



Flying Squirrel LIFE (LIFE17 NAT/FI/000469)

Project site: Jyväskylä

Summary of the following actions:

Action A5 Preparation of plans to support the habitat network in urban areas

Project site: **Jyväskylä**

Municipality: **Jyväskylä**

Country: **Finland**

Size of the project area (ha): **1446 km2**

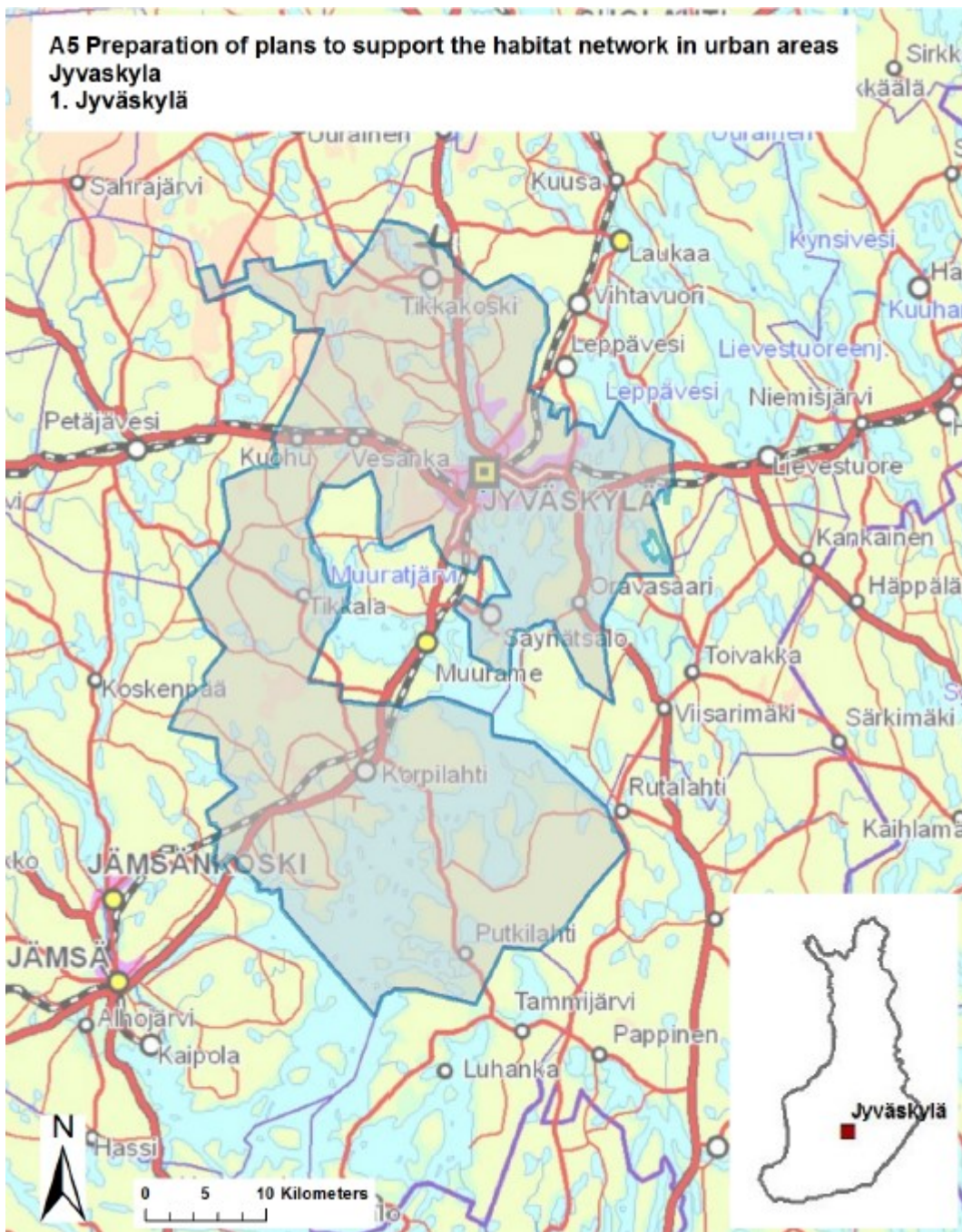
Responsible organisation: **City of Jyväskylä**

Was action implemented as planned in the proposal? **Yes**

Was action implemented in the same location than described in the proposal? **Yes**



