



LIFE Project Number
LIFE17 NAT/FI/000469

Final Report
Covering the project activities from 01/08/2018¹ to 31/03/2025

Reporting Date²
28/10/2025

LIFE PROJECT NAME or Acronym
Flying Squirrel LIFE

Data Project

Project location:	Finland and Estonia
Project start date:	01/08/2018
Project end date:	31/03/2025 Extension date: <dd/mm/yyyy >
Total budget:	8 886 666 €
EU contribution:	6 664 999 €
(%) of eligible costs:	75

Data Beneficiary

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¹ Project start date

² Include the reporting date as foreseen in part C2 of Annex II of the Grant Agreement

This table comprises an essential part of the report and should be filled in before submission

Please note that the evaluation of your report may only commence if the package complies with all the elements in this receivability check. The evaluation will be stopped if any obligatory elements are missing.

Package completeness and correctness check	
Obligatory elements	✓ or N/A
Technical report	
The correct latest template for the type of project (e.g. traditional) has been followed and all sections have been filled in, in English <i>In electronic version only</i>	✓
Index of deliverables with short description annexed, in English <i>In electronic version only</i>	✓
<u>Mid-term report</u> : Deliverables due in the reporting period (from project start) annexed <u>Final report</u> : Deliverables not already submitted with the MTR annexed including the Layman's report and after-LIFE plan Deliverables in language(s) other than English include a summary in English <i>In electronic version only</i>	✓
Financial report	
The reporting period in the financial report (consolidated financial statement and financial statement of each Individual Beneficiary) is the same as in the technical report with the exception of any terminated beneficiary for which the end period should be the date of the termination.	✓
Consolidated Financial Statement with all 5 forms duly filled in and signed and dated <i>Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets + full Excel file)</i>	✓
Financial Statement(s) of the Coordinating Beneficiary, of each Associated Beneficiary and of each affiliate (if involved), with all forms duly filled in (signed and dated). The Financial Statement(s) of Beneficiaries with affiliate(s) include the total cost of each affiliate in 1 line per cost category. <i>In electronic version (pdfs of signed sheets + full Excel files) + in the case of the Final report the overall summary forms of each beneficiary electronically Q-signed or if paper submission, signed and dated originals*</i>	✓
Amounts, names and other data (e.g. bank account) are correct and consistent with the Grant Agreement / across the different forms (e.g. figures from the individual statements are the same as those reported in the consolidated statement)	✓
Mid-term report (for all projects except IPs): the threshold for the second pre-financing payment has been reached	
Beneficiary's certificate for Durable Goods included (if required, i.e. beneficiaries claiming 100% cost for durable goods) <i>Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets)</i>	✓
Certificate on financial statements (if required, i.e. for beneficiaries with EU contribution ≥750,000 € in the budget) <i>Electronically Q-signed or if paper submission signed original and in electronic version (pdf)</i>	✓
Other checks	
Additional information / clarifications and supporting documents requested in previous letters from the Agency (unless already submitted or not yet due) <i>In electronic version only</i>	✓
This table, page 2 of the Mid-term / Final report, is completed - each tick box is filled in <i>In electronic version only</i>	✓

**signature by a legal or statutory representative of the beneficiary / affiliate concerned*

Instructions:

Please refer to the General Conditions annexed to your grant agreement for the contractual requirements concerning a Mid-term/Final Report. Both Mid-term and Final Technical Reports shall report on progress from the project start-date. The Final Report must be submitted to the Agency no later than 3 months after the project end date.

Please follow the reporting instructions concerning your technical report, deliverables and financial report that are described in the document [Guidance on how to report on your LIFE 2014-2020 project](#), available on the LIFE website. Please check if you have the latest version of the guidance as it is regularly updated. Additional guidance concerning deliverables, including the layman’s report and after-LIFE plan, are given at the end of this reporting template. Regarding the length of your report, try to adhere to the suggested number of pages while providing all the required information as described in the guidance per section within this template.

1. Table of contents

1.	Table of contents.....	3
2.	List of key-words and abbreviations.....	4
3.	Executive Summary.....	5
4.	Introduction.....	6
5.	Administrative part.....	9
6.	Technical part.....	10
6.2.	Main deviations, problems and corrective actions implemented.....	74
6.3.	Evaluation of Project Implementation.....	77
6.4.	Analysis of benefits.....	95
7.	Key Project-level Indicators.....	102
8.	Comments on the financial report.....	104
8.1.	Summary of Costs Incurred.....	104
8.2.	Accounting system.....	106
8.3.	Partnership arrangements.....	106
8.4.	Certificate on the financial statement.....	106
8.5.	Estimation of person-days used per action.....	107
	List of Annexes.....	108

2. List of key-words and abbreviations

AB: Associated beneficiary (project beneficiary)

CB: Coordinating beneficiary (Metsähallitus Parks & Wildlife Finland/MHPWF)

CINEA: The European Climate, Infrastructure and Environment Executive Agency

EASME: The Executive Agency for Small and Medium-sized Enterprises

EST: Estonia

FIN: Finland

FS: flying squirrel

FSLIFE: Flying Squirrel LIFE project

GA: Grant Agreement

MoT: External Monitoring team, NEEMO/Elmen EEIG

N2000: Natura 2000

PM: Project Manager

Project beneficiaries

EEB: Estonian Environmental Board (Keskkonnaamet), Associated beneficiary

ELF: Estonian Fund for Nature (Eestimaa Looduse Fond), Associated beneficiary

ERAMETS: Estonian Private Forest Union (Eesti Erametsaliit), Associated beneficiary

ESPOO: City of Espoo (Espoon kaupunki), Associated beneficiary

FANC: Finnish Association for Nature Conservation (Suomen luonnonsuojeluliitto ry, Associated beneficiary

FMNH: Finnish Museum of Natural History Luomus (Luonnontieteellinen keskusmuseo Luomus), Helsinki University, Associated beneficiary

JYVASKYLA: City of Jyväskylä (Jyväskylän kaupunki), Associated beneficiary

KULUMUS: Kuopio Natural History Museum / City of Kuopio (Kuopion luonnontieteellinen museo), Associated beneficiary

KUOPIO: City of Kuopio (Kuopion kaupunki), Associated beneficiary

LUKE: Natural Resources Institute Finland (Luonnonvarakeskus), Associated beneficiary

MHFORESTRY: Metsähallitus Forestry Ltd (Metsähallitus Metsätalous Oy), Associated beneficiary

MHPWF: Metsähallitus Parks & Wildlife Finland (Metsähallitus Luontopalvelut), Coordinating beneficiary

MKB: Forest Survey Bureau of Estonia (Metsakorralduse büroo), Associated beneficiary

MTK: Central Union of Agricultural Producers and Forest Owners (Maa- ja metsätaloustuottajain keskusliitto MTK ry), Associated beneficiary

POKELY: Centre for Economic Development, Transport and the Environment for North Carelia (Pohjois-Karjalan ELY-keskus), Associated beneficiary

POSELY: Centre for Economic Development, Transport and the Environment for North Savo (Pohjois-Savon ELY-keskus), Associated beneficiary

RMK: State Forest Management Centre of Estonia (Riigimetsa Majandamise Keskus), Associated beneficiary

SMK: Finnish Forest Centre (Suomen metsäkeskus), Associated beneficiary

VARELY: Centre for Economic Development, Transport and the Environment for Southwest Finland, Associated beneficiary

3. Executive Summary

Flying Squirrel LIFE was a large project to co-operate for improving conservation of the flying squirrel in Europe. It spanned from 1.8.2018 to 31.3.2025 with a budget of almost 8.9 M€. Flying squirrel (*Pteromys volans* L.) was a target species as it is endangered in Finland and Estonia. The largest threat for the flying squirrel is habitat loss and fragmentation, and the project aimed to decrease this threat directly and indirectly.

Co-operation with key stakeholders was built in the project in Finland and Estonia. Coordinated by Metsähallitus Parks & Wildlife Finland with 18 associated beneficiaries, project activities were targeted to over 120 sites. The key objectives of the project were to:

- prevent habitat loss and fragmentation,
- increase co-operation and develop tools for fluent land use planning,
- improve quality and availability of the FS related data, and
- increase exchange of knowledge and approval towards conservation.

We established 33 hectares of new conservation areas, improved habitats in 21 urban sites, and prepared over 90 site plans to managed forest as good examples to consider flying squirrel requirements. Besides maintaining important parts of forests, we built 13 new moving connections by planting young trees, increased safe nesting places with 349 nest boxes, and improved habitat continuity by opening growing space for aspen in 15 sites.

In addition to direct conservation activities and making examples of good forest use, we focused on extensive education and reaching professionals, private landowners, public and future generations. Co-operation was built within the project structure, as we worked together and developed a joint planning process with many professionals for making good forest plans. We also found that nature detection dogs can assist flying squirrel inventories well, and that predictive habitat maps illustrating suitable habitats can be used in land use planning.

We made 6 education materials covering inventory, urban land use, managed forests and environmental education. We also arranged 105 education events for over 3600 professionals and discussed with 760 landowners. In addition, 267 events in schools and nature centres reached almost 5000 children, and 136 public events reached over 6300 people. Numerous practical reports as well as 5 exhibitions and 2 nature paths have already reached over 387 000 people and, continue to offer inspiring experiences and knowledge for people also afterwards.

Despite the size of the project, no unsolvable problems were met. Some drawbacks in timetables were adjustable. Collaborative approach with skilful, committing personnel was essential in reaching the project goals. Effective group work of many professionals enabled high-quality achievements year after year. Project management took time, though, and naturally, co-operation among sometimes opposing views was challenging in times.

Achievements of the Flying Squirrel LIFE will last. Guides and other publications will be actively used across the FS range in Finland and Estonia. Project sites remain as examples of good practices, and summaries of them can be used as references in forest and land use planning. Through wide implication of better practices to everyday work, more suitable habitat for flying squirrels will be available in the future. This is a matter of education and will.

So far, unfavourable conservation status of the flying squirrel has not changed for better. Population in Estonia is still tiny and in Finland, continuously declining. Habitat loss remains a threat for the species as various use of forests continue. We recommend improvements for present conservation practices for better future for the flying squirrel, such as more clear guidance for forest use and better monitoring to confirm effective conservation practices. Ensuring sufficient living conditions for flying squirrels is essential in Estonia and Finland. In conclusion, a wide perspective and many hands to help are still needed.

4. Introduction

Flying squirrel (*Pteromys volans* L.), hereafter FS, was a target species as it is endangered in Finland and Estonia, the only countries in the EU having this species. FS is a priority species in the EU and strictly protected based on the Habitats Directive Annex IV(a). It is an arboreal rodent living in boreal forests, but critically endangered in Estonia because of a small, shrinking range, and vulnerable in Finland because of a fast decline in population trend. Flying squirrels typically prefer mature mixed forests, which have a considerable monetary value. Thus, conflicts of interests are inevitable. Indeed, the largest threat for FS is habitat loss and fragmentation, mainly due to intensive use of forests. Other threats include opposing views of the need to consider the species, and lack of knowledge how to consider it in practice.

Flying Squirrel LIFE aimed to decrease all threats directly and indirectly using good example sites with extensive education and communication. This was done in co-operation with key stakeholders. In Estonia, a national aim was to implement a National Action Plan with planned activities therein. In Finland, the aim was to prepare education materials for managed forests and urban land use planning so that FS can be better considered outside conservation areas.

As FS is a forest species, careful planning and correct management is detrimental in maintaining suitable habitats. We found that although public attitude towards FS is mostly positive, landowners have more negative attitudes due to restrictions for forest use. In addition, as forest management is done case by case at forest stands, their effects accumulate to larger areas. Thus, it would be important to have sustainable scenarios for forest use.

Conservation status of FS is still unfavourable. With extensive education materials illustrating good practices with true examples, we expect that good practices are applied throughout both countries. If forest planning for FS is made carefully, we expect that there are chances that population trends could stabilize. At the end of the project, we prepared Recommendations, where we suggest activities to improve the future for FS such as even better guidelines, continuous education and research. As FS can be seen as an umbrella species for boreal forest biodiversity, taking care of FS will simultaneously consider biodiversity at large.

Flying Squirrel LIFE project tackled main threats with **key objectives** during 2018-2025:

- preventing habitat loss and fragmentation,
- increasing co-operation and developing tools for fluent land use planning,
- improving quality and availability of the FS related data, and
- increasing exchange of knowledge and approval towards conservation.

We prevented habitat loss and fragmentation with direct conservation activities targeted to urban areas, managed forests and Natura 2000 areas in Finland and Estonia. We established 33 hectares of permanent protection in Finland and found 74 new habitats in Estonia. Habitat networks were improved in 21 urban project sites, where improvements included planting of 11 moving connections and 230 aspen seedlings, installing 99 nest boxes, and combining conservation and human recreation with careful forestry measures. In managed forests, we prepared 92 plans to project sites as good examples how to consider FS requirements with other goals in both countries. In Finland, we opened growing space for aspen at 15 forest sites and added some enclosures to protect seedlings from herbivory. In Estonia, we planted 2 moving corridors under an electrical powerline and installed 250 nest boxes to offer safe nesting places in a fragmented landscape.

Based on monitoring results, we highlight the need to follow FS occurrence for several years: single inventories are not enough to reveal variation between years. Better understanding of the habitat use improves the quality of planning and decrease risks of cutting important forests. Socio-economic analyses revealed that public attitude towards FS is often positive. Among landowners, however, attitude towards strict protection turns to more negative. This often relate to restrictions for forest use and to compensation systems which are perceived unclear or unfair. Ecosystem effects were analysed by examining alternative scenarios and estimating future potential of forests. It is important to understand that decisions made at the forest stand level accumulate to concrete consequences at larger scales in space and time.

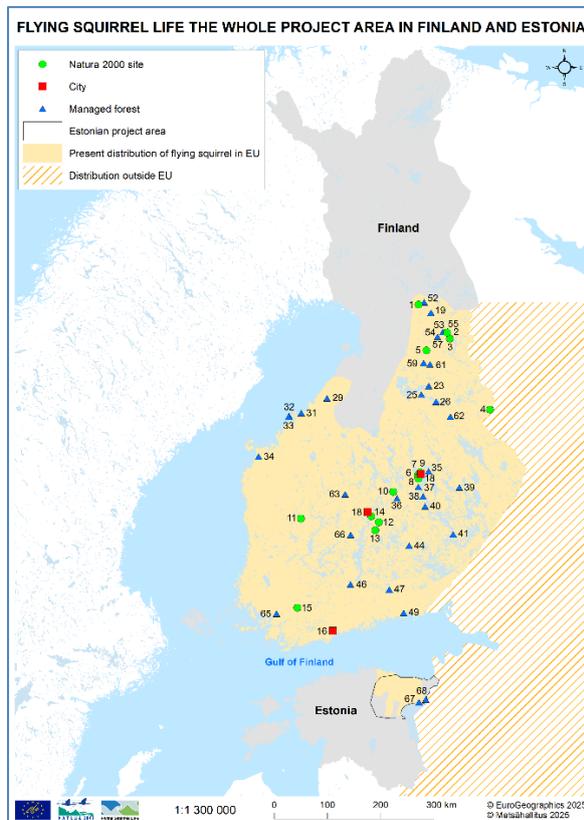
We increased co-operation and developed tools for fluent land use planning in every step of the project. Co-operation was a way to work within the project and indeed, we had over 285 planning meetings together. It was also sometimes challenging. Various expertise helped us to learn from each other but also to improve quality of forest plans in a joint planning process, for example. We improved data management system in Finland, developed a monitoring tool, and established a FS page where guidance and known locations can be seen so that they can be considered in practice. Assistance of nature detection dogs was evaluated and found to be effective especially in challenging situations. Predictive habitat models were built to illustrate potential of suitable habitats for FS in both countries. In Finland, a predictive map layer can be downloaded to a GIS system, and in Estonia, predictions were used to target inventories.

We increased quality and availability of flying squirrel related data especially with 6 high-quality education packages for good practices: 1 for inventory, 1 for urban areas, 3 for managed forests, and 1 for environmental education. Tens of publications such as summaries of project site plans as examples and various reports were prepared and remain available also after the project. In both countries, careful forest management and land use are detrimental so that FS individuals have enough habitats and can move between them. Without good conditions, ecological functionality is not reached, and the aim of legislation is not met.

Exchange of knowledge and approval towards conservation was increased with awareness raising in many ways. Education events for professionals were popular, as 105 events had over 3600 participants. We also had excellent discussions with 760 private landowners, and through a metsaan.fi service >320 000 landowners reach FS information. We built 5 exhibitions and 2 nature paths which have reached >387 000 visitors so far. Future generations were approached with 267 events reaching almost 5000 children, and 136 public events reached >6300 people. Laymans' report and After-LIFE Conservation Plan with guides and other project publications remain as good summaries for the future, together with Recommendations for better future for the flying squirrel.

Project sites in Finland and in Estonia.

Codes in parenthesis refer to project actions (sensitive sites are not shown on the map).



- 1 N2000 Syöte (C3)
- 2 N2000 Riuskanselkonen (C3)
- 3 N2000 Huuhkajanlehto (C3)
- 4 N2000 Ulvinsalon alue (C3)
- 5 N2000 Ison Jänisjärven lehto ja letto (C3)
- 6 N2000 Etelä-Kuopion lehdot ja lammet (C1)
- 7 N2000 Kolmisoppi-Neulamäki (C1)
- 8 N2000 Korsunmäki ja Keinalänniemi (C1)
- 9 N2000 Puijo (C1)
- 10 N2000 Konnevesi-Kalaja-Niinivuori (C3)
- 11 N2000 Aurejärvi (C3)
- 12 N2000 Katajaneva-Vuorilammen alue-Huhtalampi (C3)
- 13 N2000 Haapasuo-Syysniemi-Rutajärvi-Kivijärvi (C3)
- 14 N2000 Palstonvuori-Jääskelä (C3)
- 15 N2000 Rekijokilaakso (A6: 20 sites, E2: 1 site)

- 16 City of Espoo (C1: 4 sites)
- 17 City of Jyväskylä (C1: 8 sites, E2: 1 site)
- 18 City of Kuopio (C1: 9 sites)

- 19 Private 1 (C2)
- 23 Private 5 (C2)
- 25 Private 7 (C2)
- 26 Private 8 (C2)
- 29 Private 11 (C2)
- 31 Private 13 (C2)
- 32 Private 14 (C2)
- 34 Private 16 (C2)
- 35 Private 17 (C2)
- 36 Private 18 (C2)
- 37 Private 19 (C2)
- 38 Private 20 (C2)
- 39 Private 21 (C2)
- 40 Private 22 (C2)
- 41 Private 23 (C2)
- 44 Private 26 (C2)
- 46 Private 28 (C2)
- 47 Private 29 (C2)
- 49 Private 31 (C2)
- 52 State 34, Kivilampi (C2, C3)
- 53 State 35, Hanhivaara (C2, C3)
- 54 State 36, Hikilehto (C2)
- 55 State 37, Jänisselkä (C2, C3)
- 56 State 38, Pata-aho (C3)
- 57 State 39, Parviaissuo (C2)
- 58 State 40, Peranganvaara (C2)
- 59 State 41, Kurikkavaara (C2, C3)
- 61 State 42, Pöppölä (C2)
- 62 State 43, Palovaara (C2, C3)
- 63 State 44, Haavisto (C2)
- 64 State 45, Syrjävaara (C2)
- 65 Private 46 (C2)
- 66 Private 47 (C2)

In addition, 6 sites were protected in Finland (B1).

All the Estonian project sites (33) were located close to each other in the North-East corner of the country. Only sites for green corridors (C2), 67 Remniku and 68 Permisküla, are marked on the map. Delineated area was used in modelling (A3).

5. Administrative part

Metsähallitus Parks & Wildlife Finland (MHPWF) was the coordinating beneficiary (CB) of the project. Project manager (PM) during the whole project period was Eija Hurme, with Anu Hjelt as a substitute 01-07/2020 due to PM's sickness leave.

There were five project assistants (PA) during the project. The 1st PA was Leena Rinta-Runsala 10/2018-04/2019, and the 2nd Anu Hjelt 10-12/2019 and 07-08/2020. In 2020, MHPWF decided to ensure full-time assistance to PMs in LIFE projects. The 3rd PA was Anni Koskela 10/2020-07/2022, and the 4th Saara Airaksinen 10/2022-07/2024 (both moved to other tasks with permanent contracts, which lead to a need for a new PA). The 5th PA was Ilona Karjalainen from 08/2024 until the end of the project.

The project had 18 associated beneficiaries at the start 2018 of which one beneficiary, ELF, withdrew in 2021 due to practical reasons (Amendment 1/2021). The project consortium was planned to include key stakeholders both in Finland and Estonia from nature conservation, forest management, conservation authorities, large cities, research, museums, NGO's in conservation and representatives of forest owners. Majority of project actions were designed to be made in co-operation on purpose. All beneficiaries were experts in their fields and actively contributed to the project making the co-operation both efficient and fruitful.

Communication with the MoT has been fluent. Three external monitors participated the project: Milka Parviainen 01/2018-01/2019, Sonja Jaari 02/2019-08/2023 (NEEMO), and Luule Sinnisov 09/2023 until the end of the project (Elmen-EEIG). All external monitors and insightful project advisors Anita Fassio and Maria-José Aramburu (EASME/CINEA) have provided essential advice and encouragement during the project.

Six annual monitoring visits were arranged 2019-2025. Four of them were hybrids and included visits to project sites in Finland and Estonia (2019, 2022-2025), and two were fully online due to the pandemic (2020 and 2021). The sixth visit was held in two parts: part A as a field visit 10/2024 in Estonia (together with a final seminar, E2) and part B as an office day 02/2025 in Finland. All monitoring visits have been very useful for the whole project consortium as they have offered insights to practical situations and underlying challenges. Visits have also had a fruitful atmosphere for getting a deeper understanding to project tasks with discussions of existing challenges and thinking of possible solutions.

The work within the project consortium was organized as follows:

- **Project steering groups (see also Action F2)**
 - **Finland:** representatives of Finnish beneficiaries (chair MHPWF, 1-2 annual meetings 2019-2025)
 - **Estonia:** representatives of Estonian beneficiaries (chair EEB, 1 annual meeting 2019-2025)
 - **Technical group:** representatives of beneficiaries having project actions (FIN + EST: four annual meetings 2019-2024)
 - **Communication group:** representatives of Finnish beneficiaries related to communication (1-4 annual meetings 2019-2025)
 - **FIN+EST coordination:** PM/MHPWF and a coordinator/EEB (6-8 annual meetings 2018-2025)

- **Action groups** were used when needed with all related beneficiaries (majority of project actions were carried out together with many beneficiaries)
- **CB-AB meetings** were arranged when needed. For example, CB arranged open guidance meetings for reporting and project management but also provided private discussions for technical or financial challenges.
- **MHPWF's LIFE network** consists of PM's, PAs and financial experts and has met about monthly during the project period. The network allowed online communication and support by peers related to common-faced challenges in the project management.

Two Amendments and one letter amendment to the Grant Agreement were made:

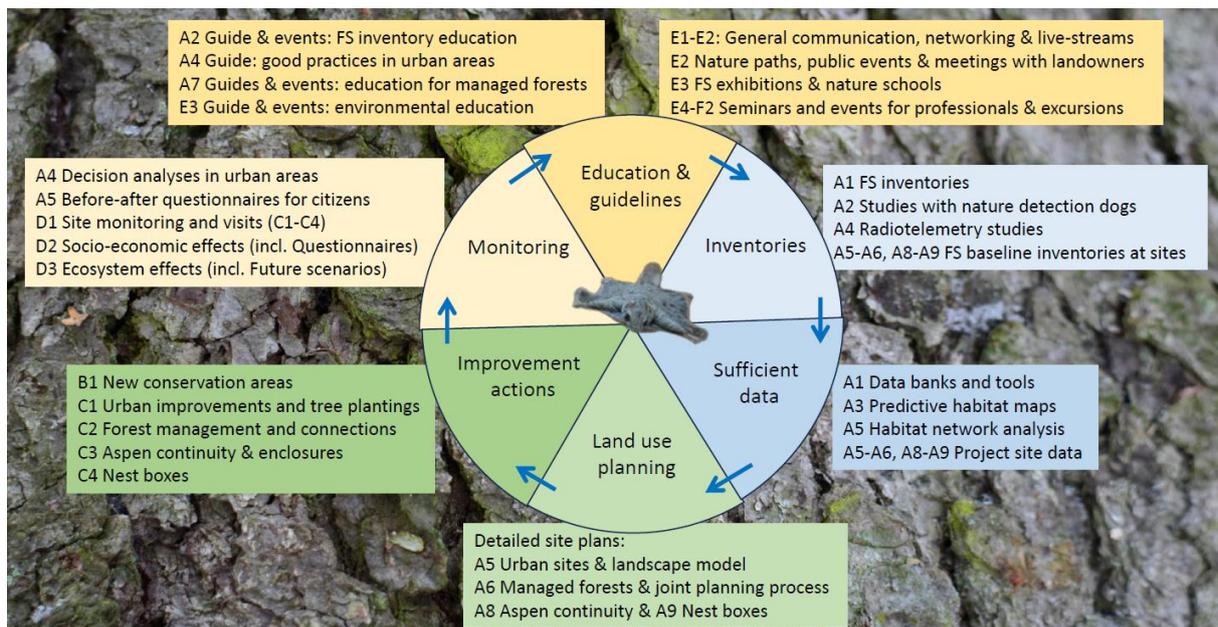
- **The Amendment 1 in 2021.** Beneficiary ELF withdrew and its tasks and budget was moved to EEB, ESPOO changed two sites, MHFORESTRY applied one additional site, and a director of the CB/MHPWF changed.
- **The Amendment 2 in 2024.** SMK applied for two additional sites and RMK for a new activity with two new project sites.
- **The Amendment 3 in 2024.** Legal address of the CB/MHPWF changed.

Extension for the Final report was applied 1.4.2025 from the CINEA. Due to lack of personnel and other challenges, reaching the original end date 30.6.2025 seemed impossible. No amendment for extension of the project in the GA was made, so the project ended 31.3.2025 as planned. A new deadline for the Final Report was set to 31.10.2025.

6. Technical part

6.1. Technical progress, per Action

Project actions in the Flying Squirrel LIFE were planned to decrease all threats and support all objectives, directly or indirectly, while enabling fluent ways to take FS into account in practise (Introduction, part 4). Project actions support various phases of a continuous learning cycle in land use planning and were done in co-operation with key stakeholders.



In Estonia, a national aim of the project was to implement a National Action Plan with planned activities therein. In Finland, the national aim was to prepare official education materials for managed forests and land use planning so that FS can be better considered outside conservation areas. All project actions supported the making of education materials. However, as a project consortium we could not make “official” guidance that is a task of conservation authorities.

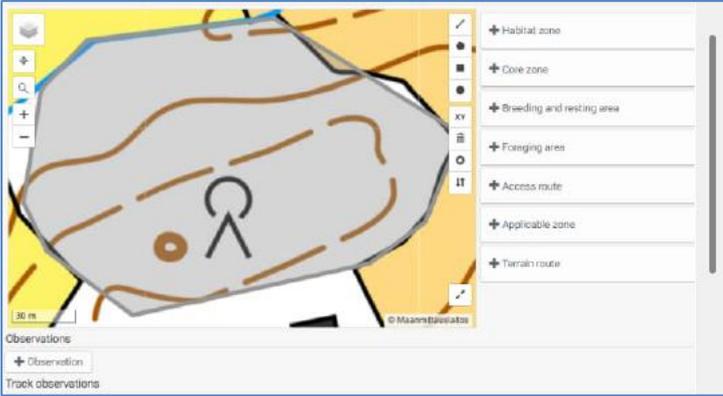
Deliverables and Milestones for all actions are listed in detail in Annex 1, while **Modifications and deviations per Action** are documented in Annex 2. **List of project sites** is in Annex 3, and of **Project indicators** in Annex 4. Continuation of the action after the project is explained in more detail in the **After-LIFE Conservation Plan** (DF1f).

References for deliverables, project publications and other information are used in the text and explained further from page 108 onwards. All Deliverables are downloaded to Butler, as well as annexes 6-35 in two additional deliverables for Final report (DF1h, DF1i). Public versions of deliverables and relevant annexes are available on the project website.

