P-PATCH COMMUNITY GARDENING PROGRAM

PROTECTING BUMBLE BEE HABITAT IN P-PATCHES

Information compiled by Picardo P-Patch gardener Beth Kerr

THERE ARE THREE TYPES OF BEES IN THE P-PATCHES.[1]

ALL THREE ARE IMPORTANT FOR POLLINATING P-PATCH CROPS.[1]

1. **Honey bees**.* Domestic bees (European Honeybees). Live in beehives kept by beekeepers and are a source for honey

2. **Bumble bees**. Native bees. Live in small colonies in nests in the ground and are not a source for honey.

3. **Solitary bees**. Native bees. Live alone in hollow twigs, holes in wood, or, most commonly, in tunnels in the ground and are not a source for honey.

WHY HELP BEES?

One reason to support native-bee habitat in the P-Patches is that we need bumble bees and solitary bees to help pollinate our crops. Another is to shore up local and national efforts to support bumble bees so they are available as an alternative or companion to the domestic honey bees that have been declining in number (colony collapse disorder). Bumble bees are expected to play an ever increasing role on working farms and in gardens.

Even when P-Patches have honey-bee hives nearby, only about half the pollination will be via the hive honey bees.[1] A noteworthy fact is that tomatoes in the Seattle area are pollinated only by bumble bees.[1] Bumble bees are also important for pollinating other crops - including peppers, zucchini, eggplant, and blueberries.[2]

In addition, fruit trees in the Puget Sound area are best pollinated by bumble bees. Mason bees - a type of solitary bee - also play their part.[1] Honey bees fill in as available. **

A bumble bee, *Bombus* sp., loaded with pollen in its pollen basket.
Photograph by: Tony Wills, en.wikipedia.org

LIFE CYCLE OF BUMBLE BEES[3]

At the end of a season all the bumble bees die except a few new queen bees. These queens overwinter. Queens sleep under a pile of leaves or dry grass during the coldest part of the winter.

New colonies are started each spring by single fertile overwintered queens. Queen bees emerge as early as late March or early April and can sometimes be seen on sunny days as early as February.[4] These are the “large fuzzy bees” seen flying slowly low to the ground in spring. Queens are hungry when they wake and search for early spring flowers.

As the weather warms up the queens look for new nesting sites. Nest sites chosen for bumble-bee colonies are quite variable. Bumble bees are opportunistic. They do not often excavate. Instead, they utilize deserted rodent nests and burrows, areas under boards and between railroad ties, woodpiles, vacant birdhouses, and the like.[3] Empty rodent nests on undisturbed slopes are ideal.[1]

After establishing a nest, the queen then produces the first brood of workers, all females, from eggs that were fertilized the prior fall. The first new workers are small. They gather nectar and pollen and increase the food supply for the nest. As the workers take over the task of foraging, the queen spends her time laying eggs. As the season progresses, the new workers are larger. If the food supply is sufficient the nest grows larger and by the end of the season full-sized bumble bees are produced. Toward the end of the season the queen lays some non-fertilized eggs which produce males. The males mate with newly emerged females to create the new queens – these queens are the only bumble bees that overwinter to start new colonies the following spring.

Bumble bees are not aggressive. However, queens and worker bees can sting and will sting if harmed or to defend the nest if it is disturbed.

A bumblebee enlarging her nest hole

Photograph by: 'Pahazzard,' en.wikipedia.org

HOW YOU CAN HELP

PROVIDING GOOD NATIVE BEE HABITAT IS EASY AND FUN

Many current P-Patch practices promote good environments for native bees – for example, we do not use pesticides. Here are other suggestions to consider:

1**. Bumble bee queens need undisturbed areas to overwinter**.[1] Their needs are simple. Incorporate and protect wild or untended areas in the garden. These should be naturally wild areas or P-Patch areas lightly covered with dry grasses and leaf litter. Consider marking the areas with signs such as "*CAREFUL: POLLINATION BANK - BUMBLE BEE HABITAT AREA*" so that areas are not accidently "cleaned up" or covered with layers of compost or wood chips or equipment (e.g., wheelbarrows) or nonorganic debris headed for the dump. Discourage foot traffic.

2. **After overwintering queens emerge they need to be able to find nesting locations. Bumble bees need undisturbed areas for nesting throughout the growing season**.[1] Nesting areas should be protected so that they are not covered or dug up and to prevent foot traffic. Bees cannot live under wood chips or heavy layers of compost.[1] Limit woodchip use to the pathways that will be walked on.

