






Master Gardeners Association of BC
Thompson Shuswap Chapter

# 2018 CITIZEN SCIENCE SUMMARY REPORT

# WE GRATEFULLY ACKNOWLEDGE

**GRANTS FROM:**

TD Bank Friends of the Environment
The City of Kamloops Social Planning Grant

**PARTNERSHIPS WITH**:

Thompson Rivers University
Big Little Science Centre

Report written by: Megan Abbott
Edited by Dr. Lyn Baldwin, Elaine Sedgman and Brenda Sanden

## Acknowledgments

Thompson Shuswap Master Gardeners Association (TSMGA) gratefully acknowledges the TD Friends of the Environment Foundation and the City of Kamloops Social Planning Council for their grants that contributed to the success of its Bee a Citizen Scientist Project. Thanks to these grants TSMGA was able to integrate a number of activities throughout the summer that resulted in a highly engaged citizen science community that cares for the environment and that becomes an advocate for pollinators.

Without our amazing citizen scientists who did all of the surveys, this project would never have taken place. Ten citizen scientists took part in four group surveys. And twelve to fifteen surveyed their own gardens four times during the summer, bringing the total to eighty-eight surveys. Now that's dedication!

TSMGA is very grateful to the Thompson Rivers University biology department who gave us access to a beautiful lab for our survey protocol training. Much gratitude goes to Dr. Lyn Baldwin, a Thompson Rivers University plant biologist, who has been an unshakeable supporter of our project.

Thank you to the Big Little Science Centre for its partnership, and the cheerfulness and energy of Susan Hammond and Gord Stewart. They provided space and human resources support for our spring Hairy Belly Bee Workshop and then in July, support for our Pollinator Day for 17 children during a science camp.

TSMGA is very appreciative of Megan Abbott's summer work with the Citizen Science Project, the collation of all our data and the writing of our final report.

And a huge thank you to Erin Udal, pollinator conservationist, and Lincoln Best, native bee taxonomist extraordinaire, who are so generous with their talent and knowledge.

**Special thanks to all of our citizen scientists:**

Megan Abbott
Teresa Atkinson
Charyle Badesso
Lyn Baldwin
Sherry Bennett
Estelle Bérubé
Dianna Chalmers
Basia Drozdz
Maureen Embury
Cheryle Goodfellow
Phyllis Mader
Brenda Sanden
Elaine Sedgman
Deb Stowell
Rick Tucker
Leslie Welch

# INDEX



# FORWARD

Erin Udal led a second workshop training 10 participants to collect consistent standardized observational data on pollinators. They learned the basic biology of native and managed pollinators and how to identify the characteristics and habitat requirements of different bee families.

Each year seems to have its weather challenges. In 2017 it was the relentless smoke from wildfires. In 2018 it was cold weather, clouds, wind and then wildfire smoke again in August.

Overall, in our gardens and two managed parks, pollinator counts per individual surveys were very similar to 2017. However, numbers per functional groups (honeybees, bumblebees, pollen pants bees, hairy belly bees, flies, wasps) were quite different. Although feral honey bees set up home in a tree in Riverside Park, citizen scientists counted fewer honey bees pollinating flowers, than in 2017. And, although the number of pollinators was exactly the same in each year, the counts of native bees and honey bees were down significantly and the counts of wasps were much higher. As in 2017, at Riverside Park, flowers such as petunias and begonias supported relatively low counts of pollinators.

McArthur Island told the same story. Pollinator counts were down quite significantly. However, on our survey day the temperature was 5 degrees cooler than in 2017 and the Butterfly Garden had just been watered. In 2017, a researcher in Oregon State was alerted to the possibility that overhead watering might affect the abundance count of bees. More research is required.

TSMGA took the concerns and suggestions expressed by our 2017 citizen scientists to heart. In partnership with TRU Biological Sciences, TSMGA organized a 2-day course with taxonomist Lincoln Best in April as citizen scientists wanted deeper knowledge of native bees.

Citizen scientists also requested a pocket guide that was more Kamloops related than the booklet used in their training. TSMGA developed the Citizen Science Monitoring Guide: *Common Bees of the Southern Interior of BC.* With a grant from the City of Kamloops and partnership with a Vernon environmental group, TSMGA was able to print 3000 guides.

In 2017 abundance counts of cavity nesting bees were very low. For that reason TSMGA held a workshop early in 2018 to teach the public more about these insects. 20 attendees learned that cavity nesters naturally nest in tunnels left by boring insects in dead trees.

This is a problem in Kamloops as we are a Fire Smart City and all of that dead wood is removed. During the workshop participants made bee hotels as substitutes for the bees' natural homes.

TSMGA also organized a very successful Pollinator Day at one of the Big Little Science Centre's camps in July. Children examined a honeybee hive, were taught to recognize native bees, walked to McArthur Island park and netted, examined and released native bees at the Butterfly Garden.

With the continued support from the City of Kamloops and TD Friends of the Environment Foundation, TSMGA hopes to collect baseline pollinator abundance data for one more year. In 2019, we will carry out the third and last citizen science monitoring protocol but we also intend to expand its scope by completing a pollinator biodiversity survey with standard entomological trapping techniques. In this way, we will understand the full pollinator diversity in Kamloops.

Elaine Sedgman
Thompson Shuswap Master Gardeners
Citizen Science Coordinator

# RECOMMENDATIONS

**The City of Kamloops is a bee city. The council has made a declaration to "protect pollinators and their habitats through action and education." With that declaration comes responsibility. Therefore our citizen scientists recommend that the City of Kamloops:**

1. Protect existing nesting sites and provide additional nesting opportunities. 70% of our bee species are solitary ground nesters. Each bee species has its own requirements, such as packed sandy loam or soft fluffy earth.

2. Place nesting boxes for cavity nesting bees in our parks.

3. Provide adequate three-season pollinator friendly forage for bees. Bees need a continuous succession of plants high in pollen and nectar throughout the growing season. Different species emerge from their nests at different times of the year.

4. Plant more native shrubs and flowering plants. Research shows that specialist bees require the flowers with which they have evolved.

5. Provide pollinator corridors and bee friendly hedgerows using native plants between various garden beds. Solitary bees are small and are unable to fly long distances.

6. Enhance and enlarge existing bee habitat, expanding it by 5 hectares.

**But most importantly, we recommend that the City of Kamloops embed the protection of bee populations within its landscape management decisions. This would include a written policy and a plan to protect and enhance pollinators.**

Policies would include such guidelines as procurement of plants from greenhouses that do not use systemic pesticides. Another is that the city uses good IPM practice for weed control using cultural, mechanical and biological methods, therefore cutting its glyphosate use. Two recent studies suggest that exposing honey bees to glyphosates disrupts their gut bacteria and makes the bees more susceptible to infections.

The City of Kamloops is a fantastic manager of turf. Citizen scientists encourage the City of Kamloops to put the same energy into giving pollinators a chance: planting and maintaining pollinator friendly flowers and enhancing and expanding their nesting sites whether they are in our natural areas or in a container at the Sandman Centre.

