

Deliverable C.5 ESCAPE

Science article on bryophyte ex-situ conservation

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Population study at the original locality of the liverwort *Mannia fragrans*, one of the ESCAPE focal species.

Photo: Sanna Laaka-Lindberg



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Introduction

Bryophyte ex-situ conservation was selected as an innovative approach to plant conservation in ESCAPE project. It has thus far only seldom applied anywhere in the world, and thus it brings genuinely new experience on species conservation activities in Europe.

The deliverable "Science article on bryophyte ex-situ conservation" is shown as an abstract of the actual science article to be finished and published later, since the publication process takes time. The publishers' usual procedure doesn't allow publishing the article anywhere else before the actual publication. Therefore, a summary of the aims of this study is demonstrated here.

SCIENCE ARTICLE SUMMARY:

Testing the feasibility of assisted migration as an ex situ conservation tool on selected threatened bryophytes

Assisted migration (AM) is an approach for preventing the loss of biodiversity caused by climate change. It is the human-assisted movement of populations of the endangered species to new locations where they will be suited to projected future climate conditions. Three bryophytes red listed in both Finland and Europe, the mosses *Meesia longiseta* and *Tortula cernua*, and the complex thalloid liverwort *Mannia fragrans* are tested for the feasibility of assisted migration as an ex-situ conservation tool.

Currently, criteria proposed for selecting plant species which may best profit from assisted migration (see www.luomus.fi/escape) are heavily focused on angiosperms, spore-dispersing bryophytes have rarely been investigated the potential of the utilization of this conservation methods. In this study, we will analyze the background data required against the criteria set for angiosperm AM and test whether these criteria are also suitable for bryophytes. The three focal bryophyte species represent different habitat types, and their occurrences have all become rare in Finland. The following measures will be investigated against each

species on whether they are: 1) threatened by climate change, 2) climate change is predicted to cause the species' suitable area to move outside their current ranges, 3) moving to the new area where it not for dispersal barriers or lack of time, and 4) safe, feasible and ecologically sound to be translocated.

Therefore, conservation priorities, background knowledge of the biology and ecology, and the feasibility of the conservation plan of the three focal bryophyte species are investigated. We aim at providing an application better fitted for conserving bryophytes.



The thalloid liverwort *Mannia fragrans* in its natural habitat. Photo: Sanna Laaka-Lindberg