

# Boston community gardens ongoing research and results to date 2021 - 2024

Urban agriculture - crops, plants, insects, communities and the urban environment

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# 1. Crop surveys

2021, 2022, 2024

# 1.0 Crop surveys methods

**Table 1. Sampling design, sample size, and methods for crop/plant surveys**

<b>Year</b>	<b>No. of gardens sampled</b>	<b>No. of plots per garden sampled</b>	<b>Sampling methods</b>
2021	38	10	Visual censusing, crop census focusing on all edible crops and herbs
2022	6	5	Plant census for all crops, herbs, ornamentals, and weeds
2023	6	5	Plant census for all crops, herbs, ornamentals, and weeds (ongoing data processing)
2024	22	5	Plant census for all crops, herbs, ornamentals, and weeds (ongoing data processing)

# 1.1 Crop richness and abundance

Table 2. Crop and plant richness at different taxonomic levels and estimated total counts. Crop types are used to distinguish crops by their common name, for example, tomatoes, pepper, kale. Common varieties are based on visual differences or tags that distinguish different types of common crops, for example, cherry tomatoes, beefsteak tomatoes etc. \*Includes ornamental plants

Year	No. of Gardens	No. of Plant family	No. of Plant genus	Crop types	Common varieties	Total count
2021	38	34	94	121	371	76071
2022	6	30	92	116	/	5107
2023	6	30	/	89	/	2921
2024	11 and ongoing	/	/	175*	/	4105

# 1.2.1 Crop richness by garden 2021

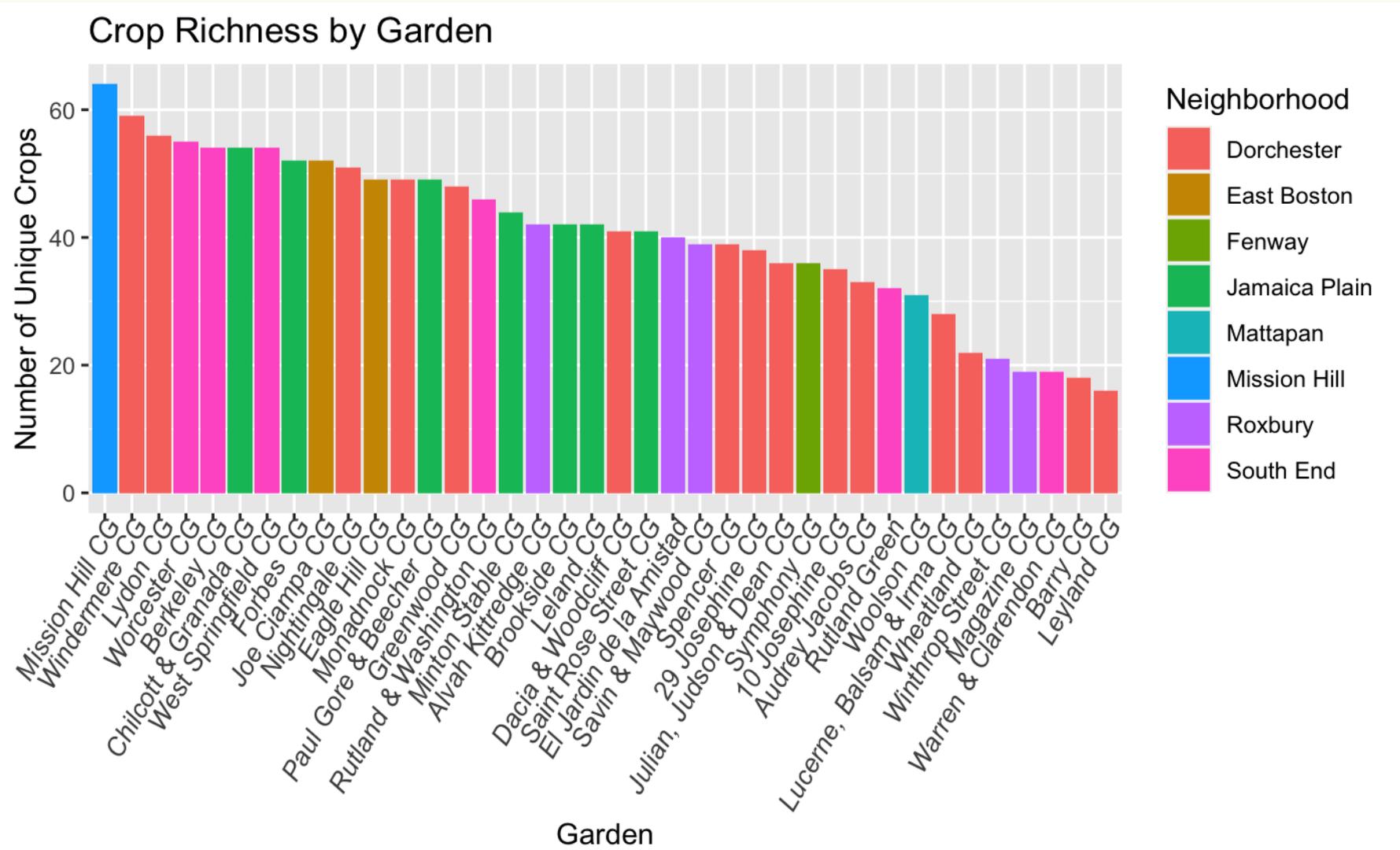


Figure 1. Total number of unique crops at each garden across the 10 plots sampled in 2021.