**Quotes from citizen scientists regarding the project**:

*I loved being with other passionate people. It's a safe environment to get giddy with excitement.*
Sherry

*I liked the camaraderie of people learning together. I feel as if I'm doing something to change the world.*
Cheryle

*I liked telling people "I'm counting bees!" when they asked what I was doing. I feel as if I'm doing something for the future.*
Dianna

*I liked getting together with others and feeling the excitement of finding bees.*
Phyllis

*Citizen Science has made me slow down and to look at little things.*
Deb

# SUMMARY OF SURVEY METHODS

In order to develop monitoring skills, each participant in this project learned the basic biology of native pollinators in a two-day workshop with Erin Udal, pollinator conservationist. Conducted in both the field and laboratory, this workshop provided participants with the necessary skills to record the abundance of pollinators to functional groups (or guilds) including: bumblebees, honey bees, “pollen pants” bees (solitary ground nesting bees), “hairy belly bees” (solitary cavity nesting bees), flies, wasps, and other (any other species that may transfer pollen such as butterflies or beetles). This project continues the monitoring of pollinator activity that was completed during the summer of 2017 (Battel 2017), with many of the same volunteers returning to collect data. Note: the word “guilds” was used by Erin Udal to describe “functional groups” and is used interchangeably within this document.

Each survey (individual or group) lasted for 20 minutes, during which time the surveyor recorded only pollinators seen on open flowers. All individual garden surveys were conducted during the first two weeks of the months June, July, August, and September, except when exceptionally rainy periods necessitated a prolonged sampling period. In order to minimize the effect of weather on pollinator diversity and abundance, surveys were conducted under the following conditions: air temperature of at least 20°C, minimal cloud cover, little to no wind. Restricting surveys to these weather conditions prevents underestimation of pollinator abundance as many pollinators will limit their foraging activity in the presence of strong wind or insufficient sunlight.

Group surveys were conducted in two city parks, Riverside Park and MacArthur Island Park, on July 14 and 28, respectively, and at one uncultivated area on the Thompson Rivers University Campus on June 24 and September 9. Within each group survey, participants individually monitored distinct areas following the same protocol as outlined above.

Pollinator abundance and diversity in uncultivated natural areas was recorded by Megan Abbott as part of a directed studies project under the supervision of Dr. Lyn Baldwin. This information was collected to compare pollinator abundance in cultivated gardens with that found in uncultivated areas. Each home garden belonging to a citizen scientist participant was paired with a nearby (within one kilometre) uncultivated area. Within each uncultivated site, surveys were conducted within a standard 17 m x 40 m plot (the typical lot size found in downtown Kamloops). These sites were surveyed following the same methods used by citizen scientists in their gardens. In addition to pollinator surveys, a complete inventory of all flowering plant genera was recorded for each cultivated and uncultivated survey site (with the exception of citizen scientist gardens new to the project in 2018).

# SUMMARY OF FINDINGS

Combining all surveys, a total of 5100 pollinators were observed within Kamloops between June and September of 2018. Abundance and diversity of pollinator species varied between natural and cultivated sites, as well as throughout the growing season (Table 1, 2).

## Individual Survey Results

**Table 1.** Summary of cultivated garden surveys from June-September 2018, including number of observers, average number of pollinators per observer and average temperature, sky, and wind conditions during surveys.

| Survey month | Number of observers | Average number of pollinators per observer | Average weather conditions |
|---|---|---|---|
| June | 15 | 37 | 26°C, light breeze, partly cloudy |
| July | 12 | 45 | 26°C, light air, clear sky |
| August | 12 | 71 | 27°C, light air, smoky |
| September | 11 | 53 | 22°C, light air, partly cloudy |

**Table 2.** Summary of uncultivated area surveys from June-September 2018, including number of observers, average number of pollinators per observer, and average temperature, sky, and wind conditions during surveys.

| Survey month | Number of observers | Average number of pollinators per observer | Average weather conditions |
|---|---|---|---|
| June | 12 | 26 | 29°C, light breeze, clear sky |
| July | 12 | 38 | 26°C, light breeze, clear sky |
| August | 12 | 36 | 25°C, light air, smoky |
| September | 12 | 25 | 15°C, light breeze, partly cloudy |

Within cultivated gardens, total pollinator abundance increased from June to August and then declined in September (Figure 1). In comparison, peak pollinator abundance in uncultivated areas was observed in July, rather than in August. Possible factors influencing pollinator abundance during the summer may include availability and suitability of floral forage resources and changing weather conditions. It is worth noting that August pollinator abundance in cultivated areas increased while August uncultivated pollinator abundance decreased slightly (Figure 1, 2). This pattern may suggest that pollinators opt to use cultivated gardens as refuge during periods of seasonal drought when native plant forage is limited. However, small solitary bees cannot fly elsewhere. They stay where they have emerged from their nests. The solitary bees we see in June or July are not the ones we see in August. Different species will be present in September (Lincoln Best, November 26, 2018). On the other hand, bumblebees and honey bees may look elsewhere for forage. Finally, both uncultivated and cultivated areas demonstrated decreased pollinator abundance in September as compared to the previous month (Figure 1, 2).

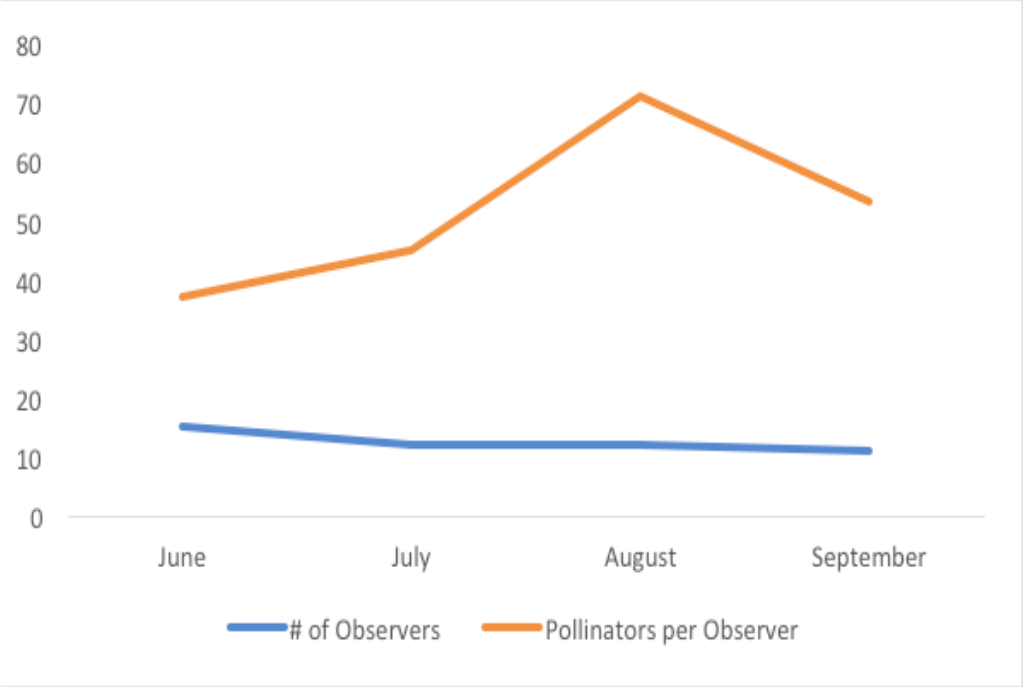



**Figure 1.** Number of observers and average number of pollinators per observer in cultivated gardens June-September 2018.

