Pollinator diversity in green spaces

By Emma Plant

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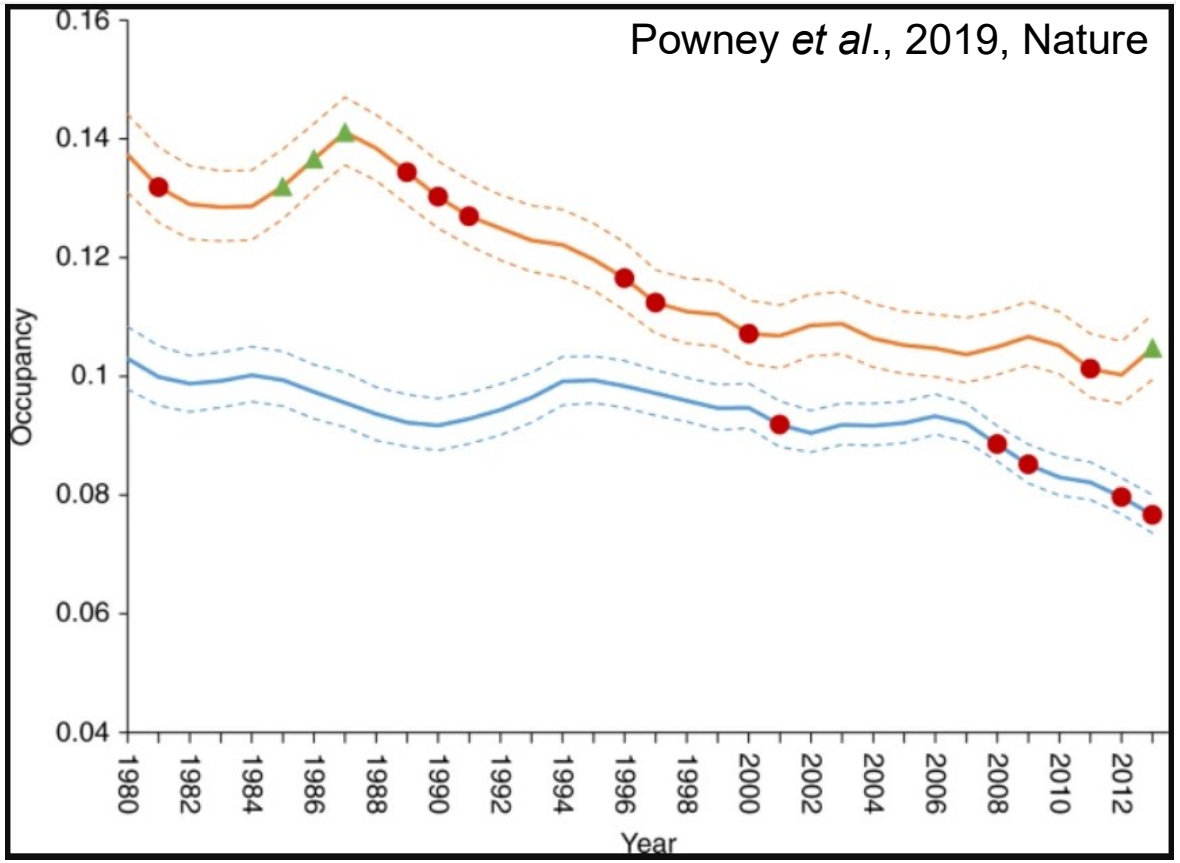
The GALLANT project

- Glasgow as A Living Lab Accelerating Novel Transformation
- Partnership between the University of Glasgow and Glasgow City Council
- Climate resilient city