## 1.2.2 Crop richness by garden 2022

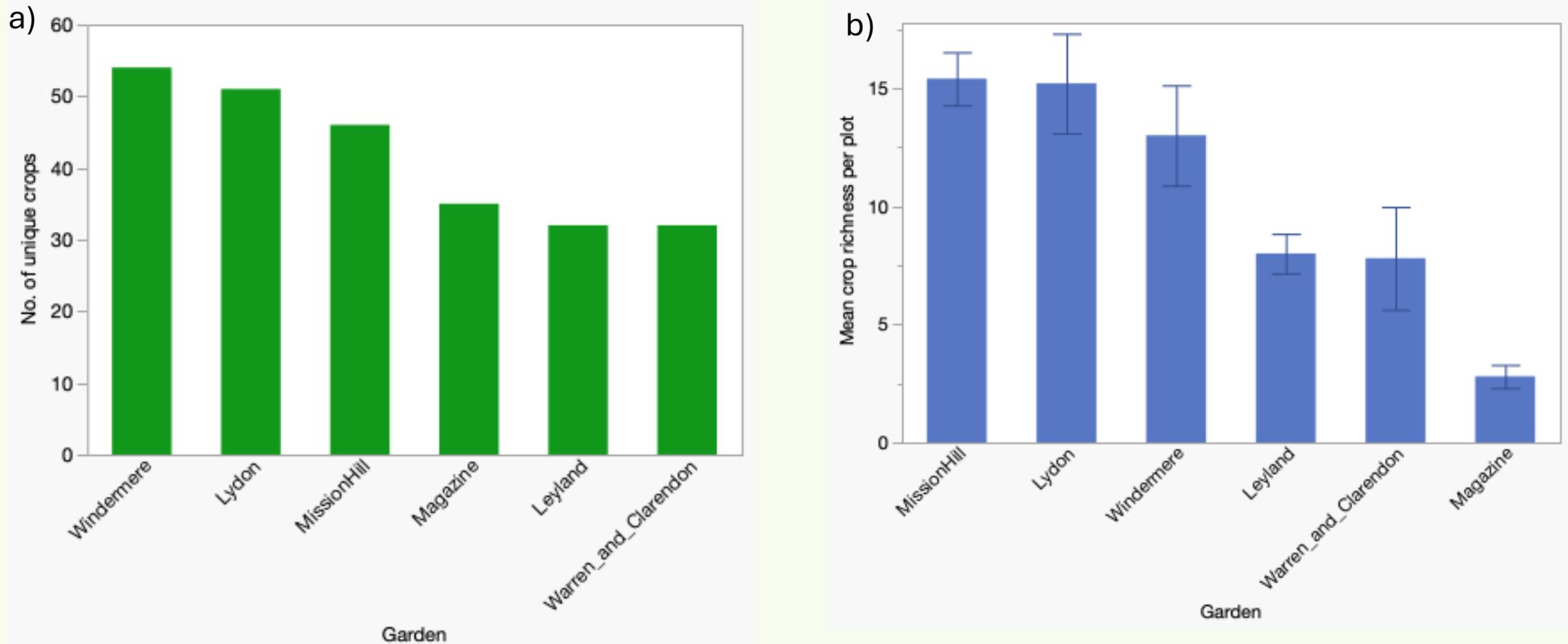


Figure 2. a) Total number of unique plants across the five plots sampled in 2022. b) Average number of crops planted at each plot in 2022. Error bars represent one standard error from the mean.

## 1.2.3 Crop richness by garden 2024

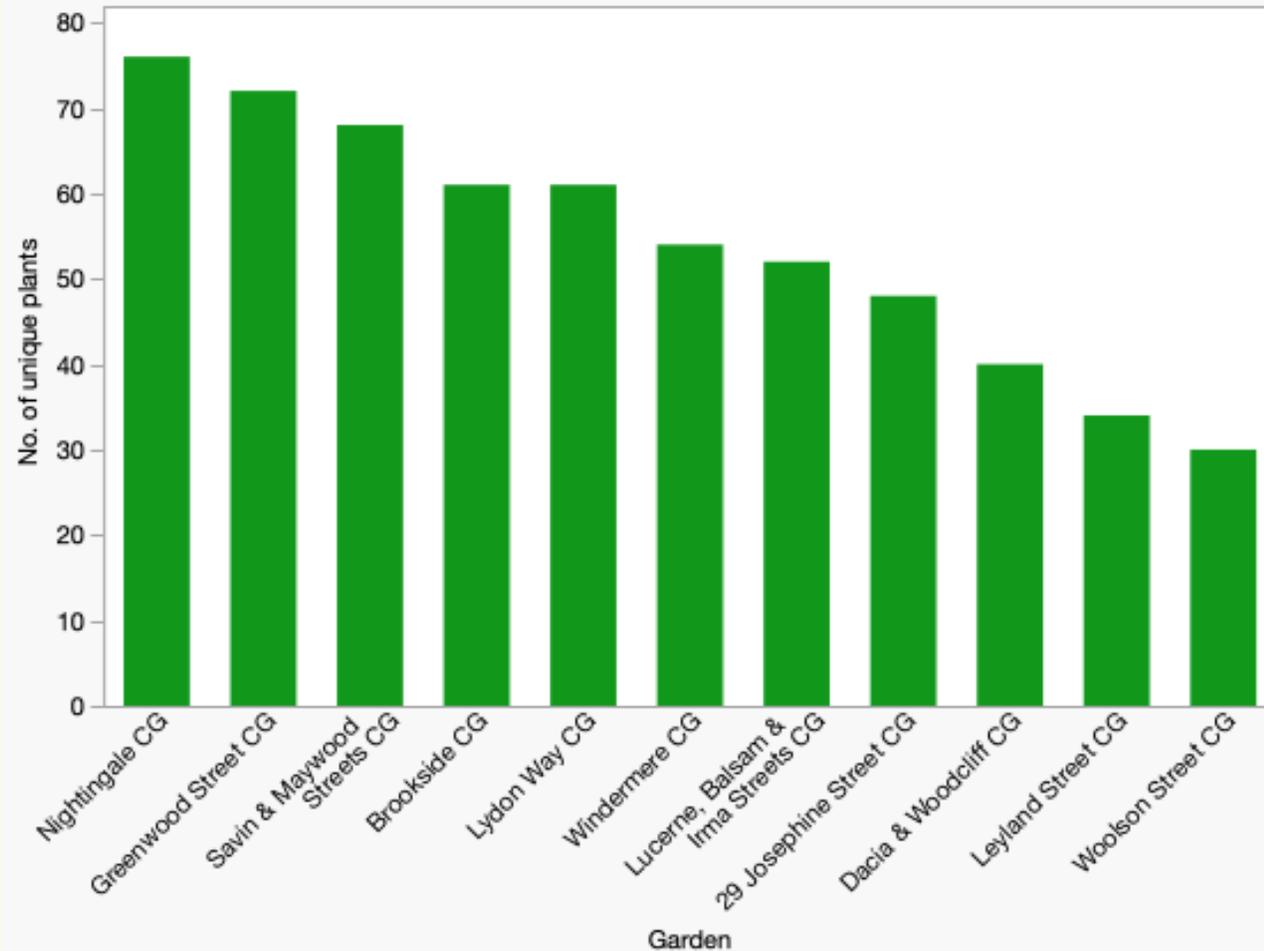
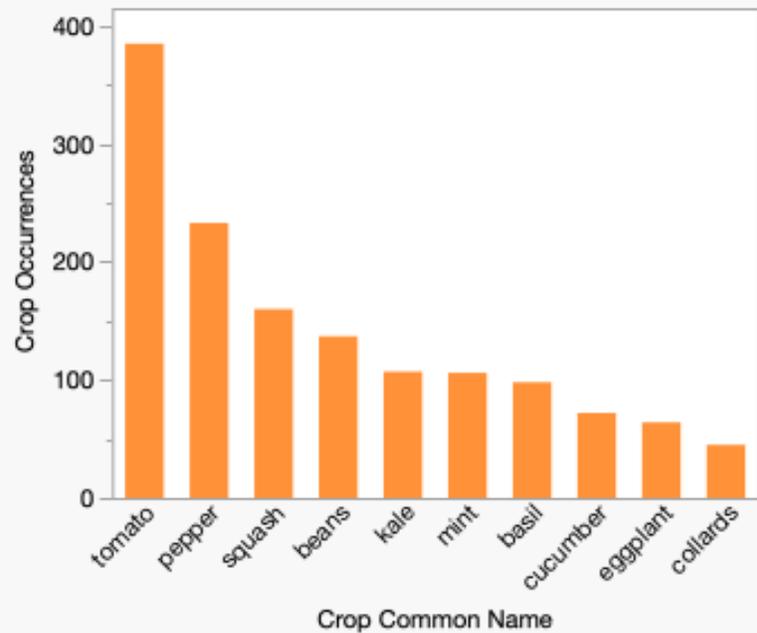


