

# Linking landscape futures with biodiversity conservation strategies in northwest Iberia — A simulation study combining surrogates with a spatio-temporal modelling approach

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## Author:

Mário Santos, Daniel Ferreira, Rita Bastos, Joana Vicente, João Honrado, Christoph Kueffer, Christian A. Kull, Uta Berger, and João Alexandre Cabral

## Abstract

The most prominent factors inducing landscape change in the rural regions of south west Europe are depopulation and the associated socio-ecological modifications. The aim of this work was to assess the future implications of these processes on land use/land cover and biodiversity in northwest Iberia. To achieve our goal, we developed a virtual spatially explicit dynamic model to simulate regional socio-ecological dynamics. For the period between 1960 and 2040, we tested four different environmental scenarios ranging from small decreases in conifer forest and a stabilization of agricultural areas and shrublands to more radical shifts, substantial decreases in agricultural areas and massive expansion of eucalyptus stands. The model considers also fire, whose role increased significantly in the scenarios of expanded forests. Bird assemblages, which we used as a surrogate for biodiversity, showed complex patterns although with overall decreases in richness and abundance. Species with narrow niche and from Mediterranean open habitats were particularly sensitive to the ongoing changes simulated. Our results suggest that landscape management actions and planning assessments designed for conserving biodiversity should focus on the maintenance of the traditional agricultural mosaic combined with a regulatory legislation limiting the expansion of fast growing tree forests (e.g Eucalyptus stands). This strategy can contribute to maintaining a diversity of land use/land cover in a heterogeneous landscape and the prevention of the occurrence of large wildfires, fundamental for the implementation of national biodiversity strategies and action plans.

Read the full article in [Ecological Informatics](#). [1]

## Associated Project:

[Socioecology of Acacia](#) [2]

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