- Protect potential nesting sites on banks with old rodent burrows.[1]

- Protect grassy thickets or other areas of dense low cover from mowing and foot traffic. These areas might be at the edges of the P-Patch, near orchard areas, or at the base of banks. These grassy areas are the sites where solitary bees and bumble bees might find the nest cavities and biennial and perennial plants that can provide food resources.[5]

- Enticing the solitary bees that nest in the dirt to new open dirt areas is difficult and may take a few years. If feasible, find the areas they are already using and protect them.[1]

3. **Because bumble bees start their colonies so early in the spring, they need abundant early-flowering plants.**[2] Plants might be in individual garden plots, in common areas and around the perimeter. Make a point to include these plants that bloom very early near orchards to support the bumblebees and mason bees needed there early in spring.

4. **Bumblebees need pollen- and nectar-rich flowers throughout their nesting season (March to mid-September).**[6] Select bee-friendly plants that bloom at different times across spring, early summer, mid summer, and fall. This practice also supports the various species of solitary bees that fly at different times in the season.

- Use a variety of plants with different colors. Colors that particularly attract bees are blue, purple, violet, white and yellow.

- Plant flowers in clumps of the same species. If space allows, make the clumps four feet or more in diameter. Smaller clumps in individual plots will help as well.

- Provide a range of flower shapes but avoid “complicated” shapes such as double petals in order to minimize the energy bees use to obtain nectar.

Think P-Patch local. Notice and then incorporate flowers that are already attracting bees in your own P-Patch and in the neighborhood near your P-Patch.

For advice and lists of native and garden plants and small trees and shrubs that support bumble bees, check out (a) Pacific Northwest Plants for Native Bees[6] and (b) Appendix B in Conserving Bumblebees: for Creating and Managing Habitat for America’s Declining Pollinators.[2]

- Examples of Pacific Northwest **native** plants that support bees are: Asters, California poppy (yellow), Lacy Phacelia, Nuttall's sunflower (Helianthus nuttallii), and Yarrow.

- Examples of Northwest **garden** plants that support bees are: Borage, English lavender, Rosemary, and Sunflowers (Helianthus annus).

BUMBLE BEES (BOMBUS) THAT LIVE IN THE SEATTLE AREA[1]

The two types of bumble bees you are most likely to see in Seattle P-Patches are Bombus mixtus and Bombus melanopygus. Two others that are apt to be seen on tomatoes are Bombus vosnesenskii and Bombus californicus. To see pictures of these bees and calendar information with the months that queens, workers, and males appear check out Bumblebees of the Western United States.[7]

References used for this document include:

1. Advice from consultant epidemiologist Dr. Evan Sugden. Dr. Sugden conducted a class at the University of Washington for the urban pollination project (Citizen Scientists) and later answered questions about native bees and bee habitat in Seattle P-Patches.

2. Conserving Bumblebees: Guidelines for Creating and Managing Habitat for America's Declining Pollinators. The Xerces Society for Invertebrate Conservation.

   http://www.xerces.org/wp-content/uploads/2012/06/conserving_bb.pdf

3. Bumble Bees by Art Antonelli and Jenny Rebecca Glass. WSU Extension, Puyallup, WA.

   http://www.puyallup.wsu.edu/plantclinic/resources/pdf/pls12bumblebees.pdf

4. Pay Attention to those Interesting Bee Residents in Gardens. By Joan Helbacka, WSU

Master Gardener Coordinator, WSU King County, WA.

   http://gardening.wsu.edu/column/04-07-02.htm

5. Enhancing Nest Sites for Native Bee Crop Pollinators. USDA National Agroforestry Center Agroforestry Notes. AF Note-34. February 2007. UNL-East Campus, Lincoln, NE.

http://www.xerces.org/wp-content/uploads/2008/10/agroforestrynotes34-bee_nests.pdf

6. Pacific Northwest Plants for Native Bees. The Xerces Society for Invertebrate Conservation. http://www.xerces.org/wp-content/uploads/2008/11/pnw_plants_bees_xerces_society_factsheet1.pdf

7. Bumble Bees of the Western United States. A Product of the U.S. Forest Service and the Pollinator Partnership. USDA Agricultural Research Service.

http://www.xerces.org/wp-content/uploads/2008/09/Western_BB_guide.pdf

Notes

*There could be wild honeybees in P-Patches but they would require hollow trees, abandoned hive boxes, or old structures and would be obvious. Almost certainly 99% of the honey bees in a

P-Patch would be from domestic hives either in the P-Patch or within a mile.[1]

** Unless there are many bumble bees in the area or a healthy honey bee hive at the time fruit trees are in bloom, it might be wise to set up some mason bee boxes.