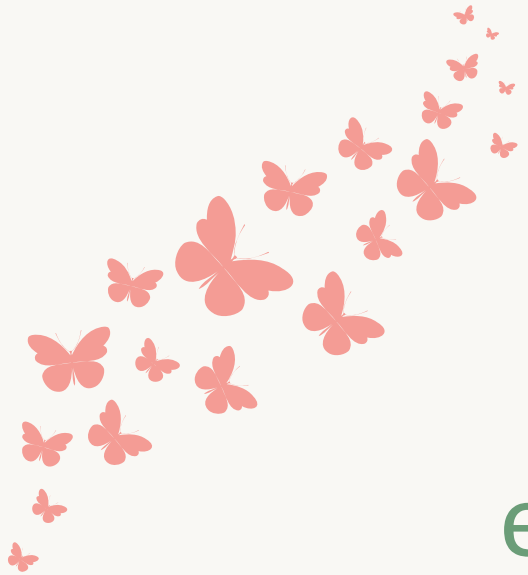


In my plot and in our gardens: exploring plant and insect biodiversity

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Acknowledgements



Vidya Tikku
Annabel Rabiyah
Jordan Takvorian
Lacey Berg
Paul Franceschi
Carter Burruss
Caroline Bowes
Alex Carbone

Woolson St.
Lucerne/Balsam St.
Lydon Way
Barry St.
29 Josephine St.
Nightingale
Greenwood St.
Windermere
Dacia & Woodcliff St.
Savin & Maywood St.
Leyland St.
Julian, Judson & Dean St.
Magazine St.

Brookside
Mission Hill
Forbes St.
Paul Gore/Beecher St.
Minton Stable
Worcester
Rutland
Warren & Clarendon
Symphony Road

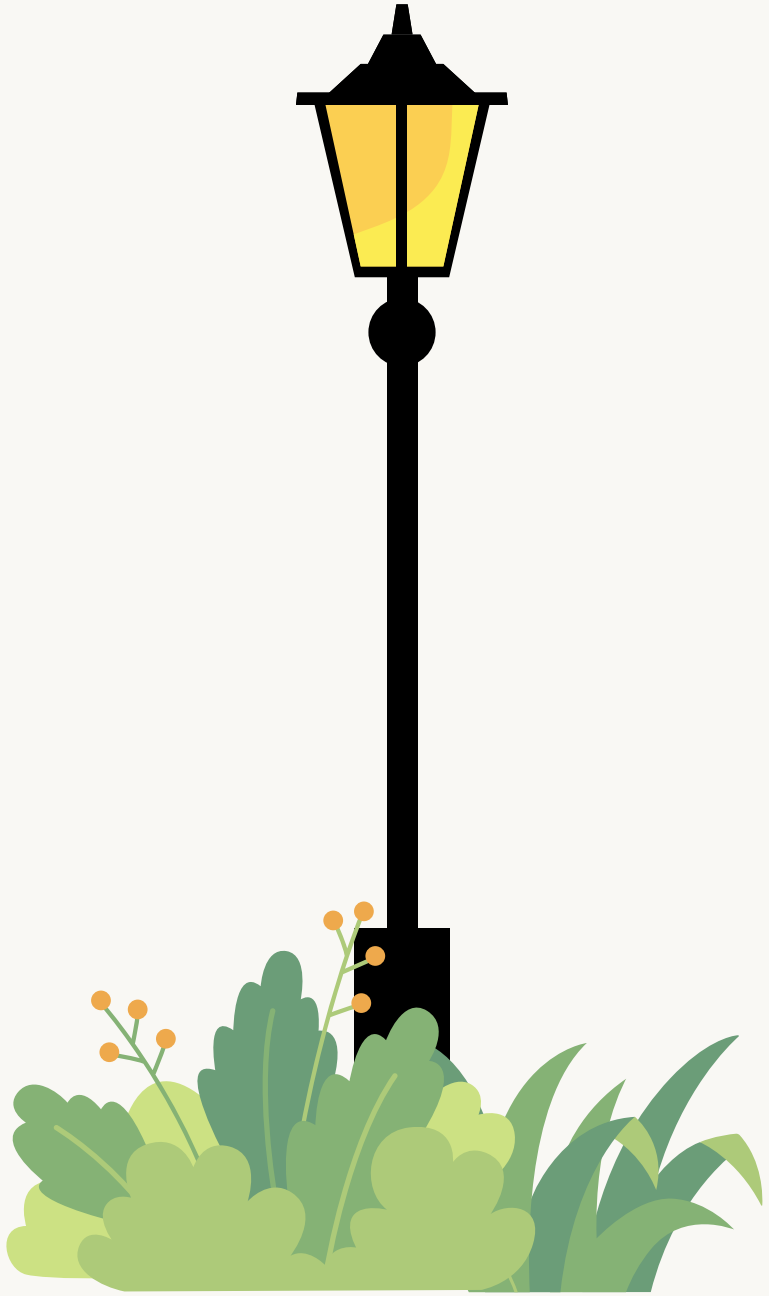
Dr. Theresa Ong
Kristen Jovanelly
Alana Danieu
Kochi Nakajima
Lara Roelofs
Zachary Shortt
Jaya Miller
Omar Sanchez

The presentation is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, through the Northeast Sustainable Agriculture Research and Education program under subaward number GNE24-317.



Overview

- A quick intro to urban biodiversity
- Plant biodiversity in Boston community gardens
- Insect (and other arthropod) biodiversity - and their interactions with plant diversity
- How to identify and track plants and bugs



“Urban biodiversity refers to the variety of living organisms, including their genetic variations, as well as the multiplicity of habitats in and around dense human settlements.”

- MAMROT, 2013







Urban biodiversity supports us



Biodiversity in our gardens?

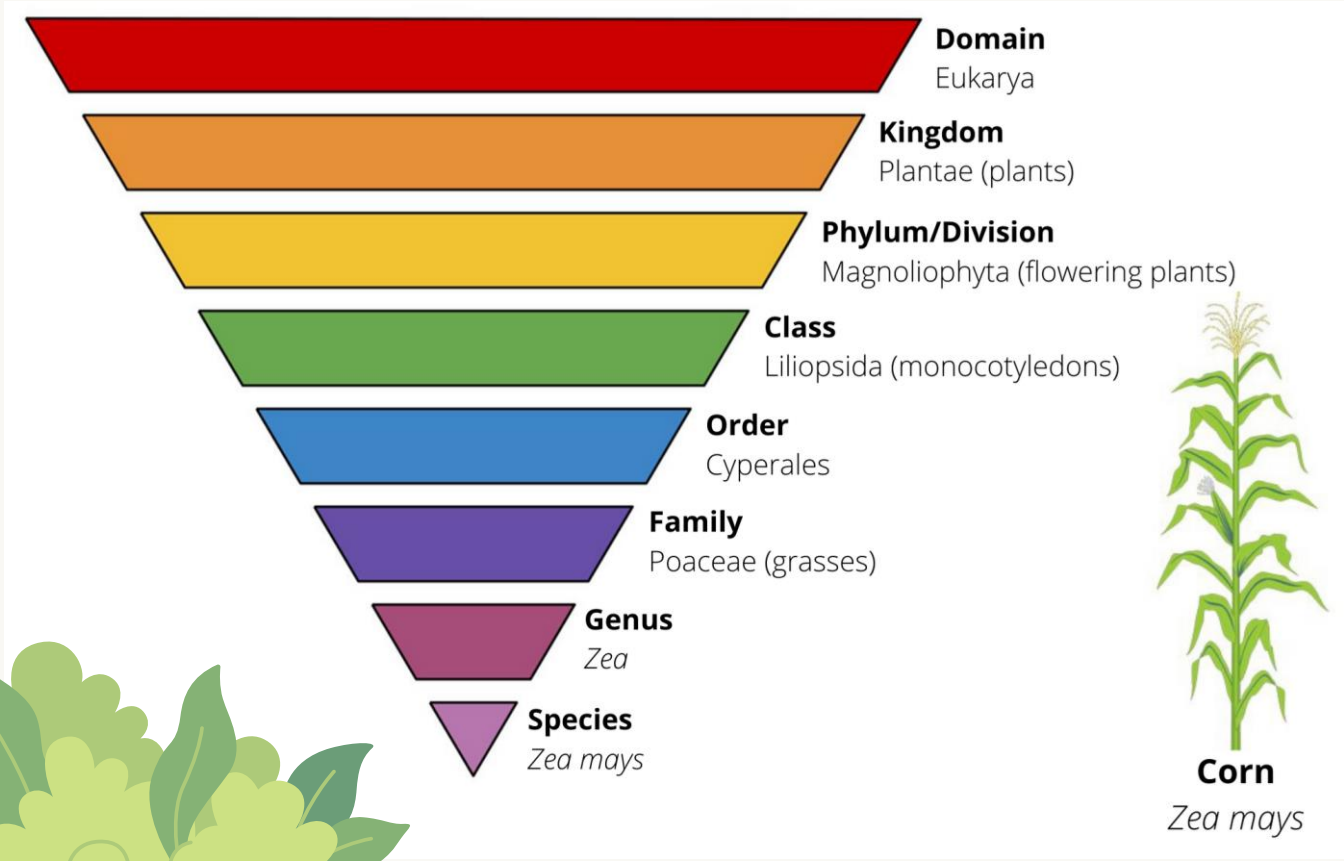






Describing biodiversity

Richness (number of distinct groups at a given level)



Abundance (number of individuals)

Kingdom
Animalia

Phylum
Arthropoda

Class
Insecta

Order
Hymenoptera

Family
Apidae

Genus
Bombus

Species
B. impatiens



Common Eastern Bumble Bee



Plant biodiversity

Lots of crops in the gardens

2021	2022	2023
x 38 gardens	x 6 gardens	x 6 gardens
34 plant families	30 plant families	30 plant families
121 types of crops	116 types of crops	89 types of crops
76071 total	5107	2921

How about ornamental plants?