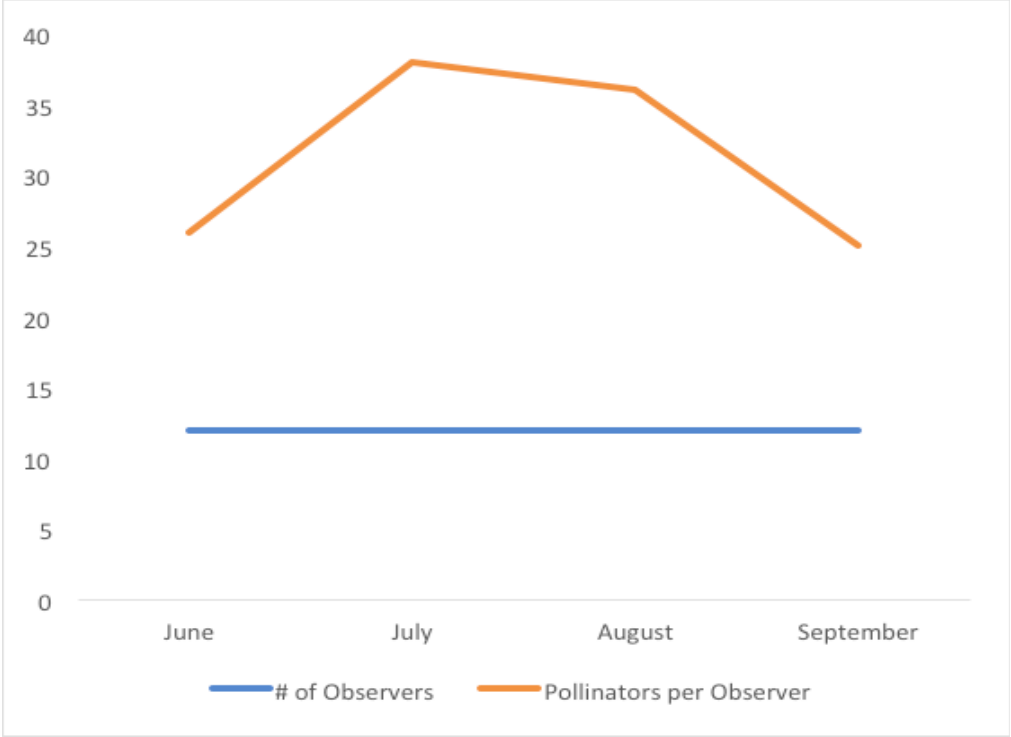



**Figure 2.** Number of observers and average number of pollinators per survery in uncultivated areas, June-September 2018

In addition to documenting changes in total pollinator abundance, this study also indicates that the abundance of individual pollinator guilds varied with habitat and season. Analysis of pollinator guild abundance indicated that the most common bees observed in cultivated areas included pollen pants bees, bumblebees, and honey bees (Figure 3). In comparison, in uncultivated areas the proportional abundance of bumblebees was smaller (especially early in the season) and there was a greater proportional abundance of hairy belly bees. In cultivated gardens, the proportional abundance of honey bees was greatest in June and September and smallest in July and August. This trend, however, was reversed in uncultivated sites: honey bees were proportionally more abundant in July and August than they were in June and September (Figure 3, 4, 5, 6) suggesting honey bees moved in response to fluctuations in available pollen. The abundance of pollen pants

bees was largely similar throughout the season in both cultivated and uncultivated areas, with the exception of a small increase in their abundance in cultivated gardens in July. Hairy belly bees and flies were observed to have similar abundance throughout the season in both cultivated and uncultivated areas. Wasps were seen in at a higher frequency in garden spaces, and other pollinators (such as beetles and butterflies) were observed more in natural areas (Figures 3, 4, 5, 6).

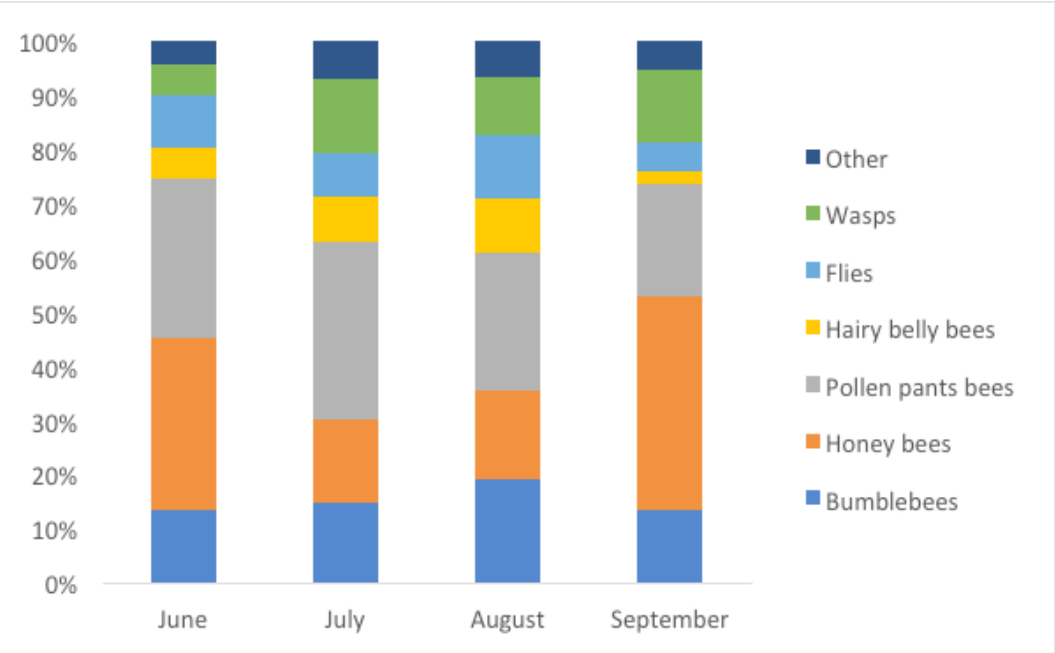



**Figure 3.** Pollinator guild composition observed in cultivated garden surveys June-September 2018

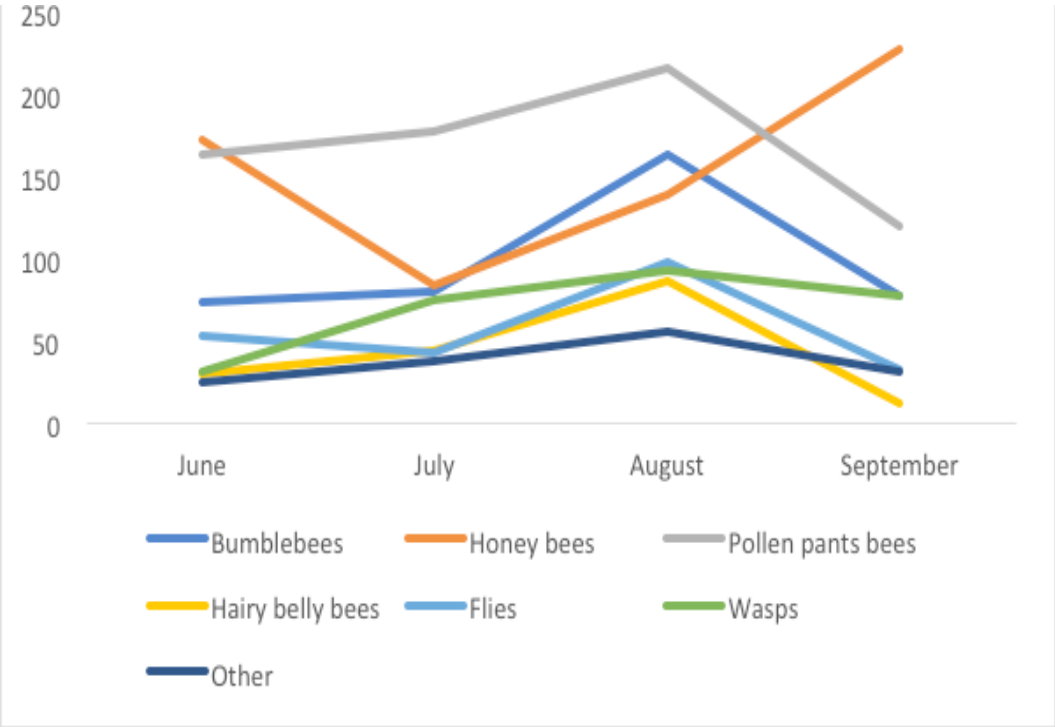



**Figure 4.** Total number of pollinators per month belonging to each pollinator guild observed in cultivated garden surveys June-September 2018

