

Penetration field preference of pollinators

RATIONALE

The issue of pollinator conservation is a current topic, but there are not any projects showing the impact of a given forage on its penetration by pollinators which is a crucial information for taking the first steps towards protecting their populations. What is more, most projects take for granted that the diversity of species in forage entails an increase in the number of pollinators. This project is a clear confirmation of these relations and shows that not only differences in plants are utterly important, but traits of plants flowering period, construction of flower, the amount of nectar and pollen it provides also should be taken into consideration. Motivation behind the project is to determine which type of forage would be a long lasting and effective food base and how the surrounding space may be revitalized.

Hypothesis: The multispecies field will be penetrated by pollinators more than the monocultures. This forage will be the most effective (providing enough food and long lasting) food base for insects.

METHODOLOGY

- TIME: from 1 April to 8 September 2021, observations were conducted 3 times a day (6 -7am, 12am – 2pm, 4pm – 5pm in all plots)
- PLACE: home garden in Elbląg, Poland; it was consisted of 5 plots (4m² in area): catnip, red clover, *rudbeckia brilliantis*, oilseed rape and multi-species one. In all monoculture stands, species with high honey yield were selected, offering both pollen and nectar, with simultaneous differences in flowering time, flower type, or location of nectaries. Plots were approximately 40 m (+/- 5 m) apart and surrounded by grassland.
- OBSERVATION PROCESS: observations were conducted daily from: 6:00 - 7:00, 12:00 - 13:00 and 16:00 - 17:00 in all plots. These hours were selected because I wanted to observe all types of pollinators. The number of observed pollinators (divided by types) on each plot was recorded.
- CONDUCTING DATA: Results of observations were systematized in the form of bar graphs for each benefit. They present the percentage share of representatives of a given order of pollinators in the plot penetration during particular weeks. After the qualitative analysis (insect order), quantitative analysis was carried out - the number of insects penetrating the benefit. The number of all insects observed on a given benefit were summed up. Observations are intended to show the actual presence of specific pollinating insects in the prepared habitats. Numbers from results were provided with the particular statistics (test t-student, chi-square, etc.)

DATA ANALYSIS AND RESULTS

The use of prepared benefits by all orders of insects taken into account was observed, but to different extent. The limited role of monoculture beneficials as a feeding base in the context of the timing of food availability and the exclusionary effect on the presence of some pollinators types were demonstrated. Plant species provided a potential food base for pollinating insects throughout the observation period. The number of pollinators on multispecies plot was the biggest and accounted for nearly twice of others results.

INTERPRETATION AND CONCLUSIONS

The preference for penetration resulted from:

- the timing of plant flowering
- the compatibility of flower structure and pollinator mouthparts
- the weather conditions

In order to achieve a positive effect, it will be enough if activities connected with construction and revitalization of green areas concern even only their fragments, as it was proved by the conducted observations. The idea of constructing an insect-friendly space should first of all include areas dominated by plants that do not offer any food for insects, e.g. large areas of frequently mown lawns in parks. Huge-scale monocultures should be divided by introduced so-called buffer zones (balks, mid-field woodlots). The proper composition of the multispecies forage should allow creating access to nectar and pollen for different pollinating insects during the whole vegetation period.