Action A1. Management and availability of the Flying squirrel occurrence data

Beneficiary responsible for the implementation:	FMNH
Other beneficiaries involved:	MHPWF, MHFORESTRY, FANC, MTK, SMK, ESPOO, JYVASKYLA, KUOPIO, EEB, RMK
Overall assessment/status:	Completed
Foreseen start date: 08/2018	Actual start date: 08/2018
Foreseen end date: 06/2024	Actual (or anticipated) end date: 03/2025

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
Lack of accurate and available FS data has been considered as one critical problem to consider the species. Thus, data management and regular FS monitoring form the foundation and can be seen as a precondition for reaching the conservation goals. When locations of the FS are known they can directly be considered and safeguarded within various land use management practices.		
Deliverable: Report of decisions on data sensitivity based on discussion meetings (DA1)		
Task A1.1 Flying squirrel database in Finland		
Meetings to discuss sensitivity, data quality and rules on	FMNH arranged two discussion meetings with many project beneficiaries (01-02/2019) to define the openness of the FS data, and FS location information was agreed to be open. Related discussions with environmental authorities were also held by FMNH.	FMNH MHPWF, MHFORESTRY,

<p>access will be arranged, and a report on data sensitivity will be produced.</p> <p>Stakeholders are encouraged to deliver FS information to FinBIF (Laji.fi). Data management system will be built and developed during the project and integrated with FinBIF.</p>	<p>Data cleaning and arrangements were carried out to build a source FinBIF. Other data users were encouraged to deliver their FS data with spatial locations to the Laji.fi service, and many municipalities have already delivered their data to the service.</p> <p>A mobile application “Liituri” to register FS inventory information was built for professional users: as a tool it enables the gathering of more detailed data in the field (6). When area delineations can be saved besides points of location, searched areas or potential areas, for example, can be registered as target areas for further follow-up studies. Application for Android was made first, and after that, for Apple - both versions are still in use.</p> <p>Clip of the monitoring tool view (FMNH):</p> 	<p>FANC, MTK, SMK, ESPOO, JYVASKYL A, KUOPIO</p>
<p>Additional task: a summary of conservation practices in Finland and Estonia</p>	<p>As conservation practices to some extent vary in Finland and Estonia, there was a need to open the existing procedures. The work was started in 2021, and discussion meetings with beneficiaries were held with the Technical group (F2). A summary “Description of the current conservation legislation and management procedures of the Siberian flying squirrel (<i>Pteromys volans</i>) in Finland and Estonia” was published in early 2022 (7).</p>	<p>MHPWF, EEB</p>
<p>Additional task: FS page built in Laji.fi service</p>	<p>It was noted that for data users, it is practical to find all necessary information at the same website. Laji.fi is highly recommended to be used as a data source, and thus a “FS website” was built there. Now, on a FS website links to guide materials prepared in the Flying Squirrel LIFE project (e.g., in Actions A2, A4, A7, E3) and a map layer illustrating potential habitats downloadable to a GIS system (Action A3.1) are available.</p>	<p>FMNH</p>
<p>Additional task: two open data webinars 20/2023.</p>	<p>Two data webinars were planned and arranged to explain FS related legislation and practices (8), as there was an urgent need for this before A7 education package was ready. Webinars arranged 02/2023 reached 470 people.</p>	<p>MHPWF, VARELY, SMK,</p>

	<p>This work increased awareness of FS among key stakeholders such as forestry companies and professionals. It was possible to be done as it needed just work and knowledge of what project beneficiaries already had.</p>	FANC, MTK
Task A1.2 Flying squirrel inventories in Estonia		
<p>FS inventories will be carried out every spring using a pellet search method. The goal is to reach at least 3000 ha of forests. New occupied habitats will be forwarded to the Environmental register.</p> <p>Additional task: inventories at large on state-owned lands 2024 by RMK (agreed Monitor visit 2022 and 2023)</p>	<p>In Estonia, FS locations are sensitive information and only in use of the authorities. Regular inventories using a pellet search method of FS are a task listed in the National Action Plan for the FS. Information about FS habitats is moved to the Environmental Registry, which also generates automatic protection for the nest tree and the surrounding area within a 25-metre radius. An updated National Action Plan of FS was signed 01/2023 (35).</p> <p>Monitoring of known FS forests including inventories in potential FS forests were carried out annually during the project 2019-2024, with last ones in early 2025. Inventories were mainly made during spring from March to May, when typical droppings of the FS are mostly visible. Both private and state-owned land were covered. Predictions of an updated habitat model (Action A3.2) were applied to target inventories to potential new habitats, a method found usable already since 2013.</p> <p>As there was an unused project budget, an additional task to increase FS inventories were planned and targeted to all potential FS habitats (applying the predictive model A3.2) in private and state-owned lands in spring 2024. In addition, in 2025 RMK made last inventories in Jan-Mar (covering 347 ha and resulting 2 new occupied habitats).</p> <p>The inventory goal was exceeded: in total, almost 20 000 hectares were inventoried in private and state-owned areas, and 74 new occupied FS habitats were found during the project 2019-2025. There are now 150 habitat patches observed occupied by the FS at least once in Estonia. Inventories in state forest by RMK 2021-2025 covered total 9436 ha with 37 new occupied habitats, and about the same result was in private lands by EEB.</p> <p>Knowledge of the FS occurrence, but also the habitat network – observed and expected habitats with moving connections between them - is saved to the GIS systems in RMK and EEB and used in everyday forest management planning and nature conservation management.</p>	EEB (ELF), RMK
Improving integrity of the	As there are many new findings of FS, possibilities to enlarge present Nature 2000 areas, or establishing new	EEB

<p>Natura 2000 network</p>	<p>ones, to improve FS conservation have been discussed. The FS is listed in Annexes II and IV of the Habitats Directive - under the latter, it is not strictly necessary to designate Natura sites, but strict protection must be ensured nationally across the species' natural range. EEB's conservation planning unit considers national-level protection of the FS sufficient and does not see a clear added benefit from adding sites to the Natura network. Enlargements have not proceeded so far, and there appears to be no current political will to pursue such designations.</p> <p>Nevertheless, the project did lead to two important changes in the national-level protection regime in Estonia: in 2023, small clear-cuts previously allowed in the limited management zones of FS SPSs (species protection sites) were banned under the protection rules; and at the beginning of 2025, a ministerial regulation placed 14 new FS sites under protection and expanded three existing SPS areas. In total, about 985 hectares of forests were added to protected areas, roughly two-thirds on state land and one-third on private land.</p>	
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Continuation of the action after the project:

In Finland, FS location information and a specific FS website, with a downloadable map layer for predicted habitats (A3.1) remains open and available in Laji.fi. New observations will be encouraged to be sent to the service so that all data can be used when needed.

In Estonia, annual monitoring of known sites continues under the national monitoring programme. The project provided important input for revising the programme: going forward, 20–30% of sites will be monitored each year, but data will be collected in greater detail than before (nest trees will be mapped and habitat use assessed). Volunteer work camps led by ELF will continue, and RMK will carry on with inventories based on the best practices developed during the project. EEB will be the conservation authority at the national level.

Action A2: Development of inventory methods

<p>Beneficiary responsible for the implementation:</p>	<p>FANC</p>
<p>Other beneficiaries involved:</p>	<p>VARELY, MHPWF (MHFORESTRY, SMK, MTK, ESPOO, JYVASKYLA)</p>
<p>Overall assessment/status:</p>	<p>Completed</p>
<p>Foreseen start date: 08/2018</p>	<p>Actual start date: 08/2018</p>
<p>Foreseen end date: 06/2024</p>	<p>Actual (or anticipated) end date: 03/2025</p>

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>As FS is a strictly protected species and typically, its occurrence is followed by protection, observations of the species need to be acquired in a neutral and professional way. Accurate observations can be used for conservation purposes in land use planning, and furthermore, increase acceptance of FS conservation. A novel approach was to examine skills of trained nature detection dogs in finding traces of FS.</p>		
<p>Deliverables: Inventory Training Package (concept and materials) ready (DA2a) and Report on the usability of dogs assisting the inventory ready (DA2b)</p>		
Task A2.1 Inventory Training Package of the Flying squirrel		
<p>Meetings will be arranged to discuss and plan the Inventory Training Package. Education material will be prepared and published based on the common pellet search method. Inventory education (24 days) will be given to project personnel and all stakeholders.</p>	<p>Two planning meetings and a few commenting rounds for drafts were held. An inventory guidebook was a bit delayed but planned together with participating beneficiaries during spring 2020. Guidebook “Liito-orava. Tietoa lajista ja kartoituksesta” (DA2a) was published in electronic format and in 2000 paper copies (in Finnish).</p> <p>In total, 17 education events in the field were arranged with 292 participants (4). Four of them were 3-day events (12 days) for project staff in Action A6.1, while 13 were separate inventory education events open to interested stakeholders across Finland. This fits the goal of 24 education days.</p> <p>In an inventory training in April 2022, Kokkola, FS droppings were found from a tree base despite the sudden snow cover (photo Anni Koskela).</p> <p>A planned visit of EEB to Finland for inventory methods was combined with other visits (D1 & F1-F2). A FS inventory workshop for EEB species protection bureau was held (05/2023) in Estonia.</p>	<p>FANC MHPWF</p>

		
<p>Additional task: FS education material and webinars</p>	<p>In June 2021 PM was contacted by a large forest company that asked for FS education. As A7 education package was not yet ready, we designed an online education material “Liito-oravatietao kartoitukseen ja metsänkäytön suunnitteluun” (9) together with key beneficiaries in this action in 06-10/2021. During 10/2021-01/2022, 8 webinars were held with 634 participants (4). This work was possible to do effectively as it only needed some working hours as partners already had knowledge of FS. All webinars increased awareness among key stakeholders, such as large forestry companies and forestry students.</p>	<p>MHPWF, SMK, FANC</p>
<p>Task A2.2 Evaluation of skills of trained dogs in locating the Flying squirrel</p>		
<p>The method of using nature charting dogs in FS inventories will be demonstrated in Rekijokilaakso. The two FS inventory methods, a common pellet search method and the skills of trained dogs, will be compared. A report will be produced.</p>	<p>A study to compare two inventory methods were arranged in Rekijokilaakso region, covering the related Natura 2000 area in 2019-2020. A set of forest compartments was selected to be inventoried for FS by both, an experienced nature surveyor, and a nature detection dog trained to recognize the odor of the FS. Inventories were made at slightly different times of the year and mixed so that the human surveyor nor the dog leader did not know of other inventories.</p> <p>In 2022, a summary report describing the study was published as a deliverable “Dog-assisted flying squirrel inventories” (DA2b). Dog inventory can bring additional value especially in times of the year when FS droppings are difficult to find by people. A dog can also detect older traces of the species and indicate previous use of a suitable forest, i.e., when a resident animal has passed away, but a new one has not yet settled on it. Knowledge of the methodology is replicated in Estonia to an experienced</p>	<p>VARELY</p>

	<p>dog trainer who can apply the method in practise when needed.</p> <p>As an additional proceeding, the method is now mentioned in an official guide for nature inventory (Hurme & Karpela 2024). Nature detective dogs for FS can be recommended to times when noticing typical droppings is difficult for humans, but also on cases where decisions should be done fast. The service is available from the entrepreneur IKI9.</p>	
<p>An inventory with dogs will be done in Espoo and Jyväskylä, connected to studies on FS movements (A4, A5).</p>	<p>The dog inventory was done at one site Seminaarinmäki in Jyväskylä 2024 (10). It was done as a common inventory where dogs pointed out new trees with droppings what were not located by human inventors before. This survey increased understanding of how FS uses urban areas there. The original plan to compare signs from satellite trackers was not possible due to delayed delivery (A5). Jyväskylä will carry out the monitoring with trackers after the project.</p> <p>In Espoo, the plan to test dogs with radiotelemetry signals of FS was first cancelled due to difficulties in timing 2021, and in 2024, due to problems in catching individuals for a 2nd study (A4, Monitor visit 2025).</p>	VARELY
<p>Additional task: dog inventories at forests at risk of cuttings (agreed Monitor visit 2023)</p>	<p>As there was some unused project budget, additional forest surveys with trained dogs were planned to forest at risk of clear cutting (10). Surveys were carried out on two sites 10/2023 and 10/2024 covering 68 hectares together, and the dog indicated the presence of FS at these sites. Forestry plans were revised and protection with the METSO program agreements will also be considered.</p> <p>One drawback preventing a wider use of nature detection dogs is their costs. The number of providers for the service is also still limited.</p>	VARELY

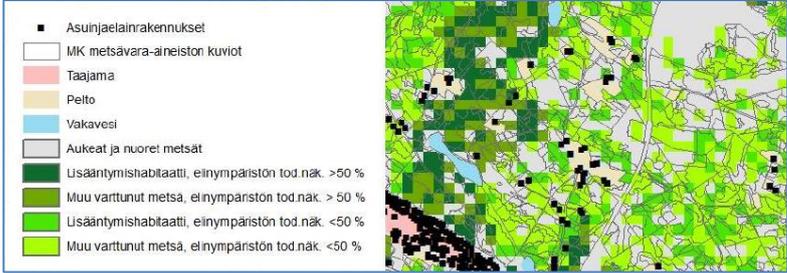
Continuation of the action after the project:

Inventory guide “Liito-orava. Tietoa lajista ja kartoituksesta” will be available and updated if needed. FANC will arrange inventory education events if sufficient resources are found. The use of nature detection dogs will be advertised and used in suitable cases, and an education program with a certificate will be proceeded. Opportunities for a genetic study of the Estonian FS population are searched.

Action A3: Illustrating the potential habitat network of the Flying squirrel

Beneficiary responsible for the implementation:	LUKE
Other beneficiaries involved:	FANC, EEB (MHPWF, MHFORESTRY, MTK, ESPOO)
Overall assessment/status:	Completed
Foreseen start date: 08/2018	Actual start date: 10/2019
Foreseen end date: 12/2021	Actual (or anticipated) end date: 12/2021

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>The aim of habitat models and predictive maps is to illustrate potential habitats for the FS. As a full knowledge of a species occurrence is unrealistic to get, locating suitable habitats and moving connections between them is a way to estimate available resources for the FS. An information layer in a GIS system is thus a tool in planning and can increase understanding of configuration of forests at a large scale. Predictive habitat maps can also be used to target inventories, which may decrease the costs of field work. Habitat modelling is a commonly used method and as such a demonstration activity.</p> <p>Deliverables: 1st and 2nd sets of predictive habitat maps for field checks in Finland and Estonia (DA3a & Da3b), Report on rules for sensitivity and availability for predictive habitat maps in Finland (DA3c), and Predictive habitat maps on potential Flying squirrel habitat network in Finland and Estonia ready and available (DA3d).</p>		
Task A3.1 Finland		
<p>Two meetings will be arranged to discuss the sensitivity of predictive habitat maps. Data of the forests and locations of the FS are collected and prepared for modelling. Models are evaluated</p>	<p>There was some technical delay at the start, but all steps needed in the model building were taken during 2019-2021 (Monitor visits 2019, 2020). Existing FS data was achieved from FMNH in 2020, after which the first models with the categorized MS-NFI data were run. During spring and early summer 2020, field checks were done at 500 sample sites in total (at each of ten regions, 50 sites were inventoried for FS and habitat characteristics).</p> <p>In general, model accuracy was found to be about 70%, being better than a guess. Thus, predictive habitat models can be used as a tool to illustrate suitable FS habitats, and further field surveys can be targeted on these areas.</p> <p>Two discussion meetings with beneficiaries were held as planned and a report of rules written. An online launch</p>	<p>LUKE, FANC</p> <p>(FMNH, MHPWF, MHFORESTRY, SMK, MTK)</p>

<p>with field checks. The result is a predictive thematic habitat map layer to be available in FinBIF.</p>	<p>event of the predictive habitat maps was arranged 8.12.2021 with 109 participants.</p> <p>The map layer is open and downloadable to a GIS system through data services Laji.fi (2021-) and Paikkatietoikkuna (2024-). No PDF or picture format were made as it would have taken a huge number of sheets for large areas. A predictive map layer is in use in state-owned lands of Metsähallitus, both by MHFORESTRY and MHPWF.</p> <p>Example of the idea of predictive habitat maps (LUKE): various habitat classes suitable for FS can be estimated with certain probabilities.</p> 	
<p>Task A3.2 Estonia</p>		
<p>A predictive habitat map for the project area.</p> <p>Locating potential FS habitat types will reduce the amount of fieldwork needed, increase understanding of undergoing population processes, and give input for land management planning.</p>	<p>The habitat modelling has been done in Estonia since 2013. Existing habitat models were updated and modelling of dispersal corridors added for large scale landscape management. The data used included national FS monitoring, national forest registry of stand composition and characteristics, environmental registry of protected species and areas, fine scale topographic and habitat maps, data derived from remote sensing imagery (Landsat and LiDAR) and the dispersal corridors planning done in state forests by RMK. The maps were created by combining data from different sources using GIS together statistical and simulation tools, and field checks were applied for model evaluation.</p> <p>Models were used to locate forests for inventories (Action A1) but also to find sites for nest boxes along moving corridors (Action A9). Information about the habitat network model is also in use on state-owned lands by RMK.</p>	<p>EEB RMK</p>

Continuation of the action after the project:

In Finland, the map layer remains available through Laji.fi and Paikkatietoikkuna services. For now, it seems that updating the layer will not be done soon as the modelling process is very laborious. In Estonia, the habitat network model is updated as needed, and used to

target field inventories (such as in Action A1 during the project). A map layer is used by conservation authorities (EEB) for protection planning decisions and by RMK for planning forestry operations in state-owned land.

Action A4: Evaluation of the Best Practices for the Flying squirrel in land use planning

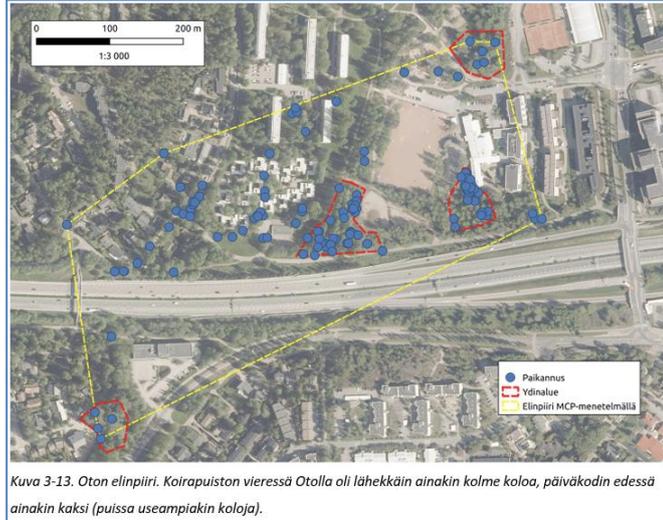
Beneficiary responsible for the implementation:	KUOPIO
Other beneficiaries involved:	ESPOO, JYVASKYLA, MHPWF, SMK, FANC, MTK
Overall assessment/status:	Completed
Foreseen start date: 08/2018	Actual start date: 08/2018
Foreseen end date: 06/2023	Actual (or anticipated) end date: 04/2024

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>There is a need for detailed descriptions of best practices for combining goals of conservation, city planning and building in urban areas. To define some common principles for combining different goals the approach was to co-operate and share knowledge and experiences with associated beneficiaries and other stakeholders. The aim was to develop conservation of the FS together towards fluency in city planning and approval of residents. Describing and evaluating good practices can be seen as a demonstration activity.</p> <p>Deliverable: A Guide for Best Practices in Urban areas (DA4)</p>		
Task A4.1 A Guide for Best Practices in urban areas		
<p>Four 1-day workshops will be arranged early in the project to discuss and plan the Guide for Best practices in Urban areas.</p>	<p>Two workshops were held for planning, and the 3rd one was an introduction seminar “Hyviä käytäntöjä kuntien liito-oravakysymyksiin” 11.2.2020 (143 participants, a hybrid meeting). The 4th workshop was a launch event for the guide 16.6.2021 (178 participants), online. Evaluation of previous land use by monitoring sites (A4.2.), one questionnaire for nature conservation authorities (regional ELY Centres) and one for municipalities/cities were done and applied in the guide (11).</p> <p>The Guide “Liito-oravan huomioiminen kaupunkisuunnittelussa – hyvien käytäntöjen opas” was prepared in co-operation and published 06/2021</p>	<p>KUOPIO, ESPOO, JYVASKYLA</p>

	(DA4). It was named to present good practices in urban areas instead of the best practices, as examples shown are based on experiences of just three cities: Espoo, Jyväskylä and Kuopio.	
A questionnaire for Kuopio residents about the views to FS before and after C2	A questionnaire was prepared in 2019 for Kuopio citizens and results were applied in planning forestry measures to project sites Pirtti & Pirtti Läntinen and Jynkänvuori (A5). The questionnaire was repeated in 2024, after the C2 management measures were carried out. Results showed that combining FS conservation and recreation in urban forest areas can be done as it seems that residents appreciate the same forests as the FS (12).	KUOPIO
Task A4.2 Evaluation of previous land use by monitoring		
Previous city plans (22 sites, covering ca 1070.8 ha) will be monitored using a common pellet search method in Espoo, Kuopio and Jyväskylä.	Older 23 city plans (1013.9 ha) were monitored to see if FS was still using the sites. In Kuopio, 8 sites (803 ha) and in Jyväskylä, 10 sites (100.4 ha) were monitored for two years 2019-2020. In Espoo, 5 sites (110.5 ha) were monitored for three years 2019-2021. Monitoring results showed that FS was still present, despite the variability of the symbols used in city planning. The results also highlight the need for careful selection of suitable symbols for each context as well as marking the ecological connections (13).	ESPOO, JYVASKYLA, KUOPIO
Already defined map-based habitat networks will be evaluated using a radiotelemetry study in Suur-Tapiola, Espoo. A 2 nd radiotelemetry study agreed in Monitor visit 2023. A test on how nature detection dogs find FS traces	The evaluation at a region of Suur-Tapiola 31 km ² was used to confirm estimations of the FS habitat use in a dense urban structure by the seashore. The radiotelemetry study was carried out 2019-2020. In total, nine individuals were caught and followed, but the number of observations per individual varied a lot. Overall, radiotelemetry study was successful (14). It was found that FS individuals can use quite small forest patches in their everyday life if forested moving connections between them exist. This stresses the need to maintain habitat networks in cities. Picture from ESPOO's radiotelemetry (14): "Otto" has crossed a highway Länsiväylä at least twice. Suvisilta pedestrian bridge crosses the highway on the left.	ESPOO

compared to observations from the radiotelemetry (A2).

Monitoring of the use of Suvisilta bridge encouraged in Monitor visit 2023



As “Otto” managed to cross a wide motorway, interest in studying movements further was raised. Thus, a 2nd study was planned to follow about ten more individuals again. However, in spring 2023 only 1 individual was caught. The 2nd study was thus cancelled as following only one individual was not seen useful.

A chance to study how dogs find FS traces close to radiotelemetry signals (A2) was missed. Challenges in timing with the FS follow-up and availability of skilled dogs 2019-2020 prevented the 1st try, and the 2nd radiotelemetry study in 2023 was cancelled.

As the observations of one individual crossing a highway were important, possibilities to use trail cameras and/or dogs close to Suvisilta pedestrian bridge over the Länsiväylä highway were investigated in 2023-2024. However, there was no expertise available to carry out trail camera monitoring within a limited time frame (10). Unfortunately, timing problems prevented the tests with dogs as well. After the project, Espoo will continue searching for a suitable way to better understand FS movements across highways.

Continuation of the action after the project:
The guide “Liito-oravan huomioiminen kaupunkisuunnittelussa – hyvien käytäntöjen opas” remains available, and it will be actively shared and applied. Cities will continue developing their land use planning practices to maintain FS also in the future. We hope that the guide will be helpful for those municipalities who are just starting their work with FS. Results from a radiotelemetry study will be actively used and shared.

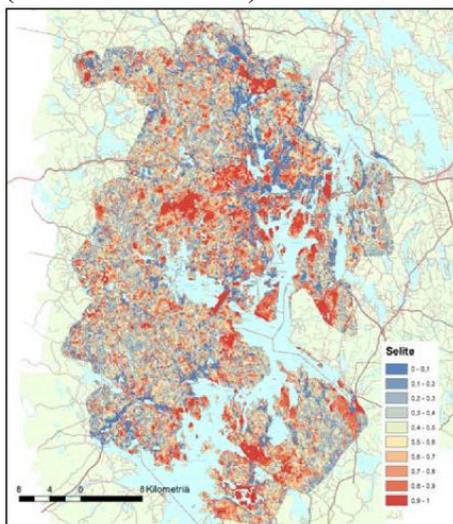
Action A5: Preparation of plans to support the habitat network in urban areas

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	ESPOO, JYVASKYLA, KUOPIO
Overall assessment/status:	Completed
Foreseen start date: 08/2018	Actual start date: 08/2018
Foreseen end date: 06/2021	Actual (or anticipated) end date: 03/2025

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>Plans for conservation actions at project sites were prepared, to be implemented in Action C1: activities will support the continuity of the habitat network in urban areas. As unexpected findings of FS are unwanted situations, careful planning and ensuring a sound habitat network for the species are essential as cities constantly need to balance with the viability of FS populations and a sustainable urban growth in the long term. Combining multiple goals was also aimed: FS typically prefer mixed, multilayered forests, but humans often appreciate open views over the landscape and thinned forests close to roads. In addition, in mature forests, old trees are important for biodiversity, while they may be a threat for the safety of people in forests used for recreation. Applying good practices and be seen as a demonstration activity.</p> <p>Total of 21 urban sites covered 1541.65 ha. ESPOO had 4 sites, JYVASKYLA 8 sites, and KUOPIO 9 sites in A5-C1. A change of two project sites of ESPOO was agreed in Amendment 1 (2021): Turvesolmu and Uusimäki were replaced with sites Finnoonlaakso and Hyljelahti.</p> <p>Deliverable: Plans for conservation actions in urban areas ready (DA5)</p>		
Habitat network with functional connections		
New moving connections to 7 sites in Espoo, Jyväskylä and Kuopio.	11 new moving connections were built. Planting young trees of different species was done in all except at one site, only careful thinnings were needed after all. Artificial jumping poles were included to two connections in Finnoonlaakso/Espoo and in Tikanväylä/Jyväskylä.	ESPOO, JYVASKYLA, KUOPIO
90 FS nest boxes to 13 sites in Jyväskylä and Kuopio.	In Jyväskylä and Kuopio, 99 nest boxes were planned to offer safe nesting places: JYVASKYLA used 27 nest boxes at 7 sites, and KUOPIO 72 at 6 sites. Additional 6 nest boxes were put to a Vanuvuori part of Kuopion lehdot ja lammet Natura 2000 area (enlargement applied	

Aspen saplings (150) to support aspen continuity in Puijo Natura 2000, Kuopio	<p>in MTR 2021). In Kuopio, three different nest box types were used to examine FS preferences (D1).</p> <p>In Kuopio, 230 aspen saplings were planted to support future FS habitats in spruce-dominated forests in Puijo Natura 2000 area: 150 in 2020, and 80 saplings more in 2022. A small planting area was noticed to locate just next to the border to a neighboring Puijo conservation area but still supporting the Natura 2000 integrity (MTR 2021). Tube fences were used to protect all seedlings.</p>	
Satellite tracking of 6 individuals, and monitoring results with nature detection dogs (A2)	<p>It was challenging to find light enough trackers which would not negatively affect small flying squirrels. After a long search, suitable device was finally found but their delivery from the company to the City of Jyväskylä was delayed until summer 2024. Thus, it was too late to arrange official permissions and catching of individuals during the project. Jyväskylä will carry out the tracking study after the project, as it would bring important information of FS habitat use in the city.</p> <p>An inventory with dogs was carried out in 2024 in Seminaarinmäki area: dogs pointed out new trees used by FS and thus brought new information for city planners (10).</p>	JYVÄSKYLÄ
Social approval: FS and recreation		
Combining FS conservation, recreation values and social acceptance: careful harvesting to 3 sites.	<p>In 2 Kuopio sites (Jynkänvuori and a combined Pirtti & Pirtti läntinen), and 1 Espoo site (Hyljelahti) FS habitats were maintained while opening views and adjusting tree species composition within the same forest areas.</p> <p>In Kuopio, perspectives of citizens were heard in planning to careful forestry practices with a questionnaire (12). The aim was to use selective cutting methods and maintain forest areas for FS while keeping them safe for human recreation.</p>	KUOPIO ESPOO
Four meetings before and after activities	As cities already had detailed site plans agreed to their conditions, a need to discuss them with other beneficiaries before execution was not seen. Instead, urban project sites were visited during other project meetings in D1, F1 and F2.	MHPWF
Habitat network model		
Optimized habitat network model	Habitat network model applying Zonation modelling was built and analyzed to the city covering 1446 km ² (DA5). The analysis has already been in use in city planning. A master's thesis was prepared and with	JYVASKYLÄ

including a student work	additional analyses it is published as a scientific article (Kosma et al. 2023).	
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Continuation of the action after the project:
 Lessons learnt from preparation of site planning are used, and participation of residents to land use processes will be continued. Jyväskylä’s habitat network model will be used and updated in the city planning.

Action A6: Preparation of plans to maintain habitat network within managed forests

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	SMK, MHFORESTRY, FANC, MTK, VARELY, EEB, ERAMETS, MKB, RMK
Overall assessment/status:	Completed
Foreseen start date: 08/2018	Actual start date: 08/2018
Foreseen end date: 12/2022	Actual (or anticipated) end date: 03/2025

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>Plans for conservation actions at project sites were prepared, to be implemented in Action C2: activities maintaining FS habitat networks in managed forests. As FS is an endangered forest-dwelling species with an ongoing threat of habitat loss, careful forest planning is essential to maintain enough habitat for the species.</p>		
<p>Besides safeguarding FS, joint planning was selected as an approach in this action. During past decades, mistrust between stakeholders in forestry and conservation had grown and via openness and discussion through practical true cases it was hoped to be eased.</p>		

Examples were prepared to demonstrate a combination of goals for conservation and commercial forestry, and to encourage a common understanding among different stakeholders. Applying good practices can be seen as a demonstration activity, whereas preparing plans together with experts from various fields is a novel approach.

In Amendment 1 (2021), additional site Syrjävaara was applied to replace Pata-aho (A6.1). In Amendment 2 (2024), two additional sites (Paimio and Jämsä, A6.1) and changes to activities in Estonia (A6.3) were applied.

