

Does agricultural management promote Swiss agricultural priority species? A spatial approach.

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European biodiversity has been shaped by agriculture. However, intensified agriculture has severely affected biodiversity, as many priority species depend on extensive land use and mosaic structures. Different payment-based biodiversity-promotion-schemes have been implemented to combat biodiversity losses on various spatial scales. Nevertheless, as agricultural land surface is decreasing, the conflict of interest between efficient food production and habitat quality for biodiversity is increasing in farming landscapes. One approach to preserve priority species, can be to adapt agricultural management regionally. In this Swiss-wide study, we used a life-cycle-assessment method to assess the direct impacts of field-based management on birds/butterflies, as indicator species groups (map A). We also used stacked species distribution models of agricultural priority species to estimate their theoretical distribution potential (map B). Using spatial hotspot analyses, we were able to determine significant hot-/ and cold spots for both maps and assess their spatial overlap. The result is a high-resolution Swiss-wide spatial analysis of the potential of agricultural land-use management to support Swiss agricultural priority species realise their potential distribution. Our results highlight areas with high or low potential for agricultural priority species, combined with the impact of the respective land management on the different indicator groups. This allows for spatially explicit comparisons across regions and land management, to identify areas where land-use management should be adapted. Optimised land use of agricultural land can help to improve the status of the declining species in the future.