

# The Benefits of Ant Association to a Rare Butterfly Species

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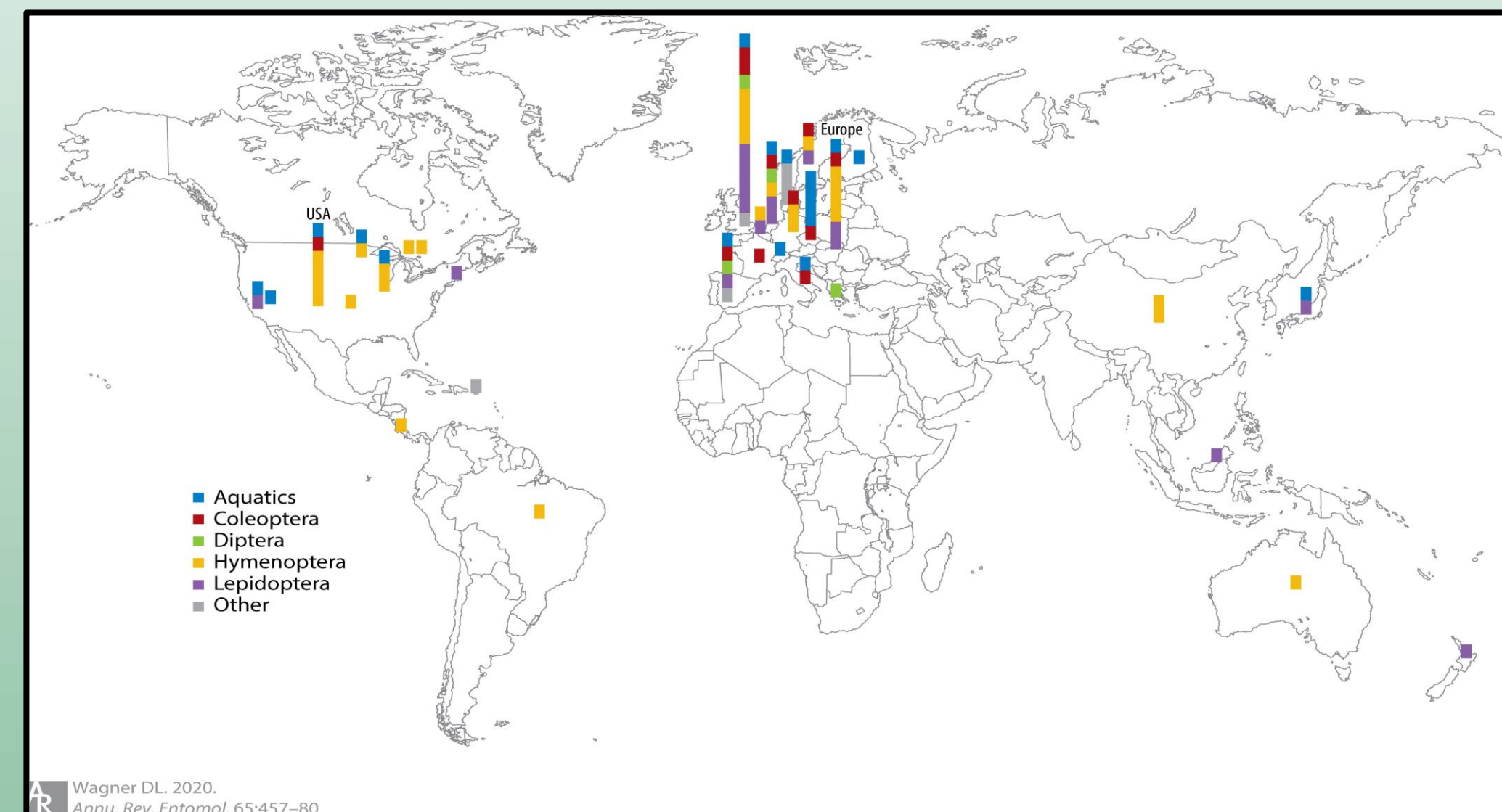
Hope Blue butterfly (*Celastina humulus*) on a Wild Hops (*Humulus lupulus*) leaf.

