



Conference Abstract

Pest and weed seed predation in field defects within oilseed rape crops

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Abstract

Non-crop habitats can act as refuge for insects in agricultural landscapes and increase ecosystem services (ESs) in neighboring arable fields. Among the different types of non-crop habitats, field defects are temporary patches where sown plants are poorly developed and other plant species emerge. These defects can be common and large in years with extreme weather conditions. However, their relevance as habitat for beneficial insects and ESs provision is unknown. Here, we quantified two ESs (pest and weed seed predation) in field defects within oilseed rape crops and related ESs levels with the activity-density of ground beetles and temperature. In 10 fields, we used artificial caterpillars made of plasticine and seed cards of two weed species (*Taraxacum* sp. and *Stellaria* sp.) to quantify ESs in two sampling periods (spring and summer) and in three habitat types: field defects, standardly grown crop (field interiors) and crop-defect boundaries. Ground beetles were sampled using pitfall traps and classified into feeding guilds and body size classes. Insects and mammals were the main pest predators and predation increased in summer, but did not differ among habitats. Seed predation rates for both species were significantly higher in summer. Predation of *Taraxacum* seeds was higher at field interiors, whereas

predation of *Stellaria* was significantly higher at field interiors and defects, compared to crop-defect boundaries. Insect predation increased with the activity-density of medium and large carnivorous carabids, whereas seed predation for both weed species was positively related to the activity-density of medium-sized herbivorous carabids. Finally, temperature was negatively linked to predation of artificial caterpillars and seeds of *Taraxacum*.

Keywords

Biological control; Ephemeral habitats; Ground beetles; Non-crop habitats; Oilseed; Sentinel prey

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