

Milestones C.1, updated

ESCAPE

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Astragalus glycophyllus Photo: Mikko Piirainen 2013.

List and numbers of the plant taxa seeds and/or tissues of which have been collected for ex-situ collections for seed bank in Kumpula botanical garden and cryopreservation and micropropagation collections in Oulu Botanical garden during the ESCAPE project by 28.2.2015.



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List of threatened plant taxa seeds and/or tissues with numbers of accessions collected in ESCAPE project for ex-situ collections

A high class facility seed bank was established in UH, Kumpula botanic garden by EU LIFE+ funding for the ESCAPE project in 2013. **Action C.1 Milestone 28.2.2014:** In original project plan, the estimated number of plant species for seed banking was 50 by 28.2.2014. In addition to this, tissue materials of 10 plant species were planned to be cryopreserved by 28.2.2014. The project starting date was delayed for one growing season in 2012, and therefore the numbers of species collected in the first operative year of ESCAPE project remained lower than expected. However, in 2013 33 taxa of 45 populations were collected to the seed bank. In cryopreservation in Oulu botanical garden 3 taxa were in proper cryopreservation, with additional taxa in preparations for cryostorage.

Action C.1 Milestone 28.2.2015: Additional 50 taxa were targeted to be collected to the seed bank by 28.2.2015. The targeted number of taxa in preparation for cryopreservation was 25 by 28.2.2015, including the originally planned 10 taxa.

In field season 2014 the total number of ex-situ preserved plant species collected to the seed bank was 52 taxa of 66 origins with 47 new taxa added. Of these 48 taxa of 62 origins were preserved in the seed bank. Of the collections, 3 taxa were seedless.

In total by 28.2.2015 the number of collecting attempts was 117, and 111 of these collections contained seeds. Altogether, the number of ex-situ preserved plant species in the seed bank is 71 taxa of 100 origins. Tissues of 17 taxa are micropropagated in 2014 Oulu botanic garden. In Oulu 9 taxa are in proper cryopreservation by the end of 2014. Altogether 31 taxa are in preparation for micropropagation and cryostorage in Oulu.

Considering the delay in collecting activity in the starting phase of ESCAPE project, the yield of species collected for the seed bank by milestone deadline 28.2.2014 was 66 % of the number of taxa expected (50 taxa), and by milestone deadline 28.2.2015 71 % of the 100 taxa expected). 94 % of the expected addition of 50 new taxa was achieved (47 taxa added in 2014).

By 2014 milestone deadline 28.2.2014 there were 8 taxa in micropropagation for cryopreservation, which was 80% of the expected 10 taxa. In February 2015, the expected addition up to 25 taxa prepared for cryopreservation was exceeded with the total number of 31 taxa in tissue culture collections in Oulu.

The list of taxa realized in Action C.1 by 28.2.2015

The taxa collected for and stored in seed bank in Kumpula botanical garden, Helsinki, are listed in Table 1. The taxa in Oulu botanical garden micropropagated for cryopreservation are listed in Table 2. The taxa already in cryostorage are marked with an asterisk (*). The rest of the taxa on the list are in micropropagation, and tests for proper cryopreservation method are going on with them.

These lists are produced as tools for monitoring the increase of the taxa in seed bank and in cryopreservation and micropropagation for the final targets of the 100 taxa in seed bank and 25 taxa in cryopreservation by the end of the ESCAPE project in 2017. The lists will be up-dated in co-operation with the monitoring action D.1 each year after the field season.

Table 1. The taxa collected for the seed bank in Kumpula botanic garden, Helsinki by 30.11.2014. The * shows the taxa that were collected with fruits, but the seed pods were empty. The ? indicates an unchecked situation.