Hope Blue butterfly (*Celastina humulus*) laying eggs on Wild Hops (*Humulus lupulus*) flowers.

## Introduction:



Insects provide important services such as pollination (1).



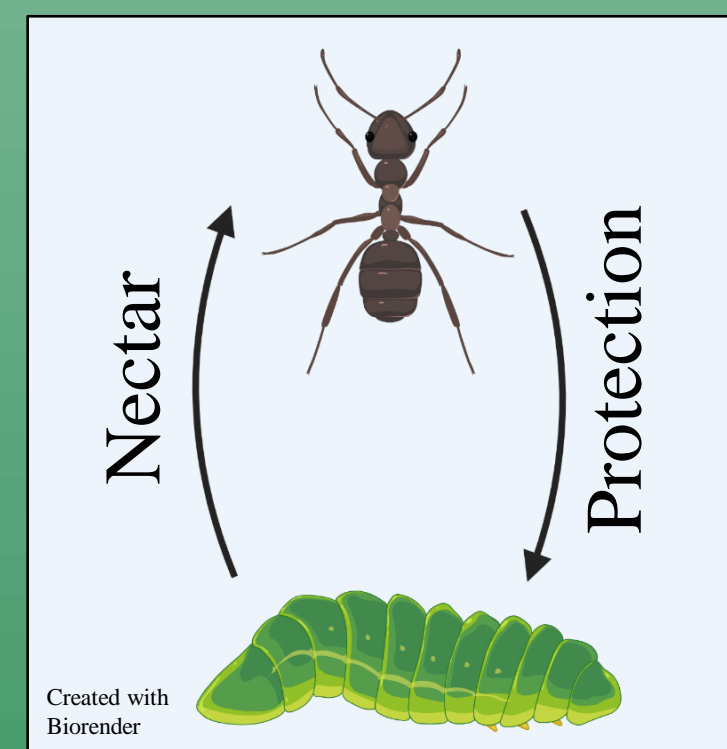
Many insect populations have shown decline in recent years, although the causes are not well understood (1). Above: studies around the globe which indicate insect decline.



Understanding how organisms interact with one another is essential to identify these causes & stop this decline (2).

## Study Organism:

- Many butterflies form a beneficial relationship with ants while they are caterpillars (3).
- The Hops Blue butterfly, a local Colorado resident, is one of these species (4).



