



## Engaging communities in learning about pollinators through citizen science

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### Background:

Citizen science is a concept where participants from general public actively help scientists in collecting and classifying data, which leads to creation of much larger datasets that the scientists could assemble themselves. The method is in particularly common in biological and conservation studies. In our study, we conducted a citizen science study within the framework of adult education that was aimed at educating the participants about the importance and diversity of pollinators and climate change, and to conduct an experiment about monitoring pollinator communities of sunflowers.

### Methods:

The study took place over spring and summer of 2022 across Slovenia. First, several workshops were organized to teach the participants to recognize different types of pollinators and to familiarize them with the research methodology. Participants then received sunflower seeds and planted them. When the flowering started, the participants occasionally visited the flowers and recorded the pollinators they observed. They classified them into the following groups: honey bee, bumblebee, solitary bee, wasp, hoverfly, butterfly, beetle, other. They also recorded the time of the day and weather.

### Results:

In total, we obtained over 1800 individual observations and over 5200 pollinators counted at 86 observation sites. The strongest group recorded were the honeybees (57%), followed by bumblebees (16.3%) and wasps (5.8%). Based on the data, we could also determine the effect of the weather, temperature, and geographical location on activities of different pollinator communities. We also considered the biases that can appear in a citizen science experiment.

### Conclusions:

The results of the citizen science study were comparable with the previous studies that were conducted following the methodology used in agronomical and biological studies. We identified the biases originating from people misclassifying particular groups of pollinators and biases regarding the weather and the geographical distribution. From the perspective of the participants, the feedback was overall positive, with participants reporting an increased awareness about pollinators and environment.