WASHINGTON'S
NATIVE BEES

WASHINGTON BEE ATLAS

WSDA Washington State Department of Agriculture

POLLINATOR PROGRAM

WASHINGTON'S NATIVE BEES

While you are likely familiar with honey bees *(Apis mellifera)* and probably even bumble bees *(Bombus),* did you know that Washington State has about 600 species of native bees? The diverse ecoregions in our state mean that our state can support a wide variety of bees. From high-elevation forests to hot, dry deserts, bees have adapted to survive and thrive in Washington's varying climates.

But we know close to nothing about what native bees we have in Washington!

To address this, the Washington Bee Atlas was established as a project of the Washington State Department of Agriculture's Pollinator Program. The project aims to find and document both our native bees and their host plants. This is primarily a volunteer-based effort, with bee enthusiasts receiving extensive training through a Master Melittology program to collect, pin, and even identify museum-quality specimens. Melittology is the study of native bees and the program is similar to the Master Gardener program.

Please note that the listed numbers of species and genera in this booklet are based on historical data, which is minimal. These numbers are changing as the Washington Bee Atlas continues to find new species in the state.

The Washington Bee Atlas data will help us learn which native bees are doing well in the state and which may need conservation assistance. Another goal is to develop ecoregion-specific seed and plant recommendations to support bees in diverse ecosystems.

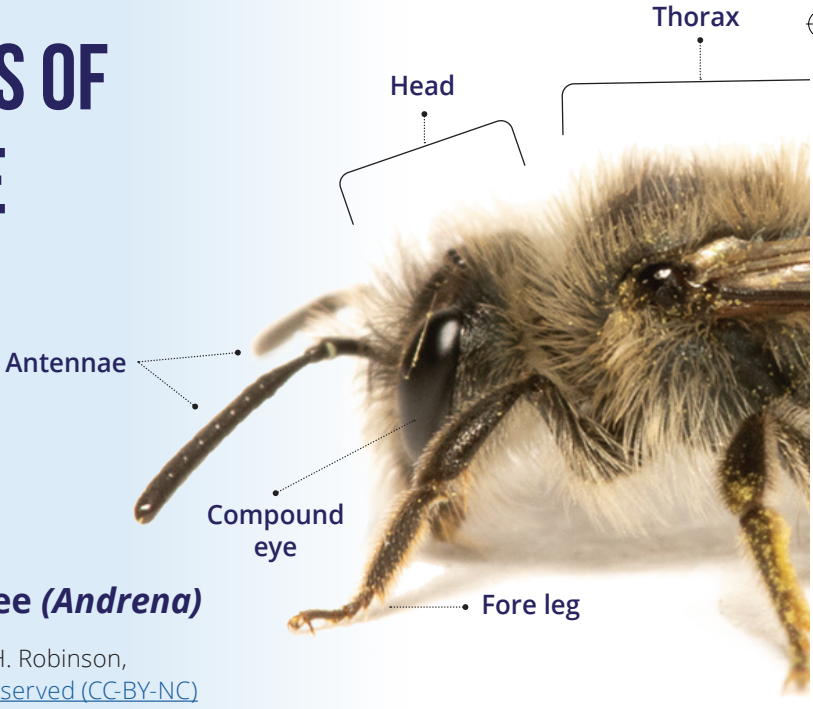
NATIVE BEES: UNDERGROUND LONERS

Unlike honey bees and bumble bees which build colonies that persist throughout the year, most of Washington's native bees are solitary and nest in the ground. A solitary bee species normally doesn't build a colony. Instead, each female bee will build her own nest. There, she lays eggs on the pollen she has collected, which the bee larva will eat after hatching. Solitary bees do not produce nearly as many offspring as honey bees.

These solitary bees usually fly on the landscape for as little as two weeks to a few months, spending the rest of their lives developing from egg to larvae to adult underground or in cavities, such as inside stems or holes in wood.