Deliverables (sensitive versions only to the CINEA): Forest plans for Finnish private and state-owned forests (DA6a), Forest plans within the region of Rekijokilaakso Natura 2000 site (DA6b), and Forest plans for Estonian sites (DA6c)

Task A6.1 Forest management plans in Finland

The Guide Material 2016 will be implemented to forest plans serving as demonstration of the legislation. Site plans are free for volunteer landowners.

At least 37 plans will be made: 28 for private forests and 9 for state-owned forests.

Project proposal included preliminary agreements with 33 private landowners but no drafts for sites. Discussions were to be made during the project, and some withdrew at the beginning of the project. In State-owned part there was a set of 11 sites of which at least 9 will be used.

Landowners' wishes will be

In total, **39 plans** to demonstrate good forest use for the FS were prepared together with key beneficiaries as planned: **28 for private and 9+2 for state-owned forest sites are reported**. There was a total reserve of 44 sites, but some landowners withdrew, and a few sites were excluded as no signs of FS were found in 2019.

To ensure that 37 sites will be reached, two additional private sites (Paimio and Jämsä) and one state-owned site (Syrjävaara) were applied. Two new private sites were used in the planning process, but not Syrjävaara due to its high nature values. Site Syrjävaara was designated as an ecologically important area by MHFORESTRY. Site Peranganvaara was also reserved but not needed in the process: it was legally established as a conservation area to ownership of MHPWF. Thus, Syrjävaara and Peranganvaara are also reported as some planning has been made in them and as a result, they remain as important habitats for FS and support project objectives.

The proposed structure of regional groups was changed to a general "A6 group" working with site plans in this action. This was due to clarity and ensuring fluent communication, but also due to limited number of staff in beneficiaries. About 30 group meetings (4), face-to-face and online, were held 2018-2022, as the need to discuss how FS is considered in practice was urgent and continuous.

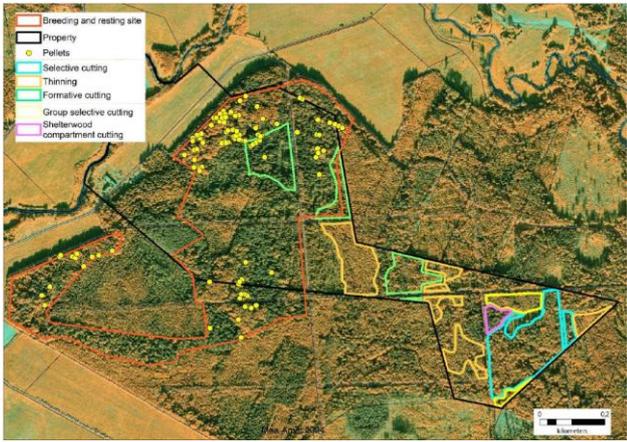
In October 2018, there also was an accidental cutting at one project site (Pata-aho), which was

MHPWF, SMK, MHFORESTRY, FANC, MTK

<p>heard, and FS inventories made.</p> <p>Planning process was expected to be done in groups across the FS range.</p> <p>FANC educate forest planners for FS inventory (12 days, ca 120 persons).</p> <p>In Midterm Report 2021, a need for 3 additional sites was presented (2/SMK, 1/MHFORESTRY), and they were officially applied in Amendment 2/2024.</p>	<p>investigated and reported in detail also to EASME (leading to applying site Syrjävaara). As a result, a facilitator (Inclus Ltd, before 2020 Inforglobe Ltd) eased the project’s kick-off meeting on 10/2018 and participated in the development of the joint planning process in the project. As a result, an online platform “Arviointimylly” was designed to bring openness and ease the complex preparation process and decision making. Online and face-to-face meetings were regularly held for three years.</p> <p>The joint planning process (15) started with discussions with private landowners (SMK) and continued with FS inventories on sites and their neighborhood (FANC, MHPWF). During March-May 2019, FS inventory education events were held by FANC for A6 personnel (4*3-day events/A2). Site planning was started by the site responsible: by SMK in private and by MHFORESTRY in state-owned sites.</p> <p>Drafts were downloaded to the “Arviointimylly”. After constructive comments, a draft was improved and put open again for checking. Most plans needed 1-2 rounds, but a few sites were more complicated. The first aim was to make good plans for the FS, even though this took time: voting for goodness of plans was not used, as the FS is strictly protected. Advice from a conservation authority (regional ELY Centre) was asked and their perspectives applied. There also was a need for a facilitated meeting (by Akordi Oy) in October 2020 between key beneficiaries.</p> <p>In all sites, the aim was to maintain at least several hectares of good habitat for FS and ensure its connectivity at the local scale.</p> <p>All site plans were ready 10/2021, and a part of them were used as examples in an education package (A7). A combination of maintaining FS habitat network while getting some income was mostly found. Sometimes the management was “no management”, which could mean postponing of procedures but also conservation with own decision or METSO agreements.</p>	
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	<p>Co-operation in this joint planning process was a true learning process (15). The process was more laborious than expected and thus cannot be replicated as such. Any co-operation between experts can still be recommended.</p> <p>Two master studies were made to examine experiences during the joint planning process in the project. Attitudes of landowners in the joint planning process were examined (Autio 2024), as well as experiences of forestry professionals with a perspective of service design (Heikkinen 2024).</p>	
Task A6.2 Forest management plans related to Natura 2000 area in Rekijokilaakso		
<p>Site plans in Rekijokilaakso Natura 2000 area and marketing METSO program covering ca 400 ha.</p> <p>FS knowledge will be discussed with landowners in 2 events and 2 excursions.</p> <p>Site plans in Rekijokilaakso do not proceed to Action C2 within the project.</p>	<p>Rekijokilaakso is a large, valuable river valley surrounded by agricultural areas and managed forests. Thus, there is a need for careful forest management to ensure sustainability of the FS habitat network while addressing also other ecological patterns. Here, landowners were contacted in many ways by authorities responsible for conservation law (VARELY) and forest law (SMK). Work started well in 2019 with an introductory event, and after a small break continued again in 2021. Two info letters were sent to residents, and one webinar and one field visit were held. Later, 80 personal meetings were held, and 330 landowners were reached (4).</p> <p>Landowners appreciated discussions with authorities representing both conservation and forest legislation at the meetings, so that questions related to various aspects could be discussed therein (DA6b). As a result, there were 14 landowners interested to have “FS friendly forestry plans” for 20 sites (most of them are sensitive). Plans covered 145 ha together and were handled to landowners. Their execution was on the responsibility of the landowner outside the project. In many cases, permanent or temporal protection was selected as management measure. Indeed, during the process permanent protection was agreed for 150 ha close to Rekijokilaakso (number of agreements for temporal protection via METSO program were not available).</p>	VARELY, SMK
Task A6.3 Forest management plans in Estonia (updated in Amendment 2024)		

<p>FS is strictly protected, and landowners cannot initiate forest management themselves. Plans to combine FS conservation and forest management will be made for about 21 sites (with effective area of ca 2700 ha). The aim is to make encouraging, positive examples to ease possible conflicts.</p> <p>Ca 35 small meetings with landowners will be arranged.</p> <p>Project proposal included 12 Natura 2000 areas related to site plans, and some preliminary agreements with landowners. The actual discussions would be done during the project.</p>	<p>There was a delay in starting this action in Estonia, as questions related to FS conservation first needed official decision making. In 2021 it was stated that if conditions for FS cannot be improved by forestry measures in limited management zones, they must not be done. As a result, no management was planned to state-owned lands. Thus, RMK did not prepare any forestry plans but instead ensured that FS habitat and moving connections are marked to their GIS systems and maintained in everyday use.</p> <p>Preparation of plans for private sites started in 2021. Plans were prepared by MKB and EEB, and ERAMETS arranged their execution (C2). Private landowners were contacted, and the planning proposed by EEB. If a meeting was arranged, then representatives also from MKB and ERAMETS participated. The wishes of the landowner were heard and discussed, and detailed FS inventories at the site and its surroundings were done as a baseline for a plan.</p> <p>In total, 31 site plans were made by MKB in supervision of EEB and handled to landowners (DA6c). Half of the plans, 15 sites, were executed during the project by EEB and ERAMETS (C2). The number of site plans exceeded the expected 21, even though the process started late and state-owned lands were excluded. Their coverage of 872.5 hectares is less than expected 2700 ha, but private forest areas are usually smaller than state-owned forest areas.</p> <p>This was a novel approach in Estonia, and experiences were promising. New expertise with modern selective cutting methods was generated for forestry entrepreneurs, who increased their skills during the project and can apply them afterwards.</p> <p>Example of a Kivistiku site plan in Estonia seen from an aerial photograph (DA6c).</p>	<p>EEB, ERAMETS, MKB</p>
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<p>Two green corridors: project sites Remniku and Permisküla (Amendment 2/2024).</p>	<p>As there was an unused budget due to cancellation of forestry plans, RMK applied a novel approach to improve habitat connectivity by building green moving corridors for the FS. In 2024, site plans for two green corridors across a wide electrical powerline were made to plant small native trees and bushes (DA6c). This was a novel approach and a result of successful discussion with a powerline company.</p>	<p>RMK</p>

Continuation of the action after the project:

Knowledge of FS and good practices will be used to maintain habitat networks in forest planning activities in Finland and Estonia (SMK, MHFORESTRY, EEB, MKB). VARELY and EEB continue active contacting of landowners. Regional planning continues to some extent in Rekiokilaakso. Restoration plans for conservation zones to improve habitat quality will be continued in Estonia.

Action A7: Education to maintain the Flying squirrel in managed forests

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	SMK, MHFORESTRY, FANC, MTK, EEB
Overall assessment/status:	Completed
Foreseen start date: 08/2018	Actual start date: 08/2018
Foreseen end date: 06/2024	Actual (or anticipated) end date: 03/2025

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		

The aim of the education package is to implement good practices to safeguard FS in everyday work. Guidance is based in conservation legislation in Finland and Estonia, and some project sites are used as examples. As a demonstration activity, a national aim of Finland was to prepare guidance for managed forests and land use planning. We could not provide official guidance by a project consortium as that is a task of conservation authorities but managed to make good illustrations of the present legislation. Materials for Estonia matched for national circumstances there.

Deliverables: Estonian Guide Material (300, Estonian deliverable was made in two parts DA7a & Da7b), Brochure describing the main points of the Education Package for Forestry (FIN, DA7c), Education package for Forestry (FIN, DA7d)

Task A7.1 Education Package for Forestry

The guidebook, brochure, 50 field excursions and 40 half-day lectures were planned.

Planning of the material started early in the project, as during the process of making forestry plans A6 information needs were actively observed. Planning meetings with key beneficiaries (SMK, MHFORESTRY, FANC, MTK, VARELY, MHPWH) started in 2021 and were held regularly.

The guidebook was based on prevailing legislation and the Guide Material 2016. Discussions of the content were held also with conservation authorities (ELY Centers and the ministry of the environment) during early spring 2023 to find correct wording.

A brochure was replaced with a simple pocket guide, as it seemed to be more useful in field conditions as a reminder of the main points of the Liito-orava talousmetsässä guidebook. Lectures were changed to webinars, which reach more people easily nowadays (Monitor visit 2022). There were 14 webinars and 55 field education events reaching 1509 people in total (4). Photo from a field education event by Riitta Raatikainen.



SMK

<p>FS module in a digital learning environment.</p>	<p>A FS module was prepared and a Liito-orava taloustmetsässä guide was applied together with more detailed instructions required in state-owned forests (16). All forest workers dealing with FS on state-owned land need to pass this education course.</p>	<p>MHFORESTRY</p>
<p>Education package in Estonia</p>		
<p>Plan to adapt Finnish education material into Estonian conditions.</p>	<p>During the project, it was found useful to make this guide material in two parts. A FS book “Lendoravaraamat” (2023) was prepared to present basic ecological information of the FS as a species but also to collect history of the work on FS what naturalists in Estonia had been done. As such, this book is a part of cultural history: it illustrates and highlights how enthusiastic and skillful individuals are essential in long processes of conservation biology during many decades. Paper copies were given to libraries and for education purposes, and electrical version is available. Clip of the book pages 96-97:</p>	<p>EEB, ERAMETS</p>
		
<p>A guide for forest management “Lendoravametsade majandamine – infomaterjal maaomanikele” (2024) was prepared to explain how sustainable forestry can be planned close to FS forests and which management principles to follow in shaping future habitats. The management guidelines were presented to forestry specialists at four workshops (E4).</p>		

Continuation of the action after the project:
 Education materials are available and will be actively used and shared in Finland and Estonia. Updates will be done when needed by the responsible beneficiaries. SMK’s web service reach over 630 000 landowners and forest professionals. Education events will be arranged and advice offered based of available resources. There have been some recent cuttings in public organizations both in Finland and Estonia, which may affect negatively to chances of continuing advice and arranging education events after the project.

Action A8: Preparation of plans to support continuity of aspen in the long term

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	MHFORESTRY
Overall assessment/status:	Completed
Foreseen start date: 08/2018	Actual start date: 08/2018
Foreseen end date: 12/2021	Actual (or anticipated) end date: 07/2024

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>Plans for conservation actions at project sites were prepared, to be implemented in Action C3: activities supporting the continuity of aspen (<i>Populus tremula</i>) in Natura 2000 sites and in managed forests in their surroundings. Plans for promoting the regeneration of aspen shoots from roots will be produced by opening a growing space (e.g., removing spruces and breaking the ground) and protecting young aspens from herbivory (fencing with enclosures built in sites with elements).</p> <p>Deliverable: Site plans to improve aspen continuity (DA8)</p>		
Promoting aspen continuity		
10 N2000 sites	<p>Site plans for opening growing space for aspen were prepared as planned, except location for activities in Syöte Natura 2000 area was changed to a western part of the same area, as no aspen was found there (MTR 2021). No fencing was planned to Syöte as the new location was difficult to reach. No fencing was planned to Etelä-Konnevesi either as the beaver did not seem to be a threat to aspen there anymore.</p> <p>In 2023, it was seen that restoration burning may not succeed. Thus, enclosures reserved to Ulvinsalo site were put to Riuskanselkonen instead.</p> <p>Growing space for aspen within a forest was done by various methods to get more space for aspens to grow. One method to open growing space was to remove thick ground cover close to aspens (photo Jarkko Niskanen).</p>	MHPWF

		
6 multiple-used forests	<p>Plans to support aspen were made to sites already in A6. Enclosures were planned on 5 sites. Site Pata-aho, where accidental cuttings were done in autumn 2018, remained in this action. As openings were already done, locations for enclosures for aspen were mostly set. Enclosures were not planned to Kurikkavaara site as aspen regeneration there seemed high due to fertility of the ground, and herbivory pressure was not heavy.</p> <p>Enlargements for sites Kivilampi, Jänisselkä and Hanhivaara, as well as the use of a brush-cutter in young forests instead of heavy machinery were applied (MTR 2021). These changes enabled us to open growing spaces outside old forest areas but just next to them. Enhancing aspen continuity next to older forests is important for boreal forest biodiversity in these areas.</p>	MHFORESTRY

Continuation of the action after the project
 Lessons learnt from preparation of plans will be used in future planning.

Action A9: Preparation of plans to support survival of the Flying squirrel in the short term

Beneficiary responsible for the implementation:	EEB
Other beneficiaries involved:	
Overall assessment/status:	Completed
Foreseen start date: 01/2019	Actual start date: 01/2019
Foreseen end date: 09/2024	Actual (or anticipated) end date: 12/2022

Activities as stated in the GA:	Summary of the task progress
General task	

<p>Plans for conservation actions at project sites were prepared, to be implemented in Action C4: the short-term survival of FS was improved by providing nest boxes and controlling predation. Deliverable: A map for nest box locations (DA9)</p>	
<p>Task A9.1 Plan of setting up nest boxes</p>	
<p>Nest boxes (250) will be built to offer safe nesting places in fragmented landscape within FS range in North-East Estonia.</p>	<p>As the network of FS habitats and moving connections is found fragmented, modelling results from Action A3 were used to find the areas where nest boxes would be most useful. Locations of the nest boxes are scattered in an area covering about 7000 km² and put on state-owned lands.</p> <p>A plan for locations of 250 nest boxes was made in 2020. The nest boxes were built and installed during volunteer work camps.</p>
<p>Task A9.2 Predation control</p>	
<p>Predation control plan related to pine marten, 2 meetings with hunters.</p>	<p>Pine marten (<i>Martes martes</i>) is an important predator of FS, which can be a big risk in a limited range of the FS in North-East Estonia. A predator control plan (17) included basic information on the topic with a draft for a procedure. In Estonia, two discussion meetings with hunters were arranged (6.9. and 9.11. 2022, both with 5 participants). Following the discussions, the Estonian Hunters' Society presented the control plan to local hunting clubs in North-Eastern Estonia.</p> <p>It was also discussed whether the planned pine marten hunt could have been carried out during the project (EEB & CINEA, Monitor visit 2023). However, as suitable methods filling ethical requirements were not found, this task was not done as a project work.</p>

Continuation of the action after the project: After the project, predator control plan will be actively shared with key stakeholders.

Action B1: One-off compensation payment

Beneficiary responsible for the implementation:	POKELY
Other beneficiaries involved:	POSELY, VARELY
Overall assessment/status:	Completed
Foreseen start date: 10/2018	Actual start date: 10/2018
Foreseen end date: 12/2023	Actual (or anticipated) end date: 12/2020

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>Permanent protection of habitat is an effective conservation measure for the FS as it directly decreases the largest threat, habitat loss and fragmentation. They directly improve the availability of habitat network and integrity of the Natura 2000 network. All agreements ELY Centres can make for land conservation are permanent protection: the outcome is the same with one-off compensation and land purchase agreements.</p> <p>No deliverables. Official agreements for new protected areas have been delivered to the CINEA with MTR 2021.</p>		
Already agreed One-off compensation payments in two areas		
<p>Preliminary agreements were made for Luhtapohja 14 ha (POKELY) and Sorsasalo 5.8 ha (POSELY).</p>	<p>Permanent one-off compensation agreements were prepared for these areas. Their ownership remains on a landowner, but the status of the conservation area and site-specific regulations remain even if the ownership of land would change.</p> <ul style="list-style-type: none"> • Sorsasalo, Kuopio (5,8 ha, established in 11.3.2019, POSELY/1623/2018) • Vihtalahti, Joensuu (14 ha, established in 23.10.2019, POKELY/832/2019) 	<p>POKELY, POSELY</p>
Area to be protected in Rekijokilaakso via METSO voluntary conservation program		
<p>A combination of forests sites that cover at least 6 hectares within Rekijokilaakso Natura 2000 area.</p>	<p>In one-off conservation, the ownership remains on the landowner (YSA) while purchased areas become property of the state. One-off compensation was agreed to in 3 areas, which covered 6.81 ha together.</p> <ul style="list-style-type: none"> • Haltianlehto, Somero (0,9 ha, established in 22.10.2018, VARELY/2588/2018) • Saukonoja, Somero (2,99 ha, established in 30.6.2020, VARELY 4761/2020) • Tuominen, Somero (2,92 ha, established in 18.2.2020, VARELY/5703/2019) <p>In addition, Ojala site (6.5 ha) was purchased to the state and a conservation area established 10/2018. The site was proposed for the project in the Midterm report 2021, with no reference in the Feedback letter. Possibility to protect this site, excellent for the FS, came suddenly in the early phase of the project and VARELY immediately reacted – then there was no time to start preliminary discussion with the EASME on it. Site Ojala was downloaded to the Land Purchase Database in April 2025.</p> <ul style="list-style-type: none"> • Ojala, Salo (6,53 ha, established in 19.10.2018, VARELY/2843/2018) 	<p>VARELY</p>

	<p>Pictured is a river valley of Rekijokilaakso Natura 2000 area and a nature path therein (E2). FS forests are ahead of walkers next and behind the cattle pastures (photo Saara Airaksinen).</p> 	
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Continuation of the action after the project:

Informing landowners on the conservation possibilities and METSO program continue by ELY Centres (organization structure will change in 2026 to Elinvoimakeskus / Lupa- ja valvontavirasto). Proposals of the formation of new conservation areas for FS will be continued if needed.

Action C1: Supporting habitat network in urban areas

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	ESPOO, JYVASKYLA, KUOPIO
Overall assessment/status:	Completed
Foreseen start date: 01/2020	Actual start date: 01/2020
Foreseen end date: 12/2022	Actual (or anticipated) end date: 03/2025

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>Actions planned in A5 were implemented in C1 (DA5). All 21/21 sites were accomplished. Information on the project work (with logos and a disclaimer) was offered with temporal tables such as laminated A4-A3 papers attached to trees.</p> <p>Deliverable: Info boards for activity sites (incl. logos of the project, Natura 2000, MHPWF and the beneficiaries involved), DC1</p>		

Supporting habitat network in urban forests in the long-term: combining goals for conservation and recreation

<p>Combining FS and recreation at 3 sites</p>	<p>In total, 364 ha were managed as planned to combine FS conservation and recreation values in urban forests in Espoo and Kuopio. ESPOO, Hyljelahti: 34 ha KUOPIO, Jynkänvuori 133 ha KUOPIO, Pirtti & Pirtti läntinen (combined): 197 ha</p>	<p>ESPOO, KUOPIO</p>
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Planting young trees to assist movement connections in the short term

<p>New moving connections at 5 sites</p>	<p>There were 13 new moving connections made in total. Young trees were planted on 11 connections, and on two of them, jumping poles were also erected. At one site, no planting was needed but some thinning was done to improve future forest structure for FS moving.</p> <p>ESPOO (3 sites): 9 planted & one with also jumping poles JYVASKYLA (1 site): 1 planted & with jumping poles KUOPIO (3 sites): 2 planted and 1 maintained</p> <p>Tree plantings in ESPOO (photo Saara Airaksinen).</p>  <p>Jumping poles in Tikanväylä, city of Jyväskylä (photo Anne Laita), received attention and enquiries of the method.</p> 	<p>ESPOO, JYVASKYLA, KUOPIO</p>
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Improving nesting facilities by nest boxes in the short term

96 boxes	<p>99 nest boxes were installed (18). JYVASKYLA: 27 nest boxes for 7 sites KUOPIO: 72 nest boxes for 6 sites</p> <p>Logo plates made of thin metal were put to project's nest boxes (photo Anne Laita).</p> 	JYVASKYLA, KUOPIO
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Planting aspen to support habitat network in the long term

Aspen seedlings in Puijo N2K	<p>KUOPIO (1 site): Aspen seedlings were planted on an area of about 1.8 ha in total. First, the planned 150 seedlings were planted. As they had survived well, 80 more seedlings were added. Pictured are fenced seedlings (photo Saara Airaksinen).</p> 	KUOPIO
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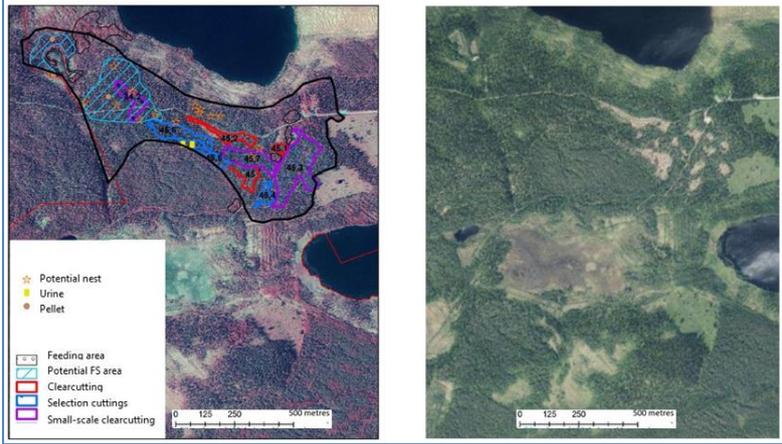
Continuation of the action after the project:
 Maintenance of conservation investments built during the project continue, and knowledge will be transferred to other stakeholders. For example, nest boxes will be repaired and new young trees planted to replace dead seedlings when needed. Experiences will be used when developing new moving connections for FS.

Action C2: Maintaining habitat network in managed forests

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	SMK, MHFORESTRY, VARELY, EEB, ERAMETS

Overall assessment/status:	Completed
Foreseen start date: 01/2020	Actual start date: 01/2020
Foreseen end date: 12/2023	Actual (or anticipated) end date: 12/2024

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>Actions planned in A6 were implemented in most sites, 55/69, in C2 (DA6a, c). Information on the project work (with logos and a disclaimer) was offered with temporal tables such as laminated A4-A3 papers attached to trees. In Estonia, info tables were used only in sites where sensitiveness of FS location was not harmed. No deliverables.</p>		
Task C2.1 Finland		
<p>All 37 site plans will be executed during the project.</p>	<p>Majority of plans, 36/39, were executed during the project. On 3 sites, private landowners did not proceed to cuttings for their own reasons (likely due to timber prices). In total, about 360 ha habitat for FS was maintained.</p> <p>SMK and MHFORESTRY supervised the careful cuttings at sites. 28 site plans on private land covered about 504 ha together: on each site, living conditions for FS were ensured and forestry measures were careful to maintain moving connections in sites. Careful cuttings were done at 19 private sites during 2019-2024, and at 6 sites, the management was “no management”, meaning temporal protection (with Metso programme) or an own decision.</p> <p>In 11 state-owned sites, 7 were carefully managed and on 2 sites no management was done. Protection (own decision or permanent protection (agreements with ELY Centre) was done in Peranganvaara and Syrjävaara. Project sites covered 574 ha together, of which 245 ha of FS habitat was saved, 120 ha remained as moving habitat, and future habitat was enhanced in 60 ha.</p> <p>Pictured is an example of a site Kivilampi on state-owned land (DA6a): A6 plan on the left and its C2 execution on the right seen from aerial photographs.</p>	<p>SMK, MHFORESTRY</p>



Task C2.2 Estonia (updated in Amendment request 2024)

Managed forests

Plans covered about 860 ha of forest. In total, 15/31 site plans were executed during the project. As there was a delay in starting the planning, project time seemed to run out as every winter in Estonia does not have suitable weather conditions for forestry machines. ERAMETS and EEB supervised the cuttings at sites. The total area covered by careful forestry operations was 153,3 hectares (and the volume timber felled during the works 5477 m³).

Project funding was used for execution. LIFE funding made it possible to introduce new and more careful management methods such as various selective cutting methods to practice. Feedback from forest owners was mostly positive, but such work would not have been undertaken without project funding.

EEB,
ERAMETS

Green corridors will be built on 2 sites in 2024.

Planting of two green corridors were carried out (2/2 sites) during two well-being days of RMK in June 2025, being both cheap and useful way of doing the work. Painted poles and info tables were put up to ensure that maintenance workers do not accidentally cut the young trees at the corridors (photo Ilona Karjalainen).

RMK



Continuation of the action after the project:

Maintenance of conservation investments built during the project continue, and knowledge will be transferred to other stakeholders. Locations of FS remain in databases, and it is likely that private landowners will execute careful cuttings as planned after the project. Timing may be affected by the market prices of timber. In Estonia, project funding was essential in the execution as after the project, cuttings will be landowners' own costs.

Action C3: Supporting continuity of aspen in the long term

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	MHFORESTRY
Overall assessment/status:	Completed
Foreseen start date: 01/2020	Actual start date: 01/2020
Foreseen end date: 12/2023	Actual (or anticipated) end date: 06/2024

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>Actions planned in A8 were implemented at 15/16 sites in C3 (DA8). The restoration burning at Ulvinsalo N2000 area (FI1200225) was cancelled due to wet summer conditions. Information on the project work (with logos and a disclaimer) was offered with temporal tables such as laminated A4-A3 papers attached to trees. Each enclosure has a durable info table. No deliverables.</p>		
At N2000 areas and their neighbourhood		
16 sites	<p>Management activities to open of growing space were done 2021-2023 in 15 sites. In total, over 200 ha of future habitat for FS was enhanced in Natura 2000 areas and in managed forests between them.</p> <p>In Natura 2000 areas growing space was opened by using various methods: removing pines or spruces (8 sites, 192 ha), or by exposing mineral soil (2 sites, 8 ha).</p> <p>Outside Natura 2000 areas management of 6 sites was done 2020-2021 by opening growing space for aspen with forestry measures such as thinning, selective cuttings and small gap felling methods (6 sites, 30 ha).</p> <p>One method to open growing space around young aspens was to remove other trees so that aspen canopies get more light (photo Anni Koskela).</p>	MHPWF, MHFORESTRY

	 <p>In Ulvinsalo, preparations for restoration burning such as cutting fire corridors and removing excess wood were done in 2022-2023. However, in 2023, Ulvinsalo restoration burning was cancelled due to wet summer. Again in 2024, Ulvinsalo restoration burning was not possible to execute due to the wet summer. Site will be burned after the project.</p>	
<p>7 sites, 70 enclosures</p>	<p>Only 46 enclosures were made, which was partly due to increased costs after the pandemic. During the work, about ten fence elements were also stolen from a storage place near project sites.</p> <p>Total of 22 enclosures were put into 2 conservation areas. Enclosures were put up in 2 sites 2022: 10 in Huuhkajanlehto, and 11 in Riuskanselkonen 2022. In 2023, enclosures reserved for Ulvinsalo were put to Riuskanselkonen as a large enclosure of ca 1,2 ha. Ulvinsalo is situated close to the Eastern border and is a bit difficult to reach so we wanted to ensure that possible closures in the border region due to the war would not harm project work.</p> <p>Total of 24 enclosures were put to 5 managed forest sites. In each site there were 4-5 enclosures. No enclosures were put to Kurikkavaara, as there was no need for fencing.</p> <p>Aspen enclosure at Kivilampi site after two winters (photo Tõnu Laasi). Aspen on the right was cut so that it increases formation of regenerative shoots (a forestry measure). Permanent info tables were attached to fences.</p>	<p>MHPWF, MHFORESTRY</p>



Continuation of the action after the project:

Maintenance of conservation investments built during the project continue, and knowledge will be transferred to other stakeholders. Enclosures will be kept in place until young aspens within have grown high enough (>5 meter) so that moose cannot cut them even during a thick snow cover. Restoration burning planned to Ulvinsalo N2000 site will be executed as planned as a part of a fire continuum plan of MHPWF.