Taxon	IUCN red list status	Number of populations
<i>Allium ursinum</i>	NT	1
<i>Antennaria dioica</i>	NT	1
<i>Ammophila arenaria</i>	EN	3
<i>Arctagrostis latifolia</i>	NT	1
<i>Astragalus glycyphyllos</i>	CR	1
<i>Campanula cervicaria</i>	VU	1
<i>Cardamine flexuosa</i>	EN	1
<i>Carex appropinquata</i>	VU	2
<i>Carex atherodes</i>	NT	1?
<i>Carex atrata</i>	NT	1?
<i>Carex atrofusca</i>	NT	1?
<i>Carex capitata</i>	LC	1
<i>Carex distans</i>	LC	1
<i>Carex extensa</i>	NT	1
<i>Carex hartmanii</i>	EN	1
<i>Carex heleonastes</i>	VU	2
<i>Carex hostiana</i>	EN	1
<i>Carex lepidocarpa</i>	EN	1
<i>Carex pulicaris</i>	VU	1
<i>Carex remota</i>	EN	1
<i>Carex viridula</i> var. <i>bergrothii</i>	VU	1
<i>Carlina vulgaris</i>	VU	1
<i>Carex vulpina</i>	EN	1
<i>Centaureum pulchellum</i>	NT	1
<i>Cerastium alpinum</i> serpentine-race of central Lapland	NT	1
<i>Cerastium fontanum</i> serpentine-race of central Lapland	EN	1
<i>Chimaphila umbellata</i>	NT	
<i>Cladium mariscus</i>	EN	1*
<i>Dianthus deltoides</i>	NT	4
<i>Dryopteris fragrans</i>	NT	1
<i>Elymus farctus</i> ssp. <i>boreali-atlanticus</i>	VU	
<i>Erica tetralix</i>	CR	1
<i>Festuca gigantea</i>	EN	2
<i>Festuca polesica</i>	NT	
<i>Galium schultesii</i>	CR	1
<i>Galium verum</i>	NT	1
<i>Geranium bohemicum</i>	NT	1
<i>Gypsophila fastigiata</i>	EN	
<i>Juncus arcticus</i>	EN	1
<i>Leontodon hispidus</i>	NT	
<i>Melica picta</i>	NT	1
<i>Melica uniflora</i>	EN	1

<i>Minuartia biflora</i>		
serpentine-race of central Lapland	NT	1
<i>Moehringia lateriflora</i>	NT	
<i>Myricaria germanica</i>	NT	1
<i>Polygonum oxyspermum</i>	CR	1
<i>Primula farinosa</i>	EN	1
<i>Primula stricta</i>	EN	2
<i>Pyrola media</i>	NT	1
<i>Ranunculus glacialis</i>	NT	
<i>Rhododendron lapponicum</i>	NT	1
<i>Rhynchospora fusca</i>	NT	1*
<i>Salsola kali</i>	EN	
<i>Sesleria caerulea</i>	NT	1
<i>Thalictrum minus</i> ssp. <i>kemensis</i>	NT	1
<i>Thymus serpyllum</i>	NT	
<i>Trifolium fragiferum</i>	NT	1
<i>Viola collina</i>	EN	1
<i>Viola uliginosa</i>	EN	1
<i>Viscaria alpina</i> var. <i>serpentinicola</i>	NT	1

Table 2. The taxa stored (marked with *) and prepared for cryopreservation in Oulu botanic garden by 28.2.2015.

Taxon	IUCN red list status
<i>Arctophila fulva</i> var. <i>pendulina</i> *	EN
<i>Campanula cervicaria</i>	VU
<i>Crepis tectorum</i> subsp. <i>nigrescens</i>	EN
<i>Cypripedium calceolus</i>	NT
<i>Dianthus arenarius</i> subsp. <i>borussicus</i> *	EN
<i>Dianthus deltoides</i> *	NT
<i>Dianthus superbus</i> *	CR
<i>Epilobium laestadii</i>	EN
<i>Euphrasia bottnica</i>	NT
<i>Lychnis alpina</i> var. <i>serpentinicola</i> *	NT
<i>Puccinellia phryganodes</i>	CR
<i>Ranunculus sulphureus</i>	EN
<i>Rosa canina</i>	CR
<i>Rosa sherardii</i> *	EN
<i>Rubus humulifolius</i> *	RE
<i>Salix pyrolifolia</i> *	CR
<i>Silene tatarica</i> *	VU