EFFECT OF LAND ABANDONMENT AND AGRICULTURAL INTENSIFICATION ON BIRD COMMUNITIES IN MODEL AREAS IN BULGARIA

PhD Thesis

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Sofia, 2024

The field studies and analyses conducted within the framework of the dissertation work focus on the processes of abandonment of agricultural lands and intensification of agriculture and the mechanisms behind their contribution to the observed trends in the number and distribution of bird populations in Bulgaria with a focus on passerine species.

The first task of the dissertation work is to establish the changes in bird communities occurring along the succession of vegetation as a result of abandonment of agricultural lands. An ornithological survey was conducted within two field seasons in an area with suitable conditions, including sample sites at different stages of vegetation succession where bird data was collected. The general conclusion, as a result of the studies, is that the abandonment of agricultural lands favors generalist species and ecotone species, but leads to habitat loss and, consequently, a decrease in the number and distribution of species inhabiting grassland habitats and agricultural lands, which are the fastest decreasing group both in Europe and in Bulgaria.

The second task of the dissertation is to establish the relationships between the percentage coverage of arable lands in agroecosystems (agricultural intensification) and the characteristics of the bird communities. An ornithological study was conducted in an area where there are both intensively cultivated agricultural areas and natural grassland habitats as well as areas occupied by woodland and shrub vegetation.

The summarized results of the work on this task indicate that intensively cultivated fields, as expected, maintain lower species richness and abundance of birds. An optimal ratio between grasslands, arable land and a low percentage of woody and shrub vegetation increases the diversity of birds in agricultural lands.

The results of the research, part of the dissertation work, can be applied when introducing or assessing the effect of agro-ecological or other measures aimed at managing the habitats of rare species associated with agricultural lands or landscape elements such as strips of woody and shrub vegetation. Another potential area of application of the obtained results and established dependencies is the preparation of management plans for specific territories in which the processes of abandonment of agricultural lands or increased intensification in agriculture are observed.

The third task of the dissertation is the application of landscape metrics for characterizing changes in habitats that have an impact on bird communities. As a result of this study, a selection of 4 landscape metrics (PLAND, TE, SHAPE_MN и NDCA), calculated at class level showed significant dependencies with the parameters of bird communities.