Action C4: Supporting survival of the Flying squirrel in the short term: nest boxes in Estonia

Beneficiary responsible for the implementation:	EEB
Other beneficiaries involved:	
Overall assessment/status:	Completed
Foreseen start date: 01/2020	Actual start date: 04/2021
Foreseen end date: 06/2024	Actual (or anticipated) end date: 06/2023

Activities as stated in the GA:	Summary of the task progress
General task	
Actions planned in A9 are implemented in C4. In total, 250 nest boxes were built and put up as planned. No info tables were used as FS is a sensitive species in Estonia. No deliverables.	
Nest boxes	

250 nest boxes	<p>Nest boxes were built and put up during 2020-2023 at 8 volunteer camps with 102 participants. A supporting organization, Eesti Looduse Fond (ELF) actively participated in the camps (photo Tõnu Laasi).</p> 
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Continuation of the action after the project:
 Maintenance of conservation investments built during the project continue, and knowledge will be transferred to other stakeholders. Nest boxes will be repaired when needed, and volunteer camps will be arranged for that when possible.

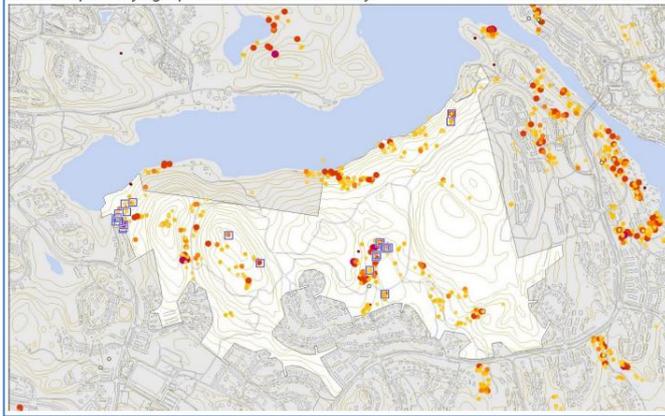
Action D1: Monitoring the conservation actions

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	ESPOO, JYVASKYLA, KUOPIO, SMK, EEB
Overall assessment/status:	Completed
Foreseen start date: 01/2020	Actual start date: 01/2020
Foreseen end date: 06/2024	Actual (or anticipated) end date: 06/2024

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>Effects of conservation activities C1-C4 were monitored at sites according to the plan delivered to CINEA 2022. Condition of planted trees or structures (enclosures or jumping poles) were observed and prepared if needed. FS occupancy pattern was observed, and variation between years noted. This is in line with previous knowledge as FS is a short-lived species: when a resident FS passes away, a new individual has not yet reached a forest. However, in Finland, during years 2023-2024 there seemed to be more unoccupied forests than before, despite of the management was done or not. Yet, no clear reasons for the observed pattern could be defined, as other factors were not monitored simultaneously. The monitoring data is waiting for further scientific analysis after the project.</p>		

No deliverables. D1 Monitoring report (18), D1 Nest box report Kuopio 2020-2024 (19) and D1 Nest box Report Estonia (20) were prepared.

An example from Jynkänvuori, Kuopio shows the importance of monitoring FS occupancy for many years (18, page 3). Here all FS observations 2019-2024 are shown: more red dots mean more droppings found. With blue observations are shown from spring 2022. If only a single survey was done then, no knowledge of other used areas would have been seen. Map by the city of Kuopio, picture of FS pellet search by Anni Koskela.



Task D1.1 Habitat network in urban areas

<p>Condition of planted trees and nest boxes is monitored, and FS occupancy is followed at some sites.</p>	<p>Planted trees were mainly growing well, but some seedlings were replaced in Espoo and Kuopio.</p> <p>Jumping poles, after being up for 3 years/Espoo and 1 year/Jyväskylä, are still in good condition. So far, no suitable method to observe if FS uses poles to cross the roads has been found.</p> <p>Nest boxes were in good condition, and FS had accepted them moderately. In KUOPIO, there was not much difference between robust timber boxes with thick front wall boxes and drilled 'cylinder' log boxes (19). The boxes with holes in the bottom were clearly the least favored by the flying squirrels, with little to no sight of flying squirrels in Kuopio.</p>	<p>ESPOO, KUOPIO, JYVASKYLA</p>
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Task D1.2 Habitat network in managed forests

<p>FS occupancy at sites is monitored.</p>	<p>Monitoring FS occupancy was done annually at managed forests, and in some sites also in their close neighborhood (18). Both in managed and protected sites, the FS occupancy varied. The data will be analyzed in detail after the project.</p> <p>Example table of FS occurrence on state-owned project sites and in their neighborhood forests during 2019-2024 in Finland (18, table 5): 1 = droppings found, 0 = no droppings found, x = no monitoring. The variation in the FS occurrence between years is clearly seen.</p>	<p>SMK, MHPWF, EEB</p>
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Project site	Baseline 2019	2021	2021 Neighbor	2022	2022 Neighbor	2023	2023 Neighbor	2024	2024 Neighbor
Pöppölä	1	x	x	1	1	1	1	1	x
Sipilänperä	1	1	1	0	1	0	0	0	1
Kurikkavaara	1	1	1	1	1	1	1	1	x
Palovaara	1	1	1	0	1	0	1	0	1
Parviaissuo	0	0	x	0	1	0	0	0	1
Hanhivaara	1	0	1	1	1	0	0	1	0
Hikilehto	0	0	0	0	1	0	0	0	0
Jänisselkä	1	1	x	0	0	0	0	0	x
Kivilampi	1	1	1	1	1	1	1	1	x
Pata-aho	1	1	1	0	1	1	0	0	x

In general, baseline inventory results from 2019 included more FS observations both in private and state-owned sites. This may partly be related to the skills of personnel as in 2019, as FS experts from FANC made the first inventories. Afterwards, responsibility for monitoring private sites 2020-2024 was on SMK, where people were well educated to work, but still had shorter experience. Still, people doing the work 2020-2024 remained mostly the same, so their experience increased during the period as well.

In Estonia, monitoring was carried out at all known sites in close cooperation with the organisers of the national monitoring programme. Post-management monitoring of the C2 project areas detected no significant changes, indicating that the implemented forestry operations did not have a negative effect on FS. Most of the work was, however, conducted at some distance from nesting forests.

At a broader scale, changes in habitat use point to the ongoing impact of intensive forest management across eastern Estonia, which continues to degrade the FS habitat network.

Meetings before and after (4)

In total, 5 monitoring meetings were arranged to visit project sites (68 participants, 4). One meeting was a launch event of A4 guide (06/2021). Both urban and managed forest sites were seen, as well as aspen continuity sites and knowledge of nature detection dogs (04/2022 and 04/2023). Two meetings were arranged specifically for Estonian colleagues: in 06/2022 in Kainuu and in 06/2023 in Southern Finland with the Osoon TV group. Pictured is a visit to the city of Helsinki, a supporting organization, by a FS nesting tree next to a new tram line (photo Eija Hurme).

MHPWF

		
Task D1.3 Habitat characteristics in the long term: aspen		
<p>Growth of aspen and condition of enclosures is followed.</p>	<p>Annual monitoring was done in spring 2021-2024 at state-owned sites (C2, C3). The opening of growing space seems to be efficient as growth of aspen from regenerative shoots looks active in all sites (18). However, the enclosures are really needed in some sites aspen shoots are eaten around them, but inside the new shoots may grow over half a meter per year. The enclosures have tolerated winter conditions well: only a little repair has been needed.</p>	<p>MHPWF</p>
Task D1.4 Survival in the short term: nest boxes		
<p>Nest boxes will be monitored annually</p>	<p>Condition and marks of a user of nest boxes were monitored annually (20). So far, no FS nesting was observed in boxes, but many small birds and insects had approved them. Game cameras followed 7 boxes, and in their footages can be seen that FS occasionally visits boxes. It is likely that in time, FS may learn to use the boxes more, but until that, they support biodiversity.</p>	<p>EEB</p>

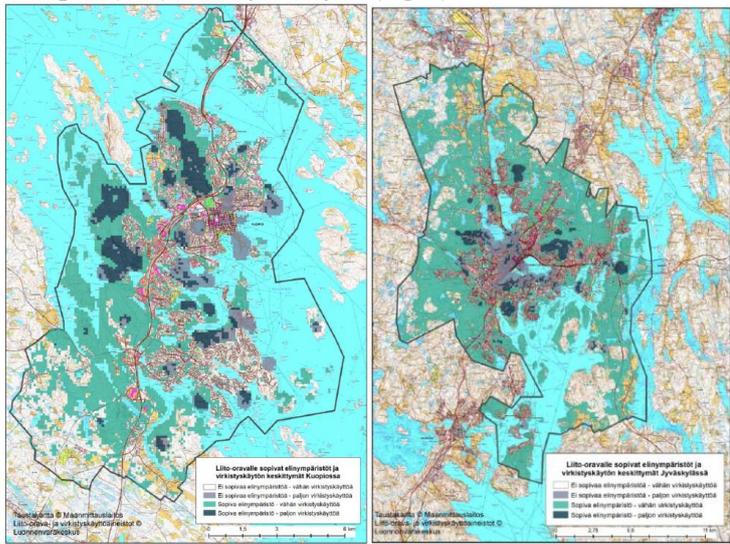
Continuation of the action after the project:

Monitoring will be done at relevant intervals by responsible beneficiaries. Responsibility of monitoring FS occupancy in private sites is on the landowners. Methods to monitor the use of jumping poles and green corridors will be searched. In Jyväskylä, on-time satellite trackers will be applied to analyse individual FS moving in the urban landscape. Enclosures are followed annually and repaired when needed. Afterwards, enclosures will be re-used in similar conservation purposes. Growing of aspens is followed at relevant intervals: in areas where growing space is opened, it will take time until the forest structure changes towards a mixture of tree species. Detailed data analysis of FS occupancy pattern at sites will be analysed in detail at the university level.

Action D2: Socio-economic impacts

Beneficiary responsible for the implementation:	LUKE
Other beneficiaries involved:	MHPWF, SMK, EEB, ERAMETS
Overall assessment/status:	Completed
Foreseen start date: 08/2018	Actual start date: 08/2018
Foreseen end date: 09/2024	Actual (or anticipated) end date: 03/2025

Activities as stated in the GA:	Summary of the task progress	
General task		
<p>Socio-economic impacts of the project are summarized, including key aspects addressing both Finland and Estonia. In Finland, studies were many and planned separately to public, citizens and forest owners, whereas in Estonia, one survey was targeted mainly to forest owners and only at a small extent to public.</p> <p>Summary deliverable was prepared together with LUKE, MHPWF and EEB. Although situations vary and comparisons cannot be drawn, there were some similar patterns found in both countries. First, attitudes towards FS vary considerably in public answers but also within forest owners, from positive to neutral, but also up to somewhat negative to negative. Second, attitudes towards the protection of FS were more other positive by owners of small forest areas (estates), whereas by owners of large forest areas they were more negative. This may relate to restrictions on forest use, which were often perceived unfair together with inadequate compensation for timber loss.</p> <p>Deliverables: Report on the socio-economic effects of the project ready (DD2a), and Social value and conflict map (DD2b)</p>		
Extensive evaluation		
Questionnaire (beginning and end of the project)	<p>LUKE's all project studies in actions A3, D2 and D3 are described in a report (21). Part of socio-economic analyses and questionnaires are reported only in this publication.</p> <p>Framing the problematics: Ota kantaa questionnaire and interviews 2019 and 2024. Multiple framings of the issue were identified, which should be taken account in communication. Not all citizens recognize the need for (additional) conservation actions, and some will openly challenge the efforts publicly. However, large majority of citizens support the efforts, while some variation exists in the emphasis on focusing efforts in urban green areas or rural forests.</p>	LUKE

<p>PPGIS study and a conflict map</p>	<p>A Public Participation Geographic Information System (PPGIS) survey was done in Espoo, Jyväskylä and Kuopio (DD2b). Based on PPGIS survey responses, places with high concentrations of recreational use and natural values were mapped with places of potential habitats of FS. The spatial overlap between social and ecological hotspots was generally low or very low, but weak synergies between biodiversity values, social values and potential FS habitats were identified in urban areas.</p> <p>Scientific article of the study is in progress. Pictures from Kuopio (left) and Jyväskylä (right), DD2b.</p> 	
<p>Attitudes of landowners</p>	<p>Attitudes of landowners. A survey of opinions and experiences, along with a choice experiment, was conducted in 2023 to better understand Finnish forest owners' attitudes towards habitat conservation. Over 60% felt that flying squirrel conservation should not outweigh the economic benefits of logging. However, a similar proportion viewed flying squirrel protection as a human responsibility.</p>	
<p>Attitudes of residents in cities</p>	<p>Results from a questionnaire of attitudes of residents (Espoo, Jyväskylä, Kuopio) seemed to be more positive (about 65%) than negative (35%) towards FS conservation. However, current participation methods may present overly positive results of public attitudes.</p>	
	<p>Socio-economic study was carried out in Estonia by the Centre of Estonian Rural Research and Knowledge (22). The methodological approach of the study combined qualitative and quantitative data collection. This included a structured questionnaire survey for forest owners and stakeholders, complemented by in-depth interviews with experts and relevant authorities. Additionally, statistical</p>	<p>EEB</p>

	<p>analysis and document reviews were used to evaluate the socioeconomic impacts of FS conservation measures.</p> <p>From both surveys and interviews in Estonia, it emerged that private forest owners' primary concern is not the presence of protected species in their forests, but rather the restrictions imposed to protect the species, which they believe are unreasonably strict and detrimental to the condition of the forest, while the compensation for lost income is unfair.</p>	
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Continuation of the action after the project:

Exchange of knowledge of reports and methods will be continued. LUKE aims to carry out a questionnaire for landowners again, after FS related education (A7) has been applied for some years.

Action D3: Ecosystem function restoration

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	LUKE, EEB
Overall assessment/status:	Completed
Foreseen start date: 10/2018	Actual start date: 10/2018
Foreseen end date: 09/2024	Actual (or anticipated) end date: 03/2025

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
	<p>Project effects from the ecosystem function perspective, addressing both Finland and Estonia, are summarized. An extensive evaluation of future scenarios related to forest use from the FS perspective in Finland are demonstrated. As forest management is done at a small scale but under official guidelines, effects at forest stand scale accumulate to large scale effects in time. Thus, future scenarios may help the design process of guidelines to estimate their effects at a larger spatial scale during a long period.</p> <p>Deliverables: Habitat probability and corridor maps, habitat probability GIS layer for first, second and third landscapes (DD3a, DD3b, DD3c), and Summary of the Project's Effects on Forest Ecosystem Function (DD3d)</p>	
Deliverable		
	<p>A summary deliverable was made of studies in Finland and Estonia (DD3d). In Finland, it was possible to study future scenarios with example landscapes for how to tackle trade-</p>	

offs between timber production and forest management, contributing suitable habitats for the FS. In Estonia, it was essential to understand better the availability of all potential habitats and forested moving connections between them so that the tiny FS population can be kept alive. The findings underline the need for finding sustainable forest management strategies. In that work, various predictive modelling techniques can be helpful. FS conservation in the future also calls for continuous exchange of knowledge between experts and monitoring the efficiency of conservation practices in both countries.

Qualitative barometer for Finland and Estonia

<p>A barometer for evaluation purposes, suitable for Finland and Estonia. A barometer would use information of A1, D1 and project indicators, but specifically address expert knowledge on biodiversity related key variables.</p>	<p>The aim was to find measures of FS and biodiversity, which would be discussed with experts and used as a base for evaluating ecosystem effects regularly. We could not develop a barometer during the project but instead, we drafted a concept at its end (DD3d).</p> <p>A qualitative barometer could be developed to work as a tool to maintain exchange of knowledge between professionals from various stakeholders but also between Finland and Estonia. It could be formed as an expert group that gathers regularly, evaluates available information on the FS and related factors, and estimates future directions. Its aim could be to participate in monitoring of the FS but also effectiveness of conservation practices.</p> <p>Regular group work could increase understanding that could be used to develop better practices to safeguard the FS in both countries. In addition, in the Recommendations formulated in the Flying Squirrel LIFE project, one important topic is how to continue fruitful collaboration that was formed during the long project. A joint expert group might be one answer for continuing exchange of knowledge and for preparing new methods based on analytic evaluation and clever thinking.</p>	<p>MHPWF, LUKE, EEB</p>
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Future ecosystem function via scenarios in Finland

<p>3 example landscapes for future scenarios</p>	<p>Three deliverables of each example landscape Laajavuori, Syrjävaara and Sipilänperä (DD3a, b, c) with a summary report explaining how the modelling (23) were ready 2023, and a scientific article was published (Ahtikoski et al. 2023).</p> <p>Cost-efficiency of maintaining and increasing suitable habitats for FS was analyzed using a set of three example landscapes with different future scenarios. The results indicated that some forest management scenarios were more cost-efficient than others in maintaining habitat suitability and connectivity for FS. Adjusted cutting removals, due to other restrictions such as recreation, were found to be more cost-efficient in creating suitable habitats. The study shows that it is possible to design and study adaptive forest</p>	<p>LUKE</p>
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	<p>management strategies that consider both ecological and economic factors. However, it often is challenging.</p>	
	<p>In Estonia, a predictive habitat mapping study aimed at identifying, evaluating and mapping both existing and potential habitats (such as younger age classes) and forested connections between them using various methods. The primary objective of the study was to enhance understanding of the habitat requirements of flying squirrel by integrating observational data with detailed environmental information to develop a comprehensive predictive habitat network model.</p> <p>The best practices developed during the project for mapping flying squirrel habitats and modelling the habitat network will continue to be used. As the forest landscape continues to change rapidly, it is necessary to repeat the analysis every few years. This can be done by applying the established methodology and using regularly updated input data collected at the national level.</p>  <p>Excursion participants (F2, 05/2024) in a forest in Estonia that was predicted as suitable for FS by A3 habitat model. FS exists in the neighborhood, but no signs of the species have been found in this forest yet (photo Saara Airaksinen).</p>	<p>EEB</p>

Continuation of the action after the project:

Exchange of knowledge of reports and methods will be continued, and their use in developments of general guidelines and strategies for forest and land use planning is encouraged. In Estonia, best practices for mapping and modelling continue.

Action E1: Dissemination plan and execution

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	All
Overall assessment/status:	Completed
Foreseen start date: 08/2018	Actual start date: 09/2018
Foreseen end date: 03/2025	Actual (or anticipated) end date: 03/2025

Activities as stated in the GA:	Summary of the task progress
General task	
<p>Coordinating beneficiary MHPWF is responsible for coordinating general communication in the project and all obligatory dissemination activities. All associated beneficiaries participate the communication and general media work. Results of the general media work and networking events are listed in Annex 4.</p> <p>Deliverables: Project brochures (DE1a), Short videos about the project and specific topics (DE1b), Layman’s Report (DE1c)</p>	
Task E1.1 Dissemination plan	
<p>Finland/Education Day for Communication</p> <p>Estonia/Project Dissemination Workshop</p> <p>Responsible for communication nominated</p>	<p>Project’s Kick-off meeting was arranged 29.-30.10.2018 in Finland with participants of all beneficiaries (FIN and EST), which included a part for an education day for communication where we started discussions about good communication practices in the project.</p> <p>Communication group was established in Finland September 2018 (F2), and a dissemination plan was prepared in early 2019 with discussions about common rules. Dissemination plan was updated almost annually in Communication group meetings (F2).</p> <p>In Estonia, good communication practices were discussed at early phase of the project in 2018 and responsible persons nominated.</p>
Task E1.2 Dissemination pack for public dissemination	
<p>MHPWF: project's website, linked to websites of associated beneficiaries and vice versa. Short project videos, a brochure, project's logo,</p>	<p>MHPWF as a coordinating beneficiary established a projects website, which is linked to associated beneficiaries’ websites. First, Finnish and English pages were made, and in 2021, also Swedish and Estonian pages added. Majority of associated beneficiaries had their own website for the Flying Squirrel LIFE project with links to the main project website. The main website has received over 33 000 visitors (not an accurate number due to changes in systems), and there are over 185 000 social media followers when summing up all beneficiaries’ accounts (4).</p>

other project materials, high-quality photographs, local and national media excursions

Project logo was ready 2019, and project's brochure (4 language versions), a 1st video and T-shirts with logos for project personnel 2020. High-quality photographs were purchased for the project 2019-2023, and 4 roll-ups of the project were made (2 Fin, 2 Est). Instead of budgeted grey gloves, reflectors with a flying squirrel shape were seen more useful and purchased as communication material 2023 and 2024. These reflectors do catch the eye, and many useful discussions have started from them (photo Eija Hurme).



The second video “Liito-orava metsässäni – mitä nyt?” was made in 2024 as [an animation](#) that serves as a short guide about what to do if there is a flying squirrel in my forest. Links to FS videos and programs are in DE1b.

FANC: 2 editorial articles in Suomen Luonto magazine

FANC published 3 editorial articles about FS issues in Suomen Luonto magazine (4: 5/2022, 6/2023 & 3/2024). A guide to build a nest box was prepared by MHPWF (in Finnish and in Swedish, Monitor visit 2021) and included in the E3 Environmental education guide (DE3).

There were 11 media trips to project sites. Two international journalists visited the project in 2019 and 2021. These visits resulted articles in appreciated international journals Deutsche Welle (Finland: Euroskeptics vs. a flying squirrel, 19.6.2019) and in Independent (Protecting the land of the flying squirrel, 7.1.2022). Pictured is a journalist M. Hall/Deutsche Welle (left) interviewing PM Eija Hurme/MHPWF and coordinator Mai Suominen/VARELY in Rekijokilaakso 06/2019 (photo Ilkka Numminen).



Info tables to conservation action sites.	Project sites with conservation actions (C1-C3) had (at least) temporary info tables, which included a description of the work and contact information, project logos and a LIFE disclaimer. Info tables were not used on sensitive sites (C2, C4).
Layman's report in four languages in electronic and paper versions	Layman's report was designed at the end of the project in four languages (Fin, Eng, Swe, Est) in electronic versions. In addition, 200 paper copies in Finnish were taken to be sent to beneficiaries for sharing, and to private landowners who participated the project.
Task E1.3 Networking with other LIFE and/or non-LIFE projects, and attending relevant seminars	
LIFE projects and other projects visited during the project	<p>Pandemics affected the scale of networking, especially during 2020-2022. Overall, 36 networking events were attended by many beneficiaries (4), including for example urban planning and education meetings for professionals. PM visited 2 LIFE Platforms and MHPWF hosted one meeting (E4). The project was communicated in national and international presentations. We also co-operated with researchers from universities of Oulu and Helsinki and arranged an online meeting 01/2025 about new genetical research of FS: 63 people were eager to hear recent findings.</p> <p>One interesting citizen science event was a "Poop hunt" (Papanajahti) in 04/2024 in the Nuuksio National Park arranged in co-operation with Haltia, WWF Finland, MHPWF, and FMNH. During the day, 46 volunteers monitored FS situation in the national park by searching for FS droppings and reporting them using a mobile application iNaturalist. More similar events will be arranged later as well.</p> <p>In Estonia, year 2023 was a year of FS, "Lendorava Aasta", coordinated by the Estonian Theriological Society. EEB actively participated in the year by introducing FS information and the project in many ways.</p>

Continuation of the action after the project

Project website and all publications and other materials therein remain open until 2030, and connections built in networking remain in use. Main guides remain available also in the FS website of Laji.fi (FMNH). FS reflectors and T-shirts delivered during the project continue to serve as long-term notifications of the project.

Action E2: Engaging general public and landowners

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	FANC, KULUMUS, JYVASKYLA, VARELY, SMK, EEB (all)
Overall assessment/status:	Completed



In Jyväskylä, 3 FS walks and 1 expert lecture were arranged (with over 100 participants) as well as 1 photo exhibition in a public library (4).

3 excursions
and 1
exhibition /
JYVASKYLA

In the Finnish Nature Centre Haltia 10 family events (FS days and an expert lecture by nature photographer Benjam Pöntinen) were participated by almost 3700 people (incl. video downloads). A family excursion “Leevi Liito-oravan polku” was arranged 76 times 2020-2024 with over 1200 participants (4).

20 FS related
family events /
Haltia

Nest box building in a flying squirrel day in Haltia where the staff had project T-shirts on (photo Erkkä Luutonen).



2 nature paths
/ Jyväskylä
and
Rekijokilaakso

2 nature paths with info tables were improved. In Rekijokilaakso (24), the work was done in co-operation with the local [Häntälä](#) Village trust, whereas in Jyväskylä (25), the city was responsible of the path. Both paths were officially opened in spring 2024.

Stakeholders,
Finland

Info letters were sent 2021-2022 to the locals, and an excursion was arranged for them 10/2022. In total, SMK

SMK,
VARELY

<p>10 excursions, 34 day-trips (private meetings), web service</p>	<p>and VARELY arranged 80 events and reached 454 private landowners. Information on FS, careful forest practices and Metso volunteer conservation program were discussed (26). As a result, at least 150 ha of permanent conservation agreements were already made outside the project.</p> <p>SMK website has FS information available at its web service www.metsaan.fi that in Finland reaches over 632 000 forest owners, professionals and entrepreneurs working with forestry.</p>	
<p>Stakeholders, Estonia</p> <p>At least 12 events and time for personal meetings (considering Russian in materials)</p>	<p>There were 6 public FS events in Estonia with 223 participants (4).</p> <p>FS knowledge was shared with landowners and professionals at 24 public events, where 306 participants were met (4).</p> <p>In the North-East part of Estonia many residents speak only Russian. However, after the war started 02/2022, there has been a continuous change in offering information materials mainly in Estonian.</p>	<p>EEB</p>
<p>Task E2.2 National seminars for transferring project results</p>		
<p>Final seminar in Finland (1,5 day) and Estonia (1 day)</p>	<p>Both final seminars were full-day events with high-quality presentations, in which project works were shown and celebrated.</p> <p>In Estonia, Final seminar was arranged 17.10.2024 in Ida-Virumaa with 40 participants at place (27, 4). Pictured are flying squirrel experts Liisa Rennel (left) and Udo Timm (right), EEB (photo Ilona Karjalainen).</p>  <p>In Finland, Final seminar was arranged 6.11.2024 in the Finnish Nature Centre Haltia with 260 participants in a hybrid event (28, 4). Pictured is a panel discussion (photo Laura Piironen). Seen from the left: Eija Hurme</p>	<p>MHPWF, EEB</p>

(MHPWF), Markus Nissinen (MTK), Riitta Raatikainen (SMK), Laura Lundgren (ESPOO), Ari Nikula (LUKE) and Jari Valkama (FMNH).



As a part of the Final seminar, right after it 6.-7.11.2025, we arranged an After-LIFE Workshop for project personnel (40 participants, 4) to discuss how to improve FS related issues after the project. The workshop included dinner, and a flying squirrel walk in the morning in the city of Espoo. In addition, an anonymous questionnaire gathered answers on how to safeguard FS future. The results were delivered to the MoE for further use.

Continuation of the action after the project:

Nature paths remain in use and are kept in good condition. Beneficiaries will arrange FS related events as well as discussion meetings with landowners when possible. In the Finnish Nature Centre Haltia, FS programs developed during the project are used in nature schools.

Action E3: Improving visitor services and environmental education

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	KULUMUS, JYVASKYLA, EEB
Overall assessment/status:	Completed
Foreseen start date: 08/2018	Actual start date: 08/2018
Foreseen end date: 03/2025	Actual (or anticipated) end date: 03/2025

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		

Knowledge of the FS related issues including Natura 2000 conservation objectives were increased through our best practices in visitor services and environmental education.
 Deliverable: Environmental education package (DE3)

Task E3.1 Exhibitions

Finland:
 KULUMUS:
 update of an old FS exhibition, including transferable packages to be borrowed

KULUMUS arranged extensive amount of environmental education (29, 4). Liidossa - Loanable exhibition was opened in Kuopio Natural History Museum 18.1.2022. There have been altogether 6 venues 2022-2024, and Liidossa has reached over 31 626 visitors (not all venues had visitor count). The exhibition can still be borrowed from KULUMUS.

KULUMUS,
 MHPWF



Museum mascots Pähkä and Kamu in Liidossa loanable exhibition (photo Niko Nevalainen).

Kuopio Museum's new permanent exhibition "Changing Nature" was opened 13.5.2022, and flying squirrels are well presented in the exhibition. During 2022-2024 there have been 245 876 visitors (4). An event of an expert lecture with a panel discussion regarding key FS issues received 139 participants online in 2021 (4).

Live streaming of a nest box was successful for two years 2019-2020 in an urban forest in Kuopio. In 2019, new information was received: [an ermine](#) (*Mustela erminea*) went into a nest box and killed four flying squirrels in a few seconds. Before it was not witnessed that an ermine hunts flying squirrels from nest boxes. In 2020, live stream ended when a local FS individual drowned in a water barrel.