What about those weeds?





Ornamental plants and weeds contribute heavily to plant biodiversity

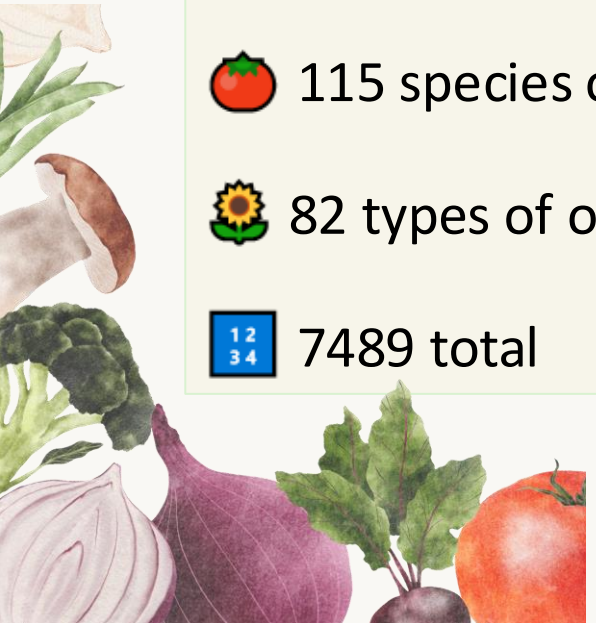
2024

- x 22 gardens
- 79 plant families
- 334 species in total
- 115 species of crops
- 82 types of ornamentals
- 7489 total

2025

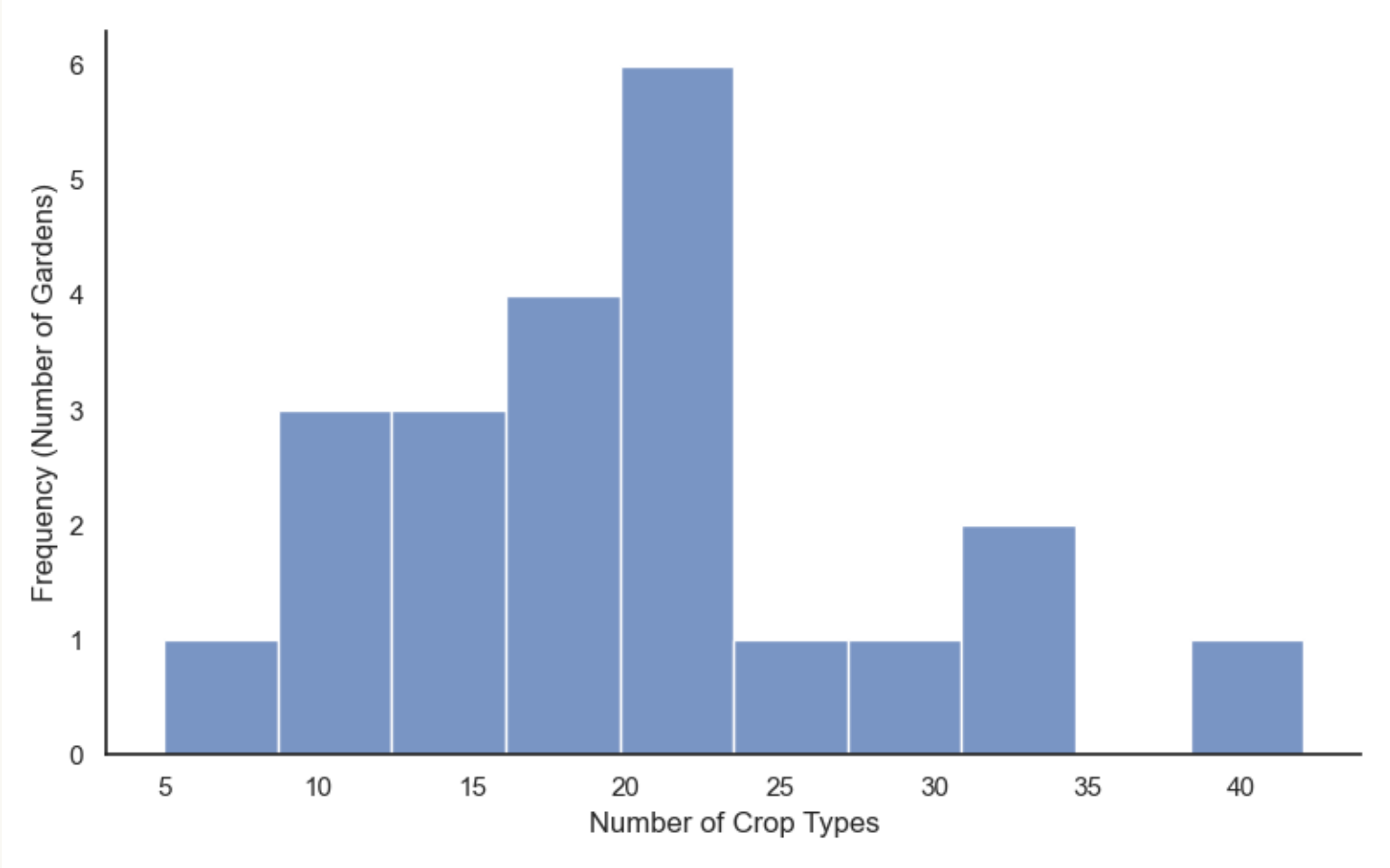
- x 22 gardens
- 77 plant families
- 363 species

2026…





Crop type richness varies among gardens



Most common crops





Gardeners’ choice award







Gardeners’ choice award

Top 10 for three years: tomato, beans, pepper, squash, basil

Top 10 for two years: kale, cucumber, eggplant

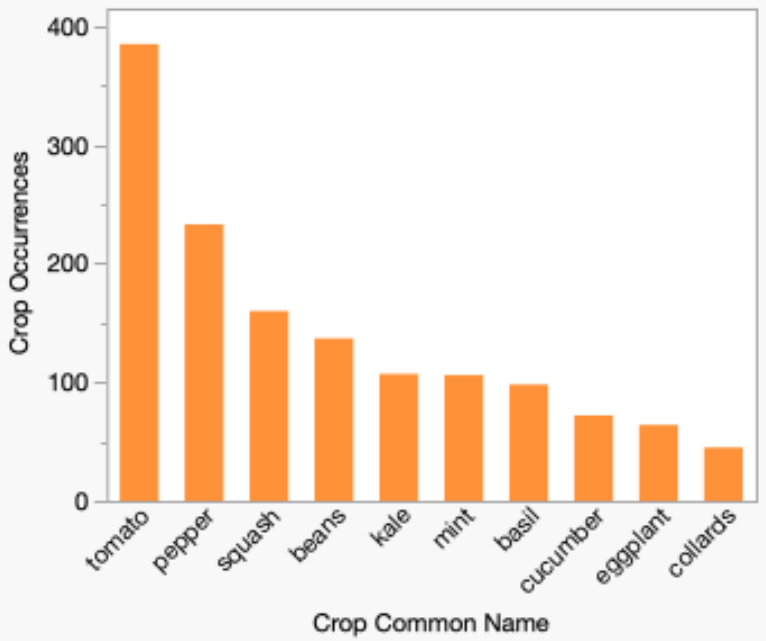
Top 10 for one year: mint, collards, cilantro, chives, corn, chard, lettuce, sage