Natural Environment Research Council

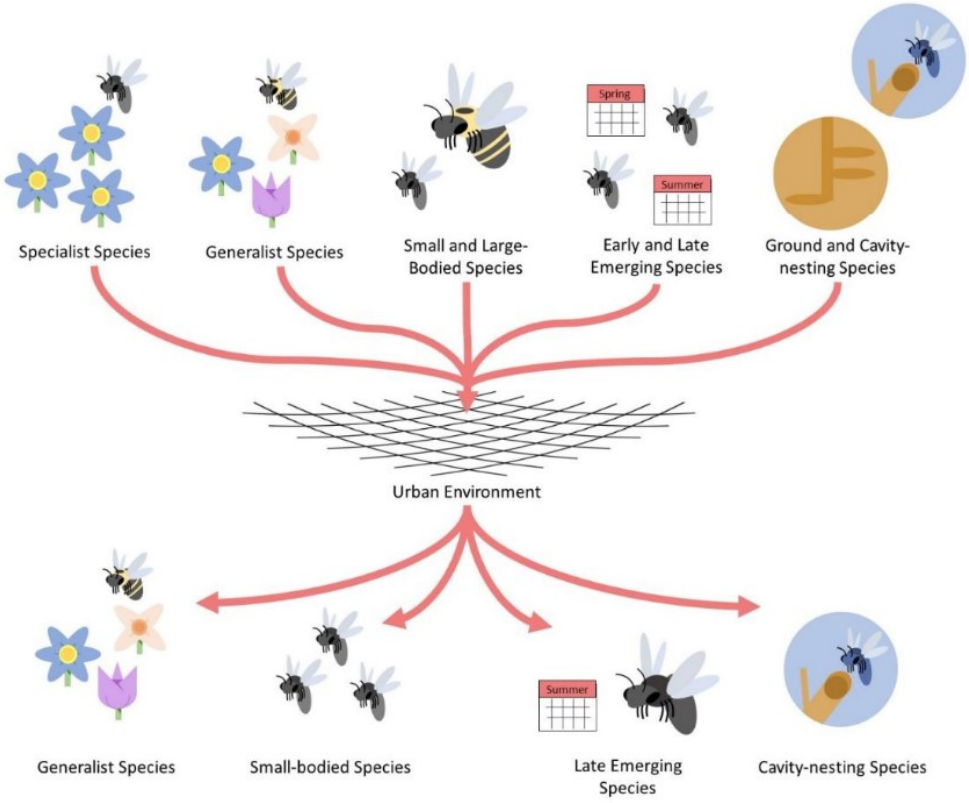
Why are pollinators important?

- Up to 90% of flowering plants are pollinated by animals
  - A third of our crops rely on animal pollination
- Bees and hoverflies have experienced a 24% decline
- Threats from climate change, pesticides, invasive species and land use change



Threats to pollinators in cities

- Urbanisation sees the conversion of natural habitats to urban ones which are dominated by impervious surfaces.
  - Novel environmental pressures in cities
- Lower diversity of certain pollinators in cities compared to natural areas