MHPWF/Haltia, permanent exhibition:
 FS panorama show,
 Being a FS,
 FS module for children workshop,

[Liito-orava lähelläni](#) FS exhibition was open 04/2020-08/2021 in the Finnish Nature Centre Haltia (30). It included two parts. The inside part "My night with a flying squirrel" was built into a room where pictures, videos, FS information with a hands-on catapult game to fly a toy flying squirrel over a highway educated and

Touring outdoor part Citizen FS, and Script of a family tour

inspired the 9905 visitors (4). There also was a lecture “Kohtaloni liito-orava” by a nature photographer Benjam Pöntinen 2020 (footage still available).

The outside part “Liito-orava lähelläni” included 32 large info tables and was open 04/2020-10/2021 during pandemics, but also outside the opening hours of the nature center without a visitor count (photo Anni Koskela).



After the exhibition, Haltia’s info tables were shared: 3 for city of Espoo, 7 for City of Kuopio (Väinölänniemi, a popular urban recreation park), and the rest for a nature photographer Benjam Pöntinen (who had taken most of the pictures in it) so be shown in Western Finland. All the information tables have been in further use since 2022.

VR glasses were not used in temporary exhibitions due to hygienic issues during the pandemic but afterwards in a permanent exhibition. Pictured is a clip of the VR view “Glide like a flying squirrel”.



A wooden FS puzzle game demonstrated land use planning challenges of FS habitat network in urban areas. It was designed and opened in a permanent Haltia

	<p>exhibition 03/2023 (photo Jari Kostet). During 2023-2024, over 85 300 visitors have seen FS games.</p> 	
<p>Estonia: a hands-on exhibition in the Iisaku Nature Centre</p>	<p>As the pandemic changed visiting habits and budget cuts reduced the capacity of public organisations to offer face-to-face education (the Iisaku Nature Centre was to be closed in summer 2025 due to public-sector cutbacks), a more practical, long-term concept was developed. In 2023, a set of 9 large information tables were designed for the Iisaku hill nature trail and opened 09/2023 (31) and 2 info tables about the project were put close to an info centre. Iisaku hill received 14 400 visitors in 2024 (photo Saara Airaksinen).</p>  <p>Natural sized flying squirrels made of felt by an entrepreneur were purchased to exhibitions in Estonia and Finland. Pictured are a felt flying squirrel with other FS related environmental education materials made by Liisa Rennel (photo Ilona Karjalainen).</p>	<p>EEB</p>

		
Task E3.2 Environmental education		
<p>An Environmental education package related to FS</p>	<p>An environmental education package “Liito-oravan jäljillä” was designed in a fluent co-operation between three beneficiaries KULUMUS, MHPWF and JYVASKYLA (DE3). It was published 03/2021. It includes basic information on the FS and a large set of high-quality activities to be used for different age-classes in environmental education. It was first made in Finnish and afterwards, Swedish translation was taken (with all together 200 paper copies). Liito-oravan jäljillä is also open in an electronical Mappa.fi education material library used by all Finnish teachers.</p>	<p>KULUMUS, MHPWF, JYVASKYLA</p>
<p>FS Ambassador in KULUMUS (2000 children reached)</p>	<p>FS Ambassador created education programs and made 194 visits to schools, reaching 3464 pupils during 2019-2022 (4). This was a very efficient way to reach future generations: as public resources are often scarce, it is much easier for one person to visit schools than arrange transport for school classes. Video footage and nest boxes were utilized in education.</p>	
<p>Nature school in Haltia/MHPWF (20 events, 400 pupils)</p>	<p>A script for a nature school “Liito-orava ja metsän salaisuus” was written and held 73 times (1491 participants) during 2020-2024 (4). The concept was found to be very practical, and as being also popular, it will be in use at Haltia also after the project.</p>	

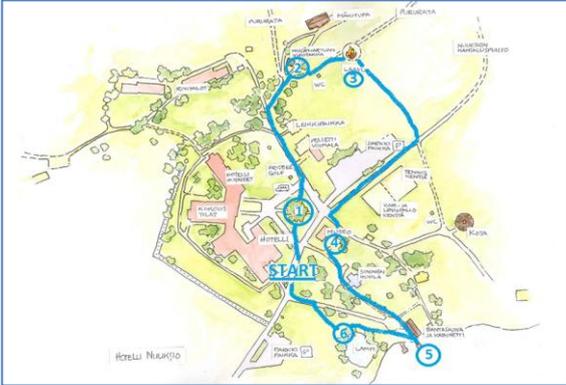
Continuation of the action after the project:

Exhibitions, nature school programs, and a guide Liito-oravan jäljillä remain in use and are actively shared.

Action E4: Engaging the key stakeholders and transferring the lessons learnt

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	KUOPIO, EEB, LUKE (all)
Overall assessment/status:	Completed
Foreseen start date: 01/2020	Actual start date: 01/2020
Foreseen end date: 09/2024	Actual (or anticipated) end date: 03/2025

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>Knowledge gathered and lessons learnt were spread to professional stakeholders including project personnel in Finland and Estonia. Workshops and seminars, national and international, gathered stakeholders together and increased networking, discussions and forming of solid grounds for applying best practices into everyday work.</p> <p>No deliverables. Most presentations can be found from project website unless there have been restrictions. A summary of all seminars illustrates the range of topics (32).</p>		
Task E4.1 Workshop for Nature Charting Dogs		
<p>2 workshops related to a novel method for FS inventory: nature charting dogs (Finland and Estonia)</p>	<p>Dog workshop I was arranged 08/2022 in Finland, Rekijokilaakso (54 participants, 4), including a theory session and demonstrations, of which footages are available. Pictured is a scent training demonstration by the entrepreneur IKI9 in the classroom: a positive reward after a correct detection was a play for this dog (photos Raisa Autio).</p>  <p>Dog workshop II was arranged 10/2023 in Estonia, Ida-Virumaa (23 participants, 4), including a theory session and demonstrations. Knowhow of training a working dog to recognize FS was replicated from Finland (IKI9) to an Estonian professional, and both experts explained and demonstrated the methods of a high-quality. Participants were also guided to share the knowledge and spread the word of the method to be further used in practice.</p> <p>Standardization of the teaching method and development of a certificate to ensure the professionalism of a dog, are in progress. As with FS there can be legal consequences such as protection of a forest, it is essential that observations made of the species are trustworthy.</p>	<p>MHPWF</p>

Task E4.2 Urban Forest Seminar		
Seminar related to the Guide for best Practices in Urban areas A4 (2 days)	The guide for good practices “Liito-oravan huomioiminen kaupunkisuunnittelussa” (A4) was published 06/2021. In 09/2021, due to pandemics, only an online seminar was arranged to show the guide and explain land use in urban areas related to the FS (174 participants, 4). Key beneficiaries presented their shares and participated in the program and discussions.	KUOPIO
Task E4.3 Managed Forest Seminar		
A seminar related to the education package for forestry A7.	A seminar “Liito-oravan huomioiminen talousmetsässä” was arranged as a hybrid event in 02/2024 in Tampere, Finland (260 participants, 4). Key beneficiaries gave presentations and participated in the program and discussions, and video footage was available for one year afterwards.	MHPWF
Task E4.4 International knowledge exchange		
Two events to network and exchange knowledge with experts internationally. LIFE Platform (2-day event, 80-100 participants expected)	International Nordic-Baltic LIFE Platform was arranged in 09/2023 as a 3-day event (88 participants, 4) close to Nuuksio National Park, Espoo, Finland. A Pop-up show by the venue (map) and excursions to LIFE works in Nuuksio, Rekijokilaakso, Hanko and to urban city planning challenges in the city of Espoo were arranged to introduce meeting participants with many LIFE projects and enhance networking (32). 	MHPWF
International Boreal Biogeographical Process meeting (3-day event, 30-50 participants)	An International Boreal Biogeographical Process meeting was planned to focus on forest planning and FS taking place on 06/2024 in Finland. Unfortunately, it was cancelled due to lack of registered people. This was likely due to the overlapping of many other events for international participants and a previous meeting in 2023 in Finland as well, even though we tried to be early with our plans to the process.	
Task E4.5 Meetings for Forest planners in Estonia		

4 seminars with ca 60 participants related to education package for forestry A7	EEB organized 4 workshops (54 participants, 4) for forestry specialists to present the developed forest-management guidance materials. The events included visits to various project sites and reviews of works carried out under the project.	EEB
Task E4.6 Disseminating and promoting modelling techniques		
Modelling techniques developed and used in the project are applicable, and their illustrations helpful.	<p>There were no specific publications of the methodologies done, as modelling techniques are described in project reports. In addition, there were scientific articles published (A5 and D3, D2 in progress).</p> <p>In Finland, a predictive map layer illustrating potential habitats of the FS (A3) is openly downloadable to GIS system in Laji.fi and Paikkatietoikkuna services and already used by many organizations as a tool in land use planning.</p> <p>In Finland, A3 Map layer is downloaded to GIS system of Metsähallitus and used in management of state-owned land. In Estonia, habitat network model is used only by conservation authorities and was used to locate potential habitats which were inventoried in the field during the project. Due to increased search efficiency and a set of new forests for inventories, the result was 74 new occupied forests at the known range of the FS (A1).</p> <p>Habitat models and their applicability were a main topic in the last two field excursions arranged for project personnel (F2) in Estonia's district 05/2024 and in urban forest areas Finland 08/2024.</p> <p>Situation of the FS including information also about modelling approaches were illustrated in a series of FS programs by the Estonian National Broadcast Nature Show Osoon 2023. Pictured is a view from excursion 06/2023, Nuuksio (photo Eija Hurme).</p>	LUKE, EEB



Continuation of the action after the project:
 Arranging seminars need surprisingly much work and it is likely that without funding no large seminars will be arranged after the project. However, webinars can be done easier.

Action F1: Management of the project

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	All
Overall assessment/status:	Completed
Foreseen start date: 01/2018	Actual start date: 01/2018
Foreseen end date: 01/2018	Actual (or anticipated) end date: 03/2025

Activities as stated in the GA:	Summary of the task progress	Beneficiary responsible
General task		
<p>With a logical set of tasks and groups, we have assured smooth overall management of the large project. The framework of the management chart has been followed.</p> <p>Deliverables (in Butler): KPI with reports (Progress Reports 12/2019 DF1a, 07/2022 DF1c, 12/2023 DF1d; Midterm Report 03/2021 DF1b & Final Report 09/2025 DF1e), After-LIFE Conservation Plan (DF1f), Audit report (DF1g) and two additional deliverables Annexes for Final Report part 1 (DF1h) and part 2 (DF1i).</p>		
Task F1.1 Project management by beneficiaries		

<p>Tasks of the coordinating beneficiary MHPWF: PM and financial secretary, LIFE Kick-off meeting Brussels, guidance of beneficiaries</p>	<p>Coordinating beneficiary MHPWF recruited Eija Hurme as a PM 08/2018 onwards, who took care of overall management of the project and its reporting according to LIFE guidelines. PM and a financial expert Elli Turtinen-Heikkilä participated in the LIFE Kick-off meeting in Brussels 10/2018. Partnership agreements were prepared with all associated beneficiaries and MHPWF.</p> <p>MHPWF organized education events for LIFE rules, general conditions, and reporting requirements 08/2018 in Helsinki and Tallinn. Additional guidance material for beneficiaries was prepared for 2019 and updated during the project. Annual online guidance meetings were also held. An Avoim Extranet sharepoint platform as a project library and a workplace was opened in 2018, as through a joint platform all guidelines and other important project materials could be shared. It was updated in 2020 with a Notebook table to gather technical data better.</p> <p>Joint platform has been essential as a library, but more important, keeping drafts and other materials available for everyone in the project personnel. Openness has increased common understanding and trust between beneficiaries, which are highlighted with a FS topic full of various strong values and some history of suspiciousness.</p>
<p>Tasks of the associated beneficiaries</p>	<p>Each beneficiary nominated a coordinator responsible for project management on their behalf, as well as members for the steering group. EEB was the national coordinator in Estonia.</p>
<p>Task F1.2 Financial management</p>	
<p>Tasks of the PM and financial secretary</p>	<p>Each beneficiary nominated a financial secretary for their behalf. MHPWF guided beneficiaries to use LIFE financial spreadsheets and related GDPR rules. Each associated beneficiary has developed a best way for them to gather needed data to the LIFE spreadsheets. MHPWF has arranged online group events and personal meetings for financial questions with the help of a financial secretary when needed.</p> <p>The first share of EU contribution (30%) was delivered to the associated beneficiaries 10/2018. The second share (40%) after the Midterm Report 06/2021 was delivered 06/2021, with some adjustments for two beneficiaries due to phases of project work.</p>
<p>Task F1.3 Indicator table</p>	
<p>Defined indicators of the project will be followed and reported,</p>	<p>KPI Tool was opened for the project and project indicators were formed to it just after Progress report 1 (12/2019). After that, a table including KPI indicators and indicators which had been specified in the project proposal was made and have been followed. A KPI update was included as a deliverable for every project report as a table describing the situation.</p> <p>KPI Tool was updated with the Final Report 2025. Some indicators were found to be very difficult to measure. At the last phase, with the guidance</p>

	of the External Monitor/Elmen EEIG, indicator for FS (7.4) was modified separately for Finland and Estonia. See Annex 4 and Chapter 7.
Task F1.4 Project reports	
Progress of the project is followed and reported according to the official plan.	<p>PM has delivered official reports according to the plan to EASME/CINEA. There were three Progress reports (12/2019, 07/2022, 12/2023), a Midterm Report (03/2021) and a Final Report (09/2025). Every November 2020-2024 PM has also reported a summary of the project's financial situation to the EASME/CINEA (a period until 30.9. each year). Additionally, PM has followed the project's financial situation with regular updates over the years.</p> <p>Two workshops related to project impacts were arranged about in the middle of the project 11/2020 and 12/2021 for all beneficiaries. Discussions about continuation of the activities and project impacts were useful to view possibilities and enhance ideas ahead for the later part of the long project.</p>
Task F1.5 After-LIFE Conservation Plan	
MHPWF will prepare an After-LIFE Conservation Plan in four languages and in electronic and paper versions	<p>An After-LIFE Conservation Plan (DF1f) was prepared by MHPWF, with the close co-operation of associated beneficiaries. The preparation process started with beneficiaries in spring 2024, after which each beneficiary started to carefully consider continuity of project tasks after the project.</p> <p>After-LIFE Plan was made only as an electronic version in English and in Finnish. It has a slide format that can be easily looked at in online meetings and printed when needed. This was discussed with the External Monitor: it is efficient to include many purposes to the same document, and excluding paper documents has also an environmental perspective.</p>
Task F1.6 Audit of the project	
An external audit to verify the respect on national legislation and following of the General Conditions of the Model LIFE Grant Agreement.	<p>Audit was obligatory for three beneficiaries who had over 750 000 EUR in their budget for EU contribution. These were ESPOO, MHPWF and SMK. Audit process was ready 06/2025 for SMK and MHPWF, and 09/2025 for ESPOO.</p> <p>In total, three audit reports (ToR) are delivered as a deliverable (DF1g). External audit verified that the beneficiary had respected national legislation and accounting rules, and that costs follow the General Conditions of the Model LIFE Grant Agreement.</p>
	Six annual monitoring visits were arranged 2019-2025. External Monitor (NEEMO/Elmen-EEIG) participated all of them, and the Project Advisor (EASME/CINEA) participated the fifth meeting 2023. Four were hybrids

and included visits to project sites in Finland and Estonia (2019, 2022-2025), and two were online due to the pandemic (2020 and 2021). The sixth visit was held in two parts: part A as a field visit 10/2024 in Estonia (together with a final seminar, E2) and part B as an office day 02/2025 in Finland. Photo from the Monitor visit's field day combined with the first excursion 05/2022, Estonia, by Tõnu Laasi.



As an additional task and encouraged by our Project Advisor/CINEA in Monitor visit 2023, we started to prepare policy recommendations for better future of FS. We had a few online meetings with project beneficiaries during 2023 and 2024 and discussed key challenges and suggestions how to do better. As a result, **Recommendations (33)** was published 10/2025. These were also delivered to responsible ministries and other decision makers. Discussions will continue after the project.

Continuation of the action after the project:

Project beneficiaries will respect the LIFE rules and the Partnership agreements also after the project. Safeguarding the FS continues as planned in the After-LIFE Conservation Plan besides organization's other tasks. All are also aware that official checks for the projects technical achievements or financial statements can be done by the CINEA after the project. All project materials will be saved at least for five years after the project.

Action F2: Project steering groups

Beneficiary responsible for the implementation:	MHPWF
Other beneficiaries involved:	All
Overall assessment/status:	Completed
Foreseen start date: 01/2018	Actual start date: 01/2018
Foreseen end date: 03/2025	Actual (or anticipated) end date: 03/2025

Activities as stated in the GA:	Summary of the task progress
General task	
With project steering groups, we assured that project management will go smoothly, and all beneficiaries know what everyone is doing. Steering groups were arranged as planned. No deliverables.	
Task F2.1 Project steering groups	
FIN steering group (1-2 days per year)	<p>A national steering group included one member from each 13 associated beneficiary in Finland. There were three members of MHPWF: an area manager as a chair, a specialist as a member, and PM. Later, a project assistant participated in the meeting as a secretary. During the project, there were 10 steering group meetings in total. Meetings were typically full office days (hybrid), but 4 meetings included a visit to project sites.</p> <p>FANC presented two notes for the steering group: about A7 guide 04/2023 and about Recommendations 03/2025. Notes pointed out that 4-6 ha should have been strongly said in the guidance. However, as a project consortium, we could not write other A7 guidance and terminology as what conservation authorities instructed us to do. Regarding Recommendations, the note was given six months after the main development of the document was made. In March 2025 it was too late to re-start discussions with all project partners, and as the need to consider habitat size was already mentioned in the Recommendations with research references.</p>
EST steering group (1 day per year)	A national steering group included one member from each associated beneficiary (EEB, ERAMETS, MKB, RMK and 2019-2020 ELF). There were two members of EEB: an area manager as a chair, a coordinator as a member. There were 5 meetings in total. PM/MHPWF did not participate Estonian meetings as it was not seen necessary.
Task F2.2 FIN-EST coordination group	
FIN/MHPWF and EST/EEB (7* 1-day per year)	Official communication between Finland and Estonia was arranged via PM/MHPWF and a coordinator/EEB. For practical reasons, meetings were held online, about 1-2 hours at a time and about monthly each year - from autumn 2018 to spring 2025. Project assistant/MHPWF participated in the meetings 2020 onwards.
Task F2.3 Communication group	
FIN Group to ensure keeping all beneficiaries in-time and discuss common	<p>All Finnish beneficiaries nominated a member for the Communication group that had 17 meetings during the project, mostly online. MHPWF arranged and chaired the meetings.</p> <p>A Communication plan was prepared in early 2019 and updated almost annually afterwards. The aim of the plan was to write down how to co-operate in a large project where strong values and sometimes opposing</p>

understanding in Finland (1,5 per year)	views are present. Keeping all informed, respecting others and maintaining a good tone were highlighted.
Task F2.4 Technical group	
FIN+EST Group meetings to keep all beneficiaries informed of project tasks (1-2 per year)	<p>The aim was to increase understanding of technical issues and the phase of project actions together in both countries. The start was a bit delayed (10/2019) but after that 4 meetings were held annually during 2020-2024, resulting in 21 meetings together. In these meetings, we were able to keep all beneficiaries updated on the phases of ongoing project tasks but also discuss important and challenging issues related to FS in both countries.</p> <p>In addition, we also agreed on a set of Exchange of knowledge meetings focusing on key actions. Online meetings for project personnel and supporting organizations were held during winter 2021-2022 covering actions A1, A2, A3, A5-C1, A6-C2, A8-C3, D1, D2-D3.</p>
FIN-EST Excursions (each 3-day): 3/Finland 3/Estonia	<p>There was a delay in starting the excursions due to the pandemics, but we managed to arrange all six planned excursions during 2022-2024 (120 participants). Excursions took place in Estonia 05/2022 (report as an example 34), 05/2023 and 05/2024 in Ida-Virumaa, and in Finland 06/2023 (Southern Finland), 08/2023 (Syöte) and 08/2024 (Kuopio). Each visit was 2-3 days in length. Pictured is a moment in an urban forest during Kuopio excursion 08/2024 (photo Saara Airaksinen).</p>  <p>Excursions were advertised to project personnel at every beneficiary and to all supporting organizations. Programs included visits to project sites and other relevant areas, where experts introduced the works or problematics related to them. These excursions were very useful in increasing understanding of various FS forests but also on various threats and problematics related to land use. Face-to-face meetings are also irreplaceable in getting to know people, discussing sensitive issues and networking in a way that lasts.</p>

Continuation of the action after the project:

Although steering groups do not work after the project, understanding of expertise in other organisations as well as personal connections last and can be relied on afterwards. Especially project coordinators worked closely together for many years and now form a loose network that can be of help when needing a colleague to discuss related topics.

6.2. Main deviations, problems and corrective actions implemented

We achieved most of the targets as planned for the project, but however, encountered some challenges as well. The Covid pandemics, properly starting in March 2020, resulted some difficulties but also a fast development of online tools and skills to use them. This enabled us to plan online meetings and webinars with which we could reach more people better and in a more equal way. Luckily, forest-related meetings could be arranged outside already in June 2020 onwards, which considerably eased for example Actions A6 with forest planning discussions and E3 environmental education. Naturally, many public events especially related to action E2 were delayed due to meeting restrictions 2020-2021. The project period was our rescue as we were able to arrange events later during the project.

Main deviations and modifications per action are described in Annex 2. Two official amendments to the GA were made: 1/2021 included a change of two ESPOO sites and an addition of 1 site (MHFORESTRY), and 2/2024 included addition of 2 sites (SMK) and a formulation of a new task of green corridors with 2 sites (RMK). Some major deviations in following the project plan are described below.

Withdrawal of a beneficiary

Quite soon as the project has started, an associated beneficiary ELF realized that its project tasks are not practically doable with the budget. In the project's revision phase in spring 2018, a large part of proposed tasks for ELF and a couple of related beneficiaries were omitted, and the remaining task was not a sensible package for a small NGO anymore. The solution was a withdrawal and moving all ELF's tasks and budget to EEB (Amendment 1/2021). ELF remained close to the project and continued as a supporting organization e.g., by actively participating volunteer camps (A9, C4, D1) and the final seminar 2024 (E2).

A3, Finland

There was a delay for LUKE in receiving FS data from FMNH for habitat modelling (A1). The problem was finally solved in late 2019, and LUKE was able to clean the data and carry out modelling phases rapidly. Afterall, models and maps for field checks were available for tests during the field season 2020 carried out by FANC. After polishing, prediction maps were ready and open in 11/2021. However, landscape models were not in use during the preparation phase of A6 site plans. That did not affect the quality of the planning work as we could consider the local landscape only for state-owned lands.

A5-C1, Finland

ESPOO faced unexpected changes in the decisions of city planning, and as a solution, two project sites needed to be changed. Turvesolmu and Uusimäki were replaced with Finnoonlaakso and Hyljelahti (Amendment 1/2021). KUOPIO had a possibility to increase work for FS, and as a solution, more aspen seedlings were planted to Puijo project site. A

project site Etelä-Kuopion lehdot ja lammet was enlarged with a subarea Vanuvuori and put 6 more nest boxes were put therein (MTR 2021).

A6-C2 Finland

Accidental cuttings on a project site Pata-aho (multiple-use forest in state-owned land, not a Natura 2000 area) just in the beginning of the project in October 2018 prevented its use in the action chain A6-C2 (MHFORESTRY). After reporting the event to EASME and getting instructions from the project advisor, the solution was to propose an additional site Syrjävaara for action chain A6-C2, and that FS monitoring D1 was continued in Pata-aho. Pata-aho also remained in Action chain A8-C3 to support aspen continuity. These were agreed in Amendment 1/2021. Fortunately, cuttings in Pata-aho were originally planned to consider already known FS there. Monitoring (D1) showed that FS was using site Pata-aho every spring 2019-2023, but in 2024, it was found only from the neighbouring forest.

This unfortunate cutting episode in 2018 increased challenges at the start of a large and complicated project. The joint planning process ahead (A6, 15) became even more important as expected, as there was a long history of opposing views regarding forestry and conservation. Thus, in a project's kick-off meeting 10/2018 we had communication education as well as a facilitator to help the start (E1). Furthermore, preparation of forest plans together with tens of people representing many organizations was also a logistical challenge. Thus, budget reserved for facilitation was mostly used for a planning platform that assisted complex decision making. This "Arviointimylly" platform proved to be essential for an open planning process as materials and drafts of plans could be put available and comments could be added there. In addition, about 30 online meetings and field visits were arranged to increase understanding to make good site plans. A facilitator eased some meetings during the way. The aim was to co-operate despite of sometimes opposing views. Naturally, opposing views do not disappear as stakeholders have various perspectives regarding conservation and forestry. In some cases, a joint solution was not found, and then nature conservation authority ELY Centre delineated the forest measures at sites. As a result of this rather laborious process, we managed to make 37 site plans together as good examples to consider FS in managed forests.

There were some cancellations of private landowners, due to personal reasons or that FS was not found on site in baseline inventories. Thus, SMK applied for 2 additional project sites to reach enough material for an education package (A7). Ready forest plans were handled to private landowners, who mainly executed the plans themselves. Finally, there were 37 sites in the joint planning process as planned, and 34 of the (A6) plans were executed (C2: careful cuttings or temporal/permanent protection). Unfortunately, three private landowners did not yet make the planned cuttings on their sites (Annex 3), most likely related to timber prize.

On the other hand, two state-owned sites, Peranganvaara and Syrjävaara, were inventoried as a part of the joint planning process. As there were many nature values in them, they were excluded of the process, and no cuttings were planned therein. Afterwards, Peranganvaara was moved to the possession of MHPWF and permanently protected, and Syrjävaara mostly protected based on MHFORESTRY's own decision. Thus, about 128 ha of habitat ensured for the FS (C2) of these two sites could be added to the project (DA6a).

A6-C2, Estonia

There was a delay in starting an important action A6 related to safeguarding FS in managed forests: processes at the level of conservation authorities took time. The national aim of Estonia in the project was to implement activities brought up in the National Action Plan. In late 2021, official delineations were ready, and an updated National Action Plan for the Flying Squirrel was published 01/2023 (35). As a result, no forestry measures were done in limited management zones for FS on state-owned land because it was seen that no management activity in them would improve the habitat quality for FS. Thus, majority of the work planned for RMK in Action chain A6-C2-D1 was cancelled.

As RMK still wanted to do practical improvements to maintain habitat network for FS in state-owned lands, it ensured that besides habitats, also moving corridors are included in their GIS systems, and that knowledge of FS habitats with habitat models (A3) is also available. Furthermore, RMK made extensive additional FS inventories in 2024 that covered all state-own forests (A1) and collaborated with a powerline company. Building a green corridor across wide and open powerline is a novel approach to support and improve habitat connectivity in a fragmented landscape. RMK sufficiently prepared two green corridors at two new project sites (agreed in Amendment 2/2024). Green corridors likely support also other forest dwelling species than just FS being also a straight-forward method that can directly be replicated elsewhere.

After delay and changes, EEB managed to reach private landowners well and prepare 31 site plans in A6. Thus, within a relatively short period a target for site plans was reached. However, only 15 were executed (C2) leading to less monitoring years within the project. First 1-2 years of monitoring (D1) after careful cuttings (C2) showed that FS was still present in project sites indicating that activities had not disturbed the animals too much.

A8-C3, Finland

MHFORESTRY enlarged three project areas Kivilampi, Jänisselkä and Hanhivaara to locate aspen continuity areas to young sapling stands just outside old forests at project sites (A8-C3, MTR 2021). This enabled us to maintain nature values within older forests while supporting aspen continuity and biodiversity close to them.

One project site was not fully executed yet as planned (C3). The site plan for Ulvinsalo Natura 2000 area was ready in 2021 (DA8), and preparations such as opening fire corridors were done 2022. Unfortunately, neither summer 2023 nor 2024 was successful for restoration burning due to wet conditions, despite of continuous monitoring of weather conditions and preparations with water hoses ready in the area waiting for even a couple of dry days. Ulvinsalo site is still a part of a fire continuum plan of MHPWF and will be executed as soon as possible after the project (summer 2025 was not good for burnings either). In addition, enclosures planned to Ulvinsalo were put up in Riuskanselkonen in autumn 2023 (as a single fence 1,2 ha), where grazing pressure seemed still considerable. This decision was based on a possibility that access to the border region can be restricted due to war (Ulvinsalo locates partly in the border zone) and that field personnel was still available in autumn 2023. It was also understood that as restoration burning was not done in 2023 due to weather conditions, same risk existed also for 2024. Before putting up the enclosures, opening of the growing space for aspen using some methods was needed. Without restoration burning in Ulvinsalo, we would have ended up having many enclosure elements in a storage.

Costs

There also were some deviations in actual costs compared to the budget. Main financial deviations are explained in Annex 2 and referred to in Chapter 8.

6.3. Evaluation of Project Implementation

Methodology applied

The methodologies applied in the project were mostly common and served as a demonstration. For example, a pellet search method is widely used for FS inventories (A1), and modelling methods for predictive habitat maps (A3) were already routines for researchers. The use of trained nature detection dogs (A2) was piloted before the project, and now it served as a demonstration as a useful approach for challenging areas. In addition, the approaches used in environmental education (E3, e.g., FS ambassador, touring exhibition & nature schools) demonstrated best practises to reach young generations and other people.

