Introduction

This field guide is intended to be a tool for the identification and monitoring of floral visitors, in particular, native bees in the urban gardens and farms of the Puget Sound Region. The relatively compact size of the guide was purposeful in that we hope you take this guide with you into the garden when you are working, or on trips around the region. Before getting started with the pictures and identification, let’s go over some basics about this field guide, and the proper way to assess bees.

How to Use the Guide

Bees and other floral visitors are notoriously difficult to identify in the field. Details on how best to observe floral visitors can be found at the front of the guide, while pictures and habitat information are sandwiched in the middle. The final section includes a data sheet and details for tracking your observations over time.

Please, read each section carefully.

Making Observations

When:

The best time to make observations of bees is at temperatures greater than 70° Fahrenheit, and wind speeds less than 5 mph. Bees will be harder to observe in windy conditions, and may not visit flowers when temperatures are too cool.

Where:

For the purpose of data collection, we ask that you only make observations of bees or other flower visitors on flowers in a garden. You may also see bees on leaves or on the ground. These bees may be resting, or looking for a place to nest.

How:

Bees and other floral visitors are easily disturbed. Avoid sudden movements, loud noises, or casting your shadow over them. Observe bees first, then less mobile flower visitors like beetles and bugs. Flies will often come back if disturbed, but other insects may not.
Classification

To simplify classification, we’ve created 5 groups of bees and 6 groups of floral visitors. Use these groups for your observations and notes. Example images of each group can be found in Section I. Only classify floral visitors to the level at which you are most confident.

**Groups of Bees:**
- Honey bees (HB)
- Bumble bees (BB)
- Other large bees (OLB)
- Green bees (GB)
- Small bees (SB)

**Groups of Other Floral Visitors:**
- Butterflies (BTF)
- Wasps (W)
- Bugs (BG)
- Flies (F)
- Beetles (BTL)
- Spiders (S)

Recording Data

Data sheets are at the back of the guide.

We recommend photocopying the data sheets and replenishing these as you need more. Before starting your observations, take note of the date, time, and location.

**Step 1:**

Pick a spot in a garden where you can clearly see a plant and its flowers. Sit or stand stationary near this plant and record any floral visitors you may see. If you observe the same plant or plants multiple times over a year, or over many years, this will give us the best information about what types of floral visitors are important for those plant groups.

**Step 2:**

If the floral visitor is a bee, and you can confidently classify it, then note the bee group. Make sure to use the pictures, habitat information, sizing guide, and other details in Section II, to substantiate your observations.
Step 3:
If possible, photograph the floral visitor and plant. If your camera has a macro mode, use that setting. Otherwise, try to take pictures that are in focus. Bees will fly away if you get too close, so experiment with the distance that is appropriate. Every bee is a little different! When photographing the plant, take a picture of the flower, leaf, and where the leaf attaches to the stem. Pictures are not necessary, but they help us to verify your observations.

Step 4:
Add additional notes about the site, plant, and floral visitor. Your notes are very helpful in the monitoring process and will allow you to build a more complete data set.

Step 5:
Submit your observations, images, and notes about your garden to our website, and track your pollinators over time!
hind wing and fore wing, and three pairs of legs. The legs and wings are attached to the thorax which is the center of locomotion of insects. Bees may or may not have legs that are modified for carrying pollen. In honey bees, this is called the corbicula, or pollen basket. Additional markings or groups of hairs are often found on the abdomen of the insect. Many bees carry pollen on the underside of the abdomen instead of on the leg.

Section I: Color Plates

In this guide, each bee group represents many different species. *The only exception to this is the honey bee.* We’ve included some of the most common bees for each group that you may see in this region. There are at least 20 different genera of bees in the South Puget Sound, and likely dozens of species. These plates are not intended to be a taxonomic identification guide, but rather a means to familiarize yourself with the native bees of our region. Common names are given, and Latin names are included to Genus or Species.

**Key Characteristics:**

Some images have arrows which point to key characteristics. Those characteristics are described below the picture.

