Responses of birds of different biogeographic origins and habitat requirements to agricultural land abandonment in northern Spain

Susana Suárez-Seoanea,b,*, Patrick E. Osborne c, Jacques Baudry b

a Area de Ecología, Universidad de León, 24071 León, Spain
b Inra-SAD Armorique, 65 rue Saint Brieuc, 35042-Rennes, France
c Department of Environmental Science, University of Stirling, Stirling FK9 4LA, UK

Received 15 March 2001; received in revised form 6 August 2001; accepted 6 September 2001

Abstract

Agricultural land-use changes in Europe have taken two opposing directions: towards agricultural intensification or land abandonment. While in the Mediterranean region land abandonment is a main cause of avian diversity decline, in northern Europe species diversity often increases with successional age. We examined the hypothesis that the biogeographic origin of the avifauna determines whether abandonment brings conservation benefits or detriment by studying the bird community of agricultural land in northern Spain, at the boundary of the Mediterranean and Eurosiberian regions. Using a successional gradient, we examined landscape-scale effects of agricultural abandonment on birds during the breeding and non-breeding seasons.

The trend in avian diversity with successional stage differed little between Mediterranean and Eurosiberian species in winter. In the spring, however, there was an increase in diversity with stage in abandonment for Eurosiberian birds but not for Mediterranean species. Analysis of individual species showed a preference among Eurosiberian birds for more wooded habitats whereas Mediterranean birds preferred open areas and shrubland.

The introduction of agricultural policies to geo-political units that do not coincide with eco-regions cannot be assumed to bring uniform conservation benefits. In the Mediterranean region, agricultural mosaics of low intensity cultivation maintain the highest diversity of priority bird species. Agricultural land abandonment should not be assumed to benefit conservation. © 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Agricultural policy; Species diversity; Biogeographic origin; Habitat requirements; Land abandonment

1. Introduction

Changes in land use often lead to habitat fragmentation, loss of habitats and species (Karr, 1994), causing a serious negative impact on biodiversity (Hansen et al., 1992). These landscape-scale changes have been very rapid during the last century and in Spain, as throughout the rest of Europe, are driven by political forces, particularly during the period after the Civil war (i.e. since 1939), the 1970s and the entry into the European Union (EU) in 1985. The EU’s Common Agricultural Policy and the consequent changes in land use have negatively affected many European bird species (Housden et al., 1991; Pain and Pienkowski, 1997). Land use changes have taken two opposing directions: agricultural intensification and, more recently, land abandonment (Meeus, 1995). While much work has been done on the effects of intensification on birds (e.g. O’Connor and Shrub, 1986; Díaz et al., 1993; Bignal and McCracken, 1996; Burel et al., 1998), fewer authors have addressed the consequences of land abandonment (but see Farina, 1995, 1997, 1998; Preiss et al., 1997; Watson and Rae, 1997). Abandonment has a variety of causes ranging from direct policies (such as set-aside), the indirect effects of pricing making small-scale farming uneconomic, to social changes such as an ageing work-force and reluctance to stay on the land (Baudry and Bunce, 1991).

Agricultural land abandonment may be the main cause of avian diversity decline in the Mediterranean region (Farina, 1995, 1997). Farina (1997) found in Italy that cultivated land had the highest bird species abundance and richness, that these measures decline with increasing distance from cultivation, and that the