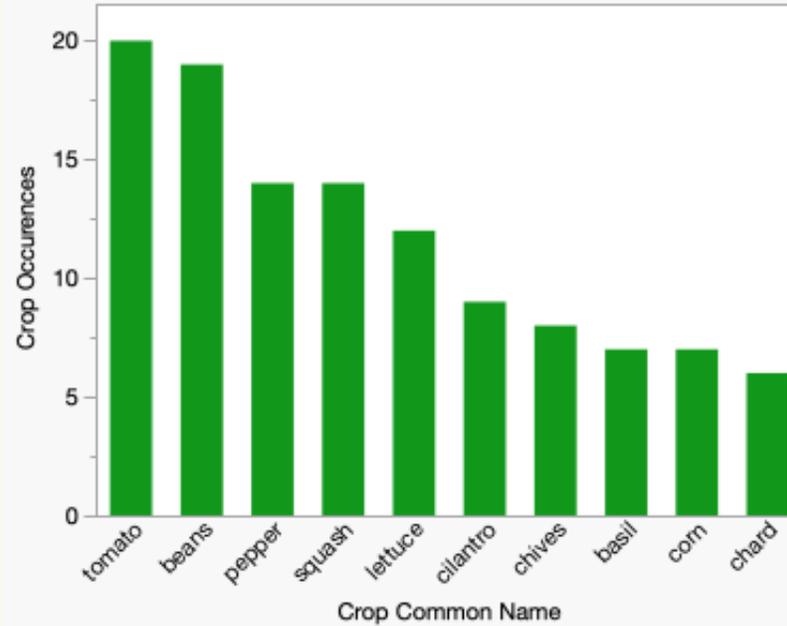
Figure 3. Total number of unique plants (crops, ornamental plants, and weeds) across the five plots sampled in each garden in 2024.

