

THE RELATIONSHIP OF EURASIAN TREE SPARROW (*PASSER MONTANUS*)
ABUNDANCE TO HABITAT PREFERENCE AND HOUSE SPARROW (*PASSER*
DOMESTICUS) ABUNDANCE IN GREENE COUNTY, ILLINOIS

An Abstract of

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ABSTRACT

Is the abundance of the Eurasian Tree Sparrow related to specific habitats and House Sparrow abundance? Eurasian Tree Sparrow has been recorded on Breeding Bird Survey routes in Illinois, Iowa and Missouri beginning in the mid-1960s to present with spatial and temporal population fluctuation during this time. Habitat types present along the Athensville BBS route in Greene County, Illinois during this period have not been documented. Digital ortho images from the late-1960s were analyzed for the various habitat and land use categories in the Athensville route. BBS data for Eurasian Tree Sparrow and House Sparrow were obtained for the period 1971-2006. Spatial metrics for the digitized habitat/land use categories, including mean patch size, mean shape index, and edge density, were analyzed in the Patch Analyst extension of the ArcGIS system. The data results from Patch Analyst along with the BBS count data for House Sparrow for the same periods were then analyzed in HyperNiche. Three best fit models were found. The first was the relationship of the average edge density of the forested areas to increases in average Eurasian Tree Sparrow counts. As the average of the edge density of the forested areas increased, the average of the Eurasian Tree Sparrow count increased. The second best fit model was the relationship of the average mean shape index of the ponds to increases in total Eurasian Tree Sparrow counts. As the average of the mean shape index of the ponds increased, the total of the Eurasian Tree Sparrow count increased. The third best fit model was the relationship of the average of the edge density of the forested areas to increases in average Eurasian Tree Sparrow counts and to decreases in total House Sparrow counts. As the average of the Eurasian Tree Sparrow

count increased and the average of the edge density of the forested areas increased, the total of the House Sparrow count decreased. This research indicates the importance of a diverse forest edge, the presence of water provided by ponds, and the importance of competition from the closely related House Sparrow.