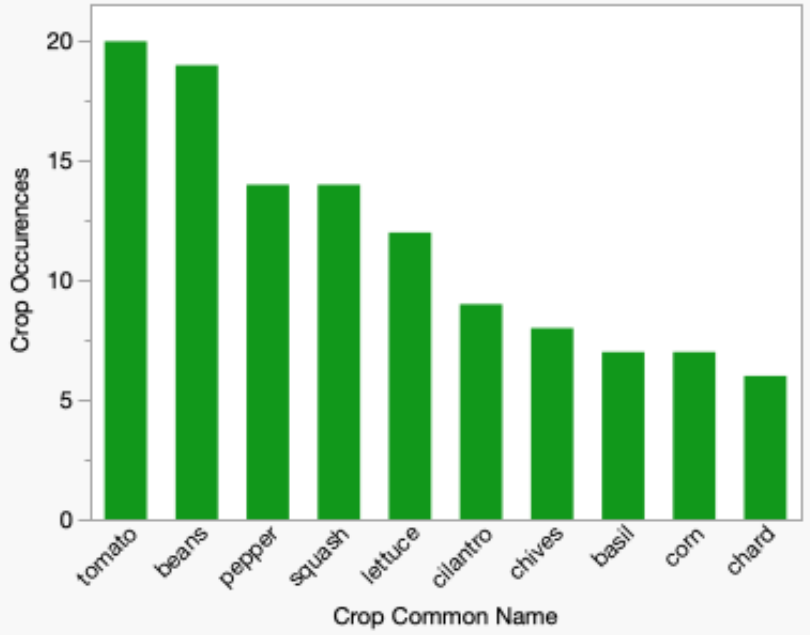


Most common crops

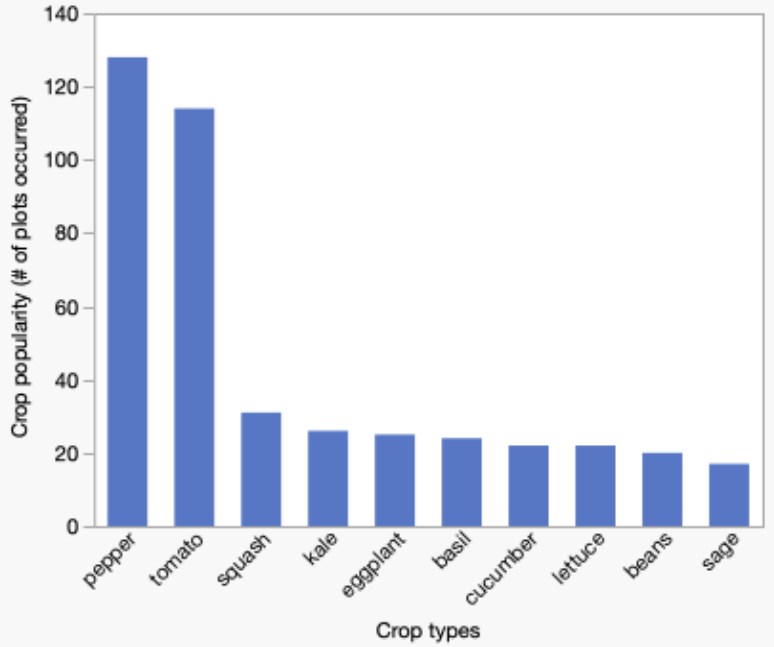
2021



2022



2024



Many crops/plants are rare













Most common weeds in the gardens

1. Hairy Galinsoga



2. Wood sorrel



3. Amaranth



4. Common purslane



5. Quackgrass



What are we seeing in garden plant biodiversity?

- Wide variety of plants!
- A few crops are common, many are rare.
- Diversity of plants can support resilience of the production and create different habitats.







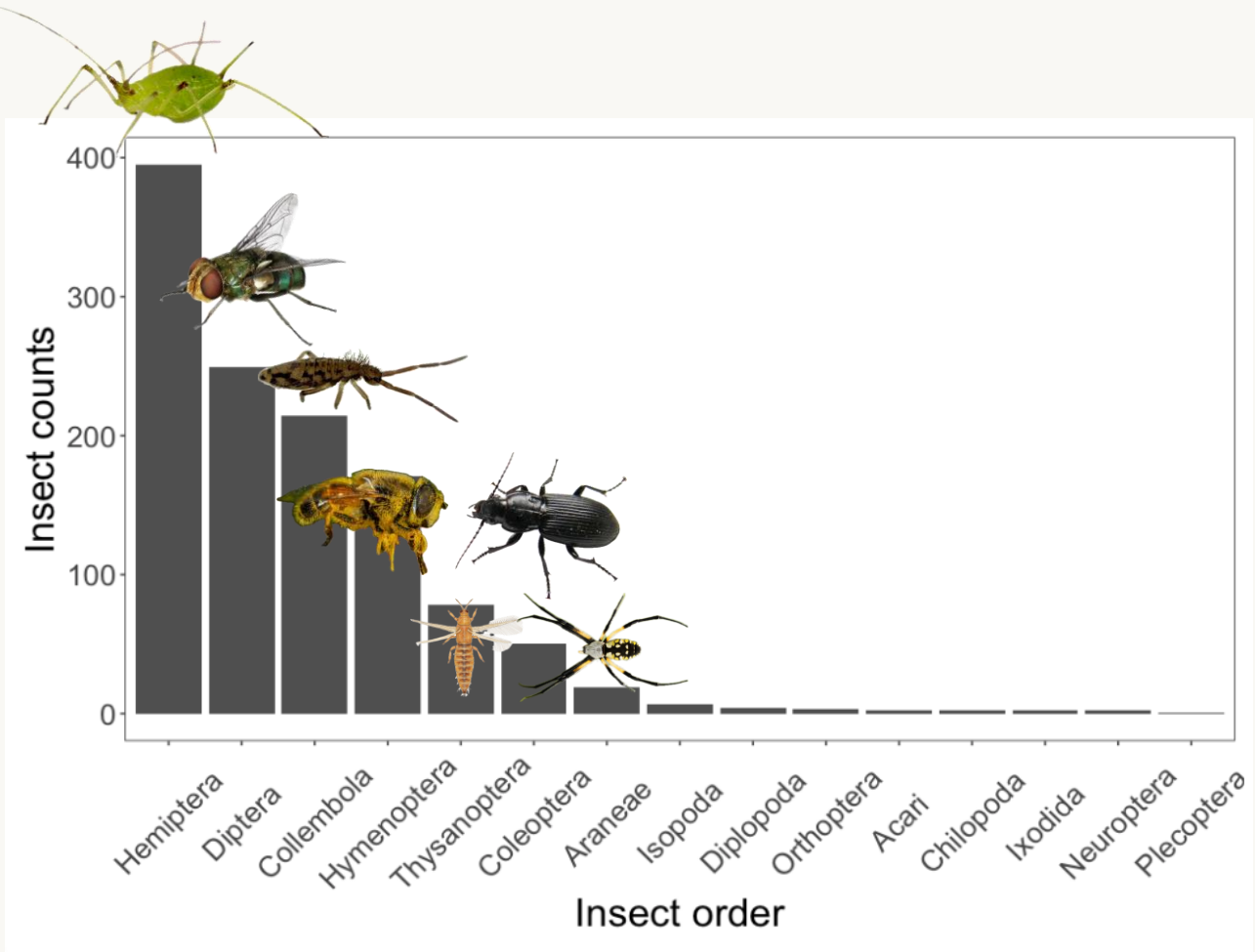
Insect
(and other arthropods)
biodiversity
and how they interact with
our plants



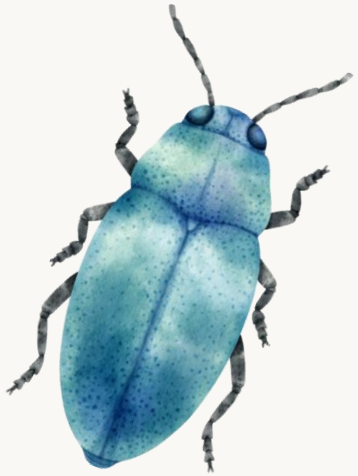
Which insects are in our gardens?

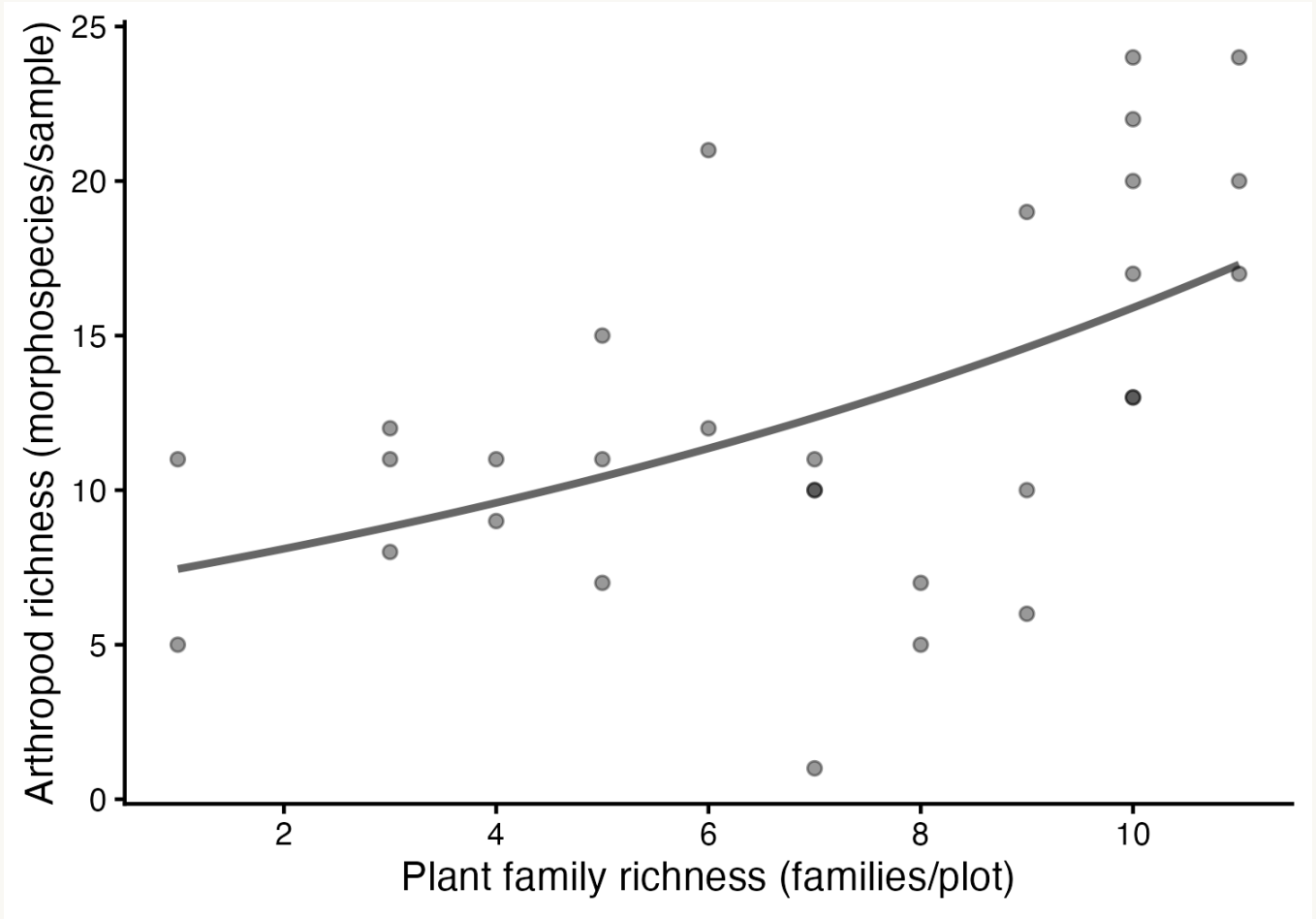
2022

- x 6 gardens
- 15 orders
- 134 morphospecies
- 1199 arthropods



Arthropod richness increases with plant richness in the plots







To have more plants and more bugs:

Is it more trouble or less?