# 1.3 Most common crops

2021



2022



2024

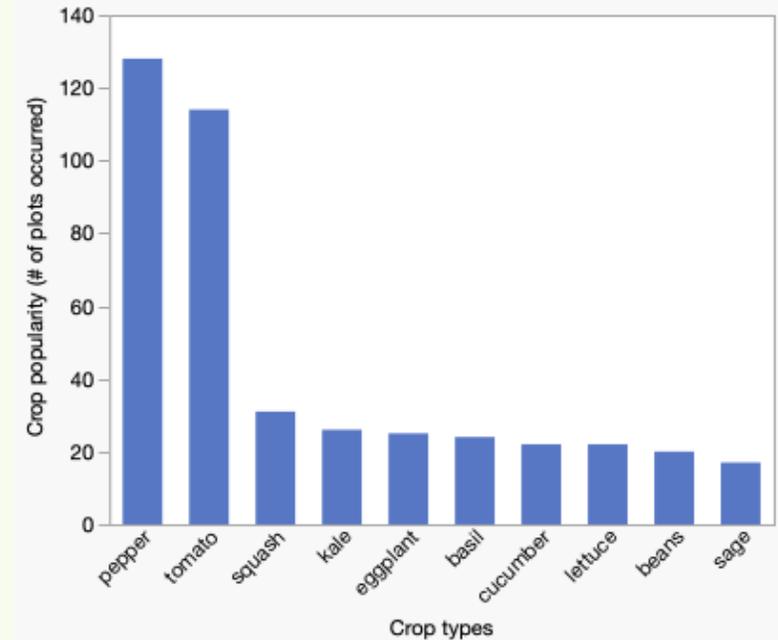


Figure 4. Top 10 crops in the three survey years

# 2022

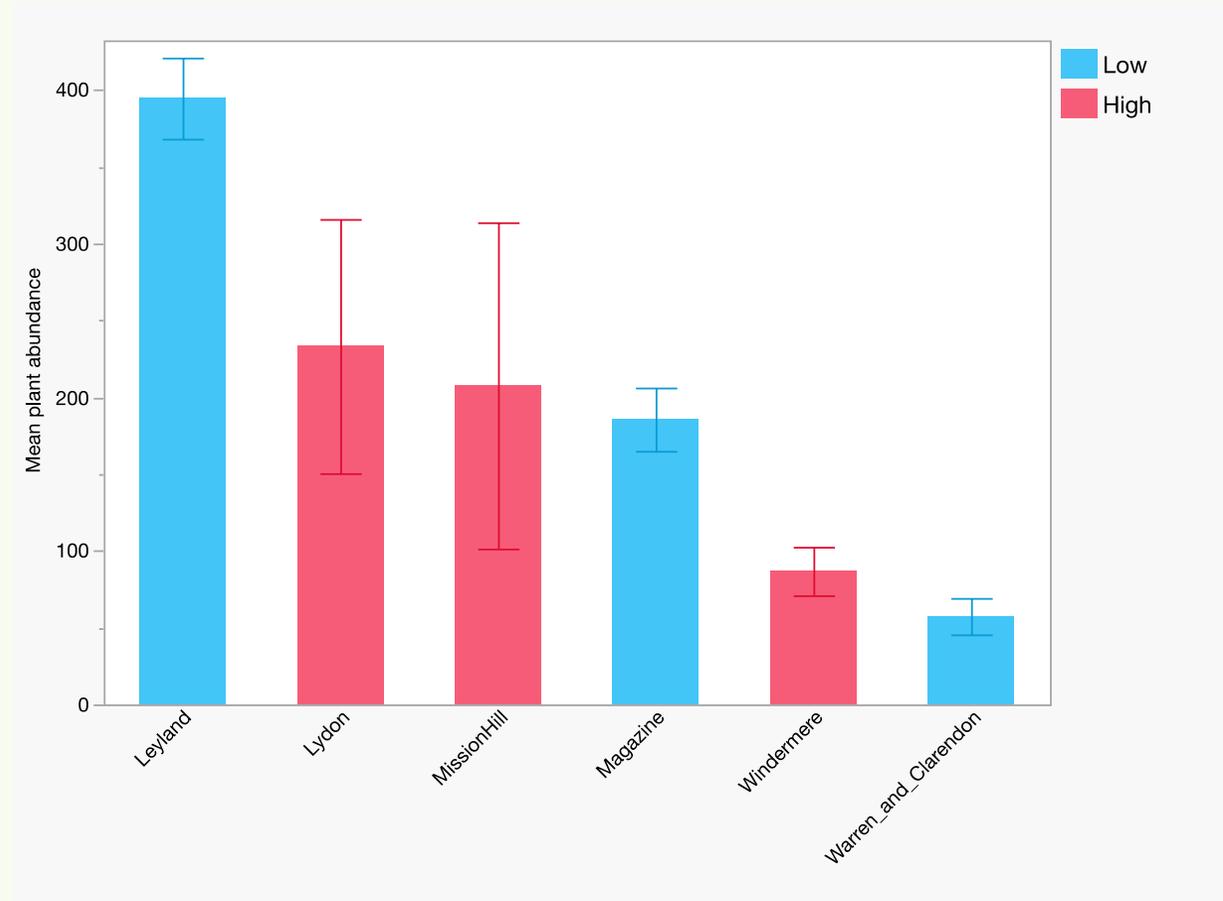
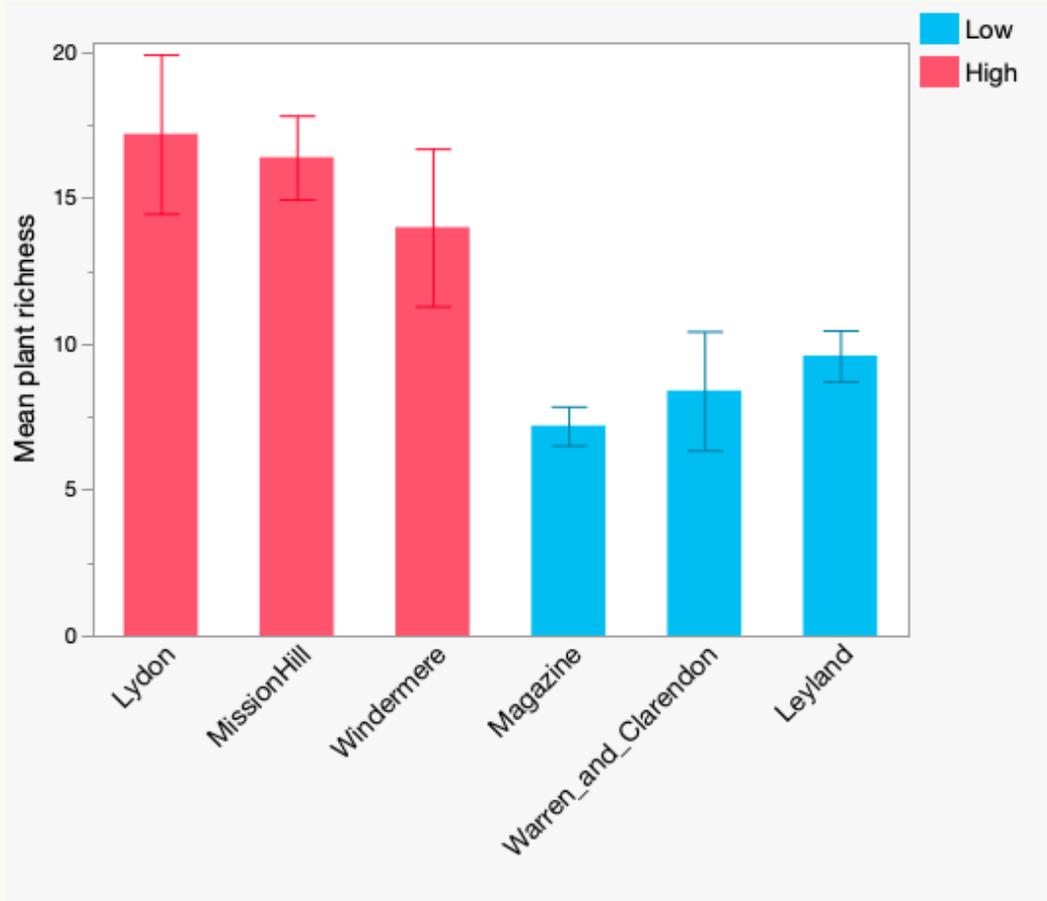


Figure 5. 2022 crop richness and abundances in the 6 gardens.

# Survey of insects and other arthropods

2022

# Arthropods in urban community gardens

## Common arthropod

- Pollinators
- Herbivores
- Natural predators



## Common resources

- Nectar and pollen
- Crops
- Complex vegetation structure



# Methods

## Arthropod Sampling

- Flower visiting insects sampling
  - Pan traps
- Soil invertebrates sampling
  - Pitfall traps