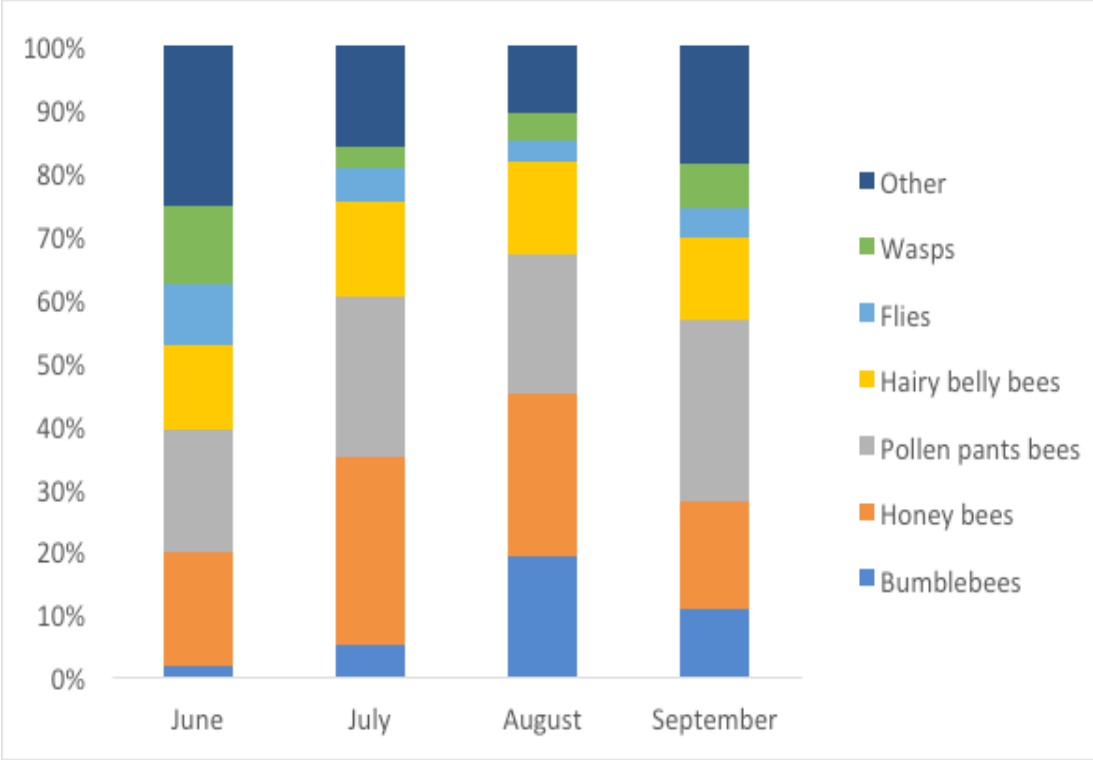



**Figure 5.** Pollinator guild composition observed in uncultivated area surveys June-September 2018

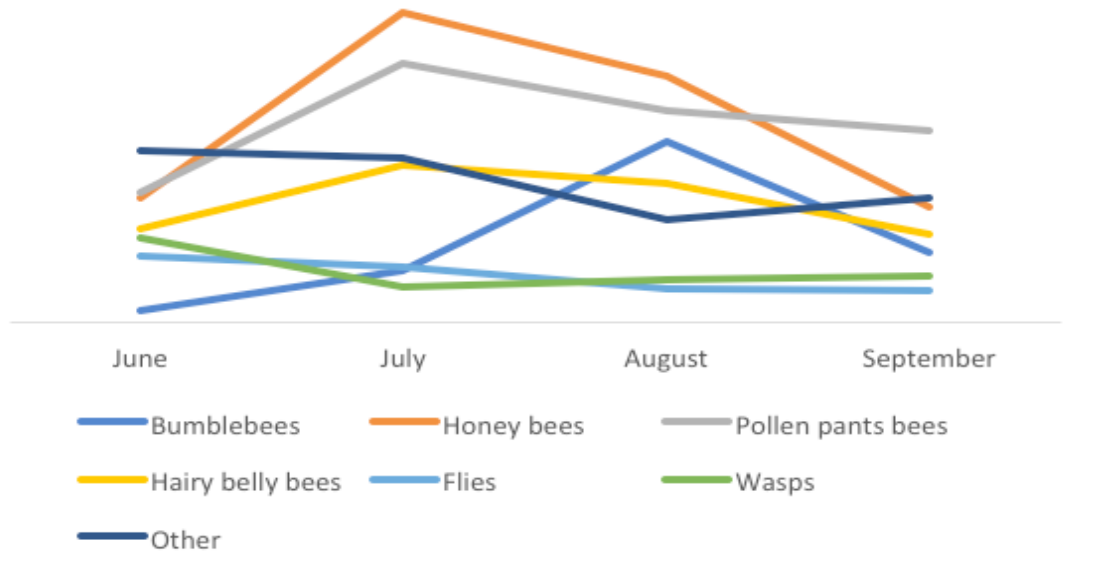



**Figure 6.** Total number of pollinators per month belonging to each pollinator guild observed in uncultivated area surveys June-September 2018

Cultivated and uncultivated sites also varied in the total abundance of monitored pollinators. Although not statistically significant, a higher number of pollinators were observed in cultivated versus uncultivated areas throughout the summer (Figure 7): June (paired t-test, $p = 0.112$); July (paired t-test, $p = 0.330$); August (paired t-test, $p=0.060$); September (paired t-test, $p = 0.106$). The largest difference is seen in the month of August, which coincides with seasonal drought typically seen in the Kamloops area. The timing of this apparent movement corresponded to high levels of wildfire smoke in the city during that period.