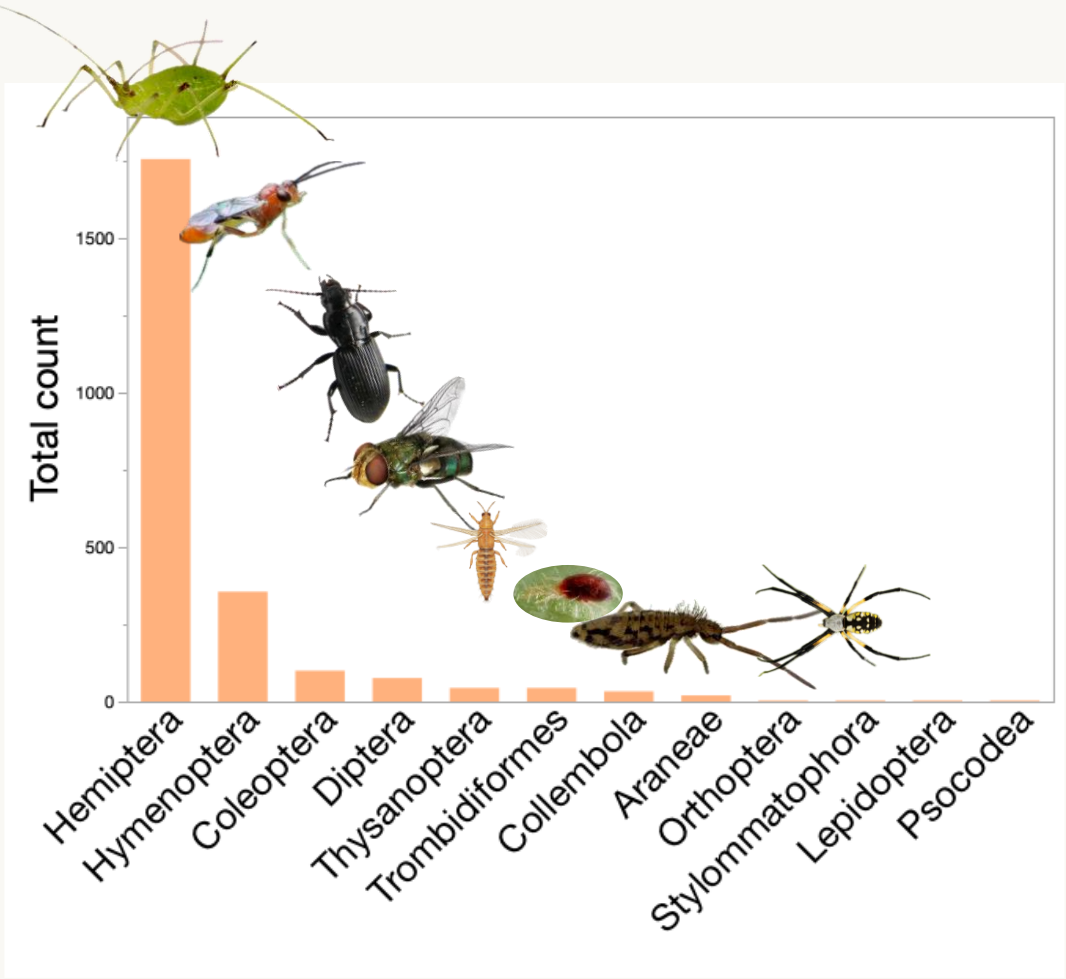




Bugs on tomato and pepper plants

2024

- x 22 gardens
- 12 orders
- 268 morphospecies
- 2441 arthropods

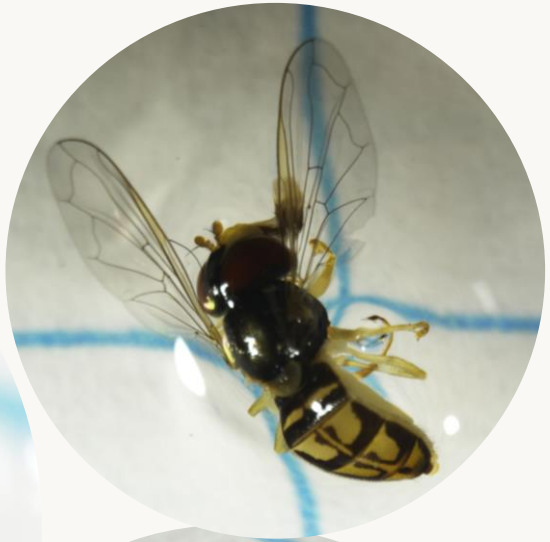


Bugs on tomato and pepper plants



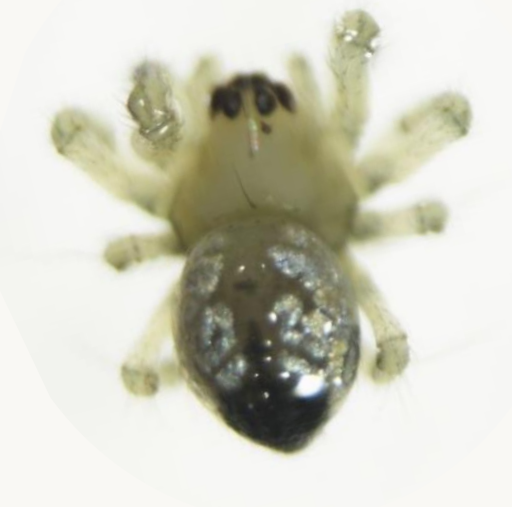












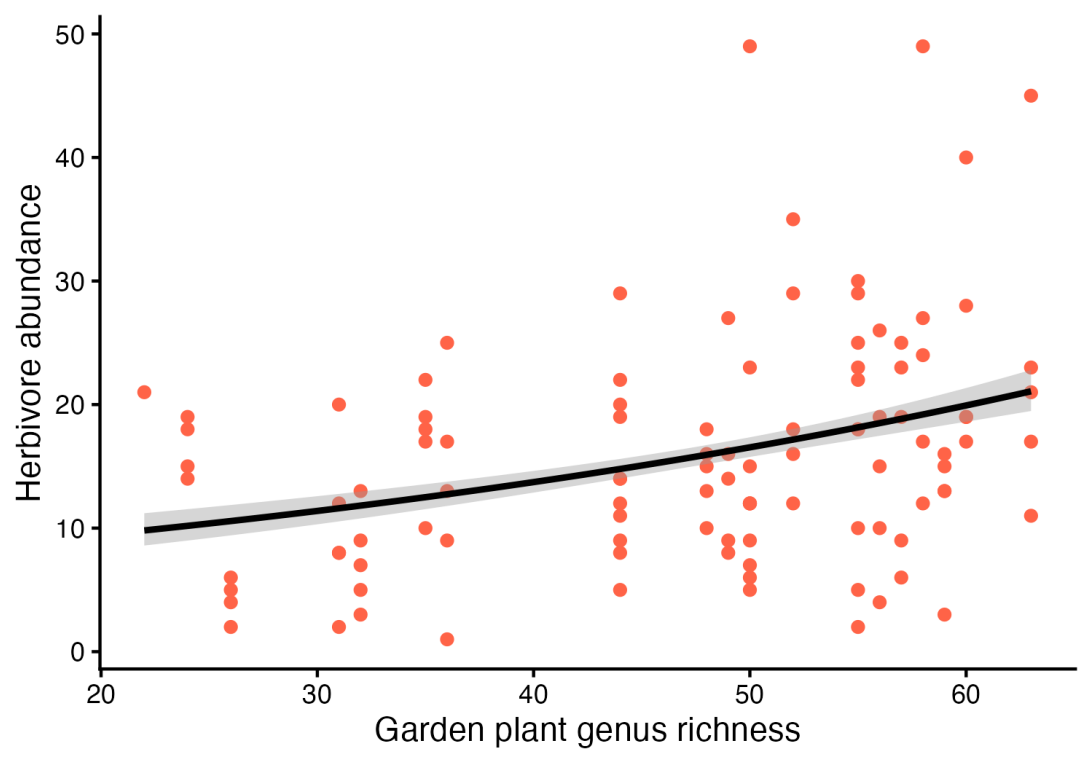








Is it more trouble or less?



- More diverse plants, more arthropods (herbivores).
- However—

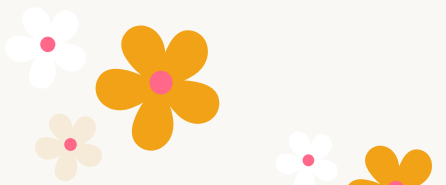
  There was no effect on plant damage!





