Ortwin Elle (2000): Quantitative analyses of habitat selection of exemplary songbird species (Passeres) in the semi-open landscape - a multivariate approach with special regard to the availability of vegetational structures

Habitat selection of nine songbird species (Sylviidae, Prunellidae, Emberizidae, Fringillidae, Laniidae) in a semi-open transitional landscape (wood/meadow ecotone) is assessed and compared by a quantitative approach over a period of three years. The structural diversity and heterogeneity of this landscape allows a common occurrence to bird species that are spatially segregated in other habitats. On the one hand habitat selection, which in this study is defined by the choice of vegetation structures at the microhabitat level, is regarded as the confrontation of the single bird individuals with their environment and on the other hand as a common trait of subpopulations. The process of habitat selection is only real at the level of the individual. Drawing against this background, a model for the quantification of habitat selection is introduced, making possible an objective analysis of both individual and average habitat selection (not explaining the process itself, however, that leads to the observed habitat selection). The influence of several structural features, mainly regarding the shape of vegetational subunits, on the dispersion of the birds on the plots is analyzed by means of quantitative methods (factor analysis, cluster analysis, discriminant analysis). Preferences and avoidances, constancy in time and space and the degree of selectivity of the specific choice of vegetational structures are discussed in detail for each bird species. There is quantitative evidence that along with increasing abstraction from the individual in the form of spatially increasing data aggregation, the specific distinctness of habitat preferences as a common trait increases. This happens, however, at the expense of information about the variability of the individual selective behaviour. Therefore the flexibility of a bird species would be underrated cosiderably, confining habitat selection to its meaning as an integrating trait of populations. Habitat selection is a dynamic process. It is shown that the structural offer in a landscape strongly influences the result of the species' habitat selection. The availability of vegetational structures on a plot determines the quantitative structural framework, which may be more or less quantitatively modified by the single species. Nevertheless, the structural offer is reflected clearly in the selected structural portions of the bird species. Therefore opportunism and selectivity in the form of structural preferences and avoidances in habitat selection have to be interpreted against the background of the quantitative composition of the vegetational structures that a landscape offers to the birds.