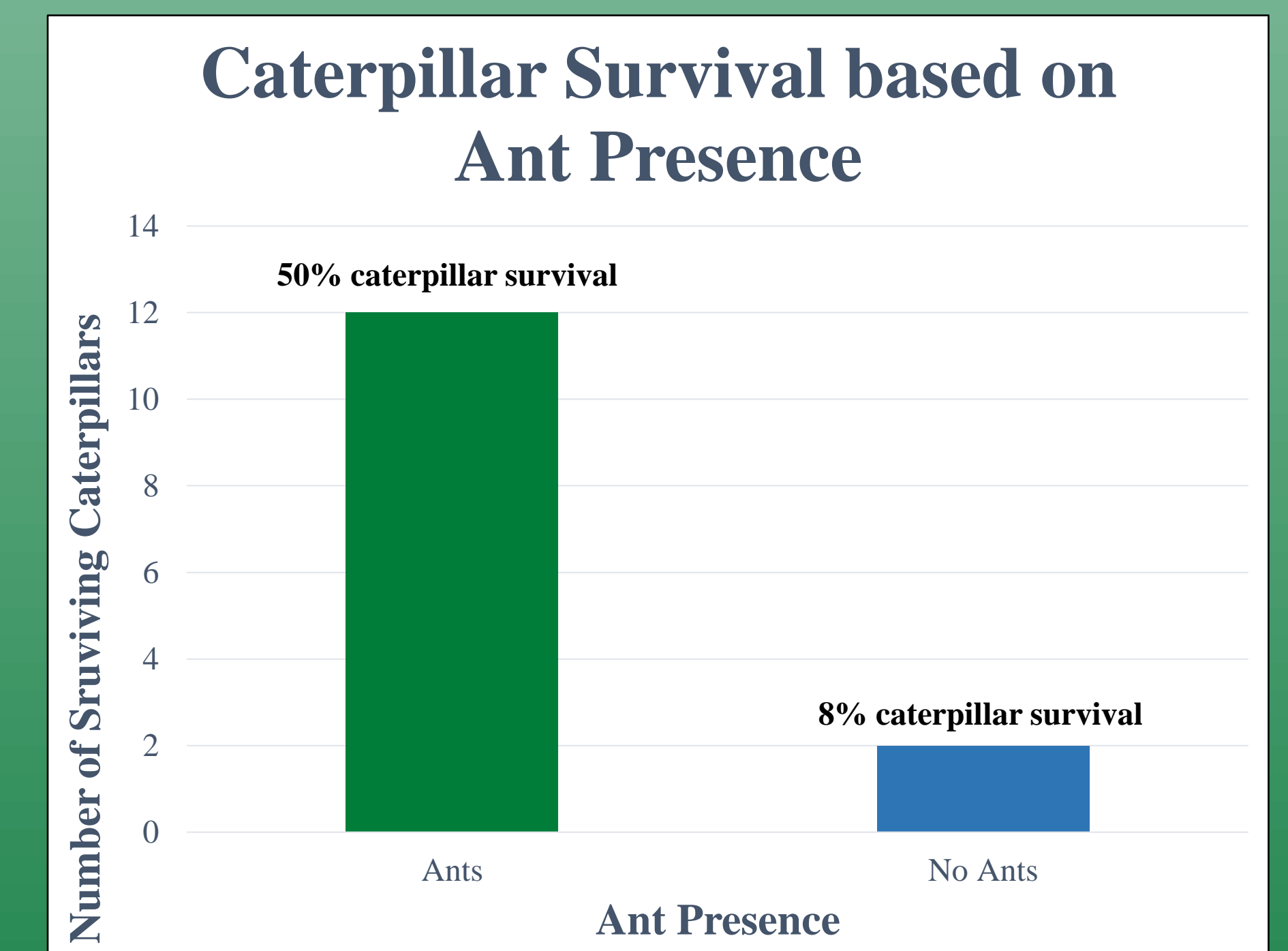
*Formica fusca* ant probing a Hops Blue caterpillar (*C. humulus*) on Wild Hops flowers (*H. lupulus*).

## Methods:



**Split Plot Design:** Ants were excluded from some areas with caterpillars & allowed to interact with caterpillars in other areas. Survival rate of the caterpillars was compared between the two groups.

## Results:



**Figure 1:** Survival rate of caterpillars with or without ant presence. Caterpillar survival significantly increased when ants were present.

## References:

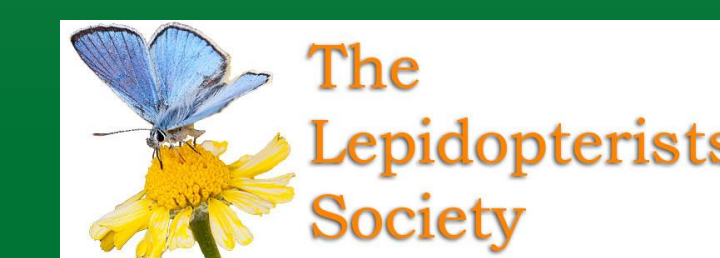
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(4) Pierce NE, Braby MF, Heath A, Lohman DJ, Mathew J, Rand DB, Travassos, MA. 2002. The Ecology and Evolution of Ant Association in the Lycaenidae (Lepidoptera). *Annual Review of Entomology*, 47:733-71.

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