DYNAMIC

Recent changes in bird communities in relation to the dynamics of farming systems and landscapes in marshlands

Backgrounds and challenges

For several decades, changes in European agriculture, including both intensification and abandonment depending on the geographical context, have been partly responsible for a significant change in biodiversity, with bird populations particularly affected. The bird species most affected are those dependent on agricultural environments, with an overall loss of 48% in European numbers over the last 30 years. However few studies have quantified the decline or maintenance of this biodiversity in agricultural environments, depending on changes in cropping systems and the landscape context (the composition and configuration of the landscape).

© Daphné Durant

Objectives

The aim of the DYNAMIC project is to analyse the combined effects of changes in cropping and farming systems and landscapes on bird communities in the Marais poitevin (Vendée). Based on bird community surveys carried out 12 years apart at 3 sites with contrasting composition (proportion of grassland and crops) and surveys of farming systems and the landscape:

- We will establish an inventory of the bird communities present on the three sites in 2022, 2023 and 2024. This inventory will be compared with surveys carried out twelve years earlier on the same sites and same survey points (2010, 2011 and 2012). We will characterise the observable changes in bird communities between these two periods. These changes will be compared with those observed on a regional scale using data from the STOC (Temporal Monitoring of Common Birds).

- We will characterise the changes in agricultural systems (cropping and livestock systems) and the landscape that have taken place over the last 12 years on these sites. In particular, specific work will be carried out to share representations of agricultural systems between the project disciplines.

- Lastly, we will relate changes in bird communities at each site to changes in farming systems and landscapes (including marsh water management).

Approaches

The DYNAMIC project is based on a scheme set up in the Marais poitevin (Vendée) between 2010 and 2012 and extended from 2022. The system consists of 3 contrasting sites (around 1,000 ha each) representing a gradient of grasslands and crops in the landscape.

Datas on birds are collected using the listening point method (30 listening points per site) carried out by ornithological experts. Crop rotation (i.e. plant species cultivated in each plot, natural hay meadow vs. pasture) and landscape features (i.e. semi-natural features) are mapped using GIS and verified in the field. Surveys of farmers will be used to characterise cropping and livestock systems on the three sites.

Statistical models will be used to analyse changes in bird communities in relation to changes in farming systems and the landscape.

One of the major challenges of the project is to find descriptors of agricultural systems that are capable of accounting for the changes observed in these systems and making sense for the various disciplines involved in the project. Part of the project is therefore dedicated to sharing a common representation of agricultural systems and their descriptors. This representation will be constructed during collective workshops around objects and key words that will be discussed and explained.