



## 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.

## Braconid wasps

Family Braconidae

**Description and life yhistory:** There are over 1000 known species of Braconid parasitoids. They are mostly internal parasitoids, but many emerge to pupate outside their dead hosts. Adults are usually less than 13 mm long, with a slender abdomen that is longer than the head and thorax combined. They are popular biological control agents, because they are good searchers, even at low host densities.

**Prey species:** Braconid hosts include larvae of beetles, caterpillars, flies and sawflies. *Cotesia congregata* attacks tomato hornworm larvae, *C. glomerata* attacks imported cabbageworm larvae, and *C. melanoscelus* attacks gypsy moth larvae. Braconids are also an important parasitoid of aphids. Each female can attack between 200–300 aphids in a two-week lifespan. *Aphidius matricariae*, *A. colemani*, and *A. ervi* are commercially available for control against green peach aphid, melon aphid, cotton aphid in greenhouses, and soybean aphid. *Lysiphlebus testaceipes* also attacks greenbug aphids and cotton aphids, while *Diaeretiella rapae* attacks greenbug aphids, Russian wheat aphid, corn leaf aphid, and English grain aphid.



Braconid wasp parasitoid reared from an aphid mummy. (340)  
Photo: John Davidson



Aphid mummies showing braconid wasp emergence holes. (341) Photo: John Davidson



*Cotesia melanoscelus* adult, a braconid gypsy moth parasitoid. (342)  
Photo: John Davidson

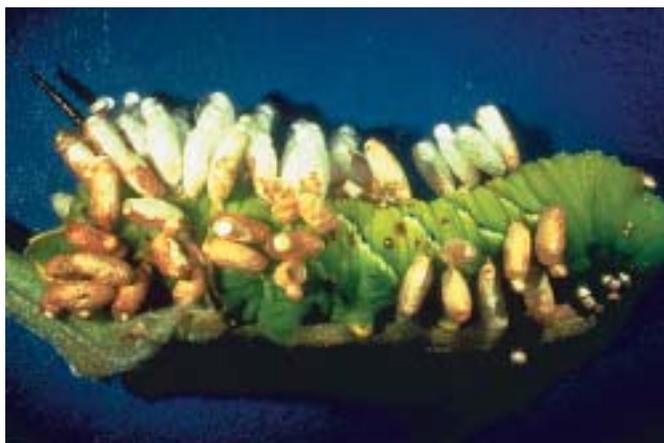


## Braconid wasps (continued)



*Cotesia glomerata* braconid cocoons on imported cabbageworm. (343)

Photo: unknown



*Cotesia congregata* braconid cocoons attached to tomato hornworm larva. (344)

Photo: John Davidson