This constant changeover of bees on the landscape coincides with the change in blooming flowers. Many bees only emerge in spring, summer, or fall when their

PARTS OF A BEE

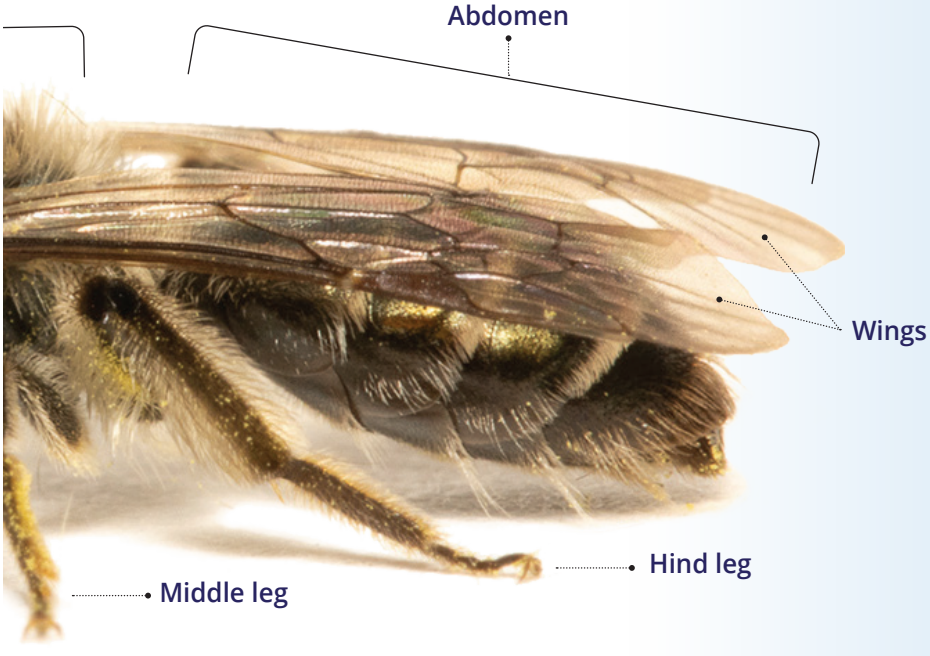


Mining bee *(Andrena)*

preferred type of flowers bloom. If you visited just one spot every two weeks you might see different bees with each visit!

Many of our native bees are tiny – measuring only a few millimeters and sometimes mistaken for gnats! Others measure up to about an inch in length. Bees can be very hairy like bumble bees or have virtually no hair at all, like many of the cuckoo (parasitic) bees. Some bees may forage for their entire lives only within several feet of where they were born, while others may forage for a few miles.

Read on for an overview of the different bee families that can be found in Washington.



MEET THE BEES

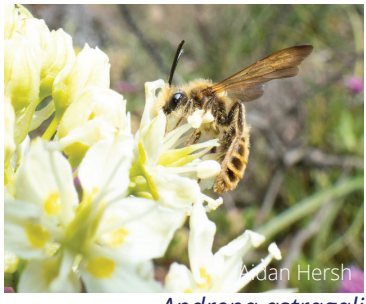
Andrenidae
mining bees

- Bee size: very small to moderate
- Known number of species in WA: 125
- Andrenidae genera in WA:
  - *Andrena*: 109
  - *Calliopsis*: 4
  - *Panurginus*: 3
  - *Perdita*: 9
- Characteristics:
  - Two subantennal sutures
  - Some species have facial fovea
  - Carry pollen on legs

Andrena

Perdita

Andrena



Andrena astragali

Andrena

Andrena

Panurginis

Andrena

Calliopsis

Perdita oregonensis

Andrena

Andrena

MEET THE BEES

Apidae
digger and bumble bees

- Bee size: small to large
- Known number of species in WA: 151
- Apidae genera in WA:
  - *Anthophora*: 15
  - *Apis*: 1
  - *Biasties*: 2
  - *Bombus*: 25
  - *Brachymelecta*: 1
  - *Ceratina*: 5
  - *Diadasia*: 7
  - *Epeolus*: 6
  - *Epimelissodes:* 1
  - *Eucera*: 11
  - *Habropoda*: 4
  - *Melecta*: 3
  - *Melissodes*: 24
  - *Nomada*: 35
  - *Oreopasites*: 1
  - *Triepeolus*: 8
  - *Xylocopa*: 1
  - *Zacosmia*: 1
- Characteristics:
  - Carry pollen on legs, sometimes in special "pollen baskets"