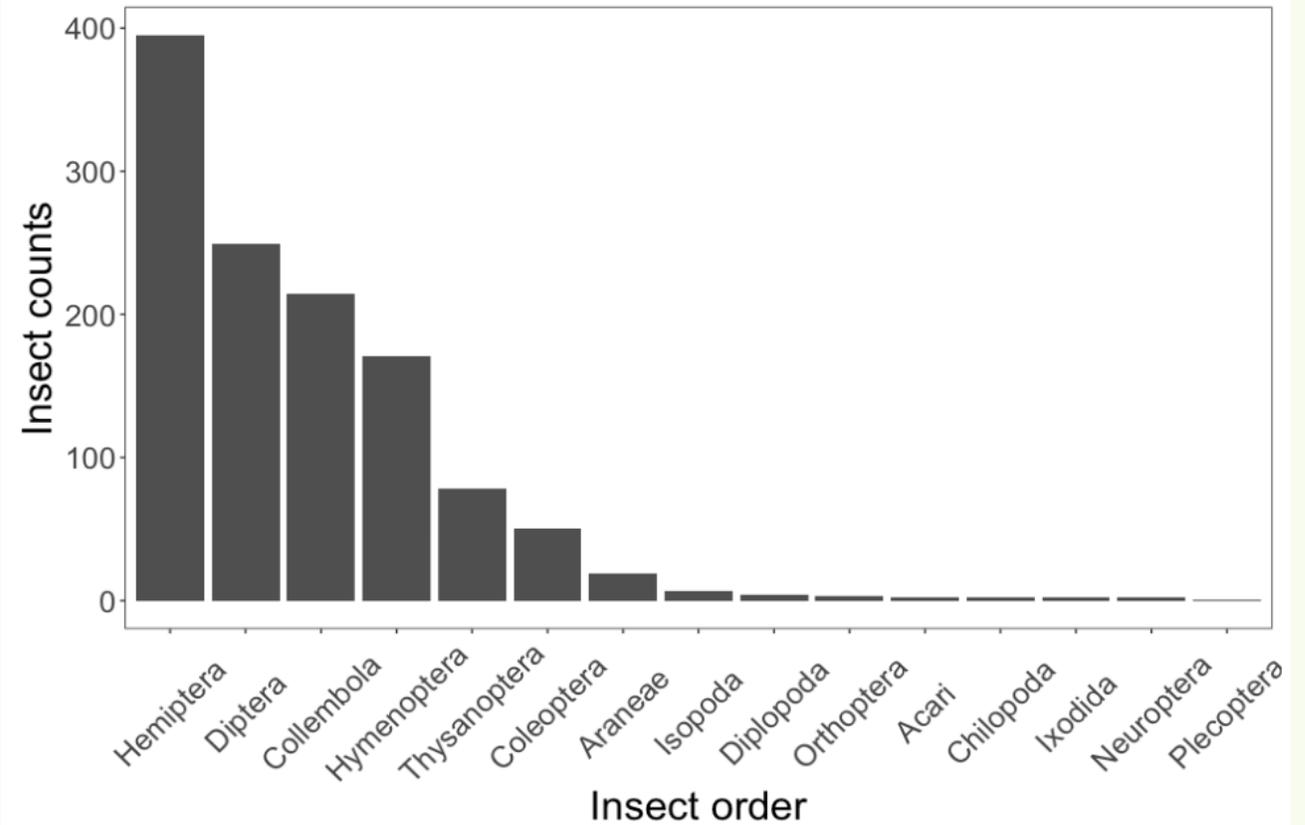


# Insect and arthropod orders

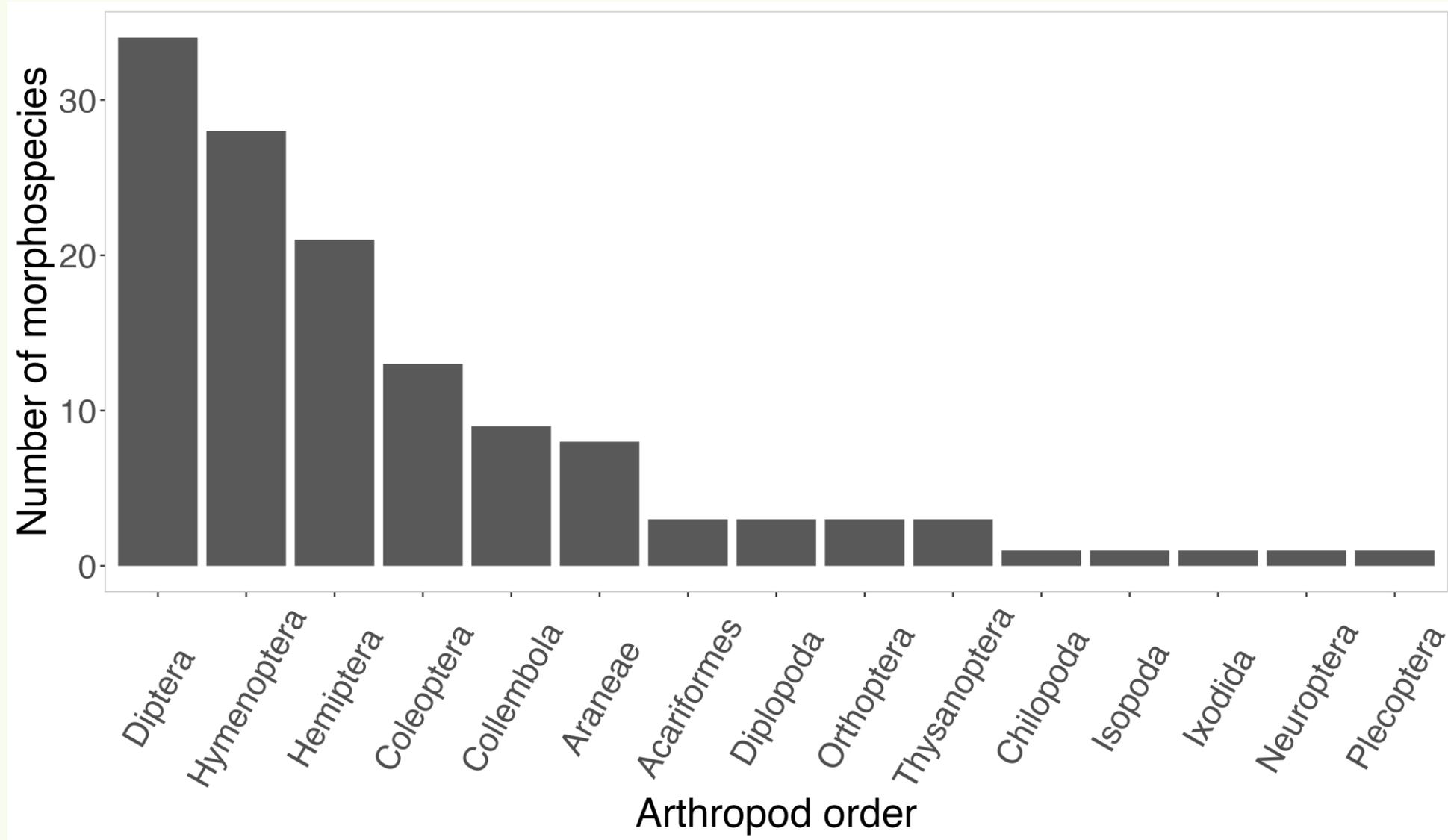
Total of 1199 arthropods

15 unique orders

134 unique morphospecies



