# Beetles LIFE

**After-LIFE Plan** 





#### **Project summary**

Beetles LIFE is a diverse conservation project. It has helped eight endangered species of beetle and, above all, their living environment, where hundreds and thousands of other species live. In our project, we told the story of these heroic species, using art, education, the media and games.

Managing the habitats of the target species also helped hundreds of other species that inhabit the forests, and it safeguards biodiversity. Nearly half of the species we are interested in are insects. They are vitally important in the food chain and for the ecosystem.

The budget for the project was EUR 2.69 million, of which 60% (EUR 1.6 million) is funding from the EU's LIFE Programme.

The project covered the period 1.8.2018–31.7.2023.



#### **Target species of Beetles LIFE**









Xyletinus tremulicola

Stephanopachys linearis

Phryganophilus ruficollis

Pytho Kolwensis



Boros schneideri



Powder-post beetle Stephanopachys substriatus



Aradus angularis



Red flat bark beetle *Cucujus cinnaberinus* 



#### Restoration measures in Beetles LIFE

In Beetles LIFE project Metsähallitus Parks & Wildlife Finland has operated on 25 Natura 2000 areas throughout Finland. As part of the project, we have restored altogether 950 hectares of Natura 2000 areas.

We have

- Restored 295 ha of bog woodlands
- Promoted aspen on 168 ha
- Managed forests by controlled burning on 345 ha
- Increased the amount of deadwood on 143 ha



#### Management of the project sites after the LIFE

The restoration in Beetles LIFE is a one-off measure. The restoration sites do not require management after the project.

However, many of the Beetles LIFE target species are dependent on the continuum of a certain habitat.

Many pyrophilous insects, such as *Stephanopachys linearis*, *Stephanopachys substriatus*, *Aradus angularis*, *Phryganophilus ruficollis* and *Boros schneideri*, are dependent on or benefit from regular fire continuum. *Boros schneideri* requires a continuum of dead pine snags - unburnt or burnt. *Pytho kolwensis* requires a continuum of fallen spruce trees while *Cucujus cinnaberinus* and *Xyletinus tremulicola* reiquire a continuum of suitable aspen trees.



#### Management of the project sites after the LIFE: controlled burnings

Mainly, the restoration sites already burned in the project do not need to be further managed. Instead, more restoration burnings should be carried out elsewhere in the same Natura 2000 areas or nearby areas.

Burnings must be continued at least in the areas where valuable firedependent species or diverse communities of fire-dependent species are known to occur, to ensure fire continuum they need. Here we use e. g. fire continuum plans and the information obtained from the inventories and monitoring carried out in the project. At the same time, restoration burnings are a way to secure aspen continuum by promoting aspen regeneration.

In addition, among the sites already burned in the project, we have identified two partially weakly burned sites, which is why some parts of them should therefore be burned again. These areas are: Uopajanniemi in Oulanka and Salo in Salamajärvi.



#### Securing fire continuity after the project

Securing fire continuity of the most valuable fire-continuum areas is paramount for ensuring that populations of fire-dependent species don't decrease and disappear.

We have already planned to implement restoration burnings in dozens of different areas nationwide during 2023-2030, including near Beetles LIFE project sites, as shown on the map beside representing burnings planned so far. The future burnings are part of Life2Taiga, Helmi programme and some other ongoing projects such as Flying Squirrel LIFE.

Based on e. g. the results of monitoring and inventories of Beetles LIFFE, the eastern and northern areas are the most important with high species values while the western sites (Pyhä-Häkki – Seitseminen - Petäjäjärvi) are the least important sustaining hardly any valuable fire-dependent species. Therefore, it is justified to carry out the most future burnings in the east and north.



# Management of the project sites after the LIFE: *Pytho kolwensis*

The target species *Pytho kolwensis* requires a continuum of unburned fallen spruce trees to reproduce. The populations of *Pytho kolwensis* tend to be scattered due to distributional barriers between occurrences. Restoration of bog woodlands ensures the connectivity between subpopulations and the necessary continuum of dead wood for reproduction. Suitable habitat for *Pytho kolwensis* was created by restoration of ditched bog woodlands and raising water tables; consequently, natural hydrology and microclimate of bog woodlands will return, and dead wood will start to accumulate again.

Moreover, we directly created habitats for *Pytho kolwensis* by felling spruce trees. This measure may also be necessary in the future to ensure the survival of such small occurrences of *Pytho kolwensis* where dead fallen spruces are not created naturally in sufficient quantities.





# Management of the project sites after the LIFE (2)

Maintaining the continuum of aspen trees is essential for Beetles LIFE target species *Cucujus cinnaberinus* and *Xyletinus tremulicola*.

