

Contrasting effects of climate warming on host-parasitoid interactions: insights from Rocky Mountain aspen leaf miners and their parasitoids

Alisha Shah¹, Emily Hamant², Juan Rubalcaba³, Beau Larkin⁴, Andrew Forbes⁵, and Arthur Woods²

¹Michigan State University

²University of Montana

³McGill University

⁴MPG Ranch

⁵University of Iowa

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Abstract

Because temperature has pervasive effects on biological rates, climate warming may alter the outcomes of interactions between insect hosts and their parasitoids, which, for many host species, constitute the single largest source of mortality. Many studies report that climate warming is depressing the performance of parasitoids more than that of hosts. We examined this consensus by assessing the thermal ecology of a host-parasitoid interaction in the Rocky Mountains using wild populations of the aspen leaf miner (*Phyllocnistis populiella*) and a set of eulophid wasps that attack them. Host and wasp development rates were differentially sensitive to temperature. In addition, upper thermal limits in adult wasps were lower than those of host caterpillars, and wasps preferred low temperatures in choice experiments. When coupled to simulations of leaf microclimates in aspen canopies, these observations suggest, contrary to expectations, that climate warming is likely to benefit parasitoids at the expense of hosts.

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