

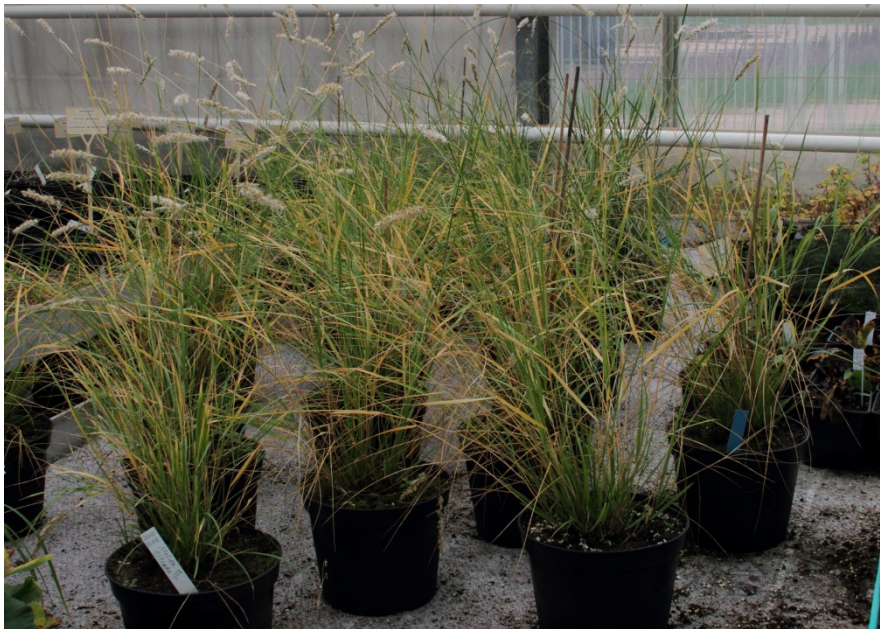
# Garden database check for data accuracy

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## Milestone D.1

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List of the plants in living plant collections in Kumpula Botanic garden, UH and Oulu Botanical Garden, UO in 2013 with a scale developed for plant vitality evaluation.

# Garden database run a check for data accuracy

## ESCAPE LIFE+2011 BIO/FI/917

### Milestone D.1

#### Aims and activities in the Action D.1

The number of species and origins of the threatened plants in the living collections of the Kumpula Botanical Garden, UH and Oulu Botanical Garden, UO are continuously monitored and reported during the ESCAPE project. The list of species and origins present in the two botanic gardens is presented here (see Table 1 below). The vitality and survival of the plants is monitored and the situation evaluated by a scale (Table 2) developed by Paula Havas-Matilainen and Anne Jäkäläniemi. This evaluation will be started and implemented from the summer 2014 onwards. The monitoring and evaluation results will be further reported in regular intervals during the project. A previous report was compiled for the ESCAPE Progress Report on 31.1.2014 (Progress Report; Annex D.1.1.).

- **Purpose of the Action:** Monitoring the number and vitality of the threatened Finnish native plant taxa included in the ex situ -collections in UH and UO. These collections include the seed bank in Kumpula Botanic garden, LUOMUS, UH, cryopreservation in Oulu Botanic Garden, UO, and living outdoor collections in these two botanic gardens. Monitoring tools are Atlantis database at UH, and the corresponding plant database at UO.
- The databases are kept up-to-date. Additional information on species / accessions vitality will be added to the data in these databases from the summer 2014 onwards.
- The numbers of taxa and the vitality of the accessions are monitored every year, and the summed results are presented in the project website and in the ESCAPE annual meeting every year.
- Lists of taxa and their numbers are kept continuously updated on the project homepages.
- The Action D.1 produces updated information on the situation of the threatened Finnish native plant species in ex situ -conservation.
- Monitoring Action D.1 is closely connected to the Actions C.1, C.2 (seed bank), C.3 (cryopreservation), C.4 (outdoor collections) and C.6 (population increasing scheme).

#### The numbers of taxa/origins in UH and UO ex situ – native plant collections

The numbers of taxa and origins of threatened native plant species are here checked and data updated.

##### **A. UH, LUOMUS Kumpula Botanic Garden**

Total number of threatened Finnish native plant taxa in UH is **71 taxa of 78 origins**.

Of these, 27 taxa (39 origins) are stored in the seedbank.

Plants originating from the seedbank germination tests later to be planted in the outdoor collections in UH include 8 taxa (9 origins). These are grown in sections 509 and 401 in the garden.

Plants originating from elsewhere than the seedbank include 26 taxa (39 origins).



Of these, at the present in seeding, germinated seedlings and seedlings in ex situ -cultivation include 7 taxa/origins with inadequate number of seeds for seedbank, 5 origins of *Primula sibirica* var. *jokelae* and 1 origin of *Melica ciliata*.

Pre-ESCAPE outdoor collections contain 15 taxa of 24 origins.

Additionally, a seed set 700SS in seed sample collection in UH will be tested for germination in the spring 2014.

### **B. UO Oulu Botanic Garden**

Collections (dated 25.3.2014) include **36 taxa of 53 origins**:

17 taxa of 22 origins are both in outdoor collections and in micropropagation. Of these 7 taxa have been tested for successful cryopreservation method.

1 taxon (*Salix pyrolifolia* 86–931) has been placed in long-term cryopreservation tank. Several other taxa will be placed in long-term cryopreservation soon as the method testing is finished.

23 taxa of 31 origins are merely in outdoor collections in UO.

