

Effects of landscape context on different groups of cavity-nesting bees, wasps and the wasps' spider prey

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Abstract

In this study our aim was to assess the diversity and distribution of cavity-nesting solitary bees, wasps and the spider-hunting wasps' prey with regards to the influence of landscape context in a study area with relatively low human disturbance. The study took place between May and August 2018 at eight study sites in the hilly-mountainous central part of Romania, where the majority of the landscape is used for extensive farming or forestry. During the processing of the trap nest material, we recorded several parameters regarding the nests of different hymenopteran groups, the spider prey found inside these nests, and also tested the influence of the landscape structure surrounding the sites on both hymenopteran groups and spider prey. The majority of nests was built by the solitary wasp group of Trypoxylon, followed by Dipogon and Eumeninae. Solitary bees were much rarer, with Hylaeus being most common group. The groups showed partially differing size preferences concerning the diameter of the occupied reed stalks. In the nests of Trypoxylon we predominantly found spider prey from the family of Araneidae, followed by representatives from the families of Linyphiidae and Theridiidae. In contrast to Trypoxylon, the wasp group Dipogon preferred spider prey from the family of Thomisidae. Concerning the hymenopteran groups, significant effects of landscape structure were found on the number of both nests and brood cells of Eumeninae and on the number of brood cells of Hylaeus, Osmia and Trypoxylon. We also found that the diversity of Trypoxylon spider prey was significantly positively affected by an increasing proportion of grassland and negatively by an increasing proportion of woodland. Altogether, our study presents several new aspects concerning the diversity and distribution of solitary bees, wasps and the spider-hunting wasps' prey and also the effects of landscape context on these groups.

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