Site map

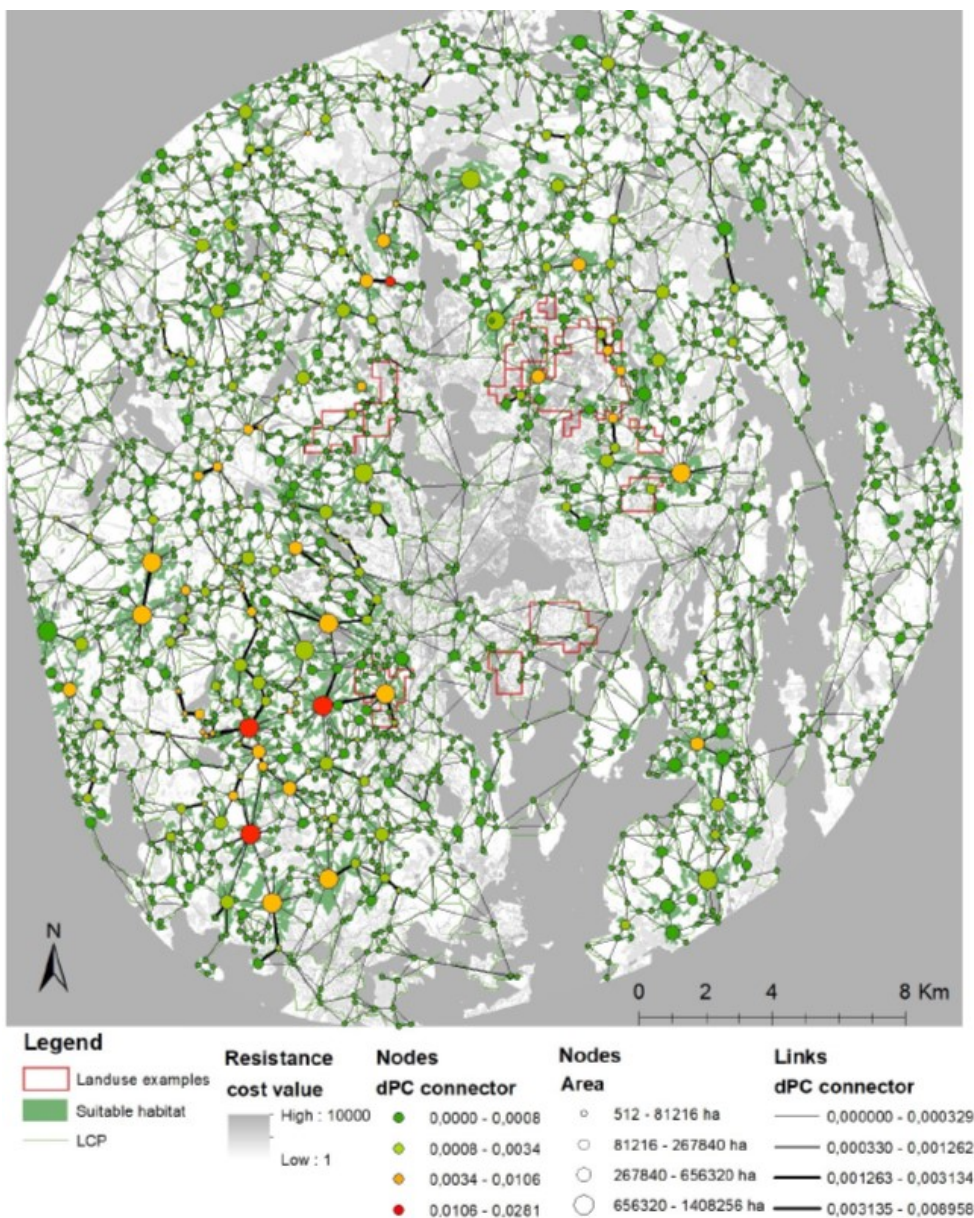


Action A5: Preparation of plans to support the habitat network in urban areas

The project area covers the whole city area. The aim of the action was to delineate the habitat network of flying squirrel so that this information can be used as a basis of general and city planning. The action proceeded in several steps. In the first phase, the existing data on flying squirrel occurrence (observations, core area information) were gathered and processed so that the data were able to be exploited in upcoming stages. This stage was carried out by a project worker.



In the next stage, data processed in previous stage were passed to an analysis stage. The data were used in Maari Kosma's master thesis. She used graph-theoretic approach to analyse the habitat network of the species at the city level. She mapped suitable habitats for the species using habitat suitability model (HSM). The flying squirrel's moving connections were modelled using resistance-to-movement surface. The least-cost path Analysis with the resistance-to-movement -layer was used to model the connections between habitat patches. Graph analysis was used to calculate connectivity values for individual patches. This enables also to analyse the impact of chosen land-use changes on the habitat network of the species.



The output map from graph analysis.



