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Comparison of flying and soil invertebrates' biodiversity on meadows with or without horse grazing

Ghylène Goudet¹, Fabrice Reigner², Massimiliano Beltramo¹

¹ PRC, INRAE, IFCE, CNRS, Université de Tours, 37380 Nouzilly, France

² PAO, INRAE, 37380 Nouzilly, France

By grazing preferentially some spots, horses create patches of short grass and tall vegetation in which they concentrate their dungs. This leads to habitat heterogeneity that could increase grassland animal biodiversity. This pilot study aimed to test a method to compare, using non-lethal protocols, invertebrates' biodiversity on meadows undergoing or not horse grazing. This 2-years study was performed in our experimental farm facilities using one-hectare paddocks with meadows 5-years-old and similar bordering environment. Two paddocks were grazed from April to November by 6 pony mares each and 2 paddocks were not grazed. For bees monitoring, 2 trap nests of 32 tubes each were placed at paddocks' edge. Nest occupancy was monitored by counting sealed tubes from March to October. Butterflies were monitored once per month from May to September by recording all butterflies in a 5×5×5m cube around the observer during a 10-min long transect. To monitor soil invertebrates, 3 wooden boards of 30×50cm were laid on the ground, 2 at the edge and 1 at the center of the paddock. Once per month from March to November all invertebrates present under the board were identified and assigned to 3 categories: predators (carabid beetle and spiders), herbivores (mollusks), and detritivores (earthworms, millipedes, woodlouse, ants).

The nests were occupied by solitary bees in the genus *Osmia* and *Megachile*, and the number of sealed tubes was different between grazed and non-grazed meadows. Butterflies from HesperIIDae, Pieridae, Lycaenidae and Nymphalidae families were observed. Their abundance and diversity tend to be higher in grazed meadows. The abundance of predators was similar between grazed and non-grazed meadows, but the abundance of mollusks and detritivores tend to be different. These tendencies should be considered with caution because of the short period of observation and the limited number of meadows included in the study. Collection of additional data is in progress to consolidate the data and confirm the impact of horse grazing. In spite of this limitation, this pilot study shows that wild biodiversity can be studied using non-lethal protocols on horse-grazed meadows and that horse grazing may influence some invertebrates groups.

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Objet : Letter of receipt EAAP Annual Meeting 2023, Lyon, France

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Thank you for submitting your abstract, we have received your contribution for EAAP Annual Meeting 2023, Lyon, France in good order.

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Preferred session: 70: Role of the horse in farms and territories

Abstract text:

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