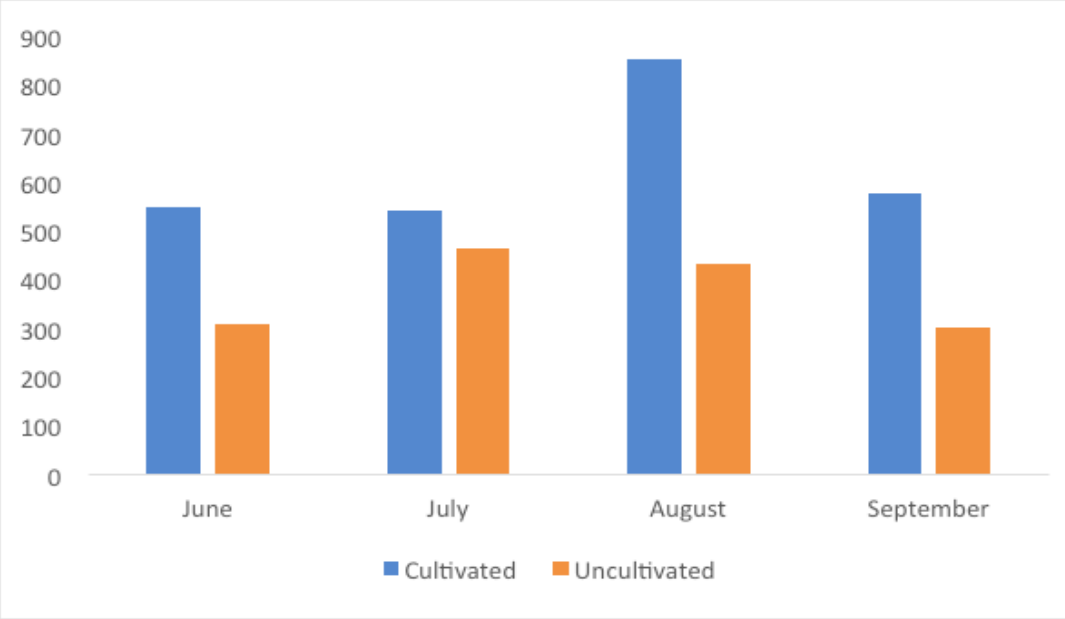



**Figure 7.** Comparison of total number of pollinators observed per survey in cultivated gardens and uncultivated areas, June-September 2018

Results obtained from regular monthly surveys of cultivated home gardens and uncultivated areas suggest that gardens can play an important role in maintaining pollinator abundance and diversity within the city of Kamloops. It is important to note that some guilds are more frequently found in garden spaces than others, particularly bumblebees, honey bees, and pollen pants bees. The dominant flowering plant genera observed in cultivated garden spaces and uncultivated natural areas surveyed in this project are recorded in Table 3 (with the exception of data from participants new to the project this year).

The observation that garden spaces typically are home to a much richer collection of flowering genera suggests that cultivated urban areas can be capable of supporting forage for multiple pollinator guilds. Certainly Wray & Udal (2016) found that higher flowering plant species richness was correlated with high pollinator abundance in their survey of Vancouver garden areas. Our observation of more generalist pollinators (bumblebees, honeybees, and pollen pants bee) in home gardens implies that they may be drawn to the larger abundance of plant genera typically found in home gardens, rather than specialized flowering species. In surveys of specialist pollinators in uncultivated natural areas, Aigner (2001) argued that specialist species depend less on high floral richness than on specific species. Protecting pollinator abundance and diversity within the city of Kamloops calls for a multi-faceted approach that encourages the cultivation of pollinator-friendly gardens and green spaces in urban environments (housing a range of native as well as horticultural plant species), as well as the ongoing protection and enhancement of natural rural areas that already support important plant genera.

**Table 3.** Dominant flowering plant genera recorded during each month in cultivated garden spaces and uncultivated natural areas

| Month | Garden Dominant Flowering Plant Genera | Non-Cultivated Dominant Flowering Plant Genera |
|---|---|---|
| | | |
| **June** | Cotinus, Geranium, Rosa, Solanum, Delphinium, Campanula, Nepeta, Aquilegia, Tanacetum, Rubus, Philadelphus, Cerastium, Aster, Lobelia, Papaver, Lupinus, Lamium, Potentilla, Trifolium, Paeonia, Salvia, Tagetes, Antirrhinum, Achillea, Iris, Verbena, Lonicera, Tilia, Sedum, Spirea, Lavandula, Lappula, Taraxecum | Achillea, Heuchera, Astragalus, Tragopogon, Crepis, Delphinium, Rosa, Erigeron, Arnica, Eriogonum, Medicago, Sisymbrium, Lappula, Lithospermum, Descurainia, Linaria, Gaillardia, Melilotus, Silene, Calochortus, Opuntia, Grindelia, Cirsium, Monarda, Ipomoea |
| **July** | Nepeta, Citrus, Origanum, Leucanthemum, Campanula, Sedum, Solanum, Perovskia, Hosta, Antirrhinum, Weigela, Echinacea, Campsis, Iberis, Salvia, Papaver, Tilia, Cosmos, Hemerocallis, Cucurbita, Coridalys, Stachys, Heuchera, Coreopsis, Clematis, Alyssum, Alchemilla, Geranium, Rosa, Lythrum, Viola, Fragaria, Lavandula, Calendula, Lonicera, Petunia, Impatiens, Rudbeckia, Lobelia, Monarda, Helianthus, Eryngium, Borago, Potentilla, Trifolium, Alcea, Tagetes, Achillea, Verbena, Lamium, Gaillardia, Dianthus, Physalis, Spirea, Euphorbia, Calluna, Ajuga, Dicentra, Erigeron, Centaurea, Viola, Symphoricarpos, Linum, Tanacetum, Vinca | Crepis, Calochortus, Eriogonum, Achillea, Erigeron, Medicago, Centaurea, Sisymbrium, Descurainia, Lappula, Astragalus, Chrysothamnus, Melilotus, Ipomoea, Cirsium, Grindelia, Linaria |
| **August** | Mentha, Solidago, Symphoricarpos, Hydrangea, Rudbeckia, Perovskia, Echinacea, Salvia, Lobelia, Ocimum, Cosmos, Heliopsis, Echinops, Geranium, Origanum, Nepeta, Hemerocallis, Rosa, Melissa, Anethum, Monarda, Helianthus, Tanacetum, Alcea, Tagetes, Liatris, Phlox, Coreopsis, Asclepias, Campanula, Alyssum, Vinca, Crocosmia, Lavandula, Solanum, Trifolium, Cucurbita, Lamium, Fragaria, Gaillardia, Antirrhinum, Verbena, Physalis, Centaurea, Zinnia, Calendula, Dianthus, Gazania, Eutrochium, Impatiens, Potentilla | Centaurea, Grindelia, Medicago, Chrysothamnus, Sisymbrium, Lactuca, Tragopogon, Centaurea, Solidago, Descurainia, Melilotus, Cirsium |
| **September** | Eupatorium, Mentha, Aster, Alyssum, Hydrangea, Origanum, Sedum, Helianthis, Perovskia, Symphoricarpos, Clematis, Antirrhinum, Echinacea, Ocimum, Rudbeckia, Achillea, Coreopsis, Gaillardia, Heliopsis, Cimicifuga, Geranium, Cosmos, Solanum, Monarda, Tagetes, Alcea, Delphinium, Veronica, Osteospermum, Lobelia, Gypsophila, Campanula, Nepeta, Phlox, Liatris, Indigofera, Crocosmia, Brassica, Cynara, Anemone, Myosotis, Thymus, Penstemon, Potentilla, Weigela, Mandevilla, Chrysothamnus, Fushia, Papaver, Calendula, Campanula | Chrysothamnus, Solidago, Grindelia, Medicago, Sisymbrium |

# Group Survey Results

Of the four group surveys, two were completed in cultivated Kamloops city parks, and two were completed in the same uncultivated area on the TRU Campus. While many pollinators were observed in the uncultivated TRU site during the training workshop in May (E. Sedgman, personal observation), our June and September surveys documented lower abundance of all guilds in this site as compared to our surveys in MacArthur Island and Riverside Parks earlier in the summer (Figure 8). This is similar to the trends we observed when we sampled individual cultivated home gardens and nearby uncultivated sites.