The results of master thesis are also published as research article:

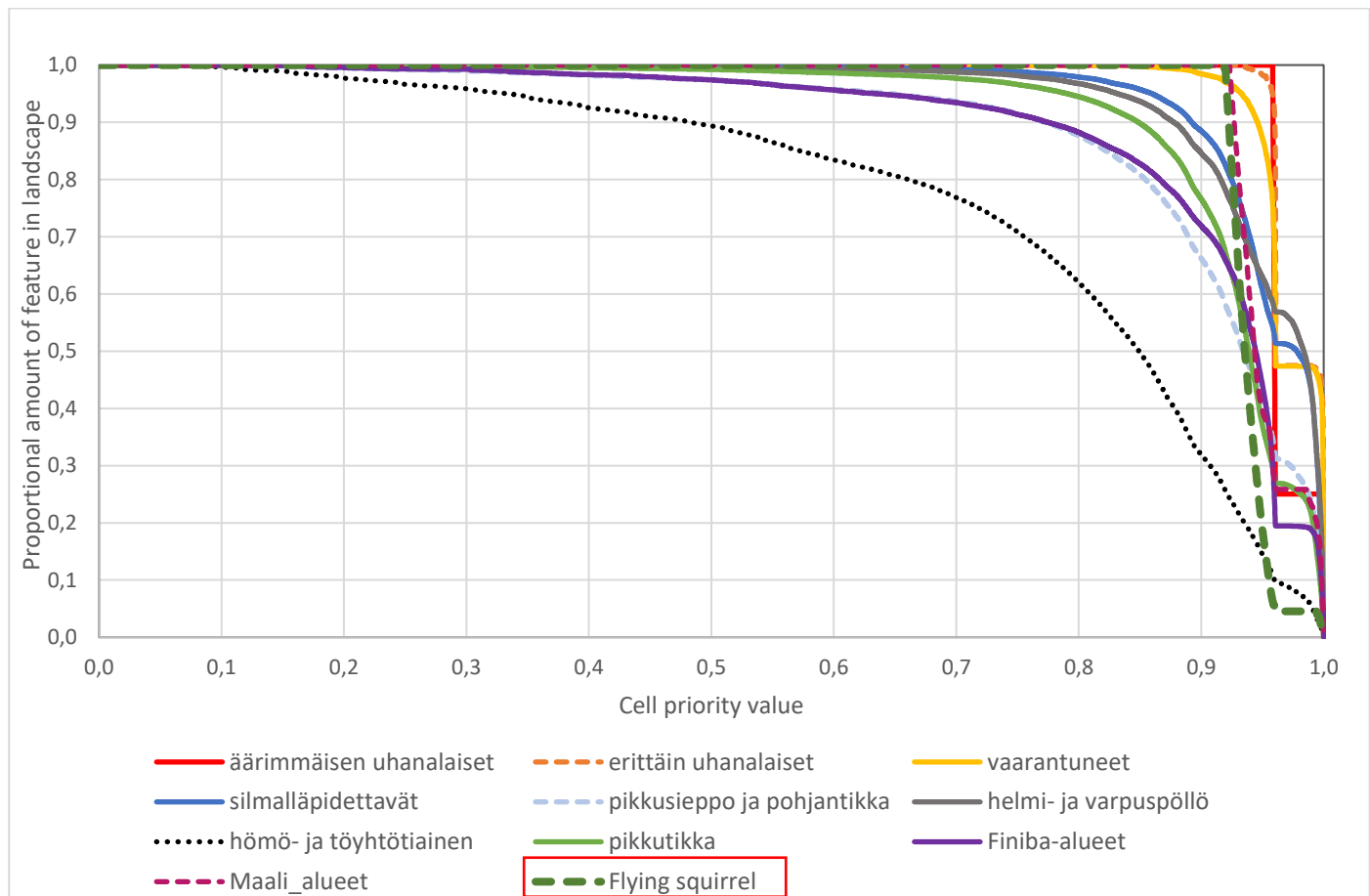
Kosma et al. 2023. No net loss of connectivity. Conserving habitat networks in the context of urban expansion. Landscape and urban planning 239:104847