Pollinators





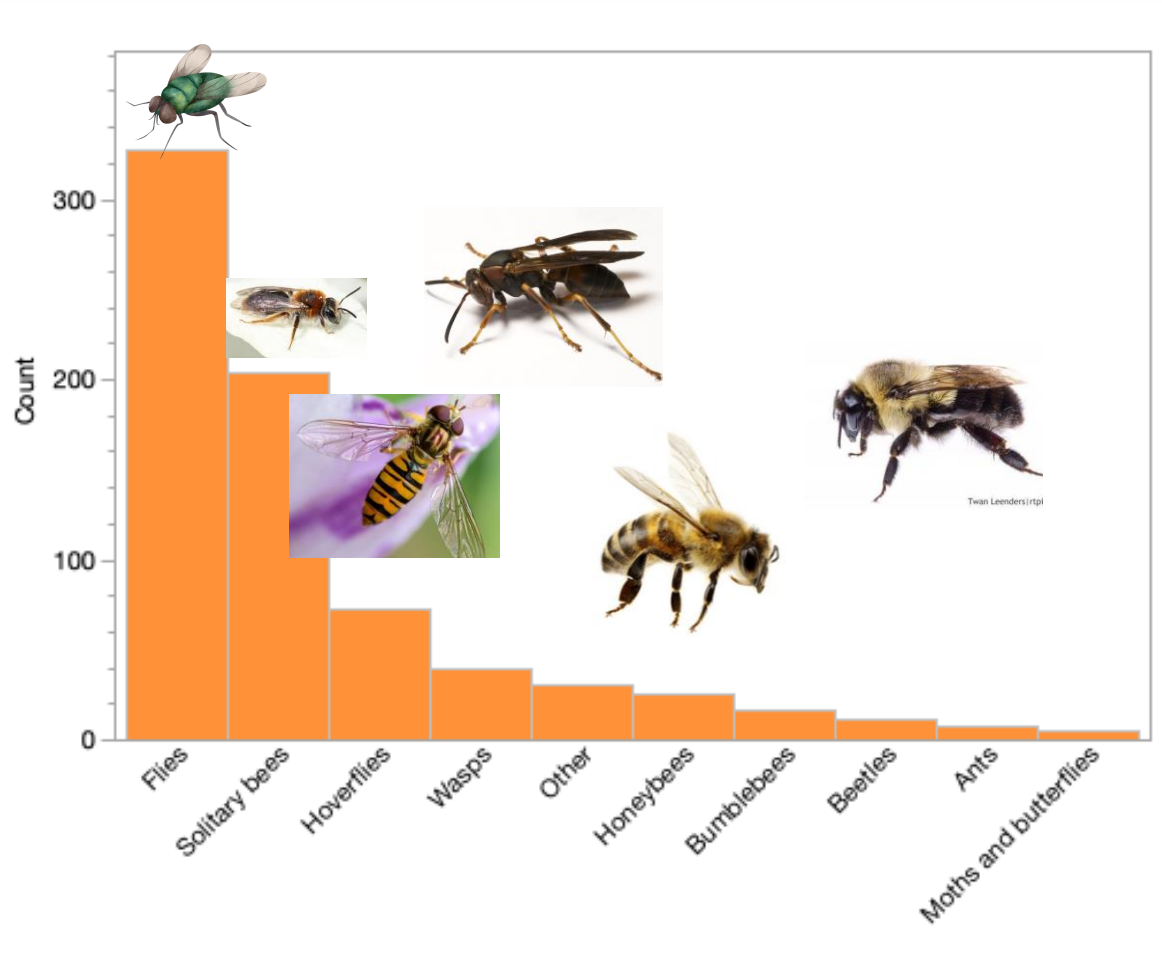




Lots of flower visitors!

2025

- x 22 gardens
- x 1620 min observation time
- 4 orders, 9 groups
- 1102 arthropods



