

# Strawberry Pollinators and Visitors: Focus on Bees

## Introduction

- Strawberry flowers are visited by many insects and pollinators in Manitoba, including native and managed bees.
- Bees rely on flowers for nectar and pollen, and are commonly seen on many flowers.
- Flies are also important visitors of strawberry flowers.
- When a bee visits a flower, pollen can get on its body; the transfer of that pollen to a different plant of the same species is called “cross pollination”.
- The abundance of native bees can vary considerably from one area to the next, and from one year to the next. This happens for a number of reasons that have to do with weather, predation, parasitism, disease and others factors. These factors can affect the levels of pollination.



*Strawberry flower. Both female and male parts of the strawberry plant are on each flower of most cultivated varieties. Bees, as well as other insects, transfer the sticky pollen from the anther (male) to the stigma (female). Stigmas are often receptive before pollen of the same flower is available, which encourages cross pollination.*

## Different bees – different abilities and limitations

- Below are the various genera (plural of genus) of bees that may be seen on strawberry flowers. They represent all five bee families found in Manitoba.
- This is not a complete summary – rather, it’s meant to give a sense of diversity, improve awareness of bees, and highlight the value, vulnerability, and limitations of bees in our fruit patches and commercial agro-ecosystems.

## FAMILY: APIDAE

### Genus: *Apis*; Pictured: The Honey Bee (*Apis mellifera*)

- Bees of the family Apidae, subfamily Apinae (including honey bees and bumble bees), have pollen baskets on their hind legs. The bee moistens the pollen with nectar and packs it in the pollen basket for transport (red circle).
- Honey bees can have dominant orange and/or black colouration.
- Honey bees are social and live in colonies.
- They may be abundant in a raspberry patch one day, then, less so the next, if more desirable forage is found.
- Honey bees are particularly important pollinators because of their abundance, their ability to move pollen, frequent flower visits and a long season of activity.



## Genus: *Bombus*; Pictured: Bumble Bee (3 species)



There are many wild bumble bee species documented in Manitoba. They are relatively large and hairy, and often quite colourful. They are important pollinators of many different flowers. Bumble bees are social and live in colonies, many in old rodent nests. On strawberries, which bloom early in the season, queen bumble bees may be seen. A bumble bee can “buzz-pollinate” by shaking its entire body, which releases pollen (more locally) from some flowers. Larger bees, like bumble bees, generally fly further and in more adverse conditions, than smaller bees.

*Bees of the families Apidae and Megachilidae generally have long tongues for better access to nectar from deeper flowers. Bees of the families Andrenidae, Halictidae, and Colletidae are generally “short-tongued”.*

## FAMILY: APIDAE

### Genus: *Ceratina*; Pictured: Small Carpenter Bee



- Small carpenter bees nest in broken twigs and stems with exposed pith - including raspberry canes. They dig and tunnel into the pith centre.
- Prairie species of *Ceratina* are considered “subsocial”.
- Their body colour is dark, metallic blue or metallic green.
- Hairs for pollen (scopa) are on the femur (the upper part) of the hind leg.

## Genus: *Nomad*; Pictured: Cuckoo Bee (multiple species)



Commonly called cuckoo bees (like other cleptoparasitic bees). They do not make nests, but lay their eggs in the nests of many different bees, primarily genus *Andrena*, but also Halictidae. After a *Nomada* egg hatches, the larva kills the host egg. Like other parasitic bees, cuckoo bees lack hairs that carry pollen. They are “wasp-like” in appearance.

## FAMILY: MEGACHILIDAE

### Genus: *Megachile*; Pictured: Leafcutter (or Leafcutting) Bee



- Leafcutter bees are solitary.
- They nest in existing cavities and tunnels, including raspberry canes, beetle tunnels, other natural and man-made cavities, and in the ground.
- They enclose their broods in cocoons made of leaf or flower petal pieces.
- Females have hairs for carrying pollen on the underside of their abdomens.

### Genus: *Osmia*; Pictured: Mason Bee



- *Osmia* bees are solitary.
- They nest in cavities and tunnels, and use mud to construct their nests to divide brood cells.
- Most are dark in colour or metallic blue or green.
- Body segments are relatively round and broad.
- Like other Megachilidae, females have hairs for carrying pollen on the underside of their abdomens.

Some insects, including mining bees (*Andrena*), nest in the ground. The entrance to the nest may be seen in bare, sandy or loamy soil.



## FAMILY: ANDRENIDAE

**Genus: *Andrena*; Pictured: Mining Bee (3 species)**



- All species of mining bees nest in the ground, often in sandy or loamy soil.
- They are solitary, but there can be many nests located close together.
- They generally lack the type of distinctive striping on the abdomen that is seen on Halictidae and bees of other families.