The average number of pollinators observed at the uncultivated site on the TRU Campus is similar, albeit lower, to those observed by Megan Abbot during her individual surveys of uncultivated sites throughout Kamloops in June and September (Table 2). The low average pollinator number we observed at TRU in September may have been influenced by the less than ideal sampling conditions (Table 4).

| Survey Date & time | Survey location | Number of observers | Average number of pollinators per observer | Weather conditions |
|---|---|---|---|---|
| June 24 10:30 am | TRU Campus (behind Trades Building) | 10 | 20 | 20°C, gusty winds, clear sky |
| July 14 10:00 am | Riverside Park | 10 | 27 | 22°C, light air, clear sky |
| July 28 10:00 am | McArthur Island Park | 8 | 34 | 24°C, light air, clear sky |
| September 9 11:00 am | TRU Campus (behind Trades Building) | 10 | 14 | 19°C, gusty, partly cloudy |

**Table 4.** Summary of group survey results obtained through citizen scientist participants throughout the 2018 season, including number of observers, average total number of pollinators per observer, and average temperature, sky, and wind conditions during surveys.

Consistent with the individual surveys, group surveys found a greater abundance of generalist pollinators (bumble bees and honey bees) in cultivated park gardens as compared to the uncultivated area surveyed (Figure 8). MacArthur Island supported the greatest average number of all bee functional groups (bumble bees, honey bees, hairy belly bees and pollen pant bees) among the three sites chosen for group surveys. The greater abundance of hairy belly bees observed in MacArthur Island Park suggests that there is likely a higher number of appropriate nesting sites in the area. Members of the hairy belly guild are cavity nesting bees and require more specialized nesting habitats than other bees, which are often limited. The abundance of this guild could potentially be increased with the installment of artificial nesting boxes in parks and gardens. Although MacArthur Island supported the greatest average number of pollen pant bees, the proportional abundance of pollen pants bees in the uncultivated sites was higher than observed in either of the two cultivated parks. Finally, both the absolute and proportional abundance of wasps was lowest in the uncultivated group survey site (Figure 8, 9).

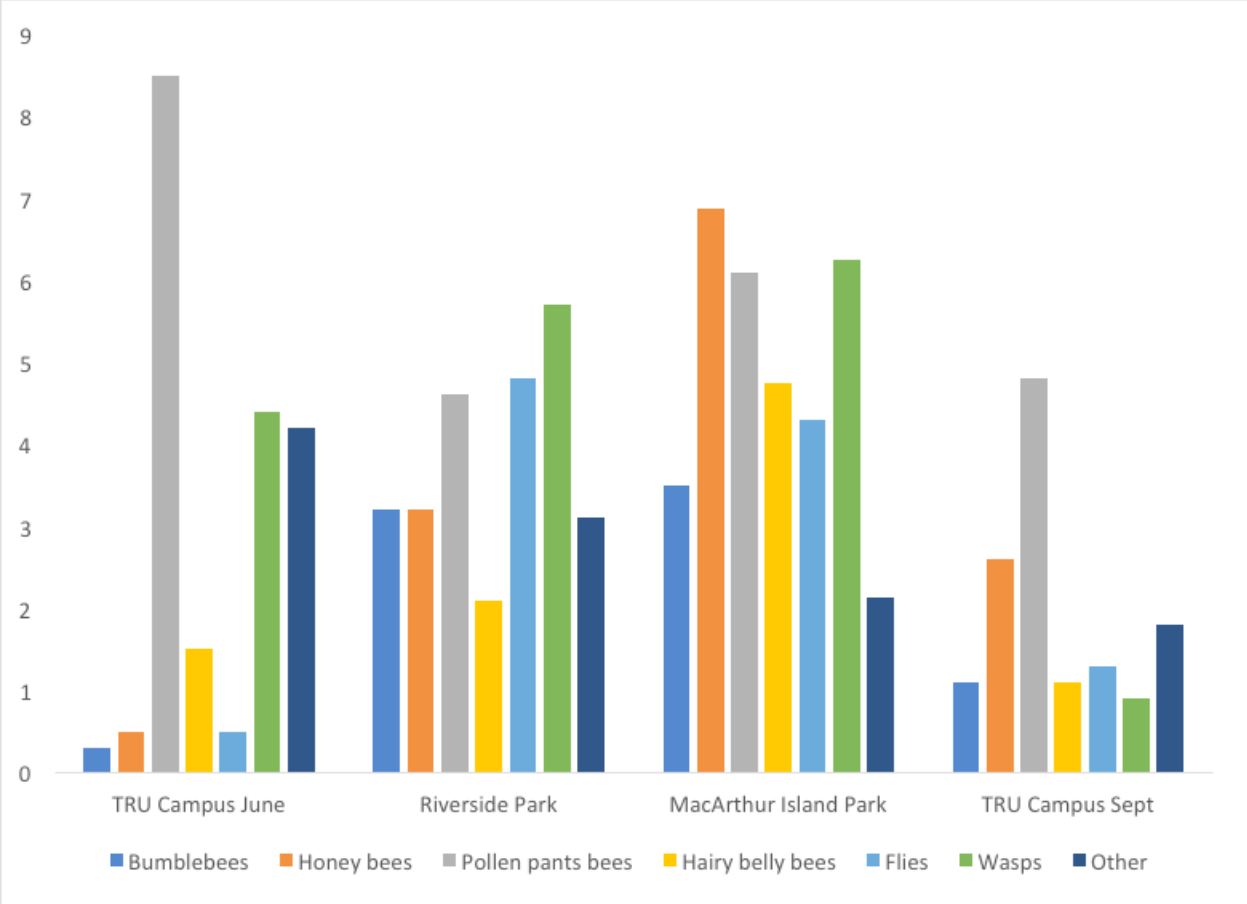



**Figure 8.** Average number of pollinators per observer by functional group during group surveys at Riverside Park, MacArthur Island Park, and the TRU Campus

