



Introduction

This study has the aim of identifying the wild plant species located in the case study area, an urban agro-ecological farm, that could be used to build functional biodiversity "hot-spots", in order to attract and create suitable habitats for predators, parasitoids and pollinators insects in view of conservative biological control and pollination service.

Design of the specific "hot spots" is based on the consideration that some plants have a fundamental role in entomophagous and pollinator insects life as source of protein through their pollen, energy from their nectar, alternative preys and winter shelter (Wäckers & van Rijn, 2012). These roles are synthesized within the sigla SNAP (shelter, nectar, alternative preys), the base of conservative biological control (Snyder; 2019).

Materials and Methods

The study took place in "Spazio Battirame", an agro-ecological farm located in an ex industrial zone of the city of Bologna. Once a week, in the period between November 2020 and November 2021, the area was travelled by walking and the flowery plants sampled and photographed. The followed systematic identification and bibliography research has lead to an evaluation of the plants attractiveness for beneficial insects. Results has been elaborated in order to design three different typologies of functional biodiversity hot-spots.

Results

40 species belonging to 20 different families were identified. Plants mostly belonged to Asteraceae, followed by Fabaceae and Rosaceae families. The 23% of the species were found outside the alleged flowering period, with an anticipation of generally one month, probably due to the urban location (heat island effect).

The plants was selected by using the SNAP theory; as an example, inside the predator's hotspot there are *Capsella bursapastoris* and *Urtica dioica*, two important winter shelters, and *Phacelia tanacetifolia* and *Daucus carota* as pollen (proteins) and nectar sources (fig.3). These different species were also chosen to ensure continuous flowering throughout the year, with a particular attention for plants that flourishes in summer, after the agricultural crop harvest, that is a critic moment for predator insects.

The pollinator hot-spot presents more species in order to supply pollen and nectar also in the first part of spring, a key period for solitary bees. *Carduus acanthoides*, *Papaver rhoeas* and *Daucus carota* are very important flowers for pollinators alimentation.

The last hot-spot is a mix of the first two.

Conclusions

The richness of wild flora permits to use spontaneous plants for the construction of functional biodiversity hot-spots. Their real habitat-suitability grade for local beneficial insects need to be tested and evaluated in open field experiments.

References:

- Snyder, W., 2019. *Give predators a complement: Conserving natural enemy biodiversity to improve biocontrol*. Biological Control, Volume 135, pp. 73-82.
- Wäckers, F. & van Rijn, P., 2012. *Biodiversity and Insects Pests: Key Issues for Sustainable Management*. New York: John Wiley & Sons.



Fig.1 Spazio Battirame area



Fig.2 Flowering plants found in the area



Fig.3 Example of hotspot of the first type

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