

ESCAPE – UNIVERSITY OF HELSINKI

ESCAPE After-LIFE Communication Plan

ESCAPE Action F.3 Deliverable

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PHOTO: Sanna Laaka-Lindberg

DELIVERABLE Action F.3

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ESCAPE After-LIFE Communication Plan

The After-LIFE communication plan is a compulsory action in every LIFE project. The specific objective of ESCAPE After-LIFE Communication Plan is to ensure that the development of ex-situ conservation activity and ex-situ method development will continue in Finland. The After-LIFE plan will also contribute to maintaining and increasing the ex-situ collections of threatened plants in the future utilizing the methods developed and tested, and facilities established during the ESCAPE project.

Dissemination of ESCAPE projects results will continue after the 5-year project in form of scientific articles based on research on target species success in ex-situ conditions and on the population growth after reintroduction and assisted migration. In connection to the activities on the target species, data for scientific papers have been accumulating. These data will be analyzed and published after the end of the project.

The information on the numbers of species added to ex-situ collections following the methods developed in ESCAPE will be made available on the responsible websites and popular articles, as appropriate, in each of the beneficiaries' organizations.

The need for continuing ex situ-conservation activities after the EU-funded project ESCAPE is well-grounded. For instance, need for plant protection in ex-situ conditions may grow in future when the effects of changing climate become more visible. Therefore, the previous experience and method development will be needed for further development of these activities. Furthermore, for method evaluation and selection based on tested experience on different plants is likely to bring out the best possible result.

This After-LIFE Communication Plan of ESCAPE project will emphasize the continuity of the project actions and sustainability of the results also in the future after the project itself ends. Project disseminations include information and guidance on ex situ conservation of various vascular plants as well as the few selected bryophytes.



Experimental bryophyte reintroduction with ex-situ cultivated moss *Meesia longiseta*. Photo: Sanna Laaka-Lindberg

1. Ensuring the ex-situ conservation activity and ex-situ method development in Finland

- Ex-situ methods have a role in plant species conservation in cases where the taxon has a small population size, is continuously declining and clearly has problems in reproduction despite of efforts to improve its habitats. In ESCAPE-project we got a lot of experience of different cases and our understanding of the possibilities of ex-situ conservation has significantly improved.
- It is important to clearly define and delimit the intended ex-situ conservation activity and clarify on which species and conservation actions ex-situ fits best. Etäsuojeluopas (Ex-situ conservationists handbook) by Mari Miranto (2017) and Sammalten etäsuojeluopas (Guidelines for ex-situ conservation of bryophytes) by Sanna Laaka-Lindberg (2017), both published as deliverables of the ESCAPE project (available at the project website www.luomus.fi/escape), have compilations of method development and experience giving reasonably well-grounded basis for planning the future ex-situ activities, which need to be well-grounded, planned and documented also in the future.
- The cost estimation of the activities should be made realistic when it comes to expenditure, time required, worker's skills and other necessary resources. Especially the long-term monitoring requires resources and commitment to the work by the actors.
- The ESCAPE –project has provided plenty of new information about threatened plant species and their biology. While collecting seeds, growing and replanting them in the wild we have learned new things about the phenology of many threatened species, about their habitat requirements, pests or other threats that may hamper their ability to form offspring. In the future this information will be used by environmental authorities on different levels for protection purposes.
- One of the bigger lessons learned is that any plant reintroduction in the wild is useless if the habitat requirements are not taken in account at the same time. Most threatened plant species have specific habitat requirements and will not thrive in degraded habitats that is not suitable for them. As more resources hopefully will be used on habitat improvement in the future, species reintroductions could be considered in previously lost sites and information from the ESCAPE –project will be useful.



Planting *Hypericum montanum* plantlets on a natural site. Photo: Terhi Rytteri

- In some cases the few remaining populations of threatened species are on the brink to disappear. On the other hand there may be habitats elsewhere that could suite the species. This is the case *Suaeda maritima*, an endangered species that in Finland grows only in a restricted area in the Åland Islands on salt marshes that are usually kept open by grazing animals. As grazing is not always possible to arrange, the question arises if the species should be moved to more suitable (grazed) sites in the vicinity? This is an example of a species that in the future may need ex-situ conservation actions if the conservation efforts on in its natural sites fail.
- the following focal species require future monitoring:
 - o *Armeria maritima* subsp. *intermedia*, CR (tested in Escape, partly successfully)
 - o *Astragalus glycyfyllus*, CR (tested in Escape, results?)
 - o *Carex vulpina*, EN (tested in Escape 2017, no monitoring results yet)

2. Maintaining and increasing the ex-situ collections of threatened plants

In ESCAPE project, we didn't get all the priority list species (see www.luomus.fi/escape) and especially not any other threatened bryophytes apart from the three target species selected for the project. Hence, there is still a lot to collect for the first time not mention re-collections necessary for renewing old collections. ESCAPE beneficiaries will continue collecting for the seed-bank, cryopreservation facilities and the living collections in the botanic gardens in the future.