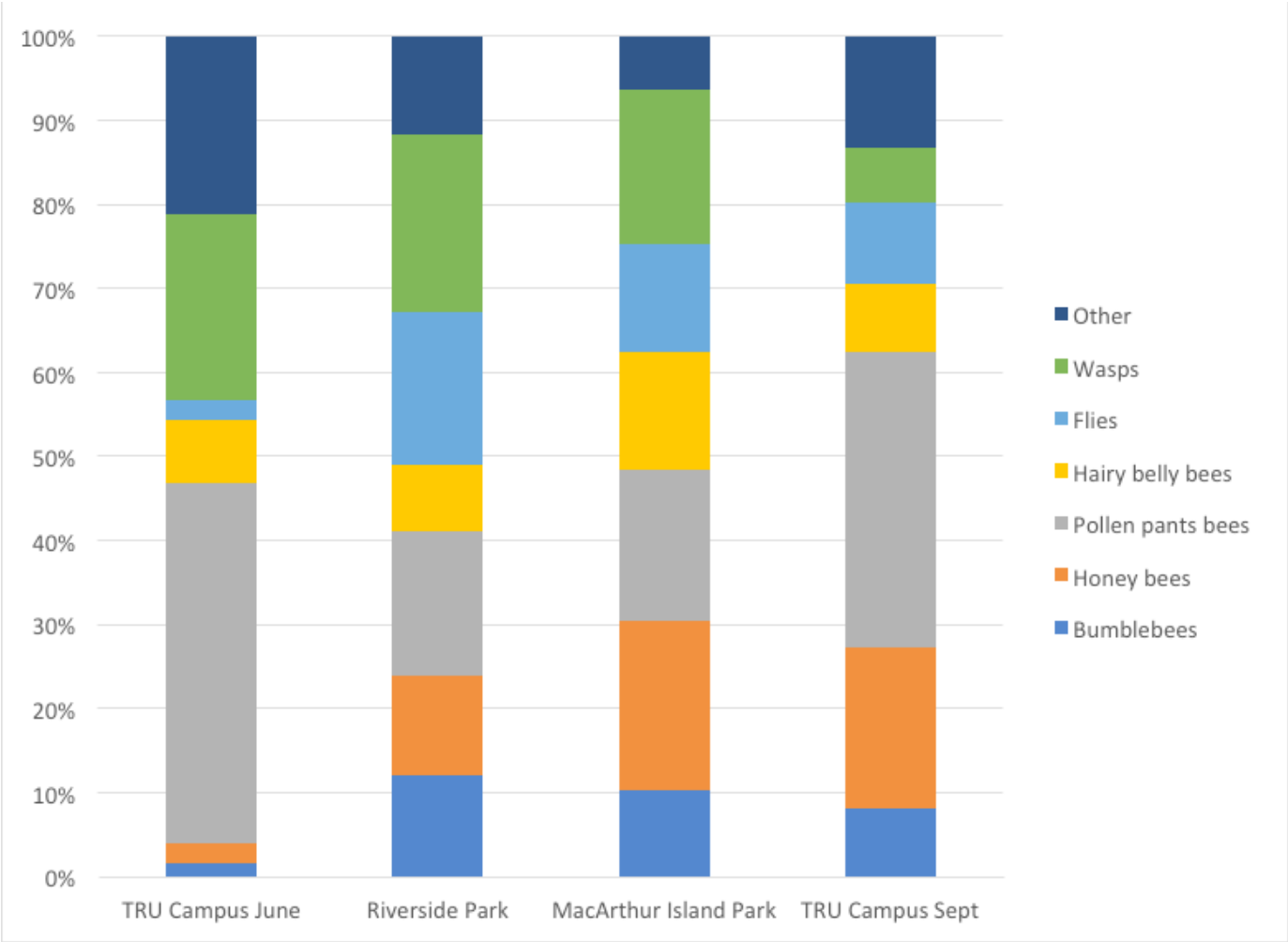



**Figure 9.** Pollinator guild composition from group surveys conducted at Riverside Park, MacArthur Island Park, and the TRU Campus

Given the less favourable weather conditions on the day of the last group survey, and its occurrence in September when many native plant species have finished flowering, it is difficult to draw conclusions on the overall abundance and diversity of pollinators in this area. However, the number of pollen pants bees (all of which are solitary ground nesters) observed in this group survey implies that for some species, this undeveloped area on the TRU Campus may provide good nesting habitat.

# Comparison between 2017 and 2018 Monitoring:

Although this report is meant to summarize the results of our 2018 monitoring program, pollinator abundance monitored across the two years shows the same general trend (Figure 10) with some important differences. In 2017, pollinator abundance was most abundant in cultivated areas in August and least abundant in uncultivated areas during the same month. Pollinator abundance followed the same general trend in 2018 in cultivated areas (peaking in August), however, the abundance of pollinators in August in uncultivated areas did not exhibit as dramatic a drop.

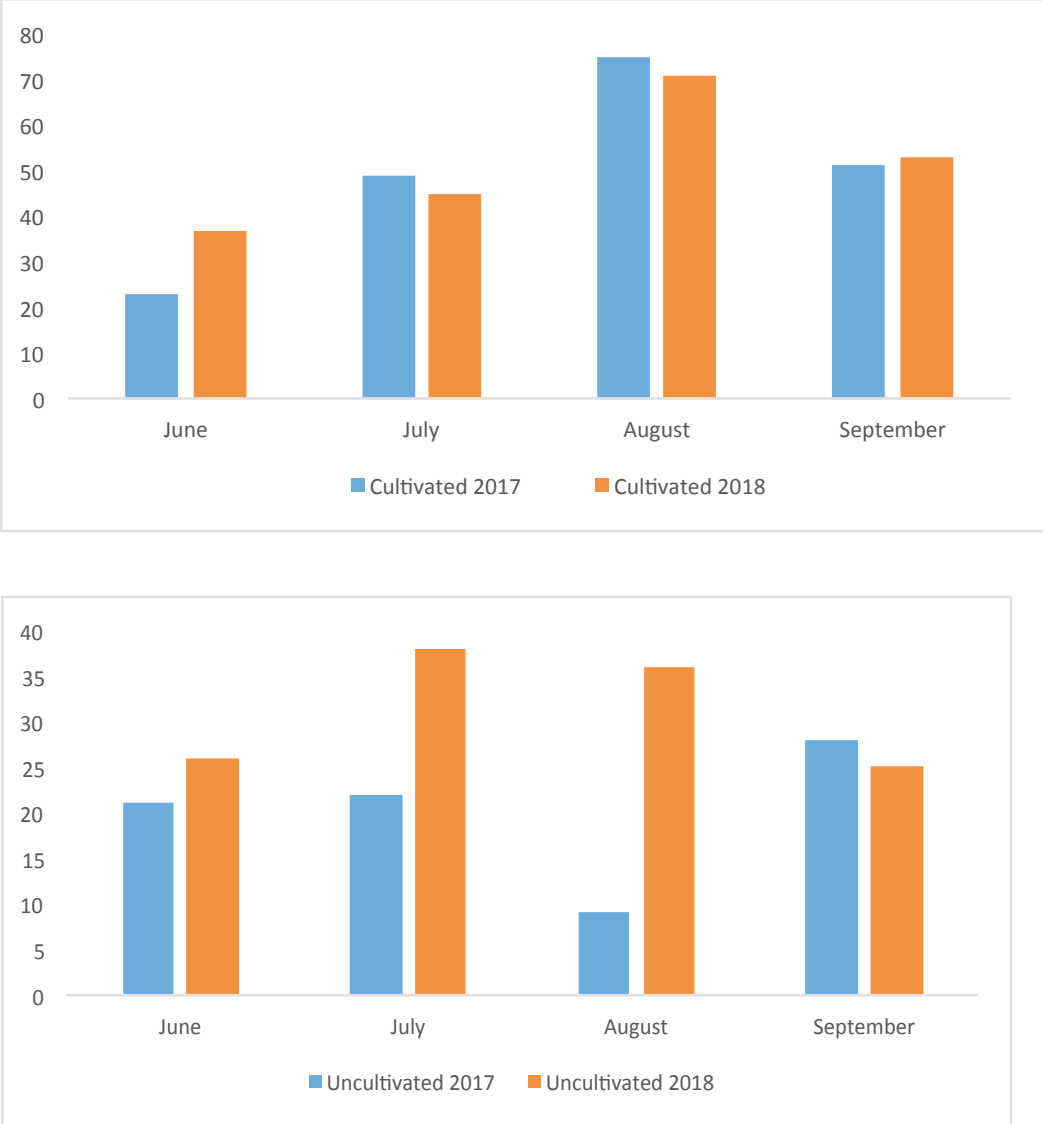
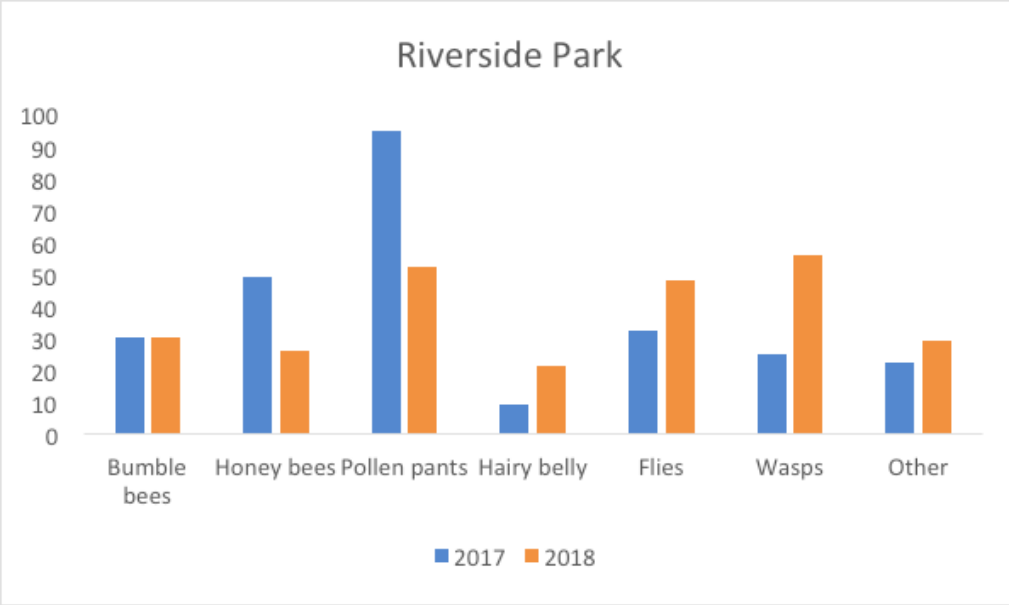