Types of pollinators in UK gardens

Honeybee: 1 species

Bumblebees: 24 species

Solitary bees: ~250 species

Hoverflies: ~280 species

Butterflies: 59 species, moths: 2500

Habitat creation

Bee hotels

Bee banks

Hoverfly lagoons

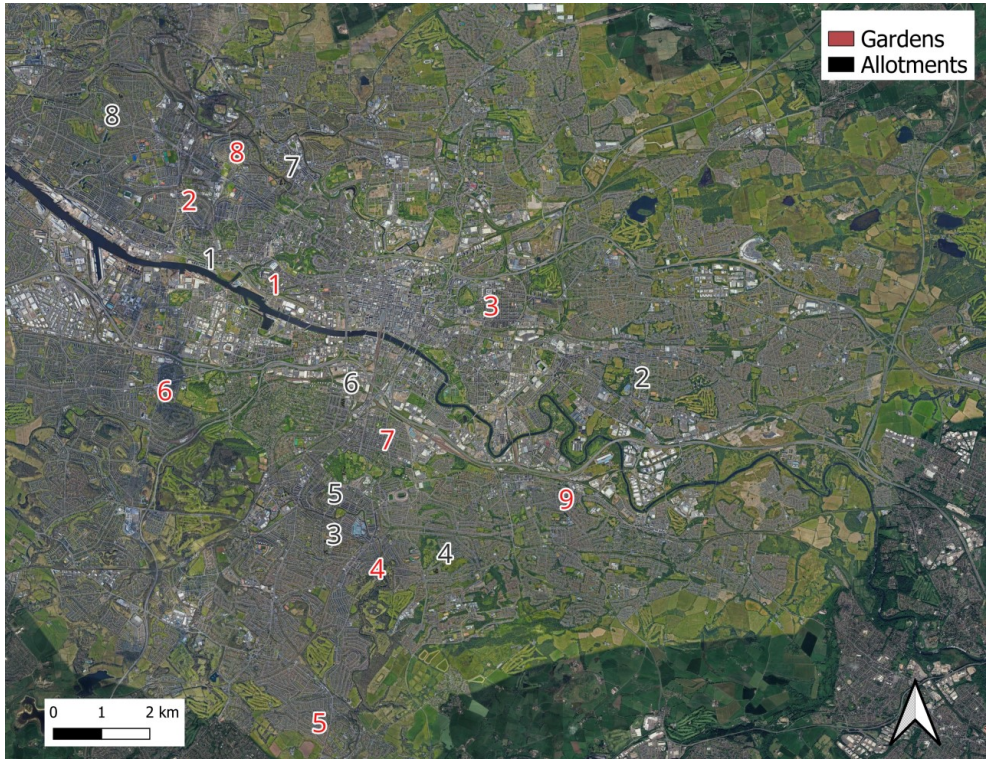
Larval food plants

Flower diversity

- Increase the diversity and abundance of plants
- Open flowers, umbels and tubular flowers
- Favour native plant species
- Be aware of invasive plant species

My research

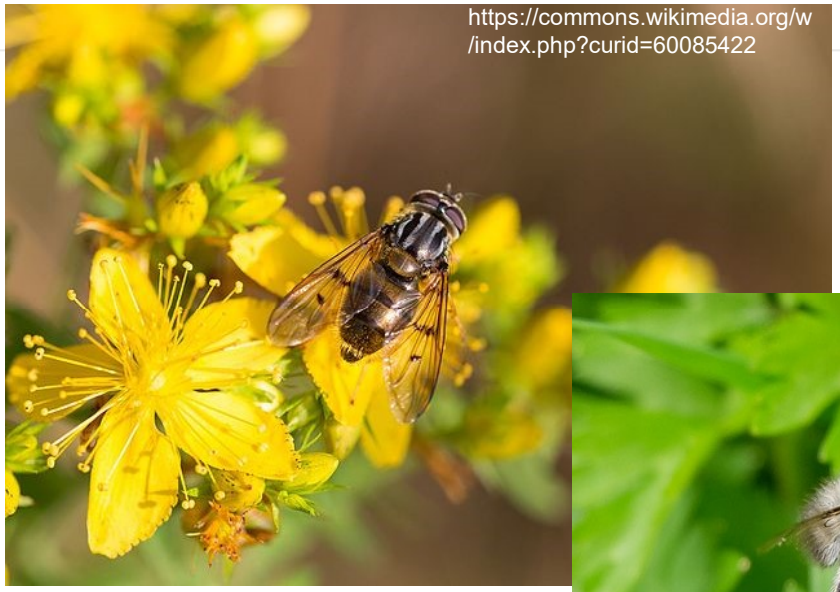
- Compare pollinator diversity between green spaces (gardens and allotments)
- Assess what influences pollinator diversity in a green space
  - Management, temperature, light, plant communities, surrounding landscape
- Determine whether pollinators have preferences for native or non-native plants



Kirklee allotment pollinator species

- 56 species found at Kirklee
  - Out of 90 species across all sites
- 856 individual pollinators
  - Out of 6942
- Most abundant pollinators
  - Common carder bumblebee (187)
  - Honeybee (108)
  - Buff/ white tailed bumblebee (92)

