa* sp. (Crambidae) and *Cuculia* sp. (Noctuidae) are found to carry the highest quantity of pollen,” the paper reads.

Navneet Singh, lead author of the study, said that *Geometridae* (geometer moths) and *Erebidae* (erebid moths, tiger moths, lichen moths, among others) turned out to be the most important moth families for pollen transportation in the Himalayan region.

“We also found frequent interaction of moths with Betulaceae, Fabaceae, Rosaceae and Ericaceae. Though the Betulaceae is predominantly a wind-pollinated plant family, some recent studies indicate that wind-pollinated plant families also benefit from enhanced dispersal by insects,” Dr. Singh, who is associated with the Zoological Survey of India (ZSI), added.

## Mutual benefit

Another interesting outcome of the study is that the moth species *Achaea janata* (a well-known pest of various economically important plants) was identified as a potential pollinator of three plant families, indicating that moths can provide net benefits as pollinators even when acting as larval herbivores of the same species.

According to Dr. Singh and his fellow authors, the research, which is part of a project funded by the Ministry of Environment, Forest and Climate Change, was among very few large scale studies at a global level where the research team studied the effect of various seasons and different altitudes on the pollination ecology of moths.

The research is based on the field work conducted in the Himalayan terrains, from the foot hills to elevations up to 3,000 m. Along with Navneet Singh, the other contributors to the publication are Rajesh Lenka, Pallab Chatterjee and Dipayan Mitra.

Dhriti Banerjee, Director of ZSI, said that generally moths are considered mysterious denizens of nights, and for a long time they were better known as pest species. “This study revealed the importance of moths in nature. When we are sleeping in our bedrooms, they are tirelessly working for the ecosystems to work, on which our survival is invariably dependent, and are

helping in a great way towards food security,” Dr. Banerjee said.

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