

ECOLOGICAL NICHE AND HABITAT SUITABILITY MODELING OF TWO SPECIES OF FOREST VOLES IN THE SOUTHERN TAIGA

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Abstract. *Background.* Ecological niche and the habitat suitability modeling is becoming an increasingly important tool for finding the relationship of organisms with their habitat and refining data on their distribution. This work demonstrates some of the possibilities of such modeling for small mammals in stationary captures. *Materials and methods.* The work was carried out in the Central Forest Nature Reserve. The data from the captures of bank and red voles on the trap line for 2010–2014 were taken as the presence points, and 9 environmental variables were used as predictors. The modeling was carried out using a comprehensive approach, within the framework of which ecological niches of voles were modeled using ecological niche factor analysis, as well as habitat suitability maps using it and analyses by Mahalanobis distances. *Results.* The bank vole showed a low marginality index (0,56) and a relatively high tolerance index (0,68). The environmental conditions used by the species were slightly different from the average available conditions. Its suitable habitats were associated with relief elevations and watershed surfaces. The red vole had a high marginality index (1,39) and a low tolerance index (0,37). It is confined to a narrow range of preferred habitats: boreal spruce forests on elevated watersheds. Habitats suitable for voles are segregated, but not completely, showing partial overlap in the area of boreal spruce forests at elevations. Schoener's D-index value of niche overlap was 0.79. *Conclusions.* The ecological niches of the two forest vole species differed, which is associated with the peculiarities of habitat confinement. A significant overlap of areas of suitable habitats of the two species may be associated with incomplete mapping of the ecological relationships of the bank vole due to the insufficient representativeness of the trap line.

Keywords: *Myodes glareolus*, *Myodes rutilus*, voles, ecological niche, habitat suitability, modeling, GNESFA, ENFA, HSM

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