## **Database reports**

### **A. UH, Kumpula and Kaisaniemi Botanic Gardens:**

In UH the information on the garden plant taxa and origins is stored in Atlantis -database. The database has been in use since 2010. Systematic recording of plant data has, however, been started already in 1977. Curator Leo Junikka has made specific location information fields for the ESCAPE project plants.

The plants in seed bank have identification code 609 and those in further cultivation have identification code 509. The location information in the database enables selecting any ESCAPE accessions. A temporary location code (510) will be needed for those ESCAPE plants which are placed temporarily in the outdoor seedling beds before exchange, returning to nature or other such conservation activities.

In Kumpula Botanic Garden the ESCAPE -plants will be planted in Hortus Fennicus -sections (228) subsections with location code of the particular subsection (228A, B, etc.)

Mari Miranto created a report form that can be used for selecting ESCAPE plants for reports on the basis of marked ESCAPE in the Remarks -field. For reports this enables also selection of the pre-ESCAPE plants placed in other sections on the basis of the ESCAPE remark. Also plants in cultivation in 509 locations are easy to find by the ESCAPE mark in the Remarks -field. Thus, if needed information on all ex situ -plants can be extracted easily from the database.

NOTE: Database reporting has been in use only short time by now. Governing the information on numerous plant accessions requires ultimate care. One problem was detected in preliminary use of the Atlantis reporting tools: if the marking of ESCAPE was not made in the remarks field, the data on that accession could not be found. Therefore, checking the data accuracy also in the future activities with ESCAPE plants need special care and regular checking.

***"Old ex situ -plants"***

UH LUOMUS Kaisaniemi and Kumpula Botanic garden have pre-ESCAPE accessions of threatened native plants. They will be listed in ESCAPE project even though they do not meet all the criteria of acceptable ex situ -plants.

The systematic registration of accession data was started in 1977. Therefore the data on some older plants (trees) are insecure (e.g. *Malus sylvestris*, *Salix pyrolifolia* ja *Sorbus intermedia* in Kaisaniemi Botanic Garden). Comprehensive inventory data is missing in Kaisaniemi Botanic Garden, but available on regular inventories at Kumpula Botanic Garden. Some older accessions of herbs may have been hybridized and therefore do not fill the criteria for use in return plantations and population growth activities. The evaluation of the vitality of the old accessions will start in 2014. However, the value of those accession with inappropriate history records, is on the raising public awareness and recognition in the garden collections.

### **B. UO, Oulu Botanic Garden**

The database functions and structure are similar to that in UH Botanic gardens. It has long been made on MS Excel -sheets, but a new database has recently been established. Data recording process is regularly checked and great care is taken on data accuracy. The outdoor collections of threatened Finnish native plants consist of two separately governed collections: VACCIA referring to older ex situ accessions and ESCAPE for recent accessions in ESCAPE project. These both are treated as the ex situ -collection.

**Table 1. The species and number of their origins in the living collections at Kumpula Botanic Garden, University of Helsinki.**

<i>Cirsium oleraceum</i>	1
<i>Clematis sibirica</i>	1
<i>Dianthus deltoides</i>	1
<i>Leersia oryzoides</i>	1
<i>Malus sylvestris</i>	2
<i>Melica ciliata</i>	1
<i>Mentha aquatica</i> var. <i>litoralis</i>	1
<i>Rubus humulifolius</i>	1
<i>Salix pyrolifolia</i>	1
<i>Salix triandra</i>	1
<i>Sorbus intermedia</i>	1
<i>Taxus baccata</i>	1
<i>Ulmus glabra</i>	3
<i>Ulmus laevis</i>	1
<i>Urtica dioica</i> subsp. <i>sondenii</i>	1
<i>Viola selkirkii</i>	1

**Table 2. The species and number of their origins in the living collections at Oulu Botanical Garden, University of Oulu.**

<i>Campanula cervicaria</i>	1
<i>Dianthus deltoides</i>	4
<i>Dianthus arenarius</i> subsp. <i>borussicus</i>	1
<i>Rosa canina</i>	1
<i>Rosa sherardii</i>	1
<i>Campanula cervicaria</i>	1
<i>Cypripedium calceolus</i>	1
<i>Moehringia lateriflora</i>	1
<i>Thalictrum minus</i> subsp. <i>kemense</i>	1
<i>Trifolium aureum</i>	1
<i>Geranium palustre</i>	1
<i>Helianthemum nummularium</i>	1
<i>Silene tatarica</i>	
<i>Aconitum lycoctonum</i> subsp. <i>septentrionale</i>	1
<i>Euphrasia bottnica</i>	
<i>Puccinellia phryganodes</i>	1
<i>Persicaria foliosa</i>	1
<i>Melica ciliata</i>	1
<i>Dianthus superbus</i>	1
<i>Arctophila fulva</i> var. <i>pendulina</i>	1
<i>Ranunculus sulphureus</i>	1
<i>Lychnis alpina</i> var. <i>serpentinicola</i>	3
<i>Carex viridula</i> var. <i>bergrothii</i>	1
<i>Crepis tectorum</i> ssp. <i>nigrescens</i>	1
<i>Epilobium laestadii</i>	1
<i>Artemisia campestris</i> ssp. <i>bottnica</i>	1

**Table 3. The evaluation of the plant vitality of the species in Botanic Gardens' living collections.**

<b>Vitality class</b>	<b>Description</b>	<b>Proportion (%) of living individuals of the all planted</b>
0	Dead	0
1	Declining, soon disappearing	0 > < 50
2	Declining	50 > < 100
3	Stable	100
4	Slowly growing and dispersing	100 > < 120
5	Actively growing and fastly dispersing	> 120