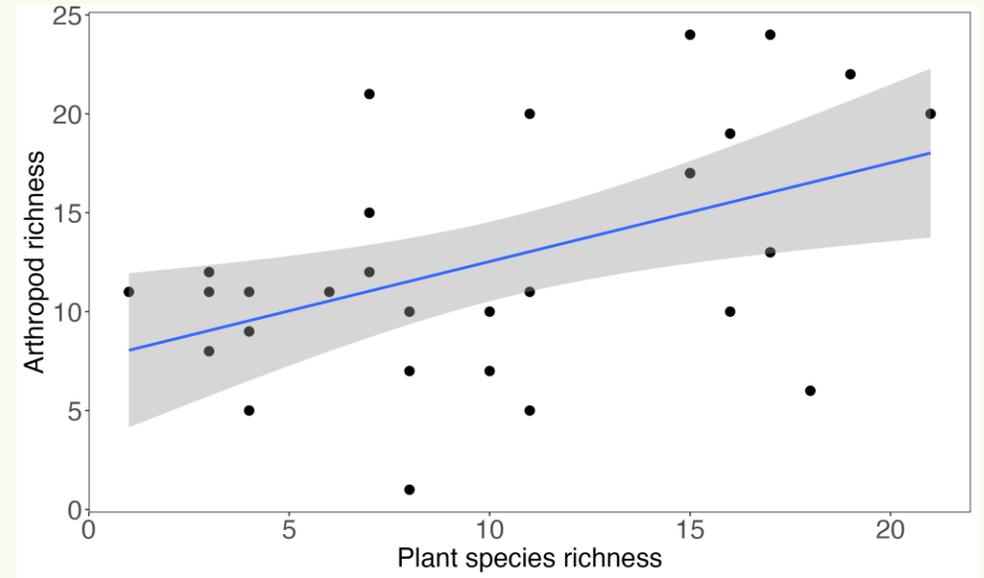
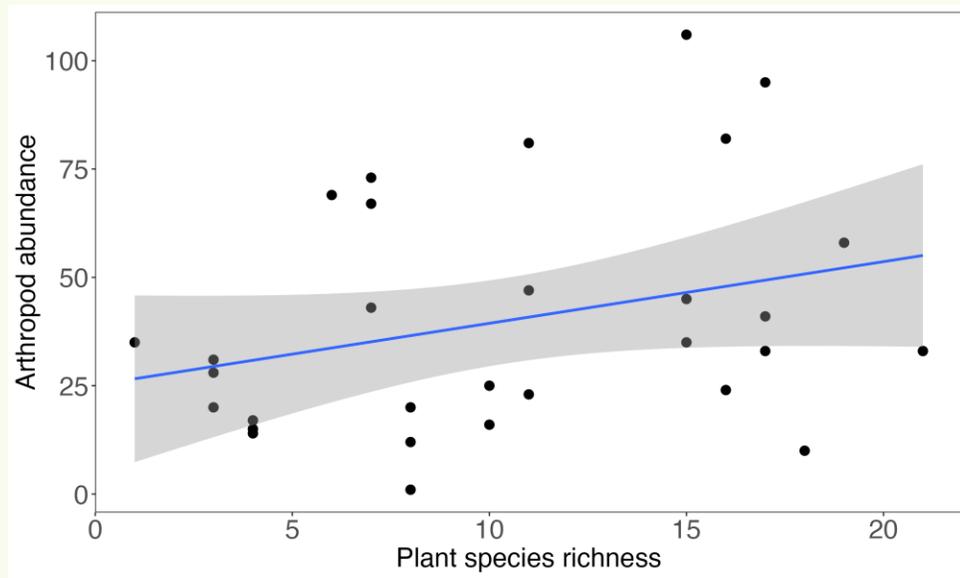
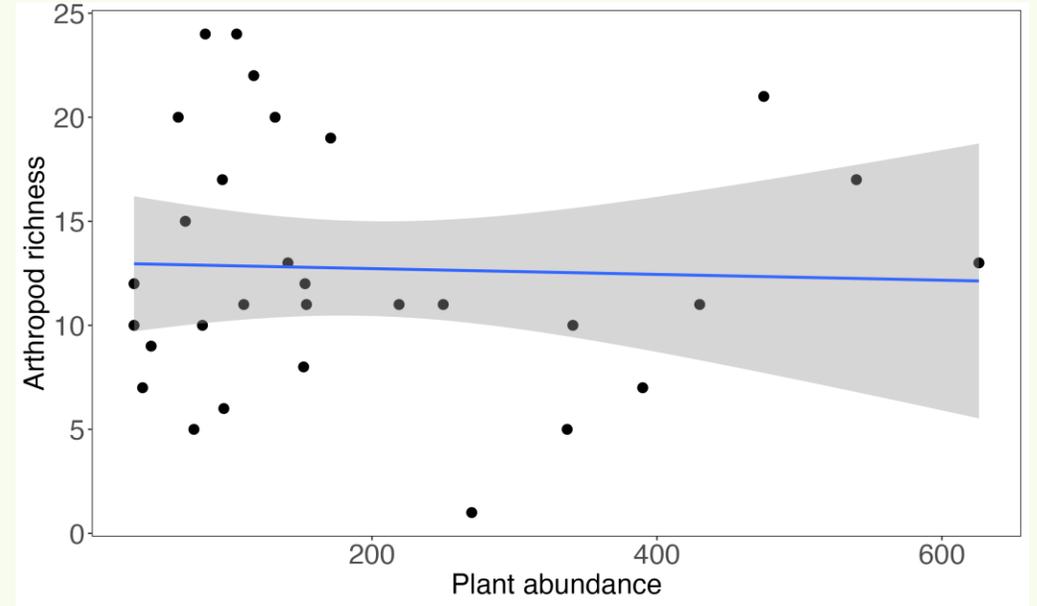
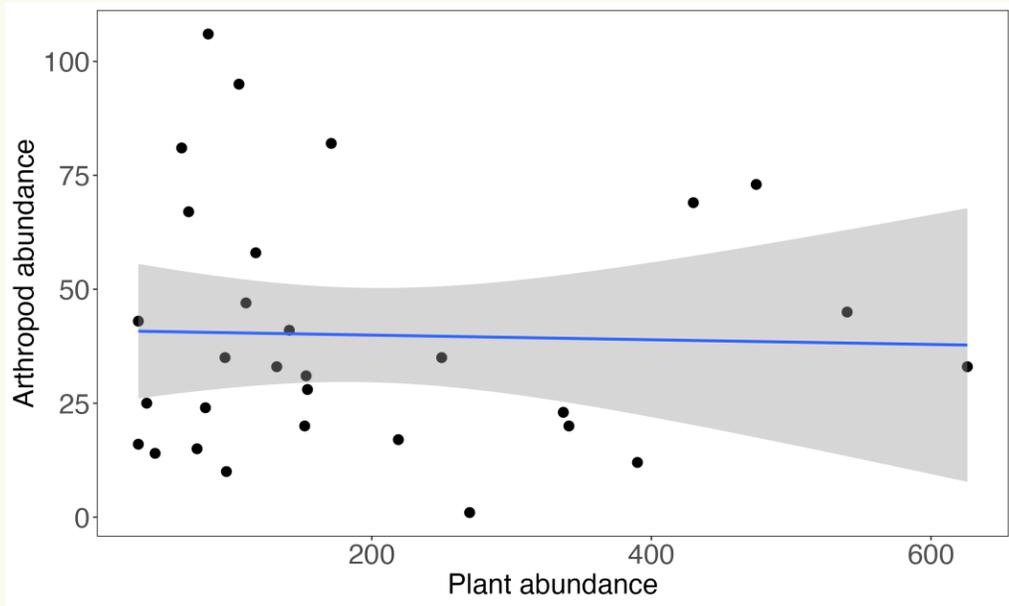
# Number of morphospecies in each order