Diadasia

Eucera

Epimelissodes obliqua

Xylocopa virginica

Male *Melissodes*

Habropoda miserabilis

Anthopora crotchii

Bombus huntii

Melecta separata

Epeolus olympiellus

Anthophora pacifica

Ceratina

MEET THE BEES

Halictidae
sweat bees

- Bee size: very small to medium
- Known number of species in WA: 87
- Halictidae genera in WA:
  - *Agapostemon*: 3
  - *Dufourea*: 6
  - *Halictus*: 6
  - *Lasioglossum*: 63
  - *Nomia*: 1
  - *Sphecodes*: 8
- Characteristics:
  - Attracted to sweat, may land on you and consume your sweat
  - Strongly curved basal vein on wing
  - Carry pollen on legs

Halictus rubicundus

Lasioglossum

Nomia melanderi

Sphecodes

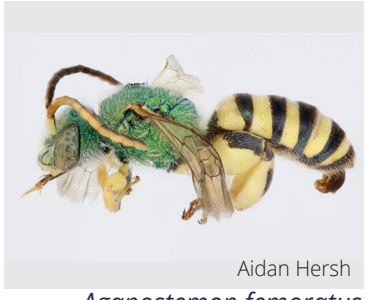
Dufourea

Halictus

Halictus

Halictus

Agapostemon



Agapostemon femoratus

Lasioglossum

Lasioglossum lusorium

MEET THE BEES

Megachilidae
mason and leaf-cutter bees

- Bee size: small to medium
- Known number of species in WA: 184
- Megachilidae genera in WA:
  - *Anthidiellum*: 2
  - *Anthidium*: 11
  - *Ashmeadiella*: 9
  - *Atoposmia*: 3
  - *Chelostoma*: 2
  - *Coelioxys*: 9
  - *Dianthidium:* 9
  - *Dioxys*: 4
  - *Heriades*: 4
  - *Hoplitis*: 12
  - *Megachile*: 31
  - *Osmia*: 71
  - *Protosmia*: 1
  - *Stelis:* 16
- Characteristics:
  - Carry pollen on abdomen
  - Elongated labrum

Megachile

Osmia

Megachile apicalis

Megachile rotundata

Anthidiellum notatum

Anthidium

Anthidium oblongatum

Ashmeadiella

Dioxys aurifuscus

Heriades

Hoplitis

Stelis

MEET THE BEES

Melittidae
oil bees

- Bee size: small to medium
- Known number of species in WA: 1
- Melittidae genera in WA:
  - *Macropis*: 1
- Characteristics:
  - Carry oil on legs

Macropis nuda

Colletidae
plaster and masked bees

- Bee size: very small to medium
- Known number of species in WA: 30
- Colletidae genera in WA:
  - *Colletes*: 14
  - *Hylaeus*: 16
- Characteristics:
  - Line brood cells with mouth secretions that dry to a cellophane-like material
  - Carry pollen on legs or internal crop
  - Specialized broad, split tongue tips for applying cell linings

Hylaeus

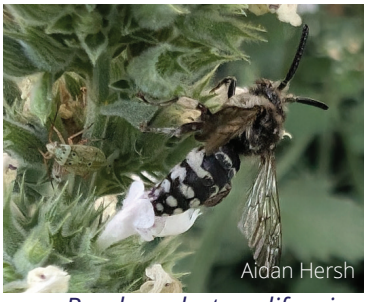
Colletes

CUCKOO BEES – SNEAKY THIEVES

Most bee families have members that are "cuckoo" bees. These bees generally do not collect pollen nor build or provision their own nests. Instead, they sneak into nests and lay their own eggs where other bees have collected and stored pollen. The eggs of the cuckoo bees usually hatch first, giving them the advantage over the host bee's egg. These bees are usually not as hairy as non-cuckoo bees since they do not collect pollen themselves.

While it may seem unfair that these cuckoo bees take advantage of the work of other bees, the presence of cuckoo bees is a good indication that there are healthy levels of the host bees present.

