

Predator-prey relationships in NOcsPS winter wheat cultivation systems

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Introduction

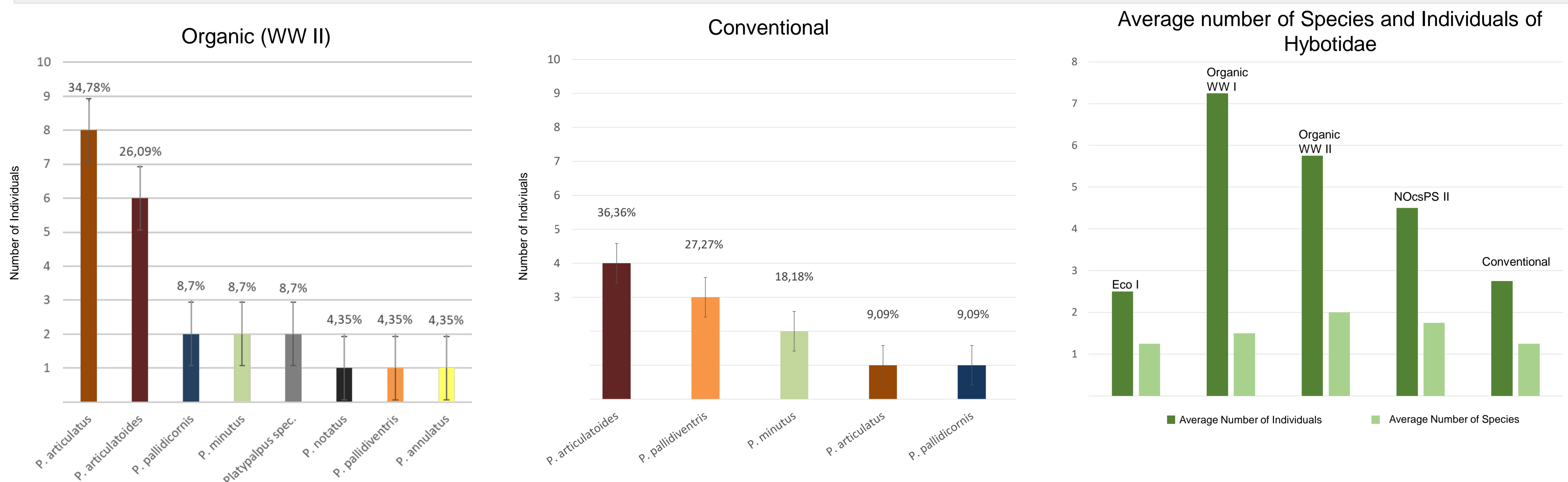
- Can the avoidance of synthetic pesticides stabilize or increase the functions of predator-prey relationships?
- Considering 5 Bioindicators: Syrphidae, Asilidae, Hybotidae, Coccinellidae and Apoidea
- Are there additional effects through the form of fertilization and crop management (single grain deposit versus normal sowing)?

Material and Methods

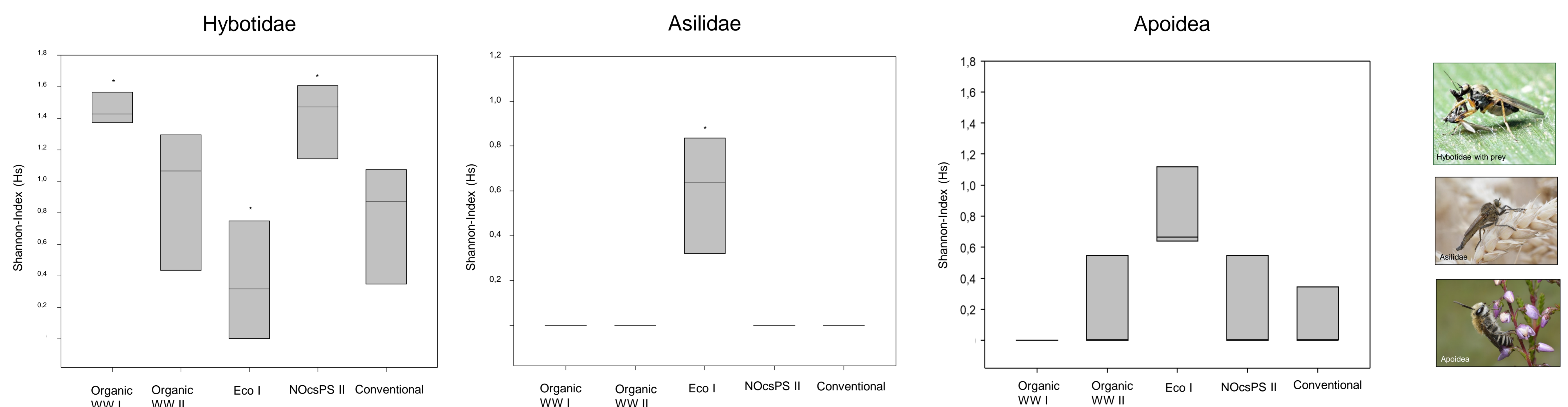
The experiment was set up as a randomized block design in 2019. It consists of five variants (Organic Winter Wheat I, Organic Winter Wheat II, Established Organic since 1995 (Eco I), NOcsPS II and Conventional) with four repetitions each. The entomological investigations are carried out with sweeping nets, elector traps, yellow bowl traps and soil activity tests. Sampling takes place from the beginning of May to the end of June. The trapped insects are determined taxonomically. In addition to comparing the arthropod biomass and insect numbers, the samples are compared with regards to the diversity (Shannon Index, Evenness) of different taxocoenoses. A taxonomic determination of all caught insects is carried out at family or genus level.

First Results

Dominance structure of dance flies (Hybotidae) (sweeping nets Dahnsdorf) 2020



Shannon Index of Hybotidae, Asilidae and Apoidea (sweeping nets Dahnsdorf) 2020



* = statistical significant (Shapiro-Wilk-Test, $\alpha < 0,05$)

After two years of trials, the effects of cultivation intensity on biodiversity parameters are still inconsistent. However, the absence of pesticides tends to have positive effects on biodiversity in general and more stable predator-prey relationships. The group of robber flies benefits statistically significant from extensive, organic farming and builds up stable predator populations in wheat. Wild bees benefit from the food supply of flower-rich weeds in organic wheat and appear in higher numbers of species and individuals.

Conclusion and Perspective

The results will allow statements about the influence of wheat cultivation systems of different intensity as well as fertilization methods and sowing methods on the abundance, diversity and function of predatory flies and their prey organisms in the wheat cultivation system. This predator-prey relationship is an indicator of the impact on functional biodiversity in wheat farming systems.