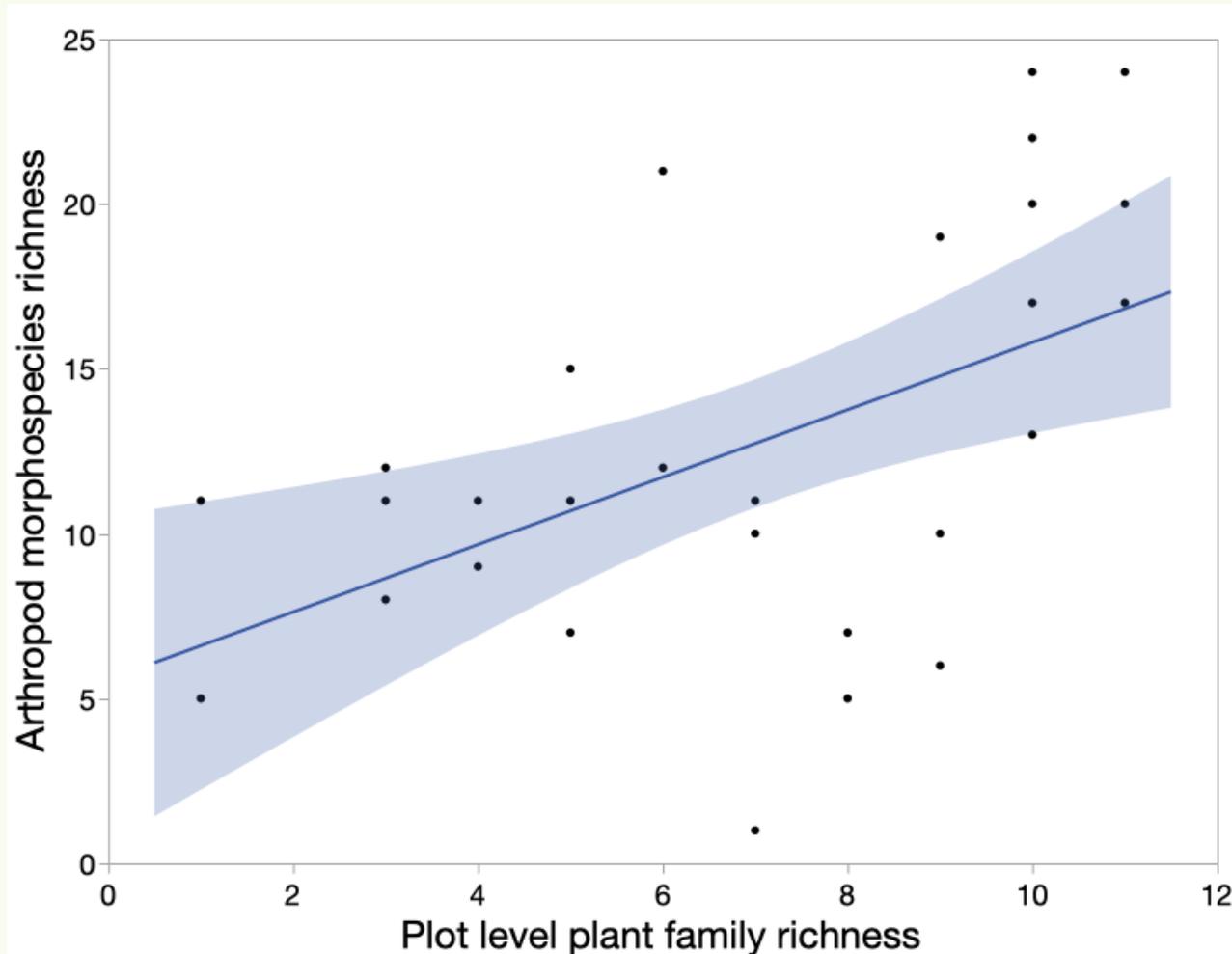


# Preliminary results



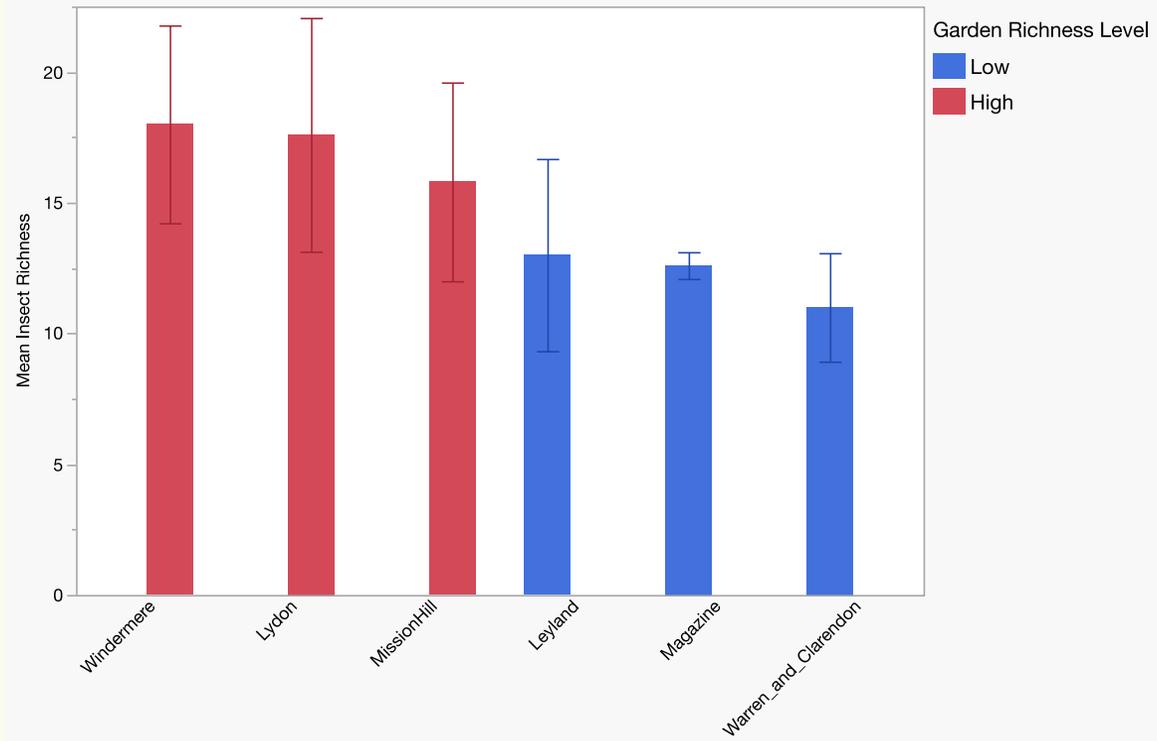


# Arthropod community and plant community

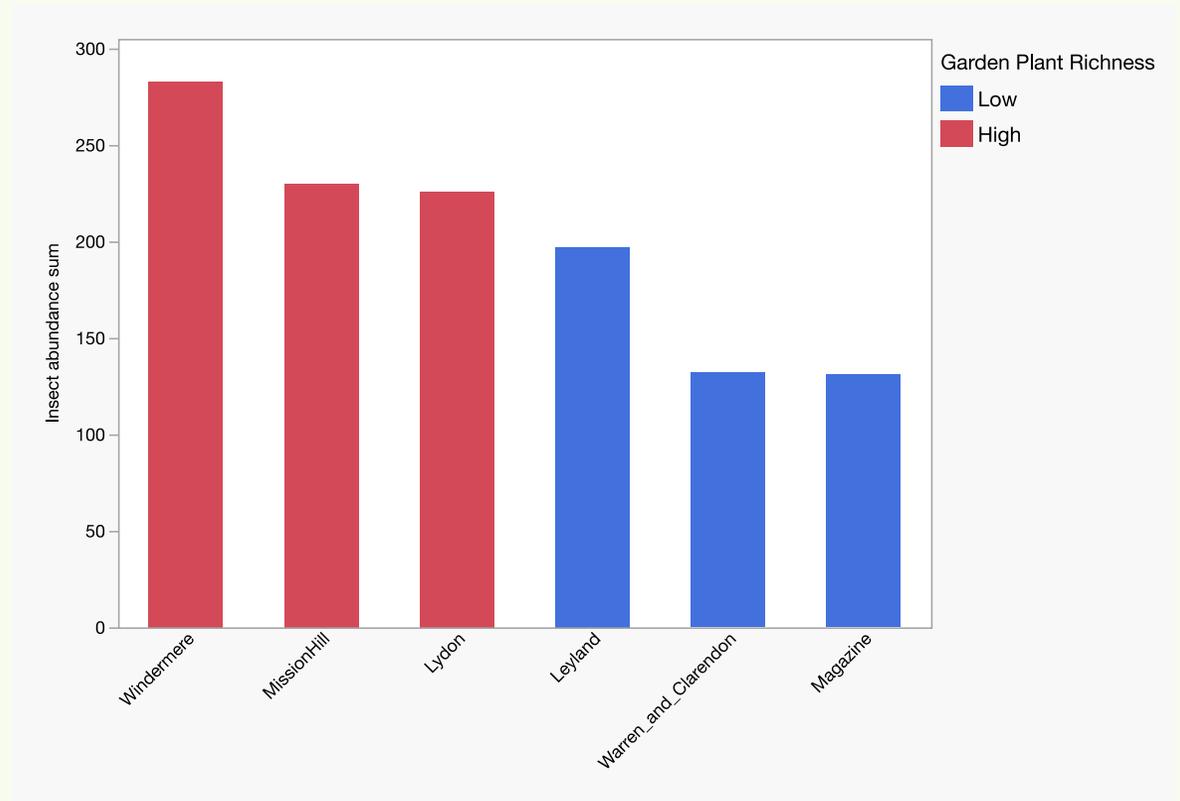
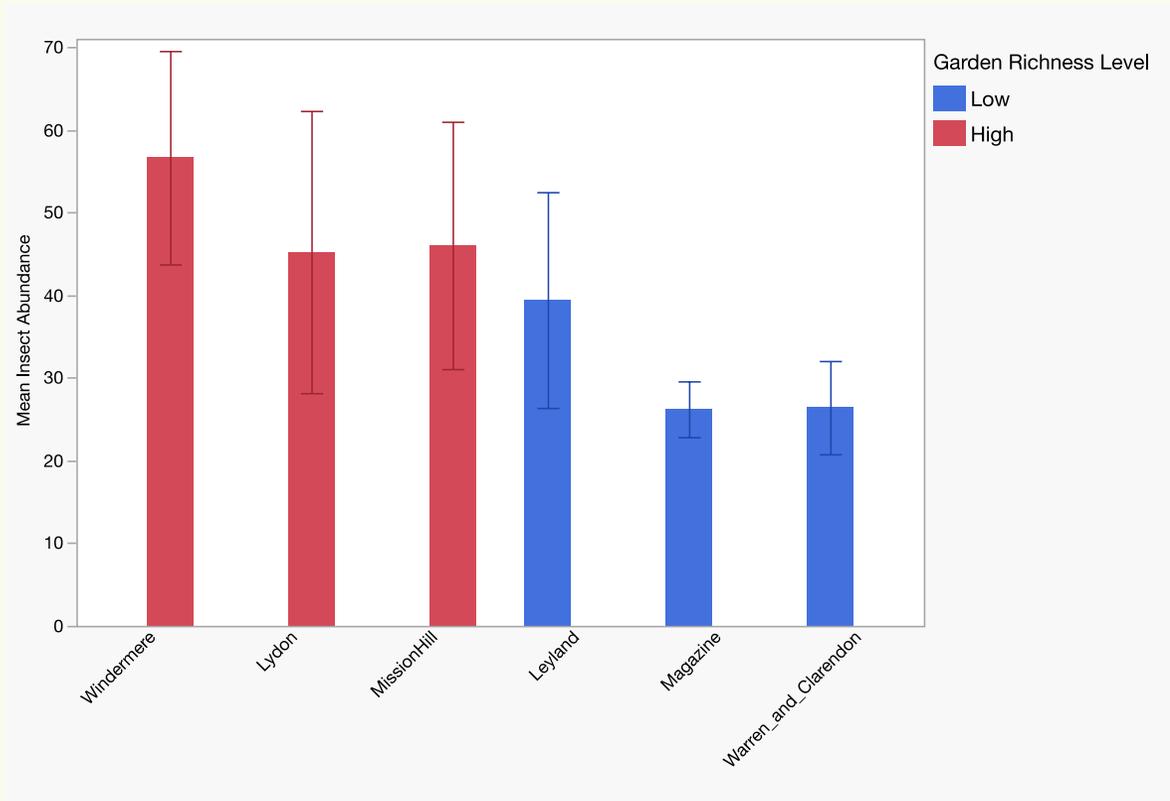


- Arthropod richness and abundance  $\sim$  plant richness at the plot level
  - With the strongest effect at the family level
- Plant abundance is not a strong predictor of arthropod community

# Insect richness



# Insect abundance



# Insect diversity

