Crop and urban systems

To root or not to root? Proximate factors that contribute to wild boar selection of rooting sites in agricultural landscapes

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One species that often comes into conflict with humans is wild boar (*Sus scrofa*). In the last decades, various anthropogenic changes in the environment have improved habitat conditions for wild boar, causing an increase in the abundance as well as damage caused by the species in most of its range (including Slovenia). In order to design effective strategies and measures for controlling agricultural damage caused by wild boar, we need to identify and better understand the influential factors, affecting the incidence and degree of damage. One of behavioural characteristics of the species is rooting, which causes the most damage in agricultural areas, and with increasing populations and proximity to humans, wild boar is expected to come into conflict with humans more and more frequently.

We analysed the relationship between damage caused by wild boar rooting and vegetation, soil characteristics, topography, and human disturbance factors. Damage data were collected over two periods: 2000-2008 and 2020-2022. We examined impact of set of environmental/population variables, including perceptual variables in the form of the proportion of urban, agricultural, grassland, forest and other land cover in 1 km and 3 km radius around damage locations. We used generalized regression model, Maxent and generalized linear mixed effect models (GLMMs) to estimate the influence of particular variables in prediction of rooting probability. Furthermore, we examined levels of organic C, total N and some other parameters in soils on rooted locations as well as presence of dominant plant species and their underground parts (root types, stolones, bulbs, and tubers).

Examined models showed that 2-3 environmental/population variables per model had the most important role on the occurrence of wild boar damages in the agricultural land: (i) density of wild boar harvest, density of feeding places (proxies for wild boar population density), (ii) the length of forest edge and density of forest cover (main habitat appearance), and (iii) human footprint index (presence of human disturbance). Damages on grassland occurred in parts of meadows where levels of organic carbon and total nitrogen were significantly higher in comparison with parts of meadows where rooting was not present.