BESTMAP

BEHAVIOURAL, ECOLOGICAL AND SOCIO-ECONOMIC TOOLS FOR MODELLING AGRICULTURAL POLICY

Biodiversity and Agri-Environmental Practices in BESTMAP case studies

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Background

In recent decades, biodiversity has been in decline in Europe, due to the intensification of land-use for commercial agriculture and the diminishing role played by traditional farming practices. The European Union is committed to tackle negative impacts on biodiversity resulting from intensive farming practices through its Common Agricultural Policy (CAP), which provides subsidies and other support to farmers. In particular, some of these subsidies are payments to farmers for the enhancement of biodiversity and the implementation of wildlife-friendly landscape preservation measures. Such biodiversity protection funding schemes include various agri-environmental practices (AEP) such as agri-environmental schemes, ecological focus areas and organic farming. AEP account for a large part of the CAP budget, but their effectiveness is consistently questioned, as biodiversity improvements are highly dependent on the type of the landscape targeted. However, previous studies have been conducted at small scales only, and further research on the effects of changes in land management on biodiversity trends has been identified as a top research priority. Further assessment of AEP effectiveness is one of the main objectives of BESTMAP – an EU Horizon 2020 project redesigning rural policies towards sustainable agriculture. BESTMAP has explored the impacts of common AEP practices on biodiversity in five case studies across Europe, focusing in particular on changes in modelled bird occurrence in alternative AEP adoption scenarios. The presence of birds in agricultural habitats is strongly linked to positive environmental characteristics, acting as a good ecological indicator for biodiversity richness of the targeted landscape.

Case Studies and methodology

Comparing the current AEP adoption with a hypothetical scenario excluding all AEPs, BESTMAP used spatially-explicit models to determine the presence of different bird species in different case study areas, namely the Humber region in the UK, the Mulde river basin in Germany, South Moravia in Czechia, Catalonia in Spain, and the Bačka region in Serbia. The AEP assessed included buffer areas, cover crops, extensive grassland management, fallow land, and organic farming. Within each case study, a wide range of farmland types were considered to capture different typologies of agricultural systems, encompassing cropland, grassland, permanent cultures (e.g. orchards and vineyards) and mixed farms. While some studies focused on as many as 38 species of bird, others observed a smaller number, or only focused on a single bird species. Despite this diversity in scope, the results shared a lot of similarities in terms of the general picture of the AES effectiveness.

Key findings and policy implications

A shared conclusion from all of the BESTMAP studies was that AEP do contribute to a more suitable environment for birds' biodiversity, however, not enough to achieve the EU's aims in terms of biodiversity preservation. Across the five case studies, AES made only a marginal difference in measured biodiversity outcomes. More specifically, fallow land, and extensive grass land were found to be beneficial measures, while cover crops and organic farming were associated with little impact on the presence of bird species. Analyses carried out within the BESTMAP project also showed that increasing the implementation of the same AEP increased the strength of the modeled positive effects on biodiversity for the majority of bird species. This implies that the policy of encouraging AEP might still be suitable but should seek to reach greater levels of adoption. Moreover, the effects of individual AEP vary between different countries, agricultural systems, and bird species. This indicates that future CAP policies should favour the adoption of a mix of different measures, cooperatively designed with farmers to maximise their uptake in a regionally targeted way.

The BESTMAP tools can provide policymakers and private organisations detailed insights into the potential impacts of AEP on biodiversity outcomes, and feed into the design of better AEP in the future. To understand more about the capabilities of our tools, please contact Guy Ziv, G.Ziv@leeds.ac.uk.

References

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