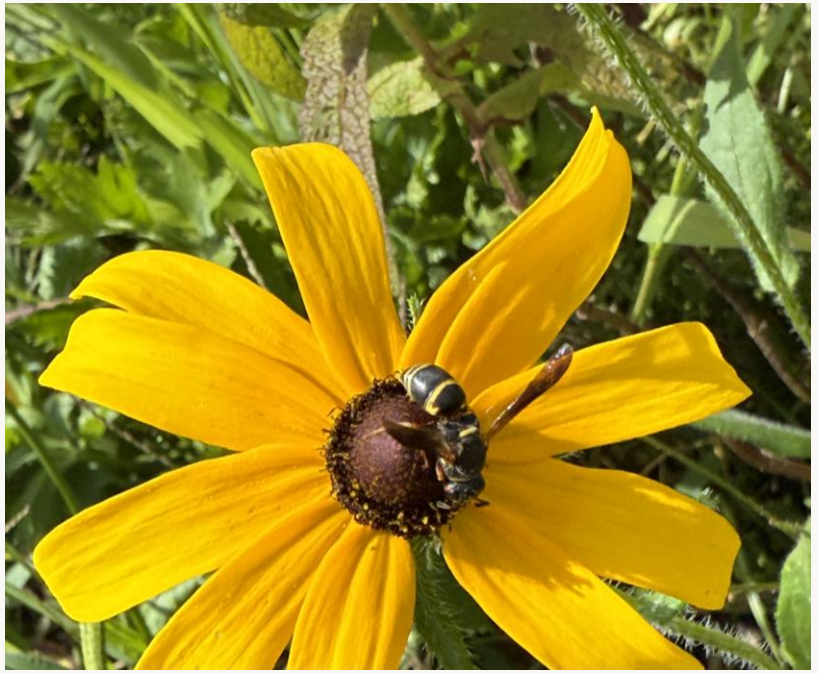


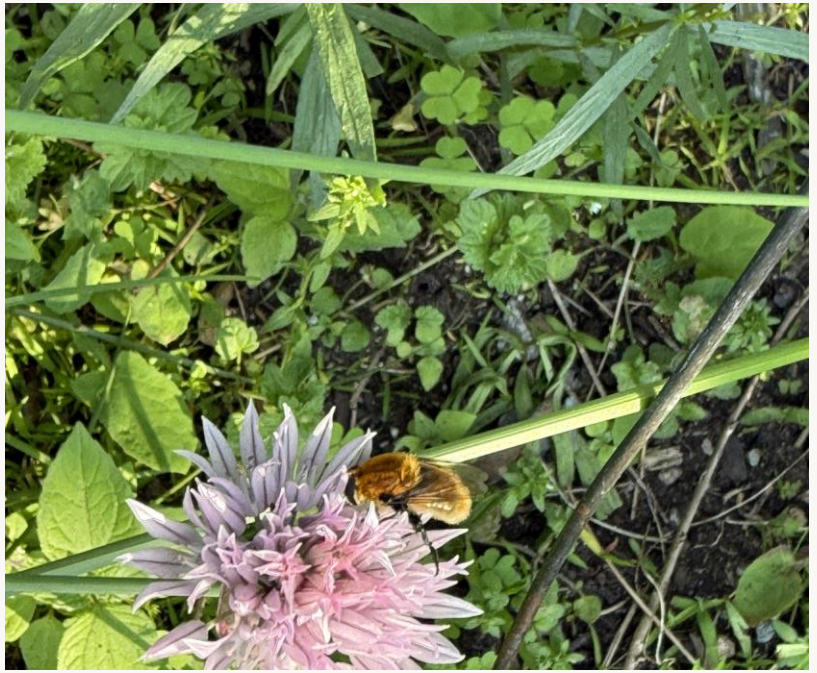




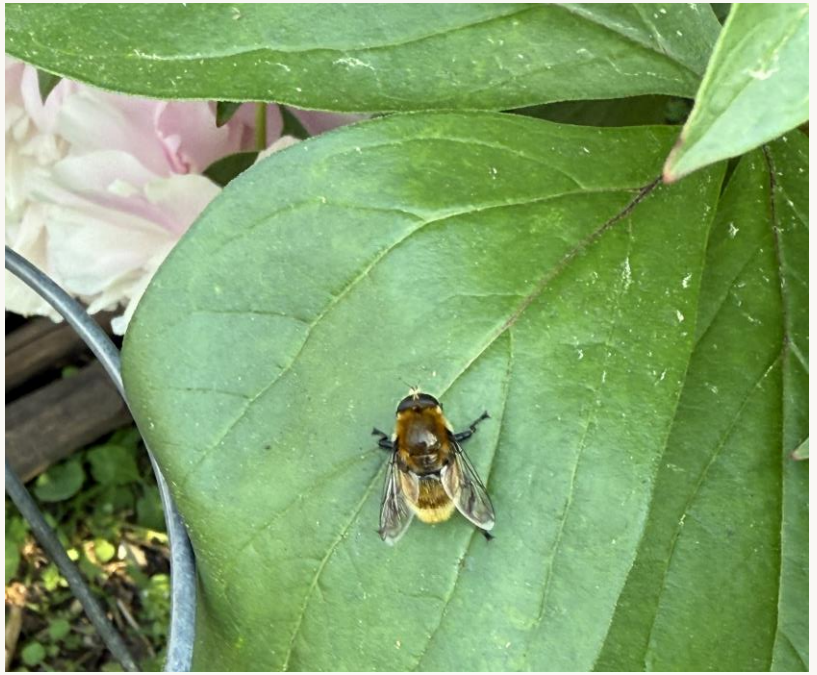


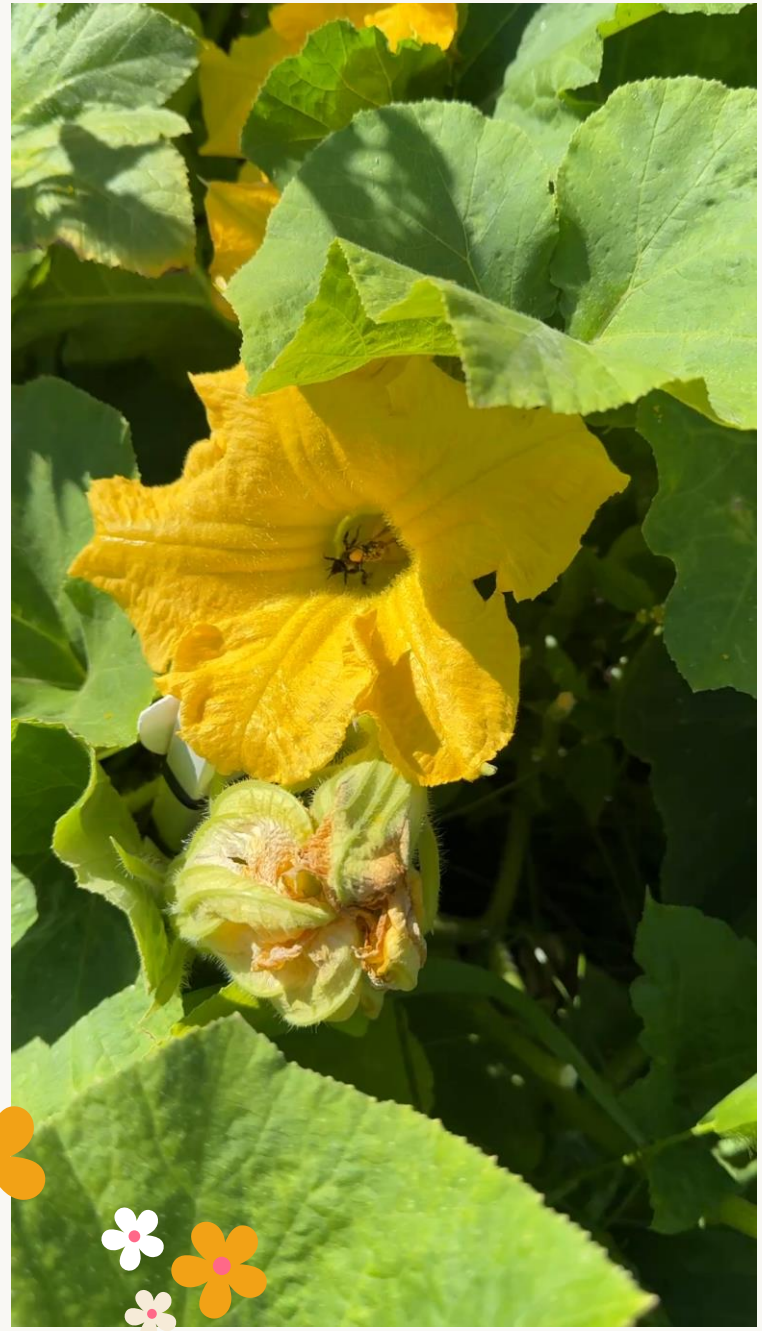


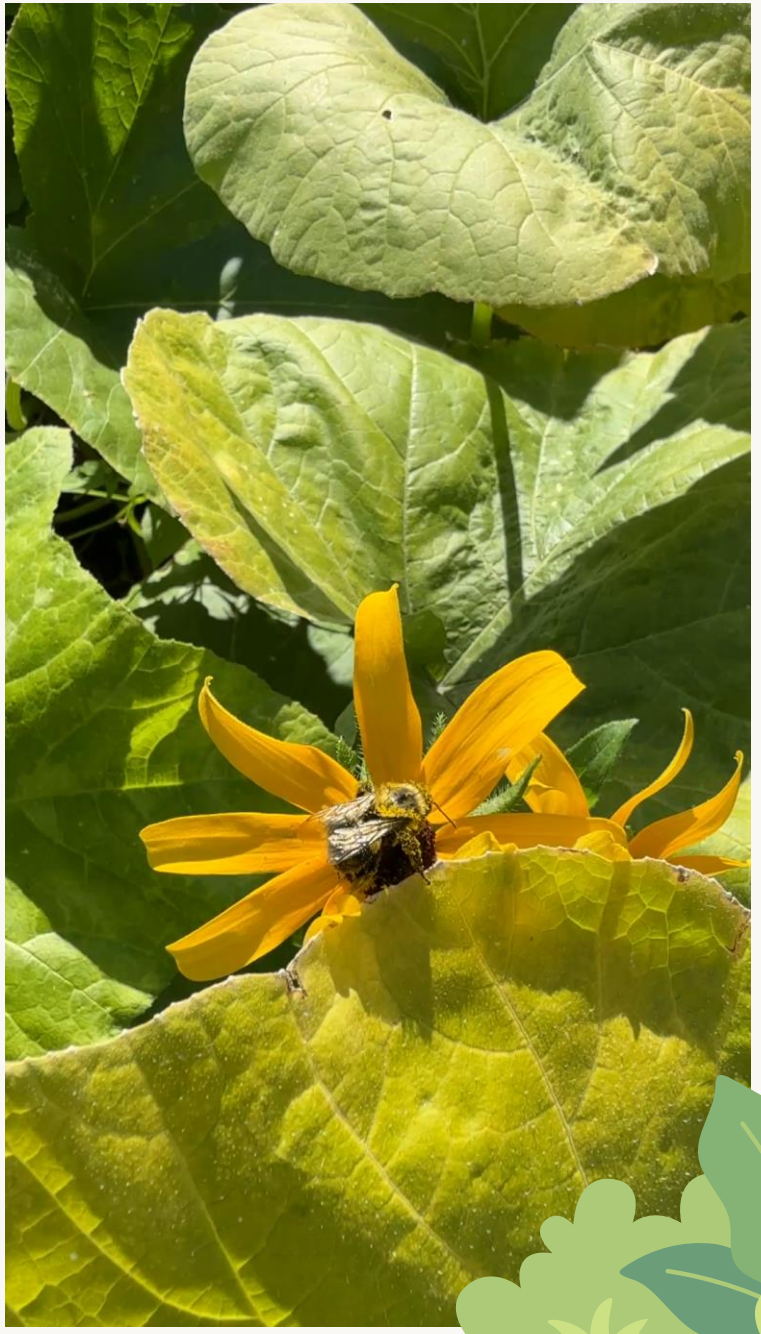


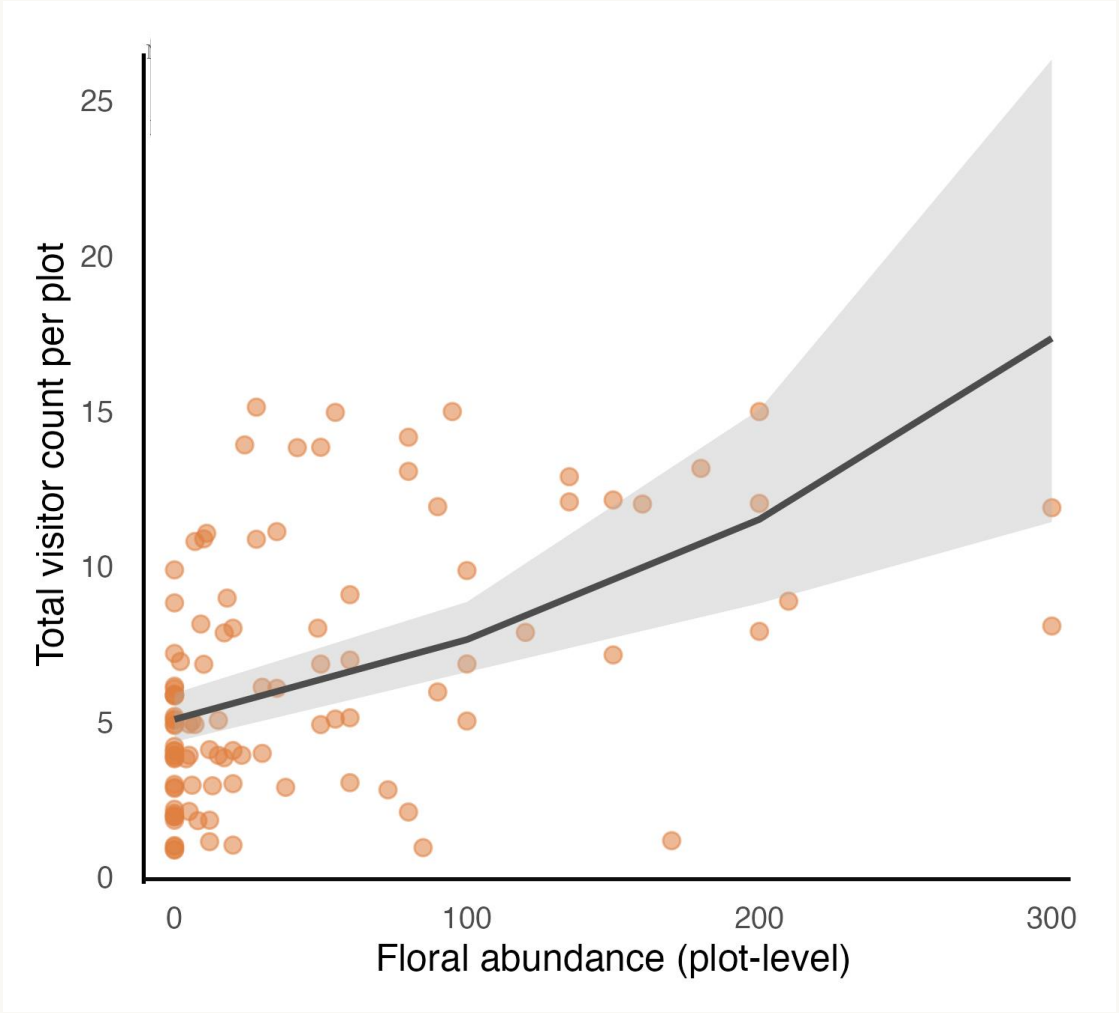












More flowers, more pollinators, and more diverse pollinators!

