

Abstract

Since the beginning of the last century there have been significant changes in the environment, farming and the landscape structure. Because birds are one of the longest-studied groups of organisms and are considered to be good indicators of environmental quality, it is advisable to relate environmental changes to changes in bird abundance. Understanding these relationships enables better and more accurate formulation of conservation plans and priorities, and therefore a large number of studies were dedicated to them. Although these studies achieved great progress in the knowledge of the most important factors that affect bird populations, their findings remained somewhat incomplete and fragmentary due to their limited temporal and/or spatial coverage. Therefore, it was not entirely clear which patterns are general and which are confined to some specific regional conditions. To fill this knowledge gap, I collected all studies on long-term trends in bird abundance in Europe and North America, which I was aware of, and made a meta-analysis of their results. Using linear mixed-effects models, I found a significant decrease in open-habitat species, probably as a result of agricultural intensification and abandonment of agricultural land. This pattern was consistent regardless of region or time period and therefore it demonstrates a serious conservation problem. Significant increase was also recorded for species migrating over short distances and residents. I suggest this pattern was driven by the impact of climate change. Overgrowing of agricultural land I consider as one of the main causes of the significant increase in species nesting in the bushes and in tree canopy. Conversely, no significant impact on the population trends was found in respect to food specialization and nest type. Interestingly all models, which showed significant regional differences in bird population trends, there were consistently negative trends observed in the Southern Europe.