## FAMILY: COLLETIDAE

**Genus: *Hylaeus*; Pictured: Yellow-Faced Bee**



- Yellow-faced bees have black bodies with distinctive paint-like markings (usually yellow, sometimes white) on the face and thorax, and bands on the legs.
- They are relatively small and have slender bodies.
- They are “wasp-like” in appearance.
- They nest in small cavity tunnels, including plant stems and raspberry canes, and line their nest with a cellophane-like secretion.
- They carry pollen internally (in the crop).
- Colletidae is a diverse family that includes another genus, *Colletes*.

## FAMILY: HALICTIDAE

Genus: *Lasioglossum*; Pictured: Sweat Bee (3 species)

FIGURE 1



Subgenus: *Lasioglossum*

FIGURE 2



Subgenus: *Hemihalictus*

FIGURE 3



Subgenus: *Dialictus*

Genus: *Halictus*; Pictured: Sweat Bee

FIGURE 4



FIGURE 5



- (Figures 1-5) They are called sweat bees because they may land on people to get salt from sweat.
- Halictidae is a large, diverse family.
- Nearly all species nest in the ground.
- Lifestyle in this family is mixed: some species are solitary, some exhibit various social structures and others are not fully understood.
- Like bumble bees, most halictid bees overwinter as mated female adults, and emerge early in the spring.
- Many halictid bees are small in size.
- They may be various colours and have a metallic look.
- They carry dry pollen in stiff hairs (scopa) on their hind legs.
- Even though they are small, and do not carry a lot of pollen, they can be relatively abundant.

## Other Insects on Strawberry Flowers

There are many insects that visit strawberry flowers that are not bees. Some of these may even look like bees. Many of the insects pictured below are flies (particularly hover flies). Some flies help control insect pests.

Flies have short antennae while bees and wasps have longer antennae, which can be seen in some of the images below. Also, flies have two wings while bees and wasps have four, although this may not be visible in a photo. As well, flies generally have larger eyes. Other insects may be seen; the kinds and numbers of actual insects seen on strawberry flowers can vary significantly.



Hover fly (genus *Toxomerus*)



Hover fly (genus *Helophilus*)



Hover fly (genus *Eristalis*)



Hover fly (subtribe *Xylotina*)



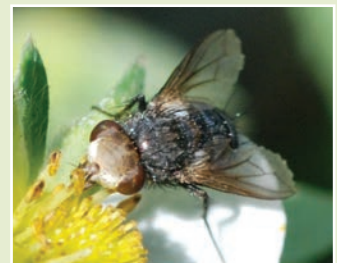
Soldier fly



Tachinid fly (genus *Epalpus* suspected)



Tachinid fly (genus *Gymnosoma*)



Tachinid fly (genus *Gonia*)



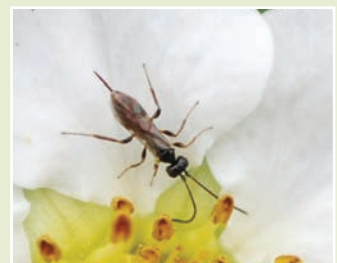
Blow fly (likely)



Flesh fly (likely)



Cuckoo wasp



Wasp (parasitoid likely)



Skipper butterfly



Lady beetle



Beetle



Mosquito

The presence of bees and other flower visitors can be encouraged by:

- planting flowering plants and trees that bloom at different times of the year for a long flowering season,
- providing a favourable nesting and foraging habitat (ex: protection from wind, good sun exposure)
- lowering the risk of pesticide use, where possible

(Photos were taken during the spring flowering period.)



Honey bee on a raspberry flower

## References:

- Dr. Cory Sheffield of the Royal Saskatchewan Museum for bee identification.
- McGregor, S.E. 1976 (year of original publication). *Insect Pollination of Cultivated Crop Plants*. United States Department of Agriculture.
- Michener, C.D. 2007. *The Bees of the World* (2<sup>nd</sup> Edition). *The Johns Hopkins University Press; Baltimore, MD*. 953 pages.
- Sheffield, C. S., S. D. Frier, and S. Dumesh. 2014. The Bees (Hymenoptera: Apoidea, Apiformes) of the Prairies Ecozone with Comparisons to other Grasslands of Canada. In *Arthropods of Canadian Grasslands 4*: 427-467.
- The Xerces Society. 2011. *The Xerces Society Guide: Attracting Native Pollinators; Protecting North America's Bees and Butterflies*. Storey Publishing. 371 pages.
- Dr. John Gavloski, Manitoba Agriculture, Food and Rural Development.
- *BugGuide* (bugguide.net).

For more information, contact Manitoba Agriculture,  
Food and Rural Development at [crops@gov.mb.ca](mailto:crops@gov.mb.ca).