



Class Insecta, Insects

Order Hymenoptera, Ants, bees, and wasps

Hymenoptera means “membraneous wings.” The hind wings are smaller than the front wings and have a row of tiny hooks, hamuli, that attach the two wings. There are two suborders. The smaller suborder includes sawflies and horntails, which are phytophagous. Bees, wasps, and ants belong to the larger suborder, which includes nectar, pollen, and insect feeders. Hymenoptera is the second largest group of insects, most of which are beneficial. These insects undergo complete metamorphosis and have complex behaviors. Most parasitic wasps do not sting humans. All hymenopterans have chewing mouthparts.

Trichogrammid wasps

Family Trichogrammatidae

Description and life history: Adults are 1 mm or less in length, with wing hairs (setae) arranged in rows on the forewings, and short antennae, with seven or fewer antennal segments. Their most distinguishing characteristic is their three-segmented feet (tarsi).

Prey species: *Trichogramma* are internal parasitoids of insect eggs, especially those of sawflies and moths. Some *Trichogramma* wasps prefer eggs of certain hosts, while others are able to parasitize almost any insect egg. Common hosts are cabbageworm, tomato hornworm, corn earworm, codling moth, cutworm, armyworm, cabbage looper, European corn borer and tomato fruitworm. *Trichogramma* are easily reared and commercially available for augmentative release in the field.



Trichogramma wasp adult. (352)

Photo: UC IPM, Jack Kell Clark, University of California at Berkeley