The seed bank in UH will carry on receiving, maintaining, and germination testing seed accessions of threatened and near threatened Finnish plants. In the long term the facility will also store seed accessions from neighboring EU countries that do not have native plant seed banks in their own country.

The micropropagation and cryopreservation activities of threatened plants will continue in the UO. The knowledge accumulated during the project will be applied in the future projects.

Increasing and maintaining outdoor collections will continue in UH and UO botanic gardens.



A set of plantlets planted in Oulu Botanic garden. Photo: Tuomas Kauppila

3. Dissemination of ESCAPE projects results

a. Scientific articles

In connection to many ESCAPE ex-situ activities including seed-banking, cryopreservation and micropropagation, reintroductions and others, a lot of method development, measurements on growth and dynamics of target species, and sensing data have been collected. Part of this data is more-or-less side product of the actual ex-situ activity, but most of the data collecting was designed for scientific purposes as well. As only a minor part of the scientific data was already published as a deliverable product during the ESCAPE project, further analyzes and publication of these data will be done after the project end. It is, however, important to emphasize that the ESCAPE project contribution to the production of new scientific information is recognized. Publishing these data is thus one of the major priorities of after-LIFE communication plan. Some data are ready for scientific publication as soon as the required analyzes have been finished, some others require more data to be added later.

The intended future ESCAPE science publications contain at least the following subjects:

- population dynamics of *Crepis praemorsa*
- population dynamics of the focal bryophyte species
- germination requirements of Finnish plant species
- cryopreservation of threatened mosses



Development of bryophyte micropropagation and cryopreservation methods needs further development also for additional species. Photo: Jaanika Edesi

b. Information made available on the responsible beneficiaries websites

ESCAPE project website www.luomus.fi/escape will stay open after the end of the project, providing project reports and publications for the public. Also the ESCAPE Facebook account will be kept running for those joined as friends and others interested. It also provides a direct way for contacting the ESCAPE staff, if any questions.

c. Popular articles

The future aspects of ex-situ conservation might be an interesting issue in local newspapers and other popular publications/journals. The monitoring results and the situation when ESCAPE project is ending could be offered as a topic for a magazine. People who were interested and possibly followed our website and/or articles in local journals might be happy to get information on what we actually did learn and develop during the 5-years. Promoting popular articles based on ESCAPE will carry the message further, and is thus encouraged.

d. Thesis

Some of the datasets collected in ESCAPE project may be good subjects for theses for e.g. biology students, as shown by those thesis and student reports done during the project. Additional subjects include

- Monitoring of *Artemisia* and *Puccinellia* reintroductions
- Analyzing some of the background study data and reintroduction data e.g. on the focal bryophytes



Artemisia campestris subsp. *bottnica* in its natural habitat. Photo: Lassi Kalleinen

e. Species suggested for future ex-situ work

Additional taxa, which likely profit the ex-situ activities, but were not included as focal species in ESCAPE-project, include e.g. *Asperula tinctoria* (CR) and *Cardamine impatiens* (EN).

4. Potential need for ex-situ conservation applied in the future

Species reintroductions and habitat restoration, which may have a potential of applying the ex-situ method developments achieved in ESCAPE project, are highly valued in EU right now.

These, as well as “ordinary” method development need funding. Therefore, applying funds for activities of developing ESCAPE project results further, creating networks and planning future projects based on ESCAPE results may open potential for continuation of the species ex-situ conservation work in the future.

Habitat restoration, ecosystem hotels and ecological compensation cases may also potentially apply ex-situ species conservation methods as additional and complementary activities in special cases. As these activities are increasing all over Europe, ESCAPE project results and publications may offer a valuable tool for evaluating cases of species preservation.

Some countries active in nature protection do not have a seed bank of native plants. For such countries and nature conservation activities, including EU-funded projects e.g. on habitat restoration may need a seed-banking service which could be operated by ESCAPE seed bank in Helsinki. This service concept will be discussed and developed with the botanic garden staff in autumn 2017 after the project end.



Seedlings of *Agrimonia* grown in nursery after germination testing in ESCAPE seed bank in Kumpula botanic garden, Helsinki. Photo: Mari Miranto

See the IUCN threat categories mentioned: Rassi, P., Hyvärinen, E., Juslén, A. & Mannerkoski, I. (eds.) 2010: Suomen lajien uhanalaisuus – Punainen kirja. Red data book. - Ympäristöministeriö ja Suomen ympäristökeskus. p. 685. URN:ISBN:978-952-11-3806-5. ISBN 978-952-11-3806-5 (PDF).