What we found



- Planting diverse plants increase insect (and other arthropod) richness, with a significant effect on herbivores. However, there is no effect of plant richness and herbivore abundance on crop damage in tomatoes and peppers.

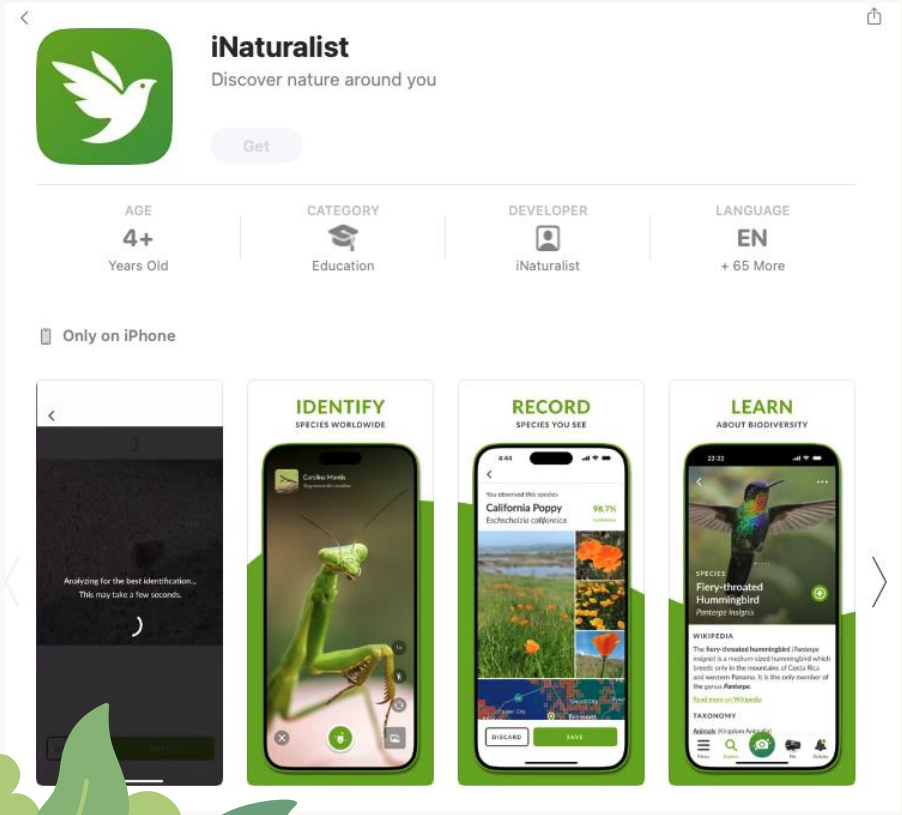


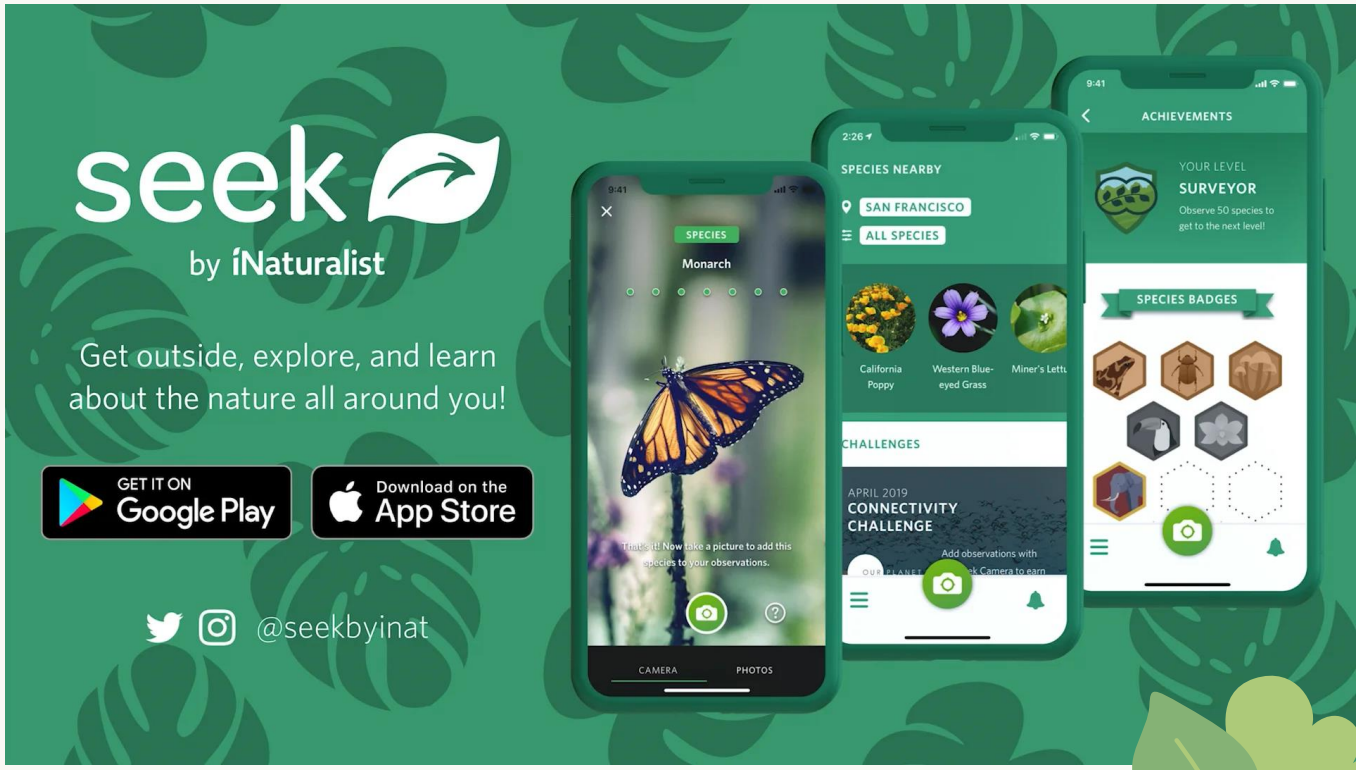
- More abundant flowers lead to more pollinators, and more diverse pollinators.

Identifying and tracking biodiversity in the gardens



iNaturalist and Seek

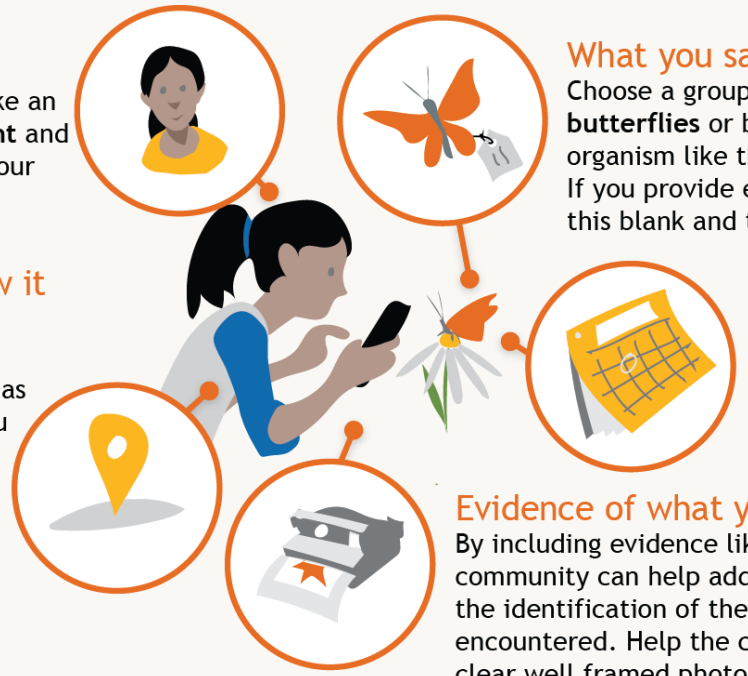




Download, log in, take a picture, and record!

