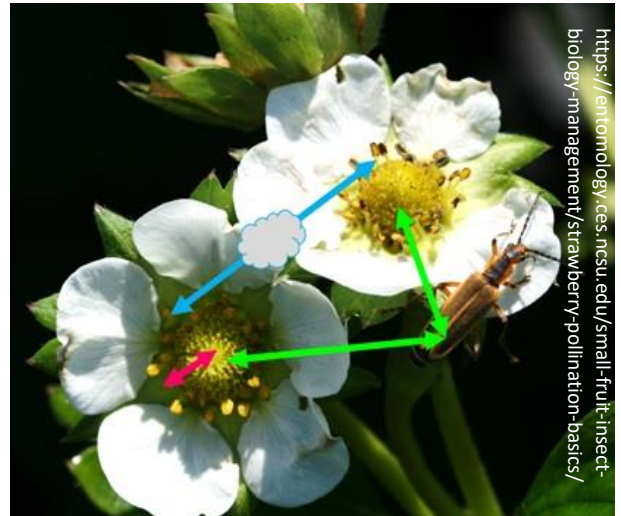


Pollination and plant reproduction as ecosystem function in urban landscapes

Topics: Urban ecology, landscape ecology, pollination, ecosystem functioning, urban ecological restoration, plant reproduction, phytometer experiments



Context

Wild bees and other pollinators belong to a group of insects that are evidently decreasing in their abundance and diversity worldwide. **Urbanization** is one of the major drivers of global land use change which variably influences **the occurrence and diversity** of different groups of pollinating insects. Non the less, cities provide suitable habitats for different pollinator species and can be considered, in some cases, as **refuges**. As urban habitats are oftentimes rare and fragmented in their distribution, the question rises how isolated pollinator populations can be (re-) connected within the urban matrix, which environmental factors play a role in their **movement, distribution and diversity** and how especially **food habitats can be designed or restored** to meet the needs of a variety of different city dwelling pollinators.

Project

In the project of the **“Blooming Bands”**, we are testing a **city-wide blooming-band network** to promote pollinator diversity and movement. We will measure local effects of blooming patches **on wild bees, bumblebees, hoverflies and solitary wasps** within differently urbanized surroundings. Furthermore, the wildflower plots will be examined for their effects on **pollination success** as a major **ecosystem function**.

Thesis: Effects of restored urban roadside green on pollination and plant reproductive success using phytometer plants

Phytometer are a group of plants that are used to measure their **physiological responses to various environmental factors**. Around 80% of all wild plants in the temperate zone are pollinated by insects. As one major ecosystem function, pollination is crucial for sustaining ecosystems, not only in natural but also in urban habitats. To measure **plant reproductive success** and the effects of wildflower patches on **pollination**, phytometer plants will be placed in different

Requirements

- Fieldwork in summer 2021
- Basic knowledge in statistical analysis in R
- Advantageous: Experiences in species identification of plants and/or insects, experiences in GIS applications and analysis
- **Driver’s license** necessary

urban environments as well as on our wildflower plots. **Seed production and fruit set** of different phytometer species will be measured in the lab. The gained data will be analyzed concerning plant reproductive success and plant trait specific responses to different urban landscapes.



Strawberries as an example for a phytometer plant. Without insect pollination, fruits are not well developed. Fruit number and weight are therefore measurements for pollination and plant reproductive success.

Left: Self-pollination, right: wind-pollination

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