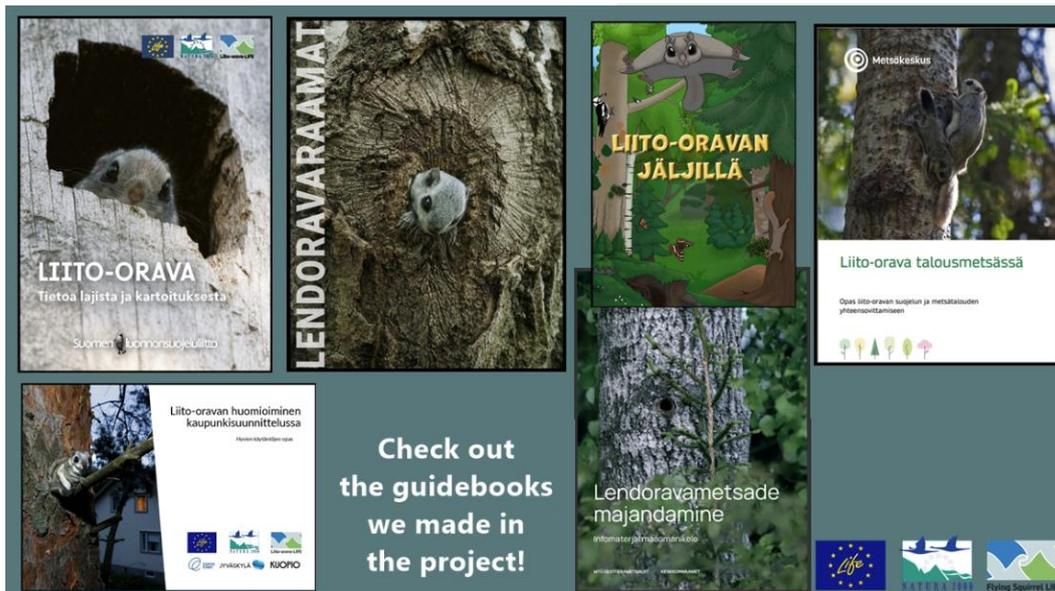
A novelty in methods can be seen in joint planning process (A6) that was developed to make forestry plans together in Finland. We learned a lot from this procedure that turned out to be very educative but also laborious. In addition, face-to-face meetings with landowners by authorities are known to be important, but we were able to improve the method of engaging locals in a way that was both very important and useful (A6, E2). Discussions are a good way to build trust to authorities but also to increase knowledge of the FS, understanding of various guidelines and legislation related to conservation and forestry. Trust likely also increases acceptance of conservation that is an important part of social sustainability.

Co-operation built in the project showed its importance and strength, but also its challenges. A project was large and rather complicated also for those working in it. Working together within most actions and keeping many meetings during the years enabled all beneficiaries to keep in tract better as well as understand various situations and perspectives of others. This setting created a deep contact and commitment to the project and its objectives.

Results achieved in relation to the objectives

The specification of the Flying Squirrel LIFE project was **to improve conservation of FS in Europe**. We formulated this as a broad target, without numbers or a specific time frame - in purpose. The key idea besides concrete conservation actions were to prepare better guidance materials which will improve the situation in time. We have basically done the tasks we planned to do and are confident that our project work has improved FS conservation in many ways.

Started activities also continue to do their work later as materials and knowledge are available after the project as well. Guide materials and education events were launched mainly in the later years of the project. Their effects to practices at national levels cannot yet be measured, but we are confident that, for example, FS friendly forest management in Estonia and Finland will increase as now sufficient guide materials are better available. In time, especially forestry professionals will have more knowledge to apply to practice.



However, as the EASME requested a numeral goal for population size for a species-related project, targets to increase population size from 100 000 to at least 150 000 in Finland and to 250-350 in Estonia were added as indicators in the project's revision phase in spring 2018. These numbers were within national population estimates ranging from about 100 000 to 300 000 based on studies made almost 20 years ago (in 2006-2008) in Finland and to population models prepared for a national action plan in Estonia. Related difficulties were communicated in the proposal, and thus we avoided to set a period during which the assumed population increase would happen.

During the project, no new national census was carried out in Finland, so we do not have a measure of the population size. However, this aim of increasing population size rose continuously up in Finland. We still have information of only the continuous population decline in Finland, so it is easy to say that the project has failed. In Estonia, population models showed the assumed size of at least 250 individuals updated to the national action plan (35).

Indeed, there is a discrepancy between research findings and the interpretation of legislation, and the concern for the future of FS must be taken seriously. As conservation authorities have not set size limits for breeding and resting sites (suggested to be at least 4-6 hectares of forest based on research findings), we were not able to set accurate limits in guide materials either. We still could encourage for thorough inventories and careful planning, and to ensure that several hectares of forests will be left for FS and show good site examples made during the project. When better practices are applied at national scales and in the long term, it is more likely to safeguard the FS in the future. We can thus continue communicating guide materials (A2, A4, A7, E3) and Recommendations (33).

- In Estonia, the minimum population size estimate was expected to increase from 49 known occupied habitats to at least 60. Due to increased search effort in FS inventories (A1), 74 new occupied habitats were found and now 150 used habitats for FS are known to be occupied at least once during past 20 years. As expected, the population size estimate was about 250-350 individuals based on modelling in the National Action Plan 2023 (35).
 - However, no new findings were made outside presently known range. Increased inventories revealed that FS really inhabits only a small region in North-East

Estonia. A tiny population is prone to many kinds of risks, of which habitat loss remains due to extensive forest use. Thus, its conservation status remains as U2-unfavourable-bad.

- In Finland, the minimum population size was expected to increase from 100 000 to 150-200 000 individuals. During the project, no new national large-scale surveys for the population size have not been made, so the values cannot be measured. FS seems to have a scattered distribution being almost common in many urban areas but even missing from many other regions outside them. However, urban areas cover only a small fraction of the total range of the FS in Finland and thus they are not enough to maintain FS at the national scale.
 - Annual censuses of a sample of forests have been done, though, during almost 20 years. Based on them, the FS population trend has been continuously declining mostly with a speed of over 30% per 10 years (Ulla-Maija Liukko/Finnish Environment Institute, personal communication 11.8.2025).
 - The latest evaluation for Habitats Directive presented by the MoE Finland 12.9.2025 (MoE Press release 2025), suggest a decrease for status of the FS from U1- unfavourable-inadequate (2019) to U2- unfavourable-bad (2025). This decrease is based on a population trend that has been continuously declining, and to uncertain future as various forest use has increased (also due to war). It is likely that the FS status in Finland will decrease in the next update and is then as bad as in Estonia.
 - Chance in the species conservation status was not set as a project indicator. Estimations for conservation status is done at the national level every six years by expert officials. Thus, it cannot grab effects of activities at project areas within a limited period.

All project actions related to four objectives directly or indirectly. Here, actions are listed under objectives as they were shown in the proposal (with additional remarks included), although overlapping exist. We can summarise that the project objectives set at the beginning were reached in terms of activities finished during the project.

Objective 1: Preventing habitat loss and fragmentation	
Actions and results related to the objective	<p>In B1, we established 6 protected areas covering 33 ha via one-off compensation for land and one purchase, which directly protected FS habitats.</p> <p>In C1-C4, concrete conservation actions (planned in A5, A6, A8 & A9) increased and maintained FS habitats and moving connections now, and part of the methods used improved continuity and formation of future habitats. There were 21 urban sites (C1), 37 (FIN) & 17 (EST) managed forest sites (C2), 15 aspen continuity sites (C3) adding up to 90 project sites in total, together with places for 250 nest boxes in Estonia improving connectivity of fragmented landscape by offering safe nesting places (C4). Besides, building 2 new moving connections across a wide powerline in Estonia (C2) is a novel approach to improve landscape connectivity.</p> <p>Monitoring project sites in D1 showed that conservation methods (C1-C4) were carried out well. It also illustrated the need to do FS inventories in several consecutive years to understand its habitat use in the area better. Monitoring project effects from the socio-economic (D2) and ecosystem (D3) perspective showed the importance of understanding better the underlying attitudes and future forests, indicating a need for further studies. Social and ecological sustainability are</p>

	important aspects to consider in planning species conservation at large spatial and temporal scales.
Evaluation of the results in relation to the objective	
<p>Direct conservation actions (B1, C1-C4) safeguarded the existing habitats and moving connections but also improved the availability of them in the future. All these activities directly also supported the integrity of Natura 2000 network, as they were targeted to Natura 2000 areas and between them.</p> <p>Monitoring (D1) showed that focusing on availability of forested habitats is most important, and nest boxes may provide only marginal help and cannot easily be scaled up. FS occurrence in managed forests (C2) was monitored annually. Occurrence was seen to vary between years that is a known pattern of population dynamics. Our observations also highlight the need for continuous monitoring and for further research on underlying patterns. It is important to make FS inventory in several consecutive years instead of only once, as a longer period reveals a more thorough understanding of the habitat use of FS in the area that is needed for careful and high-quality landscape planning (18).</p> <p>Evaluation of socio-economic effects (D2) revealed that attitudes on FS vary (DD2a), and sometimes FS conservation may be viewed with other goals for forest use. In general, FS conservation is approved and accepted as important, but quite often it is disagreed by landowners. As strict protection leads to restrictions on forest use that leads to expected monetary loss, it is not always easy to accept especially if compensation does not feel fair. Feelings of unfairness, at their worst, may even lead to “hunch forest cuttings” or leave FS observations unsaid to authorities. This underlines the need to consider social sustainability in planning effective conservation practices. The people are continuously making decisions case by case which can either decrease habitat loss or increase it.</p> <p>Ecosystem effects of the project (D3) were approached from wide perspectives in Finland and Estonia (DD3d), as continuity of suitable habitats and their connectivity is vital for population persistence and ecological sustainability. As small scale decisions will accumulate to larger scales both in space and time, we used modelling of alternative scenarios as an example. A set of future scenarios based on varying strategies can show potential alternatives, which could help decision making. Interestingly, we found that sometimes goals for FS may overlap with other goals and be reached without severe monetary loss. Estimating the future potential of forest structure and age classes may form a good base for planning (23). This likely needs consideration of large-scale planning so that FS habitat continuity is ensured by adjusting forest management scenarios.</p> <p>In all, these findings underline the need for well-planned conservation activities and monitoring, but also for considering socio-economic and ecosystem perspectives in detail at large spatial and temporal scales, so that habitat loss and fragmentation can be decreased (see also Recommendations for FS better future, 33).</p>	

Objective 2: Increasing co-operation and develop tools for fluent land use planning	
Actions and results related to the objective	<p>Co-operation was assessed by bringing and keeping key stakeholders together throughout the project. This was concretely done in working together in many actions with discussion meetings therein (especially A1, A2, A3, A4, A6, A7, E1-E4) and keeping all project information open to everyone. Tools represent a wide perspective on techniques but also methods to work with sometimes challenging tasks, leading to more fluent practices.</p> <p>A1 availability of data was improved by a data service including open FS location data in Finland and establishing a FS website where guide materials and predictive habitat map layer are downloadable. Extensive FS inventories in Estonia increased</p>

	<p>knowledge of the FS occurrence in the region. This leads to better ways to recognize and save also the remaining habitats and ensure that ecological functionality can be maintained or even improved in the region.</p> <p>A2 inventory methods are tools to find FS in forests. A guide of a main FS inventory method “pellet search” was made and educated in popular events, and skills of nature detection dogs were examined and used in assisting inventories.</p> <p>A3 habitat models are tools to estimate potential habitat in regions. In Estonia, habitat models were already used to target FS inventories successfully resulting 74 new habitats, and in Finland, opened as a map layer for GIS to be used in landscape planning.</p> <p>Carefully planned project sites and public summaries of them from A5 urban project sites and A6 managed forest sites are true examples. Joint planning process in Finland demonstrated a novel approach of co-operative method for site planning. Learning from experiences may serve as a tool that helps with planning other sites.</p> <p>A4 guide for good practices in urban areas describes experiences and tips, and A7 education package includes the same for managed forests. Both offer tools for land-use planning. E4 workshops and seminars offered further education, especially for professionals in urban areas, managed forests and nature detection dogs.</p> <p>Summaries in D1, D2 and D3 were ready at the end of project 2025. Before that, some communication (E1-E4) was made on separate studies made in D2.</p>
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Evaluation of the results in relation to the objective

Co-operating with many professionals in activities enabled us to understand expertise of each other and learn from various perspectives. This was also a fruitful way to exchange knowledge in availability of data (A1), inventory methods (A2), habitat models (A3), urban planning (A4&A5) but especially for managed forests (A6) where we were able to use a novel approach of joint planning. Planning of sites together from the beginning was challenging, as there was a history of opposing views if forests can be managed at all when there are endangered species present.

On the other hand, expertise of many was possible to utilize as FS experts made the inventories, forestry experts carried out the main responsibility of actual planning of sites, and conservation authorities compared the plans with the law. Thus, expertise of everyone was needed, and all comments on the way significantly improved the site plans.

Education events in urban areas (A4), forest management (A7), seminars and workshops (E4) on many topics during the project gained hundreds of professional participants showing their interest and a need to learn more. Afterwards, guides and other education materials such as videos remain in use. However, we are aware that available materials on websites are not enough. Spreading the knowledge and continuing education for professionals are active processes which would need people to encourage and remind of the issues and talking about FS issues repeatedly.

Monitoring actions (D1, D2 and D3) showed interesting findings, which need both further analyses but also communication. As the main publications considering monitoring were ready in late phase of the project 2025, communicating them will continue after the project.

Objective 3:	
Improving the quality and availability of the FS related data	
Actions and results	A1 Data management system in Finland was improved and a mobile application built. In Estonia, extensive FS inventories were made to gain better understanding of the remaining population.

<p>related to the objective</p>	<p>A2 Inventory methods were described in detail in a guide, and skills of nature detection dogs were examined and reported. Using accurate inventory methods, the data quality is likely better.</p> <p>A3 Predictive habitat maps were built in both countries, but an open map layer was published in Finland, whereas in Estonia the map is used by conservation authorities due to sensitivity of FS data.</p> <p>Guides A4 for good practices in urban areas and A7 for forest planning in Finland offer detailed examples and guidance for practical situations. In Estonia, there are two parts of A7 guide: FS book and a guide for forest management. All publications are open in electronic format on project's website.</p>
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Evaluation of the results in relation to the objective

Knowledge of the species locations forms a baseline for conservation and land use planning. In Finland, A1 data management system was adjusted to serve users and take in large data sets, including a mobile application “Liituri” to be used by professionals in inventories (6). It was also confirmed that **FS data is open (DA1)** that can be used as a baseline tool in planning. Already known locations indicate areas where inventories can be targeted when making more detailed plans for land use. Establishing a **FS website** now enables a visitor to find also guide materials and habitat maps: finding FS related information is now available at a same website and likely helps the land use planning.

In Estonia, FS inventories covered almost 20 000 ha and resulted 74 new forests with the species. This had direct conservation effect as all known FS locations are protected. FS information in Estonia is sensitive but **better understanding of the FS situation is a tool** for conservation authorities to advice landowners for safeguarding the species in their forests.

Methods how to get the knowledge of species locations is important, as the observations should be trustworthy. A2 Knowledge of FS inventory methods using a common pellet search were increased with guidebook (DeliA2a) and education events, which were very popular. It is important to share the knowledge how observations can be done accurately, so that **high-quality species data** can be used as a base information for strict conservation. A novel approach was to test the skills of nature detection dogs (DeliA2b), which showed to be very promising: dogs can detect small signs of FS which humans do not notice well. Using dogs can thus be recommended to assist inventories in challenging sites to get more thorough understanding of FS in the area.

Species conservation cannot be done without larger perspectives in space and time. A3 Predictive habitat maps illustrate **potential habitats and moving connections** for both countries. In Finland, a predictive map layer is open and downloadable to a GIS system (from the FS page/FMNH), while in Estonia, similar data layer is in use by authorities. Although models are “just” calculated predictions, they seem to well point out potential forests for further studies and in understanding landscape scale better. Indeed, in Estonia predictions already helped to target FS inventories (see A1) and noticing suitable moving corridors for nest box places (A9-C4). Predictive map layers are now **used as a tool in every-day forest planning in state-owned land** both in Finland (MHFORESTRY) and in Estonia (RMK).

Good practices in urban areas (A4 Guide, FIN) showed true experiences and illustrated well how FS can be marked to city plans in a high-quality manner (ESPOO, JYVASKYLA, KUOPIO). As situations and practices vary, it was encouraging to see that there are many ways to safeguard FS effectively. Urban guide is communicated widely to municipalities and serves as **an important source of practical information**. With summaries of project sites (DA5), it is an important education material for practitioners and decision makers in urban areas.

As FS is a forest species, forest management is the key for its conservation. Education packages A7 prepared in the project were done by many experts together, aiming to make as good guides as

possible. One guide was made for Finland, and a FS book and a guide for forest management in Estonia. Guides and events explained the issues and illustrated some true examples on how FS can be considered in managed forests. Understanding challenges and possibilities as well as illustrated case examples help to understand the issue and site planning at hand. In addition, knowledge on a possibility to get practical advice from authorities is important, as FS is a strictly protected by law. In Finland, no general rules for hectares to be saved exist and all cases need to be planned separately. Thus, no specific rule for hectares was possible to add to project material prepared together with authorities, who cannot define any national rules by themselves. This subject is mentioned in Recommendations (33) in more detail.

Objective 4: Increasing exchange of knowledge and approval towards conservation	
Actions and results related to the objective	<p>E1 Basic information on the project has been offered through a website (in 4 languages Fin, Est, Eng and Swe). Basic media work was done during the project years, and Layman's Report was prepared in 2025.</p> <p>E2 Public events and seminars and meetings with stakeholders enabled us to reach general public and future generations very well.</p> <p>E3 Environmental education reached future generations extremely well by FS ambassador and nature school programs, while temporal and permanent exhibitions effectively offered FS information to all interested people.</p> <p>E4 Workshops and seminars for various professionals increased exchange of knowledge of professionals in both countries, being sometimes festive meetings.</p> <p>F2 Steering group work and excursions for project personnel were important in keeping project group together and exchanging knowledge within it.</p>
Evaluation of the results in relation to the objective	
<p>Besides project websites many beneficiaries used both social media and traditional communication paths for reaching different target groups, and many press releases as well as national and international articles opened the project work. We were able to reach interested people well with footage of live streams on FS nest boxes, TV programs, videos, an extensive range of open events and nature schools, as well as with exhibitions and seminars during the years. Personal meetings between authorities and landowners were found to be a very efficient way to exchange knowledge but especially to increase trust and understanding (A6, E2).</p> <p>Project management and excursions enabled us to know the people working closely in the project and learn more about practical FS issues. The project group was formed rather close as there was intensive co-operation done across actions for almost 7 years.</p>	

Evaluation of the achieved results in comparison to the expected outcomes per action
(More details in annexes 3 and 4.)

Action	Expected results	Achieved results	Evaluation
A1	Finland: Data management system developed	Data management system with a mobile application tool (Android, Apple: possibility to save also delineations and not only point data).	A mobile application for professional use is available. FS website will be a national source of FS related info.

	Estonia: FS inventories at least 3 000 ha	<p>FS website established.</p> <p>FS inventories covered about 200 000 ha and exceeded the target. 74 new occupied forests were found.</p> <p>2 additional Data webinars were held 02/2023 (FIN, 470 participants) to offer FS knowledge (focus on legislation and procedures) before A7 education package was ready.</p> <p>Preparation of a Description of the current conservation legislation and management procedures of the flying squirrel in Finland and Estonia (2022).</p>	<p>Increased search efforts led to direct conservation effects as breeding sites and resting places of FS are strictly protected. However, no new sites were observed outside the known range of FS. Although FS seem to be stable in North-East Estonia, its range and population size are tiny and prone to many risks.</p> <p>The A7 Education package (FIN) included parts where legislation was explained in detail. Preparation of these Data webinars helped us in finding good wording to the A7 guide and preparations to field education events, for example.</p> <p>Description of conservation procedures increased understanding of situations in both countries between beneficiaries.</p>
A2	<p>Inventory training: guide and education events (24 days, 250 participants)</p> <p>Nature detection dogs: study report and surveys in cities</p>	<p>Guide and training events held as planned (12/A6 and 13 half-day events, 292 participants).</p> <p>Dog study with a report (2022) done as planned, with some additional surveys carried out on potential clear-cut areas 2024. A survey in Jyväskylä was carried out (but cancelled in Espoo).</p> <p>8 additional education webinars were held 2021-2022 to offer FS knowledge for forestry professionals before A7 education package was ready (632 participants).</p>	<p>FS inventory trainings were popular. Field education events are very important to increase the knowhow for finding FS in forests.</p> <p>Knowledge of dogs assisting FS inventories was increased.</p> <p>Study in Jyväskylä revealed new information in Seminaarimäki area (10). Important trees for FS were located, which were not observed by human inventors before.</p> <p>Additional online education was a needed and important effort as parts of it could be applied in A7 education package. As A7 education package was in use 2023, this material was not updated.</p>
A3	Predictive habitat maps built in Finland and Estonia	<p>Predictive habitat maps were built with a small delay.</p> <p>In Finland, a map layer is open and downloadable to a GIS system.</p> <p>In Estonia, habitat map is used by authorities.</p>	<p>In Finland, predictive map layer is available through Laji.fi service. Additionally, map layer is also available in Paikkatietoikkuna, open GIS service.</p> <p>In Estonia, predictions were used to target FS inventories, and 74 new FS sites were found.</p>
A4	<p>Guide of best practices</p> <p>Monitoring of 22 land-use sites</p> <p>Radiotelemetry study</p>	<p>Guide for good practices in urban areas published 2021 (online launch event got 174 participants).</p> <p>Monitoring report of 22 city planning sites and questionnaire for conservation authorities were used.</p> <p>A radiotelemetry study in Espoo was carried out. FS seem to use small forest patches if there are forested connections and larger forest areas in the region.</p>	<p>A high-quality guide was prepared in close co-operation of partner cities Kuopio, Espoo and Jyväskylä, and published earlier than planned.</p> <p>Knowledge from supporting studies and questionnaires were made as planned.</p> <p>Results of the radiotelemetry study have been used in city planning. A second try for radiotelemetry study was done 2024 but cancelled due to inability to catching enough individuals.</p>
A5	<p>Preparation of plans to 21 project sites</p> <p>Questionnaire for residents in Kuopio</p>	<p>Site plans made for all sites. 2 sites were changed in ESPOO (Amendment 1/2021)</p>	<p>Site plans were made as planned and public summaries of them serve as good examples of considering FS in urban areas.</p>

	<p>Satellite tracking study in Jyväskylä</p> <p>Optimization analysis for the Jyväskylä landscape (147 km²)</p>	<p>Questionnaires for residents were made 2019 and 2024.</p> <p>Satellite tracking device was received too late in 2024, and the study was not done.</p> <p>Optimization analysis ready. One thesis and a scientific article published of the analysis.</p>	<p>Questionnaire in Kuopio revealed that residents often like FS when forests for recreation are saved. Results are very useful for the city planners in the future.</p> <p>Satellite tracking of FS individuals in Jyväskylä will be carried out after the project.</p> <p>Optimization analysis is used in true land-use planning of the city of Jyväskylä.</p>
A6	<p>Site plans for at least 37 managed forests in private and state-owned land</p> <p>(FIN) Managed forests with a joint planning process > 37 sites</p> <p>(FIN) Rekijokilaakso > 20 sites, adjacent to Natura 2000 area</p> <p>(EST) Managed forests > 20 site plans</p> <p>Amendment 2/2024: A new task of green corridors on 2 new sites.</p>	<p>Site plans prepared as planned. 3 additional sites were applied in Amendments 1/2021 (1, MHFORESTRY) and 2/2024 (2, SMK) to reach 37 sites in total.</p> <p>Joint planning including 37 sites took 3 years. About 60 persons participated the process.</p> <p>Forestry plans for state-owned Peranganvaara & Syrjävaara were not made. Later, sites were protected and reported as project results.</p> <p>Theses on experiences of landowners (Autio 2024) and of forestry professionals (Heikkinen 2024) who participated the A6 joint planning process were published.</p> <p>Rekijokilaakso 20 site plans on private land were done (execution of plans is not included into C2 and will be made by landowners after the project).</p> <p>Estonia 31 sites prepared on private land.</p> <p>2 site plans for green corridors across electric powerlines were made in 2024 on state-owned land sites.</p>	<p>Expected number of site plans in Finland was reached, and a summary publication of private and state-owned site plans (but not for some sensitive private sites). Site plans can be used as examples of good consideration of FS in managed forests.</p> <p>Joint planning was a very important learning process, but also very laborious. A solution was found together to most sites. In a few cases including clear cuts, conservation authority stated their limits.</p> <p>Peranganvaara and Syrjävaara protected areas were included to the project as careful inventories were made in them during the project (A6).</p> <p>Theses on experiences of landowners and of forestry professionals revealed important perspectives to consider in future planning processes.</p> <p>Summaries of site plans with an explanation of the discussion process with authorities and landowners was described in a Rekijokilaakso publication (most site plans are sensitive).</p> <p>Forest management plans for state-owned land in Estonia were cancelled. After a delay in starting the action, still 31 site plans to private sites were made. Summaries of site plans offer examples of good consideration of FS.</p> <p>A new activity of two green corridors across a powerline shows a novel approach to increase connectivity in a fragmented landscape.</p>
A7	<p>Education package for managed forests</p> <p>Finland: guide, brochure & events</p> <p>Estonia: guide</p>	<p>Finland: guide, 50 field training events and 8 webinars</p> <p>Estonia: a FS book and a guide for managed forests</p>	<p>Education package FIN had webinars instead of classroom events, as these were more effective ways to reach people.</p> <p>Two separate publications were done. Estonian FS book was a cultural achievement as it wrapped up the natural history of the species and research during a century.</p>
A8	<p>Preparation of plans for aspen continuity: 16 sites</p>	<p>16 site plans prepared. A change for Ulvinsalo site was done 2023.</p>	<p>Plans prepared for all sites and a summary published.</p>
A9	<p>Preparation of a plan for locations of 250 nest boxes</p> <p>Preparation of a predator control plan</p>	<p>Plan for nest box locations was done with a small delay related to A3 habitat modelling results.</p> <p>Predator control plan prepared and discussed with hunting association in 2 meetings.</p>	<p>A plan for nest boxes especially in moving corridors was done. The aim was to support availability of safe nesting places in a fragmented landscape.</p> <p>Discussion with the ministry of climate about predator control will be continued.</p>

B1	At least 26 ha of new nature conservation areas in >3 sites	33 ha was protected on 6 sites. 5 privately-owned conservation areas were established covering using one-off compensation for land (26 ha) and one area was purchased for state (6 ha).	Target was reached and exceeded with a purchased area. Permanent protection of land decrease habitat loss that is the largest threat for FS. See also E2: additionally, over 150 ha of new permanent conservation areas were agreed in Rekijokilaakso.
C1	Execution of A5 site plans	21/21 sites: 11 new moving corridors 96 nest boxes 1 aspen planting (1.8 ha) 3 sites combining recreation & FS (364 ha)	Executed as planned (the last site finished 2024). In Kuopio, Pirtti and Pirtti läntinen were combined, which increased the area for recreation and FS conservation.
C2	Execution of A6 site plans	Finland: 36/39 forest sites Over 360 ha was directly maintained for FS habitat. Estonia: 15/31 forest sites About 500 ha maintained for FS Estonia: 2/2 green corridors to increase connectivity	In Finland, there were 2 private landowners who did not yet execute the careful cuttings due to private reasons. In 2 state-owned sites habitat was saved for FS later in the project (Peranganvaara & Syrjävaara). In Estonia, only a half of plans were executed. This was partly due to a delay in the planning process and that project time was running out. Some landowners were also considering the timing, and project budget reserved for execution costs was almost used.
C3	Execution of A8 site plans	15/16 sites managed: over 200 ha of future habitat enhanced for FS. 46 enclosures made to safeguard aspen regeneration. At Ulvinsalo Natura 2000 restoration burning was not possible due to wet weather conditions in 2023 and 2024. Enclosures reserved to Ulvinsalo were put up in Riuskanselkonen 2023 (1 large fence 1.2 ha).	Ulvinsalo restoration burning will be done after the project, as all preparations are ready. The site belongs to a fire continuum plan of MHPWF.
C4	Execution of A9 site plans	250/250 nest boxes put up 8 volunteer camps with 102 participants used	Carried out 2021-2024 as planned.
D1	Monitoring of C1-C4 sites	Monitoring at project sites carried out as planned. 5 study visits to project sites were arranged for project personnel (68 participants). Visits offered insights to methods used on sites, as well as discussions of FS related practices. A monitoring report covering all project sites was made 2025. Also nest box use reports for Kuopio and Estonia were prepared.	Monitoring report gathered and summarised information of all project sites in actions C1-C4. Most FS data from managed forests (C2) is sensitive due to private ownership. In Estonia, all FS data is sensitive. Sensitive data is reported only for the CINEA. Monitoring data showed interesting variability in FS occurrence. No detailed study of possibly underlying patterns was done yet but will be carried out after the project. Agreements to use data for further research must be asked separately from landowners.
D2	Socio-economic effects Questionnaires 2019 & 2024 and interviews 2018 & 2024 Fin Conflict map Fin Questionnaires for public and landowners (Fin & Est)	All studies were carried out as planned, although there was delay in most of them. Conflict map was published in 2022, and a scientific article about it is in progress. LUKE report was ready in late 2024 (summary of LUKE project tasks in A3, D2 and D3).	A deliverable Summary for socio-economic effects was prepared in 2025. A set of various analyses gives a good overview of perspectives related to the FS issue in both countries. Similar findings were seen in both countries. General attitude towards FS is positive, but in landowners the attitude is often negative. Especially among those having large estates, the attitudes were often very negative. Negative attitudes seem to be related to restrictions for forest use due to the strict

	Deliverable: a summary	Socio-economic study was carried out in Estonia in the late part of the project and published 2024. Deliverable was ready in 2025.	conservation of FS, and a feeling of unfairness because of inadequate compensation systems. Deliverable combines and discusses the presented results and draws some conclusions for the future studies.
D3	Future scenarios for 3 landscapes Qualitative barometer Deliverable: a summary	Scenarios were made as planned with some adjustments to modelling details. A scientific article about future scenarios was published 2023. Qualitative barometer was not prepared in the beginning of the project as we did not understand the issue well enough. A draft for the barometer was described to the D3 summary. Deliverable was ready in 2025.	A deliverable Summary for ecosystem effects was prepared in 2025. It brings up the idea of analysing scenarios but also reflects the forest structure in terms of age classes for both countries. A suggestion for a qualitative barometer as a joint process between professionals is presented. It would be very important to continue exchange of knowledge between key stakeholders also after the project. As small-scale activities are cumulated to larger scales, it is important to find sustainable strategies. As FS habitats often are mature forests, estimations of future forest potential are essential.
E1	Websites General dissemination Networking	Main website with 4 language versions (Fin, Swe, Eng, Est) 199 articles talked about the project. Two international journalists visited the project in 2019 (Deutsche Welle) and 2021 (Independent). 43 press releases were published. FS was 2 times in TV in Estonia, and a TV group Osoon made 3 programs of the FS situation. 36 networking events were participated and media trips arranged.	Websites serve as main information sources. The main website will be open at least 5 years after the project. Less media trips were arranged than planned, mostly due to pandemics but also due to a change in practices. It seemed better to sometimes find one media for visits instead of arranging events for many medias. Especially often rather remote field sites are not easy to reach by many.
E2	Open events 2 live streams 2 nature paths Engaging landowners Final seminars in Finland and Estonia	136 FS related events were arranged with a small delay as planned with some additional events included (>6 300 participants) in Finland and Estonia. Live streams followed FS in two places 2019-2021, and footages of them are in YouTube. Nature paths with info tables were improved in Rekijokilaakso and Jyväskylä as planned. 760 landowners were met in 104 events and personal meetings in Finland and Estonia. Final seminars were arranged in Estonia and Finland 2024.	Due to Covid pandemic 2020-2021, many open events were cancelled. Some events were still possible to arrange as FS meetings could be held outside. Live streams from nest boxes were stopped due to natural reasons (a mother FS moved its cubs to another nest / FANC, or when FS died by a hunting ermine or by drowning to a water barrel / KULUMUS). Personal meetings and discussions were an efficient method to engage key stakeholders, the private landowners in both countries. As we had a possibility to offer authorities for discussions, landowners felt that they gained professional guidance and new information that helped their decision making. Final seminars brought many people together and offered outstanding FS presentations to increase knowledge. They were also very important events for project personnel to show achievements reached during many years.