Controlled burning will create space for new aspen growth which will ensure the necessary **aspen continuum** for *Xyletinus tremulicola*.

Promoting regeneration of aspen by small scale cuttings will both create space for new aspen growth and enable the freed medium-sized aspens to grow. This is expected to ensure the necessary aspen continuum for *Xyletinus tremulicola* and *Cucujus cinnaberinus*.

Promoting the regeneration of aspens in these Natura 2000 areas in question is important in the future as well. Only implementing the same measures every few years guarantees the growth of different age groups of aspens. This more reliably ensures the persistence of species dependent on aspen continuum than one-off measures.



#### The average costs of restoration

The cost of restoration varies a lot depending on the sites. However, thanks to the long and vast experience in Metsähallitus Parks & Wildlife Finland of restoration and management we know, that the average cost on a state-owned land are:

- Prescribed burning ca 10 000 €/area (average 8 ha)
- Management of forest habitats ca 800 €/ha
- Restoration of peatland ca 700 €/ha







#### Restoration measures after the LIFE

We have identified three fundings sources for future restoration measures:

- 1) Helmi habitats programme
- 2) Budget funding of Metsähallitus Parks & Wildlife Finland
- 3) LIFE programme



#### Helmi Habitats Programme

Helmi Habitats Programme will provide extra funding for habitat restoration for this decade. The national Helmi Habitats Programme led by the Ministry of the Environment strengthens the biodiversity of Finnish nature and improves the status of deteriorated habitats. The estimated annual budget is approx. 75,5M€ but the amount will likely decrease due to national budgetary reasons.

The programme includes ambitious restoration targets such as

**30 000 ha** of mires restored on conservation areas

**800 ha** of woodland habitats restored inc. **750 ha** of controlled burning on conservation areas





### **Budget funding of Metsähallitus Parks** & Wildlife Finland

Metsähallitus Parks & Wildlife Finland is a public authority responsible for management of state-owned protected areas, including most of Natura 2000 network in Finland. Restoration and management of habitats in protected areas is one of our main tasks and we will continue to provide suitable habitats for beetle species.

Mainly, the funding comes from the national budget. During 2020-2022, about 13 M€ was used annually by Metsähallitus Parks & Wildlife Finland for habitat restoration and management in Helmi-habitats programme. In 2023 the amount will be on similar level but after that it is likely to decrease due to national budgetary reasons.

Recently, the funding of Parks & Wildlife from the national budget through the Helmi Habitats Programme has decreased and will possibly even decrease in the future.

This poses challenges to fulfill our important tasks - and threatens the goal of Metsähallitus Parks & Wildlife that "We have together stopped the loss of biodiversity in Finland by 2030 and biodiversity will recover".





#### LIFE programme

LIFE programme has been recognized as the most costeffective source of external funding in restoration in Finland and the Metsähallitus Parks & Wildlife Finland will be active in applying for new LIFE projects in the future.

Ongoing LIFE projects that will benefit Beetles LIFE target species are LIFE2Taiga and Flying squirrel LIFE providing necessary habitats by maintaining fire and aspen continuums.



![](_page_13_Picture_4.jpeg)

#### **Inventories & monitoring 1/6**

We have recognized **the importance of long-term monitoring** to obtain reliable information about the success of certain project measures.

We want to highlight **the challenge of implementing long-term monitoring during short projects** such as Beetles LIFE. This problem applies to almost all LIFE projects and therefore requires a great attention and a solution in the future projects.

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![](_page_14_Picture_4.jpeg)

#### **Inventories & monitoring 2/6**

We have identified the project measures and the project sites with a **need for further monitoring in the coming years**:

- Sites with produced dead wood targeted for *Pytho* kolwensis (monitoring of *P. kolwensis*, during 2025-2028)
- Controlled burning sites targeted for *Pyrophilus ruficollis* (monitoring of *P. ruficollis*, during 2033-2040)
- Promoting regeneration of aspen sites (monitoring of the survival of aspen seedlings, during 2025-2030)

Further monitoring is important because the success of these measures could not be verified during the project. Certainty can only be obtained by long-term monitoring carried out at the right time.

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#### **Inventories & monitoring 3/6**

We have also identified the project measures and the project sites with a **need for further monitoring in the distant future**:

- Controlled burning sites targeted for *Xyletinus tremulicola* and other sites promoting regeneration of aspen (monitoring of the target species arriving to the grown-up aspens, ~ 2100)
- Bog woodland restoration sites (monitoring of the target species *P. kolwensis* and *B. schneideri* arriving to the restored areas, maybe after 2080)

We find these monitoring unrealistic due to the long waiting time they require.

