

Large-scale habitat requirements of the Siberian flying squirrel *Pteromys volans* in Finland

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Our aim was to investigate the effect of forest and landscape characteristics to the occurrence of the Siberian flying squirrel in a large-scale geographic area covering most of the distribution area of the species in Finland. First, the presence/absence of the flying squirrels was determined by field surveys in randomly selected 9-ha study plots set up within 153 000 km² land area. The presence of the species was determined by searching its faecal pellets. The flying squirrel was found in 1003 (11.9%) out of 8454 plots searched.

Second, habitat and landscape variables explaining the occurrence of the flying squirrel were calculated by constructing two multivariate logistic regression models (GLMs), one including four small-scale (9-ha plot) habitat variables (i.e. forest age, average volumes (m³/ha) of pine, spruce and deciduous trees), and one including 15 landscape variables (e.g., areas of forest patches of different combinations tree species and ages, saplings, clear cuts, fields, bogs, built areas) referring to the larger, 1km landscape scale around the plot. Distance to the

nearest occupied site and vegetation zone were included in models of both scales.

Results of the small-scale models indicate that the volume of spruce trees and average forest age significantly increase the probability of a patch being occupied, while occupancy significantly declines with increasing volume of pine and with increasing distance to the nearest occupied site. For the large-scale model, cover of mature spruce/mixed forest, and surprisingly, area of fields had positive incidences on occurrence of flying squirrel. Again, probability of occupancy decreased with the distance to the nearest known occupied site, and there was variation in occupancy between geographical vegetation zones in Finland.

Thus, in Finland, flying squirrels are found in old spruce forests but they avoid pine forests. At the large scale, the species favors large areas of mature spruce and mixed forests, fields and several other occupied sites nearby. The importance of fields can be explained by fertile soil and amount of deciduous trees near fields, and the positive effect of nearest-neighbor distance by dispersal and colonization ability of flying squirrels.