Nomada



Brachymelecta californica

Coelioxys

Triepeolus helianthi

SPECIES OF GREATEST CONSERVATION NEED (SGCN)

In Washington, there are three species of bumble bees that have been designated as Species of Greatest Conservation Need by the Washington State Department of Fish and Wildlife. These species have seen significant declines in at least some areas of the state. One has not been recorded since 1998.

Western bumble bee *(Bombus occidentalis)*


Karla Salp

The western bumble bee was once common throughout Washington State. Except for a few areas in the state, it is now seldom seen. In Washington, this species of bumble bee is easy to distinguish as it is the only species with white hairs on the end of its abdomen.

Morrison's bumble bee *(Bombus morrisoni)*


Bumblebees of Washington State

While not uncommon in other areas of the United States, this species has nearly vanished from Washington State. There is only one confirmed location where this species remains in Central Washington. These bumble bees are distinctive by the bright yellow coloring of their hairs without black on the thorax.

Suckley's cuckoo bumble bee *(Bombus suckleyi)*

This cuckoo bumble bee is largely associated with another SGCN, the western bumble bee. It does not provision for its own young but instead lays it eggs in nests on pollen that other bumble bees have collected. Historically it has relied primarily on nests of the western bumble bee. The substantial decline of the western bumble bee may explain why this bee has not been seen since 1998. This bee can be tricky to identify and can be distinguished as all of the hair on its head are black and the fourth segment on its abdomen has yellow on the sides but at least some black in the middle.

If you think you spot an SGCN bee, we encourage you to take as many photos as possible from different angles and to record your sighting on iNaturalist.org or to bumblebeewatch.org.

SUPPORTING NATIVE BEES

There are many ways that you can help support native bees, and every little bit helps! Here are several ideas to get you started.

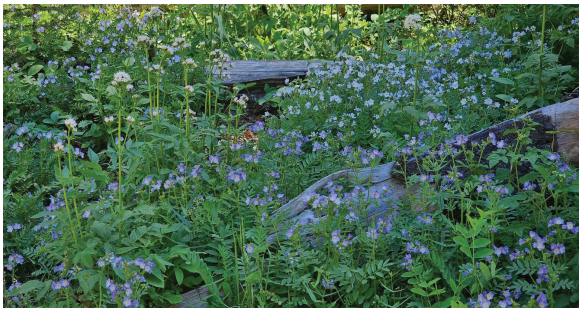
Volunteer

We invite you to become a volunteer with the Washington Bee Atlas. As a volunteer, you'll learn to collect and pin bee specimens for scientific preservation. If interested, you can also learn to identify bees at least to genus. If you are not interested in collecting bees, the **Washington Native Bee Society** or the **Xerces Society** are great organizations to become involved with to learn more about and advocate for native pollinators.

Learn more about becoming a Washington Bee Atlas volunteer at agr.wa.gov/pollinators

Plant flowers

Did you know that bees are just vegetarian wasps? All bees rely directly or indirectly on flowers. Planting flowers can help provide much-needed pollen and nectar resources for our native bees (and honey bees, of course). Planting native plants can help support bees that may specialize on those native plants. Do a little research to see what plants are native to your area.



However, even non-native flowers can help bees as many bees are generalists – meaning they can utilize flowers from many types of plants. Some cultivated plants may provide longer or more blooms than native plants, increasing the available resources. So whether you plant native or cultivated plants, the flowers are likely to support native bees. Consider sticking flowers in unusual places – like mixing flowers in with your vegetable garden, which will benefit both your bees and garden.

Reduce pesticide use

Pesticides – especially broad-spectrum insecticides – can kill or harm bees. Reducing or eliminating pesticide use can be a boon to bees. If you do choose to use pesticides, review the label carefully to avoid harming bees and never spray when bees - whether honey bees or native bees - are present.

Spread the bee love

Help increase the knowledge and love of native bees by helping others learn about them. Host a pollinator event to educate your friends and neighbors about native bees. Post pictures of native bees on social media. Support organizations, such as the **Washington Native Bee Society** and **Xerces Society**, that work to support pollinators. As we all learn more about our native bees and pollinators, we can take simple steps to protect them and help them thrive.

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AGR7-2503-012 (REV 2508)

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