<https://doi.org/10.1016/j.landurbplan.2023.104847>

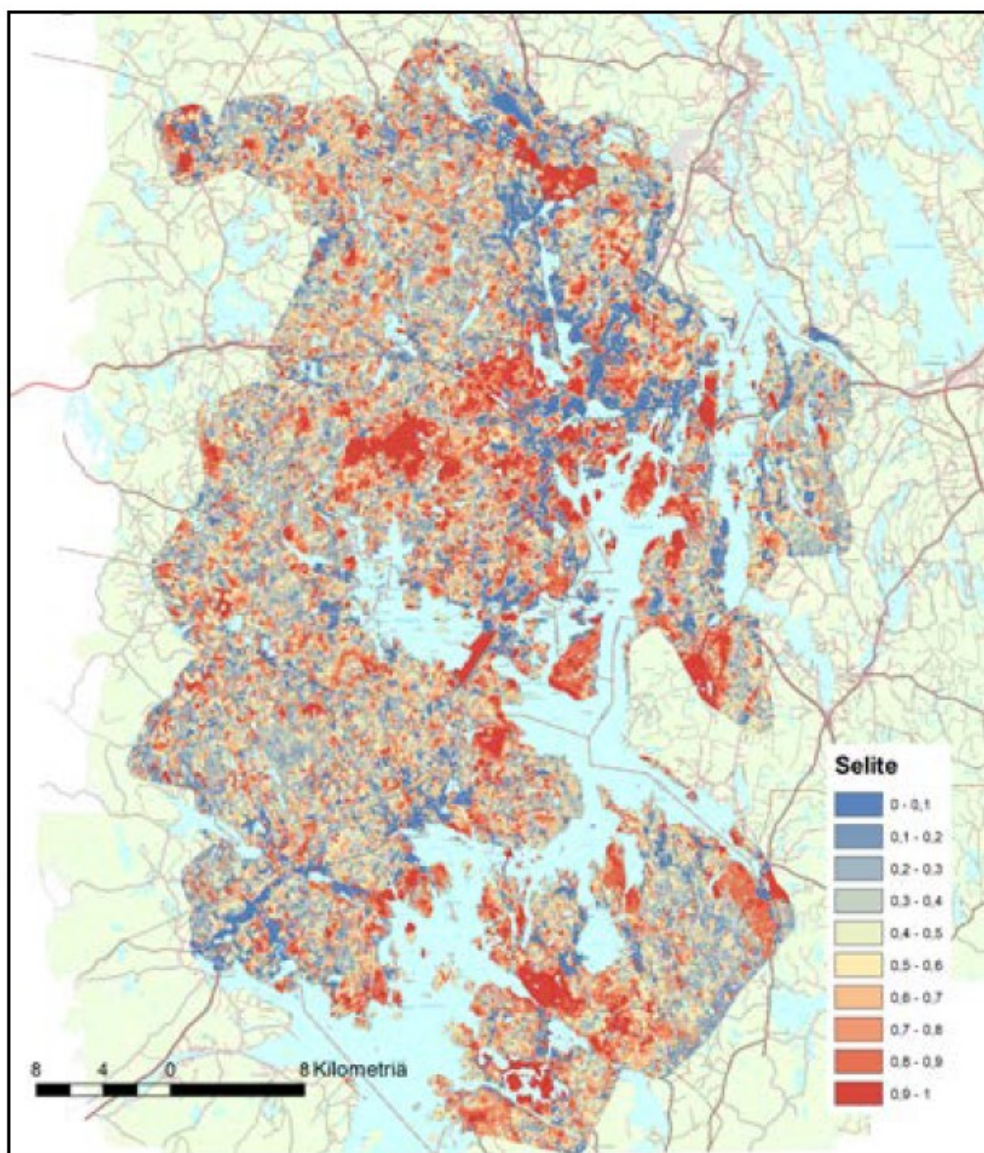
The habitat network was also analysis using expert evaluation. Expert evaluation was carried out by a project worker. As an outcome, especially movement connections of the species were identified in a comprehensive manner.

In the third analysis, information on flying squirrel occurrence was used in the Zonation analysis for the whole city. In this analysis, both information on the occurrence of the species and well as predictive habitat maps created by LUKE in Action A3 were used. The flying squirrel data were fed into the analysis along with other environmental data. The analysis produced a prioritization map and performance curves for different features. More information on Zonation can be found at

<https://zonationteam.github.io/Zonation5/>



Feature curves from the final analysis. Flying squirrel is well represented in the landscape with highest priority values. Its prioritization does not compromise other valuable species values.



The output map from the Zonation analysis prioritizing the landscape in respect to the distribution of nature values.

Results from the previous stages were utilized as a basis for general planning. All analysis results together enabled to take the habitat network of the flying squirrel into account in the strategic general plan covering the whole city area.

The original aim of the action was also to get information on the actual movements of flying squirrel individuals by using GPS -loggers. The loggers were ordered in spring 2024 and the follow-up period was scheduled to the end of summer. However, there was delay in the production of loggers and they were delivered later than expected. For that reason, the GPS-tracking is postponed to after LIFE-action. The area that was supposed to be followed-up with tracked individuals was also partly investigated with the dog inventory conducted in the summer 2024 (with co-operation with action A2). The dog inventory was



targeted at Seminaarinmäki campus area. The dog inventory revealed the area to be unoccupied at the end of the summer. Inventory gave information on the highly used core areas still, but not on the used connections between them. The dog inventory revealed that the end of summer would have not been possible time for GPS follow-up in that area due to lack of individuals.

Owing to the analysis and data processing done under this action, the FS data basis of the city has remarkably improved. The data have been processed in a comprehensive manner so that new insights on habitat analysis and FS habitat network have been gained. These analysis methods are also transferable to other cities.

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