Who you are
You'll need to make an **iNaturalist account** and please only post your own personal observations

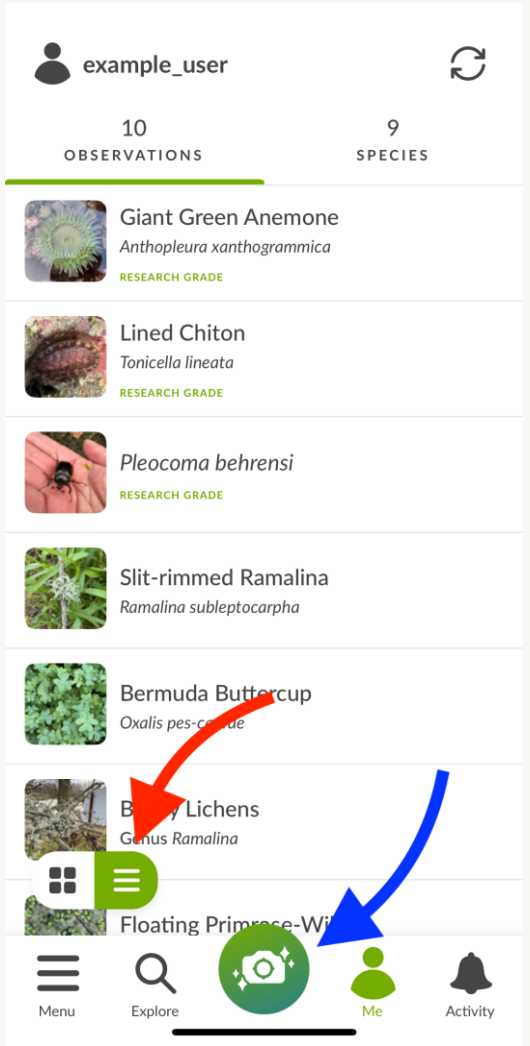
Where you saw it
Record both the coordinates of the encounter as well as their accuracy. You can obscure the location from the public



What you saw
Choose a group of organisms like **butterflies** or better yet a specific organism like the **Monarch butterfly**. If you provide evidence you can leave this blank and the **community can help**

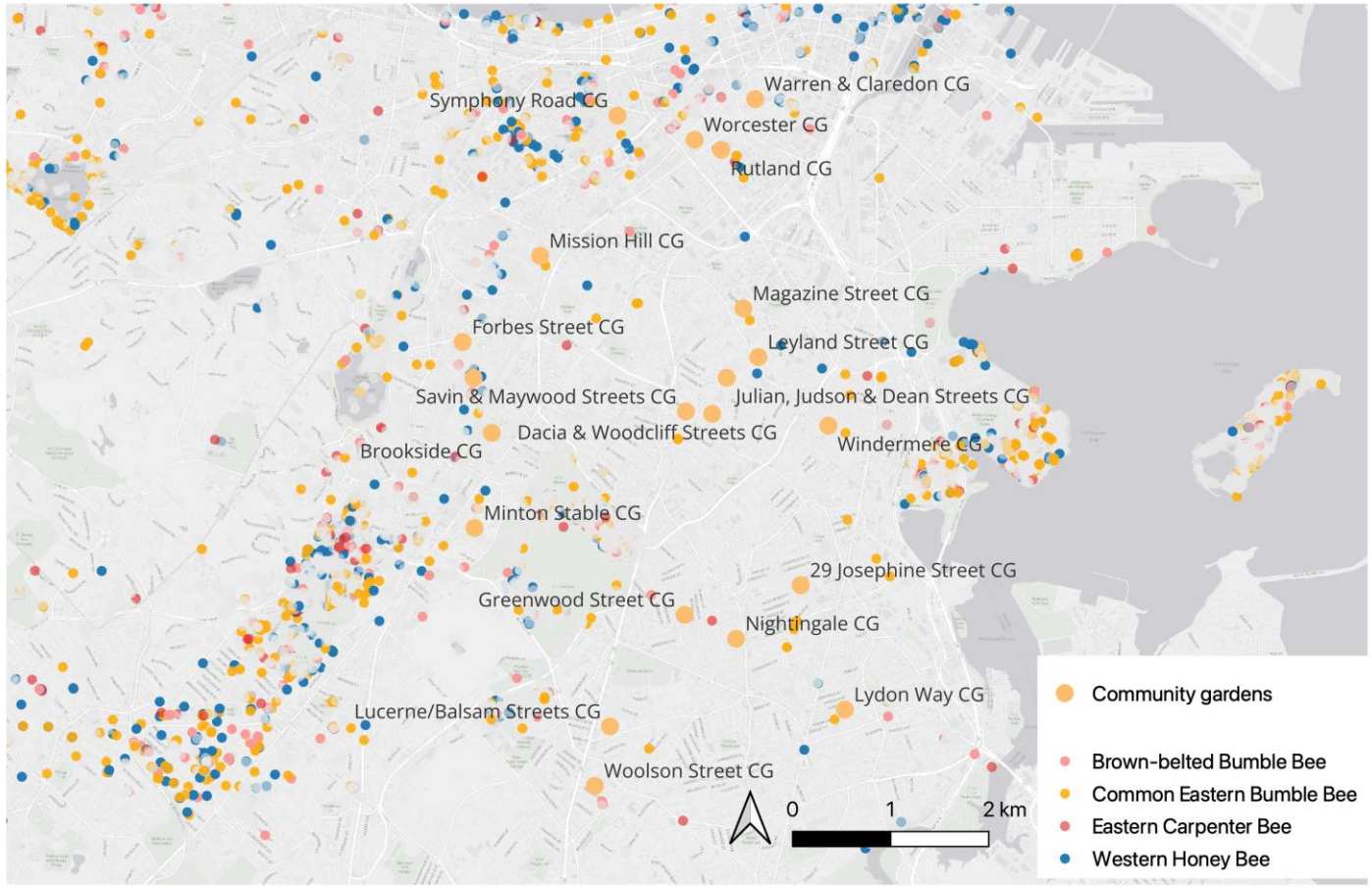
When you saw it
Record the date of your encounter, not the date you post it to iNaturalist

Evidence of what you saw
By including evidence like a **photo or sound**, the community can help add, improve, or confirm the identification of the organism you encountered. Help the community by taking clear well framed photos, by including multiple photos from different angles

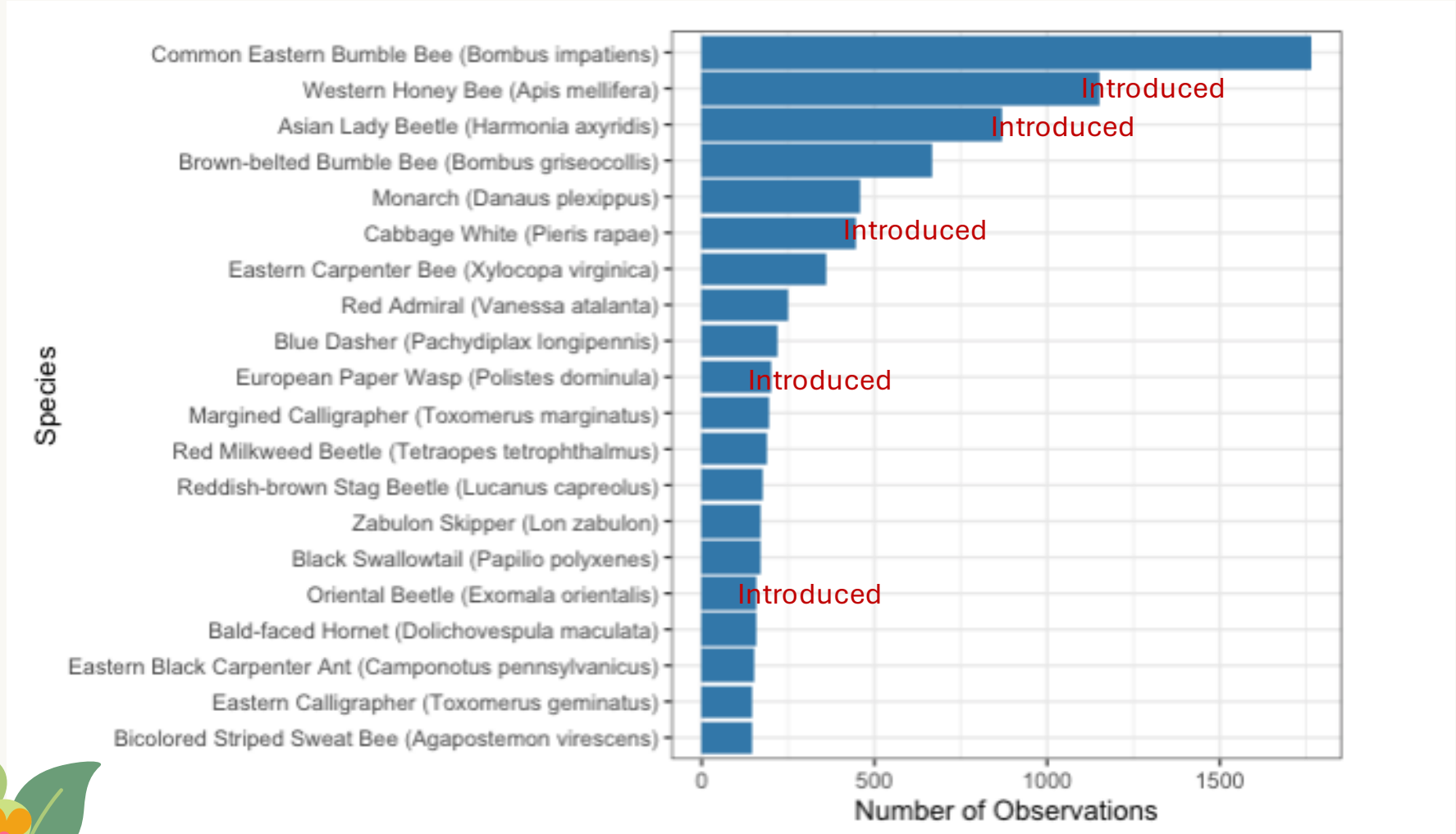




You can use iNaturalist to check out what people observed!



Top 20 most observed insect species in Boston



Making a collection?

- Within the community gardens, you can make a collection to showcase what people are finding in these spaces

Conclusion

- Plants and insects and many other organisms live in the community gardens in the city, providing us with food and a happy place.
- They are also contributing to the city ecosystem, maintaining biodiversity, ecosystem resilience and much more.
- What we plant affects what comes around, so if you are interested, find out what else are living in your plot and if it is changing!

What are you planning to plant this year?

How do you manage your plants, pests and other critters?

Questions and comments?



Get in touch!
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