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#### **Inventories & monitoring 4/6**

We directly created habitats for *Pytho kolwensis* by felling spruce trees. This measure may also be necessary in the future to ensure the survival of certain small occurrences of *Pytho kolwensis* where dead fallen spruces are not created naturally in sufficient quantities.

Therefore, it is important to continue monitoring of the fallen spruce continuum approximately every five years and react when necessary. The priority project sites that need such future monitoring visits are: Patvinsuo and Lehtopuro area.

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#### **Inventories & monitoring 5/6**

**Other inventories.** It is possible to obtain observations of many valuable species (e. g. target species *Stephanopachys* spp., *Aradus angularis*) only from forest fire areas.

To stay on the map of the state of the populations of these pyrophilous species in Finland, it is important to regularly use the monitoring opportunities arising when restoration burnings are carried out.

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![](_page_18_Picture_4.jpeg)

#### **Inventories & monitoring 6/6**

## A need to develop new inventory and monitoring methods:

The pheromone of every target species of the Beetles LIFE project is unknown.

Discovering and synthesizing the pheromones would improve the inventory and monitoring of target species both in Natura 2000 areas and outside them.

Therefore, it is important to explore the possibility of this in cooperation with research institutes such as universities.

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![](_page_19_Picture_6.jpeg)

#### **Awareness raising in Beetles LIFE 1/2**

Beetles LIFE raised awareness of the target species by collaborating with artists and scientists. This led to combining visual imagery, product design, functionality and science in our communications, to get the message across. We brought endangered wildlife closer to the public by planning and putting on exciting events for young people and families.

![](_page_20_Picture_2.jpeg)

Photo: Teemu Korhonen

![](_page_20_Picture_4.jpeg)

Photo: Metsähallitus

![](_page_20_Picture_6.jpeg)

Photo: Saara-Maija Nevalainen-Kiiskilä

![](_page_20_Picture_8.jpeg)

Photo: Rapid Action Group

![](_page_20_Picture_10.jpeg)

Picture: Noora Launonen

![](_page_20_Picture_12.jpeg)

Photo: Rapid Action Group

![](_page_20_Picture_14.jpeg)

Picture: Minja Revonkorpi

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Photo: Rapid Action Group

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#### Awareness raising after Beetles LIFE 1/2

Linking art, design and conservation of target beetles and raising public awareness have been extremely successful in Beetles LIFE project. With new and innovative approaches, we have been able to reach brand new target groups. In our view, utilising similar methods for distributing information on biodiversity and nature conservation in other contexts would be highly beneficial.

However, we realize that it is extremely difficult to find funding for these actions. Helmi habitats programme and budget funding of Metsähallitus Parks & Wildlife Finland is mainly channeled to concrete restoration measures.

This funding deficit is something we hope the Complementary Funding Hub for Biodiversity established in 2024 as part of the Priodiversity LIFE project will solve.

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![](_page_22_Picture_0.jpeg)

#### Awareness raising after Beetles LIFE

Also in the future, it is important to use all opportunities to communicate the project's themes.

We have identified at least the following ways to continue spreading information about the important themes and target species of Beetles-LIFE:

- Communication in other LIFE projects that contain the same themes (Life2Taiga, Flying squirrel LIFE)
- Annual communication about restoration burnings carried out by Metsähallitus Parks & Wildlife.

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#### Dissemination and communication of the project results after the LIFE

Starting from 2024 there will be a major effort to improve communication and knowledge exchange between different organisations and sectors by establishing a national Education Network for Biodiversity as part of the Priodiversity LIFE project. It will

1) connect nationwide biodiversity professionals and operators,

2) improve knowledge exchange and

3) offer specified biodiversity trainings to various target groups such as advisory organisations and landowners in agriculture and forestry, entrepreneurs carrying out restoration and management measures, employees of natural resources sector and environmental administration, university students and local authorities.

4) launch a public online portal where information on nature management and restoration will be gathered.

The experiences, methods and materials of Beetles LIFE will be further distributed through the Education Network and the online portal.

![](_page_23_Picture_7.jpeg)

## Other uses of the project results

#### **Reporting of the Habitats Directive in 2025**

The data concerning the Habitats Directive species (Stephanopachys spp., Aradus angularis, Boros schneideri, Pytho kolwensis) help to make an updated assessment of the state on the species

#### Updating of the habitat restoration manuals

The process of updating the restoration manuals of different habitats has been started in Finland in 2023.

The results gained in the project will be used in updating the manuals of forest and peatland restoration and management.

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