E3	<p>Environmental education package</p> <p>FS ambassador</p> <p>Nature school program</p> <p>5 exhibitions</p>	<p>Guide Liito-oravan jäljillä 2021 is also available in Mappa.fi material bank for teachers and educators.</p> <p>FS Ambassador: 194 visits to schools, 3 464 participants during 2019-2022</p> <p>Nature school program Haltia: 73 events, 1 491 participants.</p> <p>FS in a permanent exhibition of KULUMUS 2022-2024, >245 876 visitors</p> <p>Loanable exhibition Liidossa 2021-2024, >31 626 visitors</p> <p>Temporal FS exhibition Haltia, inside and outside (2020-2021), >9 900 visitors</p> <p>A wooden FS game in permanent exhibition (2022-), >85 300 visitors</p> <p>Permanent outdoor exhibition Iisaku: 9+2 info tables, >14 400 visitors/2024 in the nature trail</p>	<p>Liito-oravan jäljillä guide translated to Swedish. Paper copies were taken and given to stakeholders who use them in everyday work.</p> <p>The use of FS Ambassador managed to reach pupils effectively as she could travel to many schools.</p> <p>In Haltia, school classes visited the nature school, where programs are in everyday use.</p> <p>Loanable exhibition Liidossa is available also after the project. It has already been open in cities Pori and Jyväskylä, and in several schools in Kuopio.</p> <p>Haltia outside exhibition info tables are re-used in Espoo, Kuopio and Lapua.</p> <p>In Estonia, changes in visitor movements and public resources led to changes in exhibition plans. Instead of using a nature centre, the exhibition was made outside.</p> <p>Iisaku nature trail and a yard of a nature center are always open and now offer high-quality information of FS and biodiversity, expressed in a beautiful and artistic info tables.</p>
E4	<p>2 dog workshops</p> <p>Urban seminar</p> <p>Managed forest seminar Finland</p> <p>Managed forest meetings Estonia</p> <p>LIFE Platform</p> <p>Boreal Biogeogr. Process meeting</p> <p>Disseminating modelling techniques</p>	<p>2 dog workshops were held in 08/2022 in Finland and 10/2023 in Estonia with 77 participants together. Footages of the 1st seminar are available in YouTube.</p> <p>Urban seminar was held online 09/2021 with 174 participants.</p> <p>Managed forest seminars were held as planned: in Finland, one event with 260 participants and in Estonia, 4 events with 54 participants.</p> <p>Nordic-Baltic LIFE Platform meeting was held 09/2022 in Finland with 88 participants.</p> <p>Boreal biogeogr. process meeting was cancelled due to only a couple of registered people.</p> <p>Modelling techniques were communicated via networking meetings and scientific articles.</p>	<p>Workshops and seminars were popular indicating importance of the subject in question. Online connections ensured participation from various distances.</p> <p>Urban seminar was arranged during some meetings restrictions during pandemic, and no field event was arranged with it then.</p> <p>In managed forest seminars, we were able to present FS information and good ways to consider it well in management. We also discussed challenging issues during the meetings, such as restrictions due to strict conservation and compensation procedures.</p> <p>Program of the LIFE Platform was planned to enhance networking as it was one of the first events arranged after the pandemics. Many visits to project sites and older restoration sites were arranged, as well as activities outside to get familiar to various project tasks and environmental education.</p> <p>Scientific articles published during the project related to project works in A3, A5, D2 and D3 promote exchange of knowledge in professional platforms.</p>
F1	<p>Project management</p> <p>Progress reports 1-3 Midterm Report Final Report</p>	<p>Project was well managed, and reporting was made as planned. Guidance for reporting was regularly arranged by CB for beneficiaries. Some adjustments were done, when necessary, to ensure fluent project management</p>	<p>Management of a large project was a laborious task. CB was not well prepared on this. Adjustments were needed to increase assistance for the PM 2019-2025.</p> <p>The deadline for Final report was postponed to 31.10.2025. The project period did not change (1.8.2018-31.3.2025).</p>

	<p>Monitor visits</p> <p>Amendments 2021 and 2024</p> <p>Collaboration between beneficiaries and supporting organizations</p> <p>Policy impacts</p>	<p>(such as hiring a full-time project assistant to MHPWF).</p> <p>Monitor visits were held every year except 2024. Despite of online meetings during pandemics (2020-2021), project sites were also visited during the meetings.</p> <p>Two amendments to GA included changes of 2 sites, additions of 3 sites, and a new task of green corridors with 2 sites.</p> <p>A set of 9 Exchange of knowledge meetings (online) were arranged 2020-2021 for project personnel and supporting organizations, where updates of many actions (A1, A2, A3, A4, A5, A6, A8, D1, D2 and D3) were explained and discussed.</p> <p>A summary of FS conservation practices (7) and Recommendations for better FS future (32) were prepared together in 2022 and 2025, respectively.</p>	<p>Regular monitor visits allowed us to meet and visit project sites, while learning more of various situations with FS.</p> <p>Collaboration between beneficiaries was efficient and fluent. All beneficiaries were dedicated and motivated to improve conditions for FS in many ways, and with their skills and high-quality work the project tasks were possible carry out.</p> <p>We had skilful professionals on board, so when our PA advised us to prepare some suggestions for the future policy during a Monitor visit 2023, our project group took up the challenge.</p> <p>In autumn 2025, the Recommendations were introduced to responsible ministries in both countries, as they gather important aspects and formulate suggestions to a range of challenges in practice.</p>
F2	<p>Steering groups established</p> <p>6 excursions (3/Finland, 3/Estonia)</p>	<p>Steering groups were established and worked as planned on Finland and Estonia.</p> <p>Technical group meetings were held 4 times a year 2020-2024. 6 field excursions were held (120 participants).</p>	<p>The work in steering groups was fluent.</p> <p>Excursions offered high-quality possibilities for exchange of knowledge in true sites with professional guidance and discussions.</p>

Visible results in time

Effects of our many actions to decrease habitat loss and fragmentation and to improve future habitats for FS will be seen later. New protected areas (B1) will safeguard habitats which otherwise would have been under risk of forestry measures. Example sites made to urban areas (A5-C1) and managed forests (A6-C2) with related guidebooks (A4, A7) will be used across the FS range in Finland and Estonia. This is a long process that needs resources also for advice and education as well as co-operation with authorities. When good practices are applied over large areas simultaneously, cumulative effects can be expected to be considerable in time.

New moving connections made by planting young trees (C1, C2) will show their usefulness likely within next couple of decades when trees have grown up to at least 10 meters tall. It still may need that FS individuals learn to use these structures for moving between habitats. Later, when suitable monitoring methods have been found, or developed, we will likely see if FS individuals use artificial jumping poles in urban areas (C1). In addition, work for aspen continuity (A8-C3) with opening growing space has a time scale of decades. So far, aspen regeneration has started and continued within enclosures well, so we wish that this natural, good progress will continue. Then, within a few decades, we would have more young aspens offering food for FS and especially, increasing boreal forest biodiversity in Natura 2000 areas as well as in between them.

Useful amendments

There were two amendments to the Grant Agreement (1/2021 & 2/2024) and one letter amendment (2024) for a change of CB's legal address. All changes were needed, and they enabled us to reach targets of the project in actions. The first amendment (2021) included withdrawal of ELF and moving its tasks and budget to EEB, a change of two project sites in ESPOO (A5-C1), an additional project site for MHFORESTRY (A6-C2), and a change of director in CB. The second amendment (2024) included two additional project sites for SMK, and a new project activity with two additional project sites for RMK (A6-C2). All these changes enabled the fluent continuity of action chains A5-C1 and A6-C2, and a use of RMK's project budget for the good of FS after all.

Replication efforts

One direct replication to say is the use of nature detection dogs to find traces of the FS (A2). The knowhow was replicated from Finland to Estonia. In two workshops (2022/Finland and 2023/Estonia, E4) the method, basics of the training process and applicability of the method as an additional tool in FS inventories was presented and discussed.

We are confident that our experiences and guidance materials can be used and applied after the project to improve living conditions for FS around its range in Europe. In addition, skills of forestry contractors in making careful measures (C2) can be replicated in the future. It is likely that continuous cover of forests may be increased, and then more careful measures are needed as well.

Effectiveness of the dissemination

In general, increased use of online connections was beneficial in reaching more interested people with education events and various seminars. With education actions in A1, A2, A4, A7 and E4, we arranged 33 education webinars with 2629 participants (4). Without online possibilities these numbers could not have been reached.

Natural charisma and marketing value of the FS was not underestimated: live streaming from nest boxes and footages therein, videos representing main points for how to consider FS in forest management or urban planning, and various events around FS have been popular. TV programs made by Osoon in Estonia brought FS closer to people and illustrated the central challenges for the species future. Publishing a book *Lendoravaraamat* in Estonia was a cultural act as it brought together the natural history and knowledge of FS through decades. There were 199 articles about the project work (4, E1). Two international journalists visited us and made articles related to FS and project to *Deutsche Welle* (2019) and *Independent* (2021).

On the other hand, jumping poles received a lot of media attention in the city of Espoo 2022, mainly due to high costs of the action (C1). ESPOO made considerable efforts to explain the importance of building a physical connection and justify the costs. Afterwards, JYVASKYLA did not receive as much negative publicity of their jumping poles 2023. It is understandable, though, that when resources are scarce and the environment seem uncertain (due to pandemic, war, unemployment, etc.), investments to conservation are easily questioned.

The project started with a communication challenge. It was expected, as there is a long history of opposing views in how cuttings close to FS forests should be done. In autumn 2018, publicity

of accidental cuttings (Pata-aho, A6) was high concerning Metsähallitus. Afterwards, a lot of attention was paid to the openness and press releases were prepared together with participating beneficiaries regarding project sites in state-owned land (A6-C2). Joint planning process for discussing forestry plans was thus really needed.

As there are no accurate size limits for strictly protected breeding sites and resting places set by conservation authorities, despite of the research findings, discussions related to the size of untouched forests for FS remain active. Guide materials prepared for forest management (A7) within the project consortium needed to follow present interpretations confirmed by conservation authorities, though. Official limits for hectares, for example, must first be defined by conservation authorities, after which they can be implicated to practice by other decision makers at large. Naturally, everyone can leave own forests untouched as much as they want, but when legislation is concerned, then also penalties and compensations should be adjusted accordingly. Especially FANC has effectively been keeping the demand for 4-6 hectares on the table.

Our FS cases may have helped a large audience to see EU and LIFE projects as a tool to make a difference. A cute FS grabs the attention fast, but as its habitats are typically valuable forests, connections to complex socio-economic issues are strong. Therefore, thinking carefully tone and style of communication was very important during the years, both within the project and outside it.

Policy impacts

Project achievements supporting legislation

Flying Squirrel LIFE was built to improve conservation of the FS in Europe with co-operation. Project activities maintained and improved living conditions of FS. Better practices were increased through education and various events in Estonia and Finland, which can be seen as policy impacts. Project activities and education materials serve as concrete examples of implication of the current legislation into practice. Actions which would directly change policies (regional, national, EU) were not included.

In Estonia, expertise of project personnel was used in updating the National Action Plan for the FS (35), although preparation of the plan was not a project task as such. Extensive FS inventory efforts (A1) increased the knowledge of FS occurrence and 74 new FS forests where FS were found leading directly to protection of these sites. In addition, in early 2025, a formation of 14 new Species Protection Sites (SPS) and enlargements of 7 already existing SPS's were made by the ministry of climate.

There are now 14 Natura 2000 areas with FS in Estonia, and discussions about adding FS to a species list of other Natura 2000 areas, or possibilities to establish new Natura 2000 areas, has been encouraged by the EASME/CINEA. These issues have been discussed by EEB with the environmental agency and the ministry of climate in the end of the project (Monitor visit 2025). However, establishing new conservation areas is a sensitive matter in Estonia. So far, concrete steps have not been formulated.

In Finland, new conservation areas were established (33 ha/B1), and results from all FS inventories were updated to Laji.fi service. FS locations, which were found during inventories (A2, A5, A6, A8, D1), remain in a national data base and need to be considered in planning. A

FS website was established in the Laji.fi service, where guidebooks and a predictive map layer are found. In many managed forests (C2), non-management or a temporal protection was also a concrete selected option. Thus, there were many ways to maintain suitable habitats for FS.

Conservation actions and summaries of project sites, education events and guidebooks made during the project form a long-lasting effect as good examples to be applied. They will increase knowledge and understanding of the FS related issues, and when considered, lead to better practices throughout its range also after the project. Project achievements are available in the main website of MHPWF, where to all beneficiaries have linked their websites. In Estonia, website of EEB is a source of FS information and link to project website.

Main barriers

We achieved very good results in increasing understanding of FS, Natura 2000 network, biodiversity issues and careful forest management in engaging landowners (A6, E2). Unfortunately, as there are many cuttings in personnel at many public organizations, resources to continue face-to-face discussions between authorities and landowners are scarce. For example, communication with landowners at our scale in the project would not have been possible without a suitable funding instrument: the LIFE program. Thus, ensuring sufficient funding for conservation authorities can be seen a crucial thing also in the future.

However, we also found out that attitudes of forest owners towards FS vary (21, DD2a): many do agree with the need to protect FS, but restrictions limiting the use of forests creates a challenge for acceptance. One solution to overcome this challenge could perhaps be eased with increased environmental education with a fair compensation. Environmental education (E3) can be seen here as understanding the importance of forest biodiversity values at large, targeted to people of many ages and professions. Human welfare is also an important part of the future.

As FS still is an endangered species in both countries and its trend in Finland decline continuously, it seems that legislation is not implicated well enough into practice. Recent research findings suggest that there should be 4-6 hectares of forest left for FS (Wistbacka 2023). However, it was found challenging to apply this information as a rule to project's guidebooks for managed forests (A7), as conservation authorities had not made an official decision about hectares. Public organizations need to follow guidelines and advice given by authorities. Now, FS is also considered on one estate at a time, but FS habitats and moving connections do not typically follow borders made by humans. This is why in Recommendations (33), we bring up the need to consider the landscape scale and ecological functionality despite of the landownership. In addition, compensation systems in both countries seem to be inadequate to cover timber losses.

In Finland, the inconsistency between legislation and practice of FS protection is regularly brought up especially by nature conservation associations. In November 2024 FANC published a document "[Lisäntymis- ja levähdyspaikan määrittelyn laillisuusperusteet liito-oravakartoituksissa ja niiden tulosten tulkinnassa](#)" regarding legal nature of breeding sites and resting places, including strong statements to save 4-6 hectares of forest. This publication, however, was introduced by FANC in the Final seminar 11/2024 (E2) without previous discussions with other beneficiaries. Given that timely communication regarding ongoing activities has been consistently maintained throughout the duration of the project, this unexpected publication was not well received. It was also discussed in the communication group (F2), and the meaning of LIFE logos and a disclaimer were also discussed with the external monitor and PM. Project beneficiaries are cautious about participating in publications

that do not align with current official practices of the relevant authorities. As a result, FANC's publication was not considered as a project publication by the Finnish project consortium but naturally it was welcomed as FANC's own publication. In addition, an association for the flying squirrel, Keski-Suomen liito-oravayhdistys ry, has strongly [criticized](#) the A7 guide for managed forests (DA7d) since 2023.

These examples illustrate that in Finland, there are a lot of organizations committed to the conservation of the FS, each contributing from its own perspective and working towards improving the status of the species.

It seems that a central issue to be officially considered soon is the size of strictly protected breeding sites and nesting places for FS (as in the Habitats Directive, Annex IV(a)) as well as questions on how to maintain their ecological functionality. In definition, these sites should offer all resources for the species to live there also in the future, so they should remain ecologically functional. Now delineations are made case by case in practice: conservation authorities do this in Estonia but in Finland, the responsibility is on a landowner.

Research findings indicate that importance of safeguarding larger forest areas for the FS would be essential: survival of female flying squirrels is higher in forests larger than four hectares than in smaller forests (Wistbacka 2023). As several hectares of mature forest has a considerable monetary value, it is evident that there are difficulties to find fair solutions for both protection and compensation. This dilemma is opened in Recommendations (33), and some suggestions are formulated. Further decision making and updating official guidelines is left to responsible authorities as that cannot be done by a project consortium.

Policy development

All examples of good practices prepared during the project as well as guide materials are implications of current legislation into practice. To increase understanding of the big picture even more, we described the situation in both countries and produced materials which can be used by decision makers. In the beginning of 2022, we published a **Description of current FS conservation practices in Estonia and Finland** (7). In addition, a **National Action Plan for the flying squirrel** was updated in 2023 in Estonia (35).

In Monitor visit 2023, the Project Advisor of the CINEA encouraged us to discuss together and prepare some suggestions on how to improve FS future. This work took time but led to **Recommendations** (33), where description of the FS situation is described and lists of topics seen important to improve conservation practices and to implement the aim of legislation are given for Estonia and Finland. With these Recommendations, we aim to highlight most important tasks which would lead to better future for the FS. Due to some practical delays, Recommendations were presented to responsible ministries both in Estonia (ministry of climate) and Finland (ministry of environment and ELY Centres) in early October 2025. Discussions will continue.

EU added value

As the project covered 100% of the known FS populations within the EU (Estonia and Finland), its conservation impacts have been high at the EU level. It focused on future orientated best practices and demonstrative planning, conservation and dissemination activities. Direct conservation effects were reached via actions B1 and C1-C4 with new conservation areas and activities safeguarding FS in project sites. Furthermore, all preparatory (A), monitoring (D)

and communication (E) actions complemented the increase of better conservation of the FS – directly or indirectly. For more details, see e.g. tables in Part 6.3.

All our activities supported biodiversity in general, meaning forest environment including many other species as well. We were able to make good education materials and start good ways for better practices and are confident that implementing better practices will continue after the project in both countries. Project achievements support related aims mentioned in the proposal:

- Habitats Directive, Annex II and IV(a) (92/43/EEC)
- Bern Convention, Appendix II (strictly protected fauna)
- LIFE Regulation, articles 3 (Environment), 9 (Nature), 11 (Biodiversity) and 18 (Best practice and demonstration)
- Union Biodiversity Strategy to 2020, Targets 1 (Birds and Habitats Directive), 3 (More sustainable agriculture and forestry) and 6 (help avert global biodiversity loss)
- Birds Directive 2009/147/EC, actions increasing places for cavity-nesting birds
- Prioritized Action Framework for Natura 2000 (PAF), priority measures for forest habitats and protecting key species

Multipurpose, synergies and integration

Flying Squirrel LIFE project had a strong cross-sectoral capacity building approach as common solutions were sought together with e.g., nature conservationists, forestry professionals, city planners, NGOs, researchers and conservation authorities. The main aim focused to finding ways for more sustainable forestry as FS is a forest-dwelling species dependent on networks of suitable habitats and forested moving connections between them. Furthermore, synergy and integration of project actions from preparatory phases to communication via an action chain A-C-D-E was an essential value of the project. We were able to simultaneously work with good (best) practices, get reliable results, and communicate of them widely.

Transnational approach and Green Procurement

A transnational approach was included in the Flying Squirrel LIFE project as Finland and Estonia are the only EU states where FS is now present. Both countries share the responsibility for protection of FS and thus had a joint interest to proceed via a co-operation project that is a practical way to increase exchange of knowledge.

EU Green Public Procurement was not implemented precisely, but many elements were followed. Projects carbon footprint was reduced with everyday practices. Online meetings were used when useful and webinars were planned to reach people as education events and options for seminars. In addition, using an online platform to evaluate drafts of site plans during a joint planning process (A6) considerably decreased the need for travel costs. For field visits, public transport to central points was recommended after which smaller cars or minibuses were filled to reach more remote locations. Furthermore, vegetarian options were often selected for all in many events. Producing unnecessary materials was avoided and amount of paper copies was kept low by ensuring availability of electronical materials. As a practical example, T-shirts with EU, Natura 2000 and project logos for project personnel and reflectors with a shape of FS were designed to serve as a LIFE communication material with a long-lasting, true function.

6.4. Analysis of benefits

1. Environmental benefits

Environmental benefits, quantitative benefits

As FS is a strictly protected species by Habitats Directive's Annexes II and IV(a), its breeding sites and nesting places must not be destroyed nor deteriorated. This legislation is valid irrespective of the landowner and the status of land. Part of the project sites were Natura 2000 areas but most of them were located between conservation areas. Project's conservation actions (B1, C1-C4) directly benefited both habitats for FS and Natura 2000 network.

Table. Conservation benefits to the FS and to the Natura 2000 network

Target	Activity	Goal
Within and outside Natura 2000	349 nest boxes for FS (99 C1/FIN, 250 C4/EST).	Safe nesting places improve habitat quality for FS and increase safety of forested moving corridors.
Within and outside Natura 2000	Opening growing space for aspen >200 ha outside Natura habitat types to support aspen continuity (C3 FIN).	Increase of aspens will improve habitat quality for FS in time.
Within Natura 2000: Western Taiga 9010* habitat type	No activities were done in forest parcels representing this habitat type on project sites.	Opening of growing space (C3) will lead to more deciduous trees in forests. In time, these forests likely reach characters of Western Taiga type, increasing coverage of this habitat type in Natura 2000 areas in question.
Within Natura 2000: Fennoscandian herb-rich forests with <i>Picea abies</i> (9050)	In Puijo FI0600001, Kuopio, 230 aspen seedlings were planted in small openings (C1 FIN) already existing within forest parcels of this habitat type. Now, the quality of habitat type is insignificant due to old spruce plantings.	With an increase of aspen inside the forest, the quality of this habitat type will be improved in Puijo Natura 2000 area in time.
Outside Natura 2000: management of forests	FS habitats and forest connectivity between them were maintained and improved while reaching also other goals (C1 FIN, C2 FIN EST).	Maintaining FS habitats and structural connectivity of forests supports the ecological functionality of the Natura 2000 network.
Outside Natura 2000: new moving connections	Young trees were planted to create 13 moving connections between habitats for FS (C1 FIN, C2 EST).	Structural connectivity of forests supports the ecological functionality of the Natura 2000 network.
Outside Natura 2000: new protected areas	Protected areas (33 ha) were established to maintain habitat for FS (B1, E2) and to support the network of Natura 2000 areas in three regions.	Permanent protection of FS habitat increases availability of suitable habitat.

Other project actions have focused on quantitative benefits directly and indirectly. When tools, guides and examples are carefully made and better practices are applied, they will decrease the risk for habitat loss and fragmentation bit by bit.

As many guide materials and education events were mostly done in later phases of the project, the effects of good practices can be seen after the project after guidance are applied. Education events were very popular, which indicates a need to learn more. It is likely that guide materials and good examples will be widely used in practice across the FS range in Finland and Estonia.

Table. Direct activities to decrease habitat loss: expected and achieved results

Action and description	Expected in proposal	Achieved	Comment
A1 Data service and a tool	An application tool for professionals and an open data service	An application tool for professionals, open data service A FS website	More than expected
A1 FS inventories in Estonia	>3 000 ha	Total of about 20 000 ha inventories: 74 new FS sites found and protected	More than expected
A4 Guide and monitoring	Guide, monitoring of 22 sites, radiotelemetry study and reports	Guide, monitoring of 22 sites, radiotelemetry study and reports	As expected
A5 Plans for urban sites	21 site plans & network model Jyväskylä, 147 km ²	21 site plans & network model Jyväskylä, 147 km ²	As expected
A6 Plans for managed forests	37FIN+20Rekijoki+30EST = >87 site plans	39FIN+20Rekijoki+33EST = 92 site plans (covering 574ha/MH, 545ha/SMK, 145ha/Rekijoki, 927ha/EEB)	More than expected
A8 Plans for aspen continuity	16 site plans	16 site plans	As expected
A9 Plans in Estonia	250 nest boxes Predator control plan	250 nest boxes Predator control plan	As expected
B1 Established protected areas	>26 ha	33 ha	More than expected
C1 Urban sites	21 sites/1392 ha 11 moving connections 90 nest boxes 150 aspen saplings 239 ha combining FS & recreation	21 sites/1541.65 ha 11 moving connections 99 nest boxes 230 aspen saplings (1.8 ha) 364 ha combining FS & recreation (In Kuopio, sites Pirtti and Pirtti läntinen were combined)	More than expected
C2 Managed forests	37+20=57 sites 1570-1950ha maintained for FS (FIN >150ha, EST >1400ha)	36FIN+17EST = 53 sites About 860ha directly maintained for FS (breeding, feeding & protection: FIN 360ha, EST 500ha) 2 moving connections	Goals reached with small changes
C3 Aspen continuity	16 sites/228 ha future habitat, 70 enclosures	15 sites/206 ha future habitat, 46 enclosures	Almost as expected
C4 Nest boxes	250 boxes	250 boxes	As expected
Activities to increase knowledge of FS			
Action and description	Expected in proposal	Achieved	Comment
A2, A4, A7, E3 Education materials	5	6	More than expected
A1-A7, E4 Education events for professionals	24/A2, 50+40/A7, 10/E4 = 124 events	105 events with 3644 participants (webinars reached more participants)	Goals reached with small changes
E2 Engaging landowners	>46 meetings	104 meetings with 760 participants	More than expected
E2 Public events	>39 events 2 nature paths	136 events with 6304 participants 2 nature paths	More than expected
E3 events for future generations	>20 events to reach >2400 pupils	267 events with 4955 pupils	More than expected
E3 Exhibitions	4	5 exhibitions with over 387 000 participants	More than expected

Environmental benefits, qualitative benefits

Project beneficiaries will take care of the conservation actions made in the project and continue working for better future for FS described in more detail in the After-LIFE Conservation Plan (DF1). Sustainability of investments will be taken care of after the project by maintaining conservation activities at project sites, continuing communication and exchange of knowledge on FS issues, and spreading knowledge on guide materials and education events.

The largest threat for FS is still habitat loss and fragmentation. In Finland, population trend seems to continue its rapid decline whereas in Estonia, the remaining population is very small and as such, prone to sudden risks. We have prevented habitat loss and fragmentation in project sites with new conservation areas and outside them on private and state-owned lands. Important parts of forests have been maintained by leaving them untouched, future habitats have been enhanced by opening growing space and plantings, and habitat connectivity has been improved by leaving forest areas for moving connections and by planting new moving corridors. There is still much to do for FS.