**Additional Information:**

For additional information on each group, see the group description pages.
Honey bees (HB)

Common Name: honey bee
Family: Apidae
Genus:Apis
Species:Apis mellifera
Key Characteristic: flattened hind leg
Group Description: p. 24

Bumble bees (BB)

Common Name: tricolored bumble bee
Family: Apidae
Genus:Bombus
Species: Bombus mixtus
Key Characteristic: three distinct colors, orange rear end
Group Description: p. 26

Common Name: yellow bumble bee
Family: Apidae
Genus: Bombus
Species: Bombus fervidus
Key Characteristic: yellow body, single black band between wings
Group Description: p. 26

Common Name: yellow-faced bumble bee
Family: Apidae
Genus: Bombus
Species: Bombus vosnesenskii
Key Characteristic: yellow face, mostly black body
Group Description: p. 26
Common Name: long-horned bee  
**Family:** Apidae  
**Genus:** Melissodes  
**Key Characteristic:** very hairy hind leg  
**Group Description:** p. 28

Common Name: sand/mining bee  
**Family:** Andrenidae  
**Genus:** Andrena  
**Key Characteristic:** non-descript black abdomen, sometime with lighter thorax  
**Group Description:** p. 28

Common Name: digger bee  
**Family:** Apidae  
**Genus:** Habropoda  
**Key Characteristic:** long antenna are common  
**Group Description:** p. 28

Common Name: mason/leaf-cutter bee  
**Family:** Megachilidae  
**Genus:** Osmia  
**Key Characteristic:** blue shiny body, hair on bottom of abdomen  
**Group Description:** p. 28
Other large bees cont. (OLB)

Common Name: mason/leaf-cutter bee

Family: Megachilidae

Genus: Anthidium

Key Characteristic: thick hair on bottom of abdomen

Group Description: p. 28

Green bees cont. (GB)

Common Name: sweat bee

Family: Halictidae

Genus: Lasioglossum

Key Characteristic: bright blue/green body

Group Description: p. 30

Green bees (GB)

Common Name: sweat bee

Family: Halictidae

Genus: Agapostemon

Key Characteristic: green to black head and thorax, green to black stripped abdomen

Group Description: p. 30

Small bees (SB)

Common Name: masked bee

Family: Colletidae

Genus: Hylaeus

Key Characteristic: yellow markings on face

Group Description: p. 32
Common Name: sweat bee
Family: Halictidae
Genus: Halictus
Key Characteristic: hairy hind legs and stripped abdomen
Group Description: p. 32

Common Name: cuckoo sweat bee
Family: Halictidae
Genus: Sphecodes
Key Characteristic: red abdomen, black head and thorax
Group Description: p. 32

Common Name: sand/mining bee
Family: Andrenidae
Genus: Panurginus
Key Characteristic: non-descript black body
Group Description: p. 32

Common Name: small carpenter bee
Family: Apidae
Genus: Ceratina
Key Characteristic: protrusion at end of abdomen
Group Description: p. 32
**Butterflies (BTF)**

*Common Name:* skipper butterfly  
*Family:* Hesperiidae  
*Key Characteristics:* clubbed antennae, scale covered wings

**Flies (F)**

*Common Name:* hover flies  
*Family:* Syrphidae  
*Key Characteristics:* one set of wings, very large eyes

**Wasps (W)**

*Common Name:* common wasp  
*Family:* Vespidae  
*Genus:* Vespula  
*Species:* *Vespula vulgaris*  
*Key Characteristic:* obvious pinched abdomen, aggressive looking

**Bugs (BG)**

*Common Name:* stink bugs  
*Family:* Pentatomidae  
*Key Characteristics:* triangular area between leathery wings
Section II: Group Descriptions

**Beetles (BTL)**

- **Common name:** chafer beetle
- **Family:** Scarabidae
- **Key Characteristics:** hardened front wings, distinct mouthparts

**Spiders (S)**

- **Common Name:** crab spider
- **Family:** Thomisidae
- **Key Characteristics:** four pairs of legs

**Sizing and Shape Guide:** Size and shape are often useful tools to identify bees. Each group description includes an sizing guide for your reference.

