WHICH IS IT -
WASP, BEE, OR FLY?

The **Order Hymenoptera** includes many tiny wasp parasites, sawflies, ants, wasps and bees. Hymenoptera means "membrane wing." Hymenoptera have two pairs of wings.

Bees - Apoidea

Females collect pollen and nectar. Nectar provides energy for the adults and grub-like larvae. Pollen is the nitrogen source for larvae.

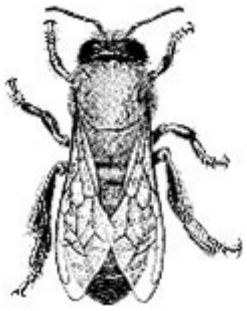
Most species have hairs on their body. In particular, females have **hairs on the hind legs or underside of the abdomen**, for collecting pollen for their larval offspring.

Bodies tend to be rounder than wasps, and they tend not to have a conspicuous "wasp waist".

Antennae are thin and have many cylindrical segments. Female antennae are usually elbowed, whereas male antennae are longer than female antennae, and not elbowed. Males often have yellow or white hairs on the front of their face.

Females create a nest of some sort to protect their larvae. They usually provision individual cells for each offspring, and then lay an egg on the provisions.

Females have a stinger, which is a modified ovipositor, for laying eggs. The stinger is usually retracted into the abdomen. Males don't lay eggs, so they don't have ovipositors, so they don't sting! Social species are the most aggressive about using their stinger, since workers do not lay eggs, and are expendable.



HONEY BEE (*Apis mellifera*)**:** The most familiar bee species. Social, living in colonies with one reproductive queen, many female workers, and some males present only for a limited period of time. Colonies last for many years. Usually they are found in white wooden hives managed by beekeepers for honey production and agricultural pollination.

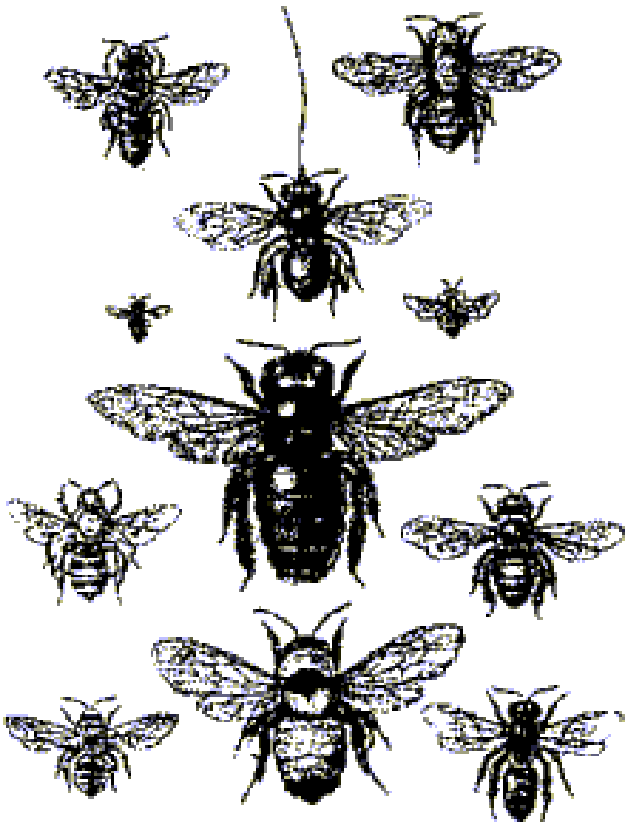
Individuals are tan with varying degrees of orange or brown, They are hairier than wasps, but less furry than the bumble bee.

Workers carry pollen in a smooth, slightly concave pollen basket on the hind legs, rather than in a dense brush of hairs as in most female bees.

BUMBLE BEES (genus *Bombus*) Another familiar social bee. There are about a dozen species in Idaho. Black with yellow and sometimes orange markings. Very hairy, robust bodies.

Colonies are annual. Only the queens overwinter. They are seen foraging in the spring when they are first founding a colony. They can also be seen in the fall; these are new queens preparing to hibernate for the winter so they can found a new colony in the spring. Males are seen in the fall as well.

SOLITARY BEES (several families, many genera) There are about 5,000 species of bees in North America, and most are solitary species. Each female makes her own nest; there is no queen and worker cast. Most make nests in tunnels in the ground. Some use tunnels in wood or other ready-made cavities. Most females collect pollen on their hind legs. Females in the family Megachilidae collect pollen in hairs on the underside of the abdomen. Distinguishing families requires some technical expertise, but see the pinned specimens, reference books, and photos on the web to get a feeling for their diversity.



Wasps - Vespoidea, Sphecoidea

Females collect insect prey to feed the grub-like larvae. Social species are also attracted to carrion and picnic food. Adults visit flowers, watermelon, and soda cans for the sugar water which provides energy. They may do some pollinating on the flowers, but they tend not to visit a large number of flowers.

Not hairy, no hairs on the legs, since they don't carry pollen. However, they generally have well developed mandibles. Bodies tend to be more elongate than bees, and they often have a thin "**wasp waist**".

Like bees, **antennae are thin** and have many cylindrical segments. Female antennae are usually elbowed, whereas male antennae are longer than female antennae, and not elbowed. Males often have yellow or white hairs on the front of their face.

Females create a nest of some sort to protect their larvae. They usually lay an egg and then provision individual cells for each offspring. Solitary species provide whole insects for the grub-like larva to feed on. Adult wasps chew up the food for the larvae in social species.

Like bees, **females have a stinger**, which is a modified ovipositor, for laying eggs. The stinger is usually retracted into the abdomen. Males don't lay eggs, so they don't have ovipositors, so they don't sting! Social species are the most aggressive about using their stinger, since workers do not lay eggs, and are expendable.

Vespidae

Some are solitary, some are social. Solitary species nest in tunnels that they dig in the ground, or in existing tunnels in wood. All members of this family **fold their wings longitudinally** when they are not flying.

Yellow Jacket

Bald-faced Hornet

YELLOW JACKETS AND HORNETS The most familiar wasps, often confused with bees. Yellow jackets have yellow and black markings. Hornets are black with white markings. Both are social, and their nests are made of paper, not wax like honeybees. Nests are typically built in shallow underground cavities or in the eaves of houses or on branches of trees. Nests consist of several tiers of papery cells, with a shell or cover of paper.

PAPER WASPS Reddish brown coloration, sometimes with yellow. Long legs. Social. Nest consists of a single tier of cells attached by a short stalk to the eaves, or the underside of a surface. There is no outer covering, as in the yellow jackets and hornets.

Flies – Order Diptera

Diptera means **two wings**. Flies have only one pair of wings. Most other insects have two pairs of wings.

Some flies have similar coloring to wasps and bees. This is called warning coloration, because predators avoid them, thinking they can sting. However, flies do not have a stinger. They have sponging mouthparts, so they can't bite.

Antennae are short, having but a few segments terminating in a bristle; bees' antennae are multi-segmented, narrowly cylindrical and longer.

Flies also have **huge eyes** that take up most of their head. Compare the eyes of syrphid flies with the eyes of bees.

SYRPHID FLIES, also called flower flies or hover flies, often **hover in front of the flowers**, unlike bees. They tend to sit on one flower for some time, and don't show deliberate movement from flower to flower to collect pollen, as bees do. They feed on nectar for energy, and a little pollen to mature their eggs, but they don't collect provisions for their offspring, and they don't make nests.

Syrphid flies, though often hairy, do not accumulate loads of pollen under their abdomens or on their hind legs as female bees do.

Syrphid flies can be significant pollinators.