Unfortunately, we have not been able to eliminate the main threats as various forest use is an important feature in both countries. However, we have taken steps forward by making good examples and guidebooks, which help to make better solutions to tackle threats in practice, across the FS range in the EU. In addition, our efforts in environmental education (E3, E2) hopefully increase understanding among future generations and other people so that in the long term, appreciation of ecological features in land use are better considered. Furthermore, we prepared Recommendations (33) including suggestions on how to improve practices to reach better future for FS, delivered to responsible ministries and decision makers in October 2025.

2. Economic benefits

Implementation of conservation actions have promoted employment and business opportunities at local level both in Estonia and Finland. A Full-Time Equivalent for additional personnel was 6.18, and costs for external assistance were about 1.3M€, for example.

In our project, careful forestry measures were applied to ensure maintenance of suitable forests for the FS (C1, C2 and C3). These were often novel methods for contractors who needed to learn new skills to work in challenging situations. These contractors now have new expertise they can use elsewhere and spread their knowledge further.

3. Social benefits

Forest environments are found to be very important for human recreation and health. Taking FS in consideration in forest planning typically mean that parts of the forest remain untouched and forest management practices nearby are careful. More forest areas directly offer inspiring environments for people while preserving boreal forest biodiversity and ecosystem effects both in urban areas and managed forests. Thus, conservation actions made during the project, and good guidance to be applied after the project, will maintain and increase forests to be a source of enjoyment for people as well.

Visiting exhibitions and participating in environmental education increase **time spent in nature that has positive impacts for physical and mental health**. We arranged 136 open events such as FS walks, lectures, and family events reaching over 6 300 people. Nearly 5 000 pupils were reached in nature schools and by a FS ambassador. High-quality exhibitions have offered experiences for over 387 000 people already. Permanent and loanable exhibitions as well as always open nature paths continue to reach people also after the project. Environmental education guide Liito-oravan jäljillä has been a very much thanked package and remain open in Mappa.fi material bank for teachers and educators (both in Finnish and in Swedish). Environmental education is also a strong way to increase **hope for the future** that is an essential part of human wellbeing.

Improved data management and quality, as well as better guidance increase efficiency of the work. In addition, co-operation, exchange of knowledge and networking can improve everyday work. **Professionals** from various fields got used to work together and learnt from each other to communicate in a constructive way despite of opposing views. These built encouraging experiences and trust bit by bit. It is likely that participants will continue co-operative way of working afterwards as well. Tone of voice and true will to understand various perspectives are important in building trust and confidence, which may be essential in considering complex conservation questions in practise.

Personal discussions held with **forest owners** increased exchange of knowledge and social acceptance of conservation. Private landowners appreciated chances to discuss with authorities, and possibilities to get advice just for their cases (A6, E2). Getting contacts take time but that time is well used as social sustainability is a crucial part to succeed with nature conservation. We discussed with 760 landowners in Finland and Estonia, which would not have been possible without project funding. General attitude towards FS is positive (DD2a), and questionnaires for residents showed that FS habitats can be appreciated in urban areas (DA5). However, attitudes of landowners get more negative towards FS when restrictions for forest use are included to the picture (DD2a). It is thus very important to understand various attitudes as through social sustainability conservation goals may be reached better.

The social aspect of the **volunteers** is important as the feeling of doing important things together for good can be extremely meaningful for participants. We got good experiences from volunteers who participated nest box building and installing in Estonia (102 participants in 8 events), as well as from nest-box building days in Finland (140 participants in 3 events). Among private people, there also has been interest to train an own dog to search for FS signs but as FS is strictly protected by law, observations need to be solid. Thus, work towards a certificate for nature detection dogs is in progress, so that entrepreneurs could ensure that their dogs can perform reliably in inventories.

Income and chances to work towards important goals are important parts of human well-being. As we used careful forestry measures, such as a variety of selective cutting and continuous cover methods, we simultaneously created chances for entrepreneurs to gain special expertise in FS friendly forest planning. Gaining **special skills** may create working opportunities after the project. The need for more careful forestry methods in general seems to be increased, especially when a strategy to maintain continuous cover of forests is applied.

All these activities show that Flying Squirrel LIFE project promoted better understanding of the FS and human engagement with nature. This likely provide various social benefits which contribute to human well-being and a greater appreciation for natural ecosystems.

4. **Replicability, transferability and cooperation.**

Lessons learnt and methodologies used in the Flying Squirrel LIFE are replicable and can be transferred and applied also to other situations. Although FS only occur in Finland and Estonia, there are many other forest-dwelling species as well as strictly protected species which need to be considered in complex land use planning processes.

Better understanding on how to get prepared and how to act is essential to maintain ecologically functional landscapes. FS serves as a good example of a species needing a network of habitats and moving connections. Most of our processes can be applied with system-specific modifications.

Applicable approaches:

- Concrete co-operation with stakeholders within the project. Commitment to joint tasks and a will to search solutions in challenging situations may be a fruitful way to work – although also laborious. We also underline the need of using independent facilitation services which are accepted by participants to ensure neutral atmosphere. Assistance for processes is not a punishment to anyone but instead, may considerably help to understand situations and related issues better. This may lead to more constructive discussions and effective problem solving.
- Personal discussions with landowners in land use planning. Landowners often are a key stakeholder group, which makes it important to take some time for discussions. Getting advice from authorities likely increase social sustainability of conservation as well.
- Use of habitat models to illustrate potential of the habitat network.
- Assistance of nature detection dogs in inventories. Assistance of dogs was found to be important especially in challenging inventory cases, and expertise developed in Finland was replicated in Estonia by private entrepreneurs. Further development of methods and certification are still needed to get this method better available.
- Guide materials and open data. Available materials increase understanding and trust on processes, besides spreading better practices to apply for true planning cases.
- Learning careful forestry methods. In managed forests, forestry measures in project sites were often new for entrepreneurs. New skills can be an advantage, which may help in getting contracts for challenging forest measures needing special expertise.
- Planting green corridors to support connectivity of forest habitat network.
- Environmental education materials to promote more outdoor teaching.

5. **Best Practice lessons**

Our aim was to address best practices as a continuous cycle of learning together in land use planning process. Majority of project actions represented best practices in various fields of expertise, but some of them can be highlighted (as expected in the project proposal).

- A2: Inventory trainings led by FS experts offer good chances to learn important things in nature
- A3: Habitat models, created with a solid knowledge of related methods, can serve as tools to illustrate habitat potential at the landscape scale
- A4, A5: Urban areas have found sustainable ways to combine conservation with other goals, and make improvements to habitat network and participation of residents

- A6, A7: Managed forests can maintain nature values when better practices are applied through effective education and clear guidance for professionals and landowners
- B1, C1-C4: Conservation actions directly safeguard FS via protection, habitat improvements and maintenance, or by increasing habitat connectivity
- D2, D3: Socio-economic analyses and modelling future scenarios utilized solid scientific methodologies and help to understand complex issues better
- E2: Events and engaging landowners increase knowledge and use feelings to deepen the experiences which may increase understanding of the conservation better
- E3: Environmental education and exhibitions offer inspiring nature experiences to future generations and visitors, and can form a solid base for hope towards a better future

6. Innovation and demonstration value

Actions A2, A6 and D3 can be seen as good examples for innovation and demonstration values in finding solutions to complicated situations. They can also be understood as novel approaches, as to our knowledge, these methods have not been used earlier at this scale. We proposed a few demonstrations in the project proposal, but also applied a novel innovation at the end of the project:

- **Innovation:** Our new action to building green corridors across a wide electrical powerline on two locations in Estonia (A6-C2, Amendment 2/2024) is a novel approach. Planting native trees and bushes likely form sheltered crossing points for wildlife is a novel and innovative method. To our knowledge, this was a first time when structural connectivity between forests is concretely increased in an area that is typically maintained treeless. Trees in the corridors will be maintained at a sustainable height in the future, so that the powerline function is not disturbed. The increased shelter will likely serve as a safer crossing place for wildlife in the future.
- **Demonstration:** Inventory using nature detection (charting) dogs (A2) can be seen as a novel demonstration as we showed that nature detection dogs can efficiently search traces of FS (DA2b, 10). The value of dogs assisting FS inventories is highlighted in challenging locations where skills of humans are limited: dogs can recognize few or old traces what are difficult or impossible to see for humans. The method is now described in an official guidebook for nature inventories (Hurme & Karpela 2024). Furthermore, as FS is a strictly protected species where legal protection may take place, observations must be made with care: a certificate for dogs is in progress.
- **Demonstration:** Join planning process for managed forests (A6) showed that group work by various professionals representing different expertise in many participating stakeholders is useful. As a result, good plans to consider FS were made (DA6a). However, this approach with tens of people was laborious as it took time to evaluate of the drafts and have many planning meetings. In some cases, there also were situations when no common view of forest management was found (especially concerning clear cuts), when a word from a conservation authority was needed. One central lesson from the joint planning process was the constructive effect of a facilitator in key discussion meetings. A facilitator can be very helpful especially in the beginning and increase chances to get to know each other and open various perspectives better. In addition, an online platform where drafts were put and evaluated together with tens of people was found as an essential technical help.
- **Demonstration:** Modelling future scenarios (D3) utilized existing skills and knowledge in habitat modelling techniques. Use of these methods need expert knowledge, but as in

our case, co-operation with various organizations can be used to build materials which may even assist complex decision making in some cases.

- **Demonstration:** Engaging with landowners (26, DA6b) was successful due to known methods and high skills of the participating authorities. Face-to-face discussions and local events effectively built trust to authorities who were responsible of the conservation and forest legislation. Besides legislation issues, knowledge on FS, forest biodiversity and careful cutting methods were increased through discussions. Interestingly, one common topic in these discussions was the establishment of Natura 2000 network and reasoning behind the decisions in late 1990s', even though the process took place over 20 years ago in Finland.

7. Policy implications

Better procedures applied in practise can be seen as a strong policy implication, as through true cases, the legislation is brought into action. Guidebooks, examples of project sites and other materials made in the project remain in use and serve as tools to apply for better land use and forest planning. Some perspectives can be pointed out (see part 6.3. for policy impacts and main barriers):

- National data aggregation and open national services (A1) can be used to create and update regional regulations, policies and even national legislation (FS knowledge was included in the National Action Plan for the FS in Estonia 2023, 35).
- Good practices introduced within guides to inventory (A2), municipalities (A4), forestry (A7) and environmental education (E3) remain available and can be applied in practice. Project sites in urban areas (A5-C1) and in managed forests (A6-C2) demonstrate how directives can be implemented in practice.
- Demonstration of the use of habitat models (A3, D3) can be applied in national plans for species conservation to illustrate potential of the habitat network in both space and time.
- Benefits of co-operation demonstrated in the project encourage communication and use of expertise on various fields.
- Personal discussions with forest owners (A6, E2), participation of citizen into urban forest planning (A5), and questionnaires to key stakeholders (D2) increase understanding, transparency and openness.
- Planting trees support moving connections (C1, C2) and improving aspen continuity (C3) directly enhance habitat formation and forest biodiversity in general.
- We did our share also by preparing recommendations for a better future of FS together with project beneficiaries, encouraged by our Project Advisor/CINEA. In Recommendations (33), we describe the worrying situation of FS, existing challenges and present suggestions how to improve the situation. Due to some delays, Recommendations were presented to responsible ministries in both countries at the end of the project, 10/2025. Discussion on them has just started.

7. Key Project-level Indicators

In this section, we shortly summarise project progress in achieving targets in Key Project-level Indicator (KPI). LPI database is filled, and a detailed list of indicators is in Annex 4. In 2025, there was a modification to the KPI Tool regarding 7.4. Wildlife species: targets were made separately for Finland and Estonia, as FS situation is very different in them.

1.5 Project area/length

New protected area was established on 33 hectares.

1.6 Humans (to be) influenced by the project

Flying squirrel related public events and exhibitions (E2, E3) reached at least 470 000 people during the project. Afterwards, nature paths and exhibitions likely reach annually over 200 000 people in Finland and Estonia.

4.2.1 Sustainable Forest management

We can define sustainable forest management planning to 2091 hectares (project site plans in Finland and in Estonia, A6). We may expect that at least 1000 hectares of good practices will be applied annually after the project.

7.4 Wildlife species

In Estonia, we found 74 new occupied forests, and now we know of 150 used habitats. This was more than expected due to extensive field inventories (A1), and we assume that the small population can be about stable. However, all new sites were found within the known range that underlines the risk of a tiny population. Status in Estonia likely remains as U2-, unfavourable-bad, due to the tiny population being very prone to a variety of risks.

In Finland, though, no national census was carried out, and we still do not have any estimates for a population size. Thus, we keep the same estimate 100 000 for 2025 and 5 years after the project as it is within the range of 100 000 and 300 000 based on last studies (2006 and 2008). In September 2025, a report for Habitats Directive evaluation was published (MoE Press Release 2025), and Finland suggest that the conservation status of the FS is decreased from U1- (unfavourable, inadequate-) to U2- (unfavourable-bad). Thus, 5 years after the project the status likely is U2-, unfavourable-bad, also in Finland. (See part 6.3 for further explanation.)

10.2 Involvement of non-governmental organisations (NGO) and other stakeholders in project activities

We have had 4 NGOs during the project (ELF, ERAMETS, FANC, MTK).

11.1 Website

There have been over 33 000 visitors in the main project website during the project (changes in website systems have not allowed more exact calculations).

11.2 Other tools for reaching/raising awareness of the general public

6 guidebooks were prepared in the project (in Actions A2, A4, A7, E3). 136 Info tables for project sites (C1-C3, 82), exhibitions (E3, 43), nature paths (8) and project roll-ups (E1, 3). 1 brochure and 2 videos of the project. 5 exhibitions and 2 nature paths of which 3 exhibitions were temporal. A flying squirrel website was established in Laji.fi data service in Finland. A regular Info letter made for project staff during 2020-2024 only. 242 Articles and own press releases.

12.1 Networking

16 Supporting organisations for the project in Finland and Estonia.

12.2 Professional training or education

1700 people in education for urban areas (A4) and managed forests (A7) were reached in 70 events. 404 family events (E2) and nature school events (E3) held with a total of 8700 people.

13. Jobs

The Full-Time Equivalent (FTE) accumulation is 6.18. The value is calculated by considering working months of additional personnel and project months (494/80).

14.1. Running cost/operating cost during the project and expected in case of continuation/replication/transfer after the project period

Running costs/operating costs during the project were 7 885 781,87 €.

14.3. Future funding

FS related work continues to some extent with beneficiaries' own contribution. We explain future aspects in more detail in After-LIFE Conservation Plan (DF1f).

14.4.1 Entry into new entities/projects

There were no clear plans for another FS related project by the beneficiaries.

8. Comments on the financial report

8.1. Summary of Costs Incurred

There was 88,7 % of the total project budget used during 1.8.2018-30.3.2025 indicating that we were able to fulfil the technical targets within the budget very well.

Shifts between cost categories were about 9 % and thus well within the 20% rule. We have two public bodies as co-financers, the Environmental Investment Centre (EIC), Estonia, and the ministry of environment (MoE), Finland, which have co-financed public beneficiaries EEB and MHPWF, respectively. With their co-financing, the own contribution of all public beneficiaries is over 102% larger than the sum of non-additional personnel costs. Thus, the project follows the 2% rule.

No budget amendments for the project were done other than budget shift from ELF to EEB because of the withdrawal (Amendment 1/2021). Some main modifications and deviations are explained in Annex 2.

PROJECT COSTS INCURRED			
Cost category	Budget according to the grant agreement in €* €	Costs incurred within the reporting period in €	%**
1. Personnel	4 771 613,00	4 816 097,56	100,93
2. Travel and subsistence	842 382,00	363 558,16	43,16
3. External assistance	1 907 931,00	1 305 066,77	68,40
4. Durables goods: total non-depreciated cost	110 000,00		333,78
- Infrastructure sub-tot.	0	314 111,56	
- Equipment sub-tot.	0	53 044,90	
- Prototype sub-tot.	0		
Land Purchase	201 252,00	244 600,04	121,54
5. Consumables	397 615,00	164 733,19	41,43
6. Other costs	87 690,00	124 687,69	142,19
7. Overheads	568 183,00	499 882,00	87,98
TOTAL	8 886 666,00	7 885 781,87	88,74

*) If the Agency has officially approved a budget modification through an amendment, indicate the breakdown of the revised budget. Otherwise, this should be the budget in the original grant agreement.

***) Calculate the percentages by budget lines: e.g. the % of the budgeted personnel costs that were actually incurred

There were more Personnel costs used than budgeted due to laborious actions (especially A1/EST and F1/FIN, see 8.5). We used less Travel costs than planned partly because of restrictions during the Covid pandemic, but also because online facilities made many meetings more effective during the project. External assistance costs were not used as much as expected.

For example, personnel service was used more often than planned in MHPWF, and many ESPOO's C1 costs were moved from External assistance to Infrastructure costs (Mid-Term Report 2021). Costs for Land purchase costs (B1) were a bit higher than budgeted as VARELY managed to make more conservation agreements than planned. In 2018, VARELY had a possibility to decide of a purchase when a good FS forest was offered. It is important to make conservation agreements rather fast when private landowners show the interest, as they may easily turn away if the process seems slow. Consumables and Other costs followed the budget rather well.

Allocation of costs per actions

A table below presents the current costs per action. Costs for concrete conservation actions A, B and C covered 50,7% of the project's total costs. Actions with more costs than budgeted are painted yellow, and those with less costs than budgeted with green. Budget use has been about in balance according to needs to carry out activities cost-efficiently: savings in some actions could be used in other actions. As the project budget was made in 2017, the general outcome of 2025 is rather good.

Action	Budgeted	Current costs	%	Action
A1	249473,0	481809,5	193,1	Management and availability of the Flying squirrel occurrence data
A2	127677,0	132291,3	103,6	Developments of inventory methods
A3	272477,0	238032,2	87,4	Illustrating the potential habitat network of the Flying squirrel
A4	585286,0	417682,5	71,4	Evaluation of the best Practices for the Flying squirrel in land use planning
A5	242096,0	210541,7	87,0	Preparation of plans to support habitat network in urban areas
A6	902407,0	674907,1	74,8	Preparation of plans to support habitat network within managed forests
A7	342433,0	381969,8	111,5	Education to maintain the Flying squirrel in managed forests
A8	55375,0	54333,0	98,1	Preparation of plans to support continuity of aspen in the long term
A9	2400,0	2372,0	98,8	Preparation of plans to support survival of the Flying squirrel in the short term
B1	231909,0	250215,1	107,9	One-off compensation payment
C1	859891,0	582982,1	67,8	Supporting habitat network in urban areas
C2	707290,0	269871,3	38,2	Maintaining habitat network in managed forests
C3	245751,0	274144,1	111,6	Supporting continuity of aspen the long term
C4	56730,0	29325,1	51,7	Supporting survival of the Flying squirrel in the short term: nest boxes in Estonia
D1	425228,0	207553,6	48,8	Monitoring the conservation actions
D2	247297,0	253160,1	102,4	Socio-economic impacts
D3	160589,0	125093,0	77,9	Ecosystem function restoration
E1	397965,0	386860,8	97,2	Dissemination plan and execution
E2	186135,0	230385,8	123,8	Engaging general public and landowners
E3	253373,0	207017,8	81,7	Improving visitor services and environmental education
E4	163191,0	194410,1	119,1	Engaging the key stakeholders and transferring the lessons learnt
F1	1169239,0	1568896,4	134,2	Management of the project
F2	434271,0	212045,6	48,8	Steering groups
Overheads	568183,0	499882,0	88,0	
TOTAL	8886666,0	7885781,9	88,7	

In 7 actions, there were large savings in the budget. In urban areas, good practices were effectively prepared (A4) and conservation activities (C1) done with less money. Site plans for managed forests (A6) as well as their execution (C2) were done with less budget, mostly due to fewer activities in Estonia. Nest boxes in Estonia (C4) were also put up easily. Monitoring costs (D1) were few as there were not as many sites and years to use. Finally, steering group work (F2) was made with smaller efforts compared to what we were prepared for: online connections were often used instead of face-to-face meetings.

On the other hand, 7 actions were clearly more costly than expected. These were extensive inventories in Estonia (A1), education package for managed forests (A7), protected areas (B1), aspen continuity (C3), engaging general public (E2) and professional seminars (E4) and project management (F1). These actions needed more work than was expected, but costs remained within the total budget.

Beneficiary-wise, some partners used a bit over their budget, while some used less. Already in early 2023 it looked that some budget would be saved. Since then, we repeatedly discussed on possibilities to do some additional work that would support project objectives. However, realized additions were few: A1 Inventories & A6 Green corridors/RMK, A2 Dog work/VARELY, and A4 Radiotelemetry/ESPOO. MHPWF used more personnel costs for project management than planned, as it was seen essential to have a full-time project assistant for a large project (discussed with EASME/MTR 2021). MHPWF did exceed its own budget but as there were savings by other beneficiaries, additional assisting personnel fitted in the budget at the project level without too high shift between cost categories.

8.2. Accounting system

Please refer to Annex 5 for the description of the accounting systems. The annex includes the following information from all the beneficiaries:

- System for recording project expenditures
- Cost account for the management of the project
- Documentation between the CB and the AB
- Providing copies of invoices and corresponding payment proof on the mission
- Providing a copy of a timesheet per beneficiary
- Calculation of annual personnel costs (annual gross salary), obligatory charges and pension contribution
- Calculation of annual productive hours in your organization
- Explanation of your organization's method of calculation and reimbursement of travel costs (tickets, fuel, allowances, etc.)
- Tendering and procurement process

8.3. Partnership arrangements

Partnership agreements between MHPWF and each associated beneficiary were signed in 2019. MHPWF regularly arranged guidance for reporting to beneficiaries. For GDPR sensitive information, MHPWF has instructed beneficiaries to use secured e-mail. In MHPWF, all sensitive data of the project (such as GDPR) is kept in a secured storage, where only PM, Project officer and Financial secretary have access to.

8.4. Certificate on the financial statement

Project costs have occurred during 1.8.2018-31.3.2025. Only for MHPWF (CB) and EEB (AB, coordinator in Estonia) personnel costs for one month to prepare final report during 1.-30.4.2025 were included to their financial statements.

Financial reporting was done regularly and with every report to the EASME/CINEA during the project. MHPWF have filled the Consolidated financial statement based on information gathered from beneficiaries. It is signed by MHPWF for the whole project and discussed with beneficiaries before sending the FR to the CINEA.

The Audit report (DF1g) includes reports for three beneficiaries (ESPOO, MHPWF, SMK) and follows the format of the ‘Terms of reference for the certificate on the financial statements’ for LIFE projects (ToR). Audit costs are included to individual financial statements for MHPWF and SMK.

8.5. Estimation of person-days used per action

The realized workload estimated as person-days followed the expected rather well. About 95% of the budgeted person-days were used.

Action type	Budgeted person-days	Estimated % of person-days spent
All projects when applicable Action A: Preparatory actions	7552	110,0
NAT and CLIMA projects Action B: Purchase/lease of land and/or compensation payment for payment rights	85	23,8
NAT projects Action C – Concrete conservation actions	4212	42,8
NAT and CLIMA projects Action D: Monitoring and impact assessment	2229	80,1
NAT and CLIMA projects Action E: Communication and Dissemination of results	2422	92,1
NAT and CLIMA projects Action F: Project management (and progress)	6003	104,6
TOTAL	20703	95,0

List of Annexes

All deliverables, technical report with annexes) and financial reporting (2 parts) are downloaded in Butler, Final report. Annexes 1-5 of the Technical report are in Butler with the Final report and a cover letter. Annexes 6-23 are in a Deliverable DF1h and annexes 24-35 in DF1i created for annexes for Final report (other publications than deliverables). Public deliverables and other project publications are in project's main website. Sensitive reports are sent only to the CINEA. References are used in the text.

TECHINICAL REPORTING

- 1 Deliverables and Milestones (excel)
- 2 Modifications and Deviations per Action **Sensitive** (excel)
- 3 List of project sites **Sensitive** (excel)
- 4 List of Project Indicators and KPI (excel)
- 5 Accounting systems of the beneficiaries (doc)
- 6 A1 Digital monitoring tools FMNH
- 7 A1 Description of current conservation legislation and management procedures of the flying squirrel in Finland and Estonia
- 8 A1 Data webinars 2023
- 9 A2 FS education material for webinars 2021-2022 (in Finnish)
- 10 A2 Report of dog inventories 2023-2024

- 11 A4 Questionnaire for conservation authorities and municipalities (in Finnish)
- 12 A4 Report questionnaire for citizen before and after Kuopio
- 13 A4 Summary monitoring of flying squirrels on built areas
- 14 A4 Radiotelemetry study Espoo (in Finnish)
- 15 A6 Joint planning process Finland
- 16 A7 FS education module for state-owned forests Finland
- 17 A9 Predator control plan Estonia
- 18 D1 Monitoring report
- 19 D1 Nest box report Kuopio 2020-2024
- 20 D1 Nest box Report Estonia

- 21 D2 Report of LUKE project studies A3 D2 D3
- 22 D2 Socio-economic study Estonia
- 23 D3 Summary of modelling future scenarios
- 24 E2 Rekijokilaakso nature path
- 25 E2 Jyväskylä nature path
- 26 E2 Description of engaging landowners Finland
- 27 E2 Final seminar Estonia
- 28 E2 Final seminar Finland
- 29 E3 Environmental education examples KULUMUS
- 30 E3 Environmental education examples Haltia

- 31 E3 Iisaku Exhibition Estonia
- 32 E4 Summary of seminars
- 33 F1 Recommendations
- 34 F2 Example FS Excursion May 2022 Estonia
- 35 National Action Plan FS Estonia 2023

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OFFICIAL FEEDBACK LETTERS FROM EASME/CINEA

Monitor visit 2019:	LIFE17NATFI000469MISMC1LET190412
Monitor visit 2020:	LIFE17NATFI000469MISMC2LET200512_AF
Monitor visit 2021:	LIFE17NATFI000469MICMC3LET 210520
MTR 2021:	LIFE17 NAT FI 000469 MTR1LET 210510_AF
Monitor visit 2022:	LIFE NAT FI 000469 MICMC4LET 220525
Monitor visit 2023:	LIFE17 NAT FI 000469 MIS5LET 230630
Monitor visit 2025:	LIFE17 NAT FI 000469 MISMC6LET 250305

DELIVERABLES

- DA1 Report of decisions on data sensitivity based on discussion meetings
- DA2a Inventory Training Package (concept and materials) ready
- DA2b Report on the usability of dogs assisting the inventory ready
- DA3a 1st set of predictive habitat maps for field checks in Finland and Estonia & DA3b 2nd set of predictive habitat maps for field checks in Finland and Estonia (combined into one document)
- DA3c Report of rules for sensitivity and availability for predictive habitat maps in Finland (based on discussions)
- DA3d Predictive habitat maps on potential Flying squirrel habitat network in Finland and Estonia ready and available

- DA4 Guide for Best Practices in Urban areas
- DA5 Plans for conservation actions in urban areas ready
- DA6a Forest plans for Finnish private and state-owned forests
- DA6b Forest plans within the region of Rekiokilaakso Natura 2000 site
- DA6c Forest plans for Estonian sites

- DA7a Estonian Guide Material, part 1
- DA7b Estonian Guide Material, part 2
- DA7c Brochure describing the main points of the Education Package for Forestry (FIN)
- DA7d Education package for forestry (FIN)
- DA8 Site plans to improve aspen continuity
- DA9 A map for nest box locations

- DC1 Info boards for activity sites
- DD2a Report on the socio-economic effects of the project ready
- DD2b Social value and conflict map
- DD3a Habitat probability and corridor maps, habitat probability GIS layers (first landscape)
- DD3b Habitat probability and corridor maps, habitat probability GIS layers (second landscape)
- DD3c Habitat probability and corridor maps, habitat probability GIS layers (third landscape)
- DD3d Summary of the Project's Effects on Forest Ecosystem Function

- DE1a Project brochures
- DE1b Short videos about the project and specific topics
- DE1c Layman's report
- DE3 Environmental Education package

DF1a Updated project performance indicators using KPI Tool with the PR1
DF1b Updated project performance indicators using KPI Tool with the MTR
DF1c Updated project performance indicators using KPI Tool with the PR2
DF1d Updated project performance indicators using KPI Tool with the PR3
DF1e Updated project performance indicators using KPI Tool with the FR
DF1f After-LIFE Conservation Plan
DF1g Audit report (MHPWF, SMK, ESPOO)
DF1h F1 Annexes for Final report Part 1 (6-23: actions A-D)
DF1i F1 Annexes for Final report Part 2 (24-35: actions E-F)

FINANCIAL REPORTING

Financial statements

Signed Individual Financial Statements of 19 beneficiaries

- 20 sensitive excel documents (2 tables from MHPWF, see Cover letter)
- 19 signed Individual Cost Statements (scanned)

Payment Requests

Signed Consolidated Financial Statement of the Flying Squirrel LIFE project

- 1 excel document
- 5 signed sheets

Signed LIFE Certificates for Durable goods

- 7 signed documents (scanned)

Responses to previous requests

- Response to the feedback letter of Monitor visit 2025
- Supporting documents for issues 20 and 21



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