**Sizes:**
- Large
- Medium
- Small

**Shapes:**
- Narrow
- Robust
- Round

**Seasonality and Range Maps:**

In addition to size, all bees have a unique geographic distribution that changes over the course of the season. Using previously collected data, we were able to prepare a bar chart for each group, and generate a series

![Map Image]
of maps that show the abundance of each bee group over the course of any given season. The charts and maps can be used as a reference.

**Pollen Carrying Device:**

Bees collect pollen as a food source. They inadvertently pollinate plants in the process. Pollen can be carried in two regions on bees, either on the legs, or belly.

**Flight Pattern:**

Bees and other insects can sometimes be identified by how they fly. You will notice that some bees are methodical, moving from one flower to the next and never going backwards. Other bees may be smooth fliers, lazily move between plants, or erratic, approaching a flower, then leaving and coming back.

Methodical: 

Smooth:

Erratic:

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**Honey bees (HB)**

**Group Description:** Honey bees are medium to large in size, and usually range in color from orange to yellow. The honey bee has stripes on it’s abdomen, and the thorax is often fuzzy. Beware, there are many flies that mimic honey bees.

**Shapes and Sizes:**

**Pollen Carrying Device:** Large flattened plates can be found on the hind legs for carrying pollen.

**Plants Visited:** Honey bees collect pollen from many different plant groups. Our research suggest that over a season, honey bees may visit upwards of 90 different plant groups. Some of the most frequently visited are smartweed, sunflower, white clover, squash, borage, tomatillo, oregano, cilantro, and sow thistle.

**Flight Pattern:** Methodical

**Seasonality:** Honey bees are typically managed by humans and have year round
colonies. In the spring, these colonies begin quite small, and steadily build over the season. Honey bees may be most abundant in the fall.

**Range:** In the early part of the spring and summer seasons, honey bees may be localized mainly near areas of management. As the season progresses, we see that honey bees become much more ubiquitous throughout the landscape. In the fall, honey bees are highly abundant, particularly in rural areas.

**Spring:**

**Summer:**

**Fall:**

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### Bumble bees (BB)

**Group Description:** Bumble bees have bodies that are generally covered in thick fuzzy hair. This hair can be black, yellow, orange, or even white. Bumble bees are medium to large in size with a round or robust body shape.

**Shapes and Sizes:**

**Pollen Carrying Device:** Like honey bees, bumble bees have a flattened plate on the hind leg for carrying pollen.

**Plants Visited:** Bumble bees can visit a wide range of garden plants. In our study, bumble bees visited approximately 75 different plant species. The most commonly visited plants were, lavender, tomato, phacelia, borage, comfrey, squash, tomatillo, flatweed, zinnia, pole bean, red cover, and sunflower.

**Flight Pattern:** Looping

**Seasonality:** Bumble bee queens emerge in the spring of the year to begin foraging...
and search for a new nest. These colonies can reach several hundred individuals by mid-summer. The colony will slowly dwindle as new queens are produced for the following year. By fall, only next year’s queens will remain.

**Range:** Bumble bees are most abundant outside of urban areas in the early spring. By summer, this trend shifts and urban areas may have the most bumble bees. In the fall, the populations are more abundant in rural areas.

**Spring:**

**Summer:**

**Fall:**

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Other large bees (OLB)

**Group Description:** Other large bees (OLB) are a cosmopolitan group. For now, this group encompasses bees that are slightly smaller to slightly larger than the size of a honey bee. These bees can be in the families Apidae, Andrenidae, and Megachilidae. Body coloration will range from metallic blue to striped, or very dark in color. Some OLBS may have long antennae.

**Shapes and Sizes:**

**Pollen Carrying Device:** Other large bees may have hair on the underside of their abdomen for carrying pollen, while others may have very hairy hind legs.