New species for Glasgow

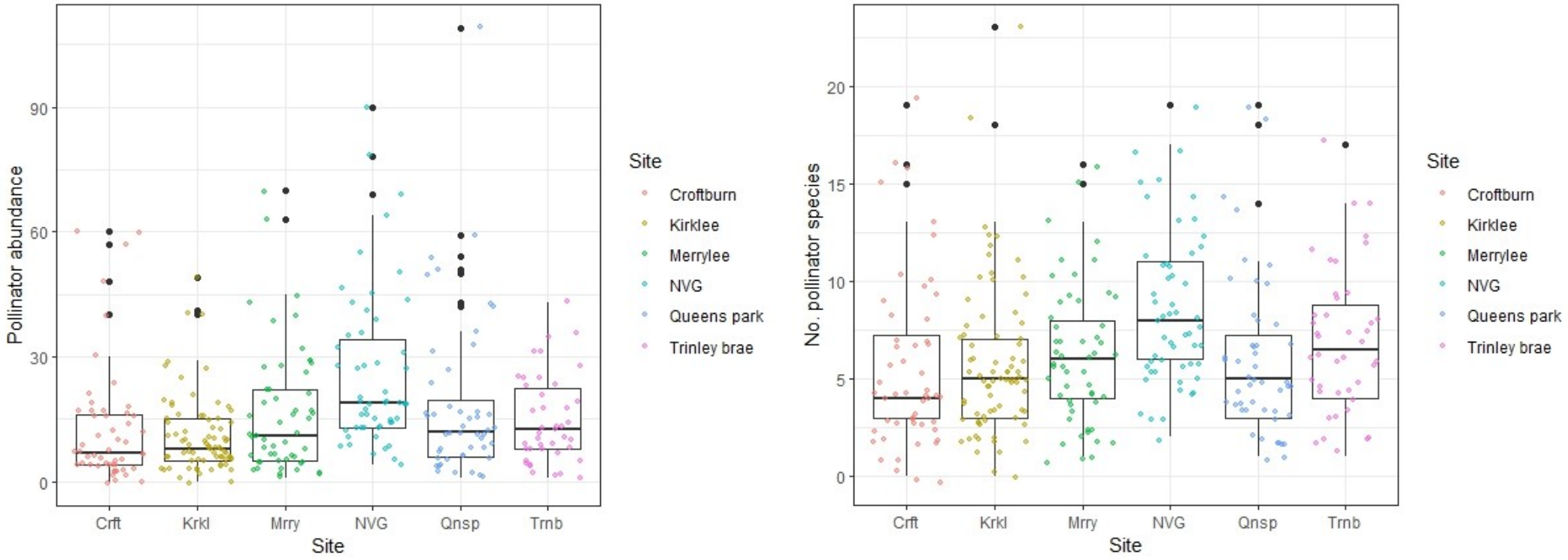


Ferdinandea cuprea

Anthophora plumipes, Hairy footed flower bee

Chrysotoxum festivum

Pollinator comparisons



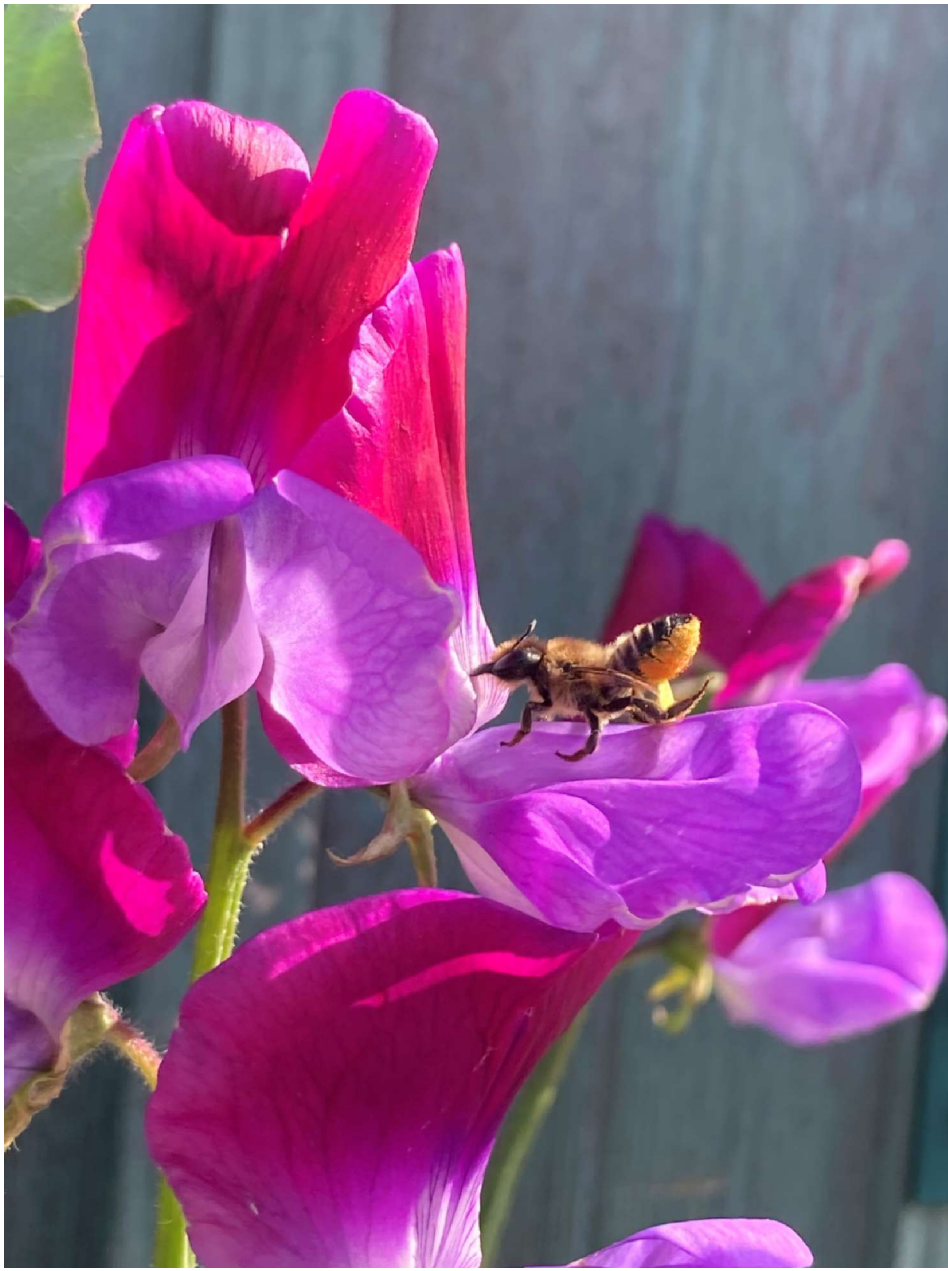
- Each point represents total abundance or species richness in one month, at an individual plot

Plant species

Month	Plant	Abundance of pollinators	Species richness of pollinators
April	Currants	29	5
May	Brambles	26	6
June	Foxgloves Geranium	24 15	5 12
July	Lavender Oregano Phacelia Comfrey Radish	11 11 11 11 7	5 3 2 2 6
August	Brassica	19	10
September	Nasturtium Brassica	21 16	9 9

Conclusions

- Small changes to green spaces can improve pollinator diversity
- Allotments, including Kirklee, are species rich in pollinators
  - New species
- More analysis to follow on pollinator preferences and comparisons of diversity between sites



Thank you for listening

- Thank you to all the plot holders and garden owners that allowed me to sample for this study
- Questions?