**Figure 10.** Comparison of 2017 and 2018 average pollinator numbers (including all pollinator functional groups) observed in cultivated gardens (top panel) and uncultivated sites (bottom panel).

Across 2017 and 2018, group surveys in the public parks (Riverside and MacArthur Island) documented important differences in pollinator abundance (Figure 11). Compared to 2017, the abundance of pollinators in Riverside Park (particularly honey bees and pollen pant bees) declined quite dramatically while the abundance of flies and wasps showed an abrupt increase. Likewise the abundance of pollinators in MacArthur Park across the two years also differed. Compared to 2017, the abundance of bumble bees, honey bees and hairy belly bees declined, while the number of wasps observed increased. Overall, citizen scientists documented approximately double the abundance of wasps in Riverside and MacArthur Island Parks than in the previous year.



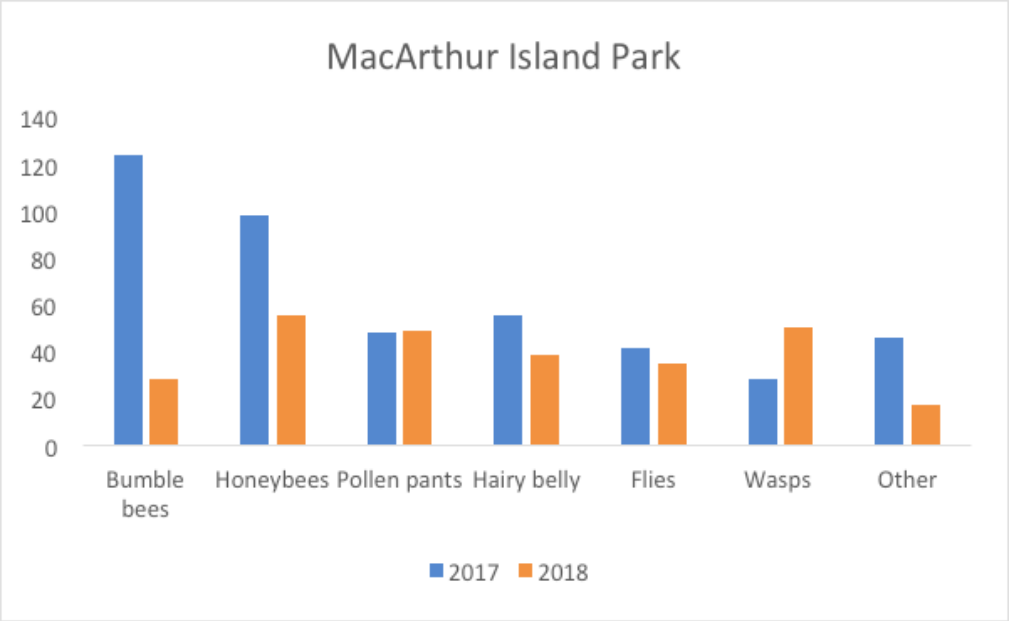




**Figure 11.** Comparison of 2017 and 2018 average pollinator numbers (including all pollinator functional groups) observed in Riverside Park (top) and MacArthur Island Park (bottom).

# CONCLUSIONS

This project gathered important information regarding pollinator abundance and diversity in a variety of habitats around Kamloops. It also served as an important collaboration between experts and citizen scientists within the community. Engagement to this degree provides a holistic approach to topical environmental issues. Involving individuals at many different levels of experience is vital to finding realistic and effective solutions to loss of pollinators worldwide. Citizen scientists' understanding and awareness of native bees makes them excellent ambassadors for these important creatures.

Data collected during the summer season of 2018 indicated that although cultivated gardens rich in floral genera provide important habitat and forage for pollinators, they support different guilds of pollinators than do uncultivated areas. Ultimately, supporting pollinator populations within the city of Kamloops will rely upon the following:

a. Creating pollinator habitat throughout the City by providing a continuous succession of bee friendly flowers throughout the three seasons,
b. Increasing the use of local native plants as bee forage in our gardens and maintained city parks,
c. Identifying, protecting and enhancing existing native plants that host pollinators within natural areas,
d. Providing appropriate nesting sites for the hairy belly bee guild, which are cavity nesters,
e. Protecting existing nesting sites and providing additional nesting areas for ground nesting solitary bees especially within managed parks, and,
f. Providing pollinator forage corridors such as bee friendly hedgerows between various garden beds.

It is important to note that our observations of pollinator guilds, such as “hairy belly bees” or “pollen pants bees”, are not the same species throughout the summer, as different solitary bee species are active during distinct periods of the summer. Native solitary bees usually only fly for two or three weeks. While citizen science projects, such as this one can identify morphologically distinct functional groups or guilds; understanding the full pollinator biodiversity present in Kamloops will necessitate a higher level of identification through collection of insects and laboratory taxonomic identification.

We are therefore expanding our scope in 2019. We will carry out citizen science monitoring protocols during three group pollinator surveys within the grasslands of Kamloops. But, at the same time we will complete pollinator biodiversity surveys with standard entomological trapping techniques. A comprehensive survey of pollinators in our area would require spring, mid-summer and late summer trapping effort in order to account for seasonal variation in pollinator life cycles.

With the continued support from the City of Kamloops, TD Friends of the Environment Foundation and partners, we hope to collect baseline pollinator guild abundance data for one more year. This will give us an increased ability to assess variability in pollinator abundance while continuing to raise local awareness of pollinator importance.

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Thompson Shuswap Chapter

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