**Plants Visited:** Our data set is limited at this time, but the data does indicate that OLBs visit approximately 35 different plant groups. The most commonly visited were sunflower, calendula, cosmos, fringed quickweed, common oregano, cilantro, zinnia, and mayweed. Some
OLBs may visit early season fruit trees.

**Flight Pattern:** Smooth

**Seasonality:** These bees are most common in the spring and summer, although, they may be much more rare than honey bees or bumble bees.

**Range:** Our data indicate that OLBs may be most abundant in urban areas during the summer months, while in the spring, some rural areas may have greater populations. By fall, these bees may not be widely found in the landscape.

**Spring:**

**Summer:**

**Fall:**

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Green bees (GB)

**Group Description:** Green bees are narrow in shape and much smaller than a honey bee. These bees have a metallic green body, and sometimes a striped abdomen. Beware, some wasps can look like green bees.

**Shapes and Sizes:**

**Pollen Carrying Device:** Look for hair and pollen on the hind legs. These bees will not carry large amounts of pollen on the bottom of their abdomen.

**Plants Visited:** Green bees may be much more selective in the plants they visit compared to any other group we have discussed thus far. Our results indicate that they may visit approximately 19 different plant groups, and may favor plants in the Asteraceae family. Examples of popular plants for green bees include cosmos, sunflower, and calendula.

**Flight Pattern:** Erratic

**Seasonality:** Green bees seem to be fair-
ly stable in their numbers throughout the season, although, they may be fewer in number than honey bees and bumble bees. These bees may also be more difficult to observe because of their erratic flight. Once you have a trained eye, you may begin to see them more often.

**Range:** In the spring and summer green bees appear to be most common in rural areas. Late in the season, this trend may shift and urban areas may see more green bees than the surrounding countryside.

**Group Description:** Small bees will typically appear to be black, but may have a black abdomen with white stripes. In some very rare cases, the abdomen of a very small bee will be red and hairless. These are the cuckoo bees. There are very tiny bees within this group that can be identified by a pointy abdomen.

**Shapes and Sizes:**

**Pollen Carrying Device:** Some bees within this group carry pollen on their hind legs. Cuckoo bees will not have a pollen carrying device at all.

**Plants Visited:** We’ve found small bees on approximately 41 plants in the South Puget Sound Region. These plants include flatweed, cilantro, buckwheat, calendula, borage, dill, sowthistle, fringed quickweed, smartweed, and many more.

**Flight Pattern:** Erratic

Seasonality: Small bees may be more commonly found in the spring and sum-
mer. These bees are difficult to observe because they move very quickly and fly in an erratic manner. Make sure to look closely at flowers when observing these bees, since they are quite small and easy to miss.

Range: In the spring, small bees appear to be most abundant in the Seattle Area, and rural areas south of Olympia. By summer and fall, small bees may be less abundant throughout the South Puget Sound Region.

Spring:

Summer:

Fall:
<table>
<thead>
<tr>
<th>Bee Groups</th>
<th>Other Floral Visitors</th>
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<tbody>
<tr>
<td><strong>S</strong></td>
<td>BTL</td>
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<td>21</td>
<td>21</td>
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<td><strong>SB</strong></td>
<td>GB</td>
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<td>17, 18, 32</td>
<td>15, 16, 30</td>
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</tbody>
</table>

**Bee Groups**
- HB
- BB
- OLB
- GB
- SB
- BTL
- BTF
- F
- W
- B
- S

**Other Floral Visitors**
- W
- F
- BG
- BTL
- S

Any comments or enquiries:

Any other relevant information or observations:

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<thead>
<tr>
<th>HB / BB</th>
<th>HB / BB / GB / OLB / SB</th>
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<th>W / F / BTL / BE</th>
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<td>Flower Type</td>
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<tr>
<td>Green bee</td>
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<tr>
<td>Honey bee</td>
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<td>Small bee</td>
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<tr>
<td>Bumble bee</td>
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<td>Butterfly</td>
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Thank You!