Biodiversity for Sustainable Futures

Pollinating Insects of Alberta: Visual Guide to Common Terrestrial Orders (Adults)

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Seal, M., Summers, M. (2024). Pollinating Insects of Alberta: Visual Guide to Common Terrestrial Orders (Adults). QUBES Educational Resources.

Legend

Common Names

Body Size

Wing Number

Habitat

Mouthpart Type

Notable Features

Hymenoptera

Terrestrial & Subterranean, flowers

0.2 - 115 mm

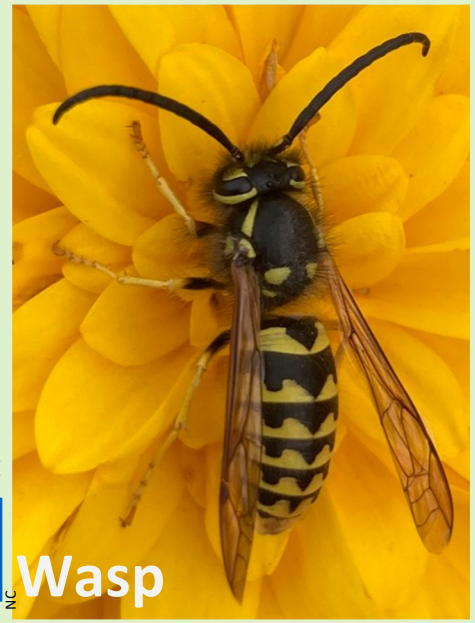
0/2 pairs

Chewing /Lapping

- Thorax and abdomen are connected by a **thread thin waist**
- Females have an ovipositor modified into a **stinger**
- Forewings are typically larger than hind wings, both have sparse venation that angle to form closed cells
- 3-60 segmented **geniculate (elbowed) antennae**, most having 10+ segments
- Commonly have three ocelli

[How to tell bees from wasps and flies]

Bees, Wasps, Ants, & Sawflies



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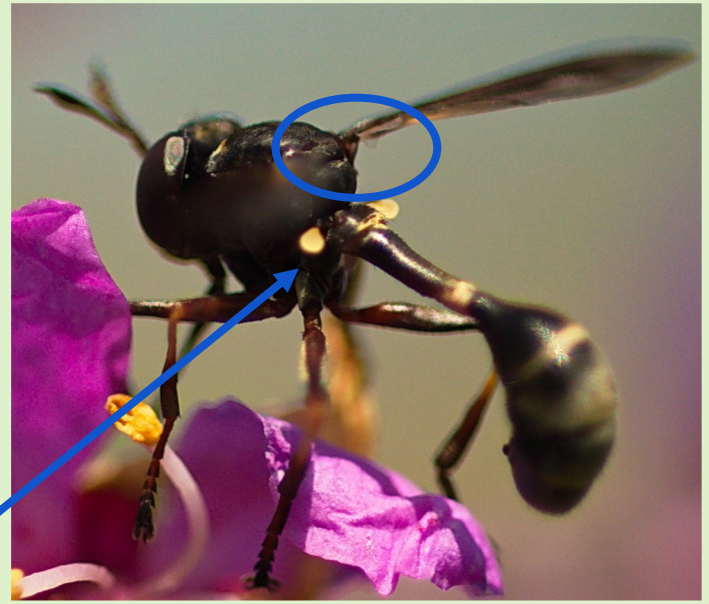
Flies & Mosquitoes

Diptera

Virtually all environments

0.5 - 40 mm | 1 pair | Sucking

- The forewings are membranous with moderate venation
- Hindwings are reduced to **halteres (circled in blue)** (small, club-shaped wing remnants) which serve to help balance during flight
- **Large compound eyes**, may have ocelli
- Females lack a proper ovipositor
- Antennae are **filiform** (thread-like), **aristate** (thin and connected to a platform), or **stylate** (similar to filiform but shorter and thicker)



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Lepidoptera

Terrestrial, tend to remain in areas with larval food plants, some migrate great distances

2 - 250+ mm

2 pairs

Siphoning

- Coiled **proboscis** (straw-like mouthparts)
- Forewings are typically larger than the hindwings, both are covered in **fine scales**
- Ocelli and/or other sensory organs are common
- **Multi-segmented antennae**, with variation in morphology used for identification
  - butterflies: thin antennae with small **ball or club** at distal end
  - skippers: **hooked** antennae at end
  - moths: thin and **feathery** antennae without ball or club at end

Butterflies, Skippers, & Moths

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Coleoptera

Majority of terrestrial and freshwater environments

0.3 - 200 mm

2 pairs

Chewing

- **Elytra** (hardened forewings which typically cover entirety of membranous hindwings at rest)
- Wide variation in morphology of antennae, <11 segments
- Commonly lack ocelli
- Wide variation in leg morphology

Beetles

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Hemiptera

Many terrestrial and freshwater environments

1 – 100+ mm

[illegible]s

Piercing/ Sucking

- **Rostrum** (beak-like mouthparts with accompanying piercing structures)
- Wings either cross at distal end of abdomen or are held above body in a tent-like manner
- Forewings may be entirely **leathery** or **hemelytra** (wings that are leathery/hardened at the front and membranous/thin in the back
- May have a **prominent scutellum** (triangular back plate)
- 3-13 antennal segments
- Minimal morphological differences among legs; mostly **gressorial** (walking/running), occasionally **saltatorial** (adapted for jumping)

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Additional Resources:

iNaturalist Calgary Insect Pollinators Guide: A guide to pollinator species found in Calgary
https://inaturalist.ca/guides/15081

iNaturalist Calgary Pollinators Project: A citizen scientist project for uploading observations of pollinators visiting flowers
https://inaturalist.ca/projects/calgary-pollinators

The Native Bee Fauna and its Floral Relations in the City of Calgary, Alberta
https://prism.ucalgary.ca/handle/1880/114223

Bumble Bees of Calgary: A key and illustrated guide for identification of the bumble bee species found in Calgary, Alberta
https://prism.ucalgary.ca/handle/1880/113505

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