



## Beginners' Guide to Bees, Wasps, Flies and other Pollinators:

### Honey Bees—

All species of Honey Bees are classified under the one genus of *Apis* and are characterized by their ability to produce and store honey and build comb from wax (they are the only bees to have a wax gland). No species of Honey Bee is native to North America.

### Bees Native to North America—

There are roughly 4,000 species of bee native to North America (roughly 20,000 known species of bees worldwide). The nesting habits of these bees range widely from burrowing into the ground, to using stems and sticks, to building right inside adobe walls. Some bees do not build nests, and will simply place their eggs into the nests of other bees.

### Wasps—

Predating bees evolutionarily (both are in the order of *Hymenoptera*), bees can be considered wasps that have adapted to a vegetarian diet. Wasps are an essential garden pollinator and predator. Wasps eat “meat” (other arthropods and bits of carrion) in their larval stage and nectar in their adult stage, thus providing both garden benefits. Because wasps are a well-known predator to most garden pests, studies show that simply having multiple bees and wasps flying through your garden (even if they don't hunt anything) can alone decrease pest damage done to crops as the pests attempt to “fall to safety” every time a Hymenoptera flies by. There are roughly 12,000 species of wasp in North America. The vast majority of these wasps are solitary, so they lack a stinger since they have no large nest to protect. They may appear frightening with a long ovipositor trailing behind them, but it is for laying eggs, not stinging. Yellow Jackets, Hornets, and Paper Wasps are the only *social vespid* wasps we have (only about 40 species in all). These wasps work together to construct a large nest and provision it with food and young. They are truly social in that they all work and lay equally, lacking a queen. These are the defensive and stinging wasps that give the rest of the 11,960 species a bad name.

### Flies—

One of the largest orders of insects on earth is that of flies—*Diptera*. Of the 188 families within this order, 71 have been reported visiting flowers. Though pollination has not been recorded for all of them, many species seem to be inadvertent pollinators. Being generalists, flies also provide many other ecosystem benefits including: the clean-up and removal of detritus and waste products (both animal and vegetable), parasitizing other insects which can both reduce pests and help to keep beneficial insect gene pools strong, as well as being a major food source for many other beneficials.

### Bees vs. Wasps

- Wasps tend to have more dramatic coloration and patterns.
- Wasps are less hairy than bees (and the hairs they do have are a single filament, as opposed to the branched hairs of bees).
- Wasps never carry pollen.

## Bees vs. Flies

- Flies have only two wings; bees and wasps have four.
- Flies are generally less hairy than bees.
- Flies typically have large eyes near the front of their heads that often nearly meet on the top; those of bees are off to the side.
- Flies' antennae are shorter; they are stubby with a single protruding bristle.
- Flies don't carry pollen loads (though some do have markings that mimic pollen nodules).

## Other Pollinating Animals:

- Ants
- Bats
- Beetles
- Butterflies
- Gnats
- *Hemiptera*—"True Bugs" (many, many species within this order)
- Humans
- Hummingbirds (a few other birds as well)
- Lemurs
- Lizards
- Moths
- Mice
- Possums
- Slugs
- Thrips

80% of all plants on earth require animal involvement for successful pollination (*biotic pollination*). Of the remaining 20% of plants that are pollinated *abiotically*, 98% are pollinated by wind (*anemophily*) and gravity (primarily grasses, conifers, and a large selection deciduous trees) and 2% are pollinated by water (*hydrophily*)—virtually all of these are aquatic plants.

As always, next to habitat loss, the biggest threat to pollinators and our ecosystem overall is the use of herbicides, pesticides, and other toxic chemicals. Please refrain from using these substances, and encourage the people in your life to do the same. We are happy to discuss alternative methods of pest and weed control at no cost.

A significant amount of this information came from the Xerces Society—their book [Attracting Native Pollinators](#), specifically. For more information and a complete recommended reading list, please visit [www.wildhoodfarm.com](http://www.wildhoodfarm.com). Thank you for supporting our wild friends!