



REPUBLIC OF ESTONIA
ENVIRONMENTAL BOARD

LIFE to alvars: Large-scale alvar grassland restoration in practice

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Alvar grasslands (6280* Nordic alvar and precambrian calcareous flatrocks)

- characterized by **openness** (maintained by **grazing**)
- **limestone** bedrock
- very **thin soil** layer (0-30 cm)
- plant and invertebrate communities are **rich in species**
- very **limited** distribution
- almost 90% of the areas **in Europe**
- within the European Union, the habitat is only found in **Sweden, Estonia** and minor areas in **Finland**



*The European Commission (DG ENV B2) commissioned the Management of Natura 2000 habitats.
6280 *Nordic alvar and precambrian calcareous flatrocks



Loss of the alvar habitat

Estonia has experienced a major **loss** of alvar grassland (**85%**) in the past 40 years due to:

- **abandonment**
- **forestation**
- **inadequate grazing regime**
- **Building houses, roads etc**

Main threat to the alvar grasslands is **overgrowing with junipers and pine trees** after grazing has ceased.



LIFE to alvars project

- Preparation for LIFE to alvars project started in 2011 with study visits to Sweden - large scale alvar restoration project carried out there 1996-1999 with machinery use
- Transfer this knowledge to Estonia and adjust it to local conditions.
- LIFE to alvars (LIFE13NAT/EE/0000082) was initiated
- Duration 2014-2019
- Budget 3,7 million euros (75% financing rate)



LIFE to alvars project

- Restoration process of the overgrown alvar starts with the **tree and shrub removal**
- Abandoned alvar grasslands are up to **80...100%** covered with junipers and pine trees
- **10...30%** of the trees and shrubs remain after the restoration process.



Large scale restoration challenges

- **Timeframe**
- **Traditionally** restored manually
- Little previous experience in **using machinery** at restoration work
- Little previous experience in large scale restoration **outcomes**



Large scale restoration in action

- 4 different types of forestry and communal machinery proved to be **successful restoration tools**



Chain swipe mower
fitted to excavator



Stump/bush grinder
fitted to excavator



Harvester



Guillotine
fitted to excavator



Large scale restoration results

- Restoration work finished in spring 2019 – 2500 hectares of alvar grassland is restored
Restoration is well visible from the orthographic photos.



Lighter areas on the map is restored alvar-
about 90 hectares



Large scale restoration results

- Restoration carried out using machinery is **faster**
 - 1 hectare **manual** restoration time consumption **300 hours**
 - 1 hectare restoration using **machinery** time consumption **60 hours**
- **Cost effective-** manual restoration has **40% higher cost**
- **Better quality** – no sharp juniper stumps with machinery



Replicability and transferability

- EB decided not to purchase the restoration machinery but to **outsource the work from the local companies** who own the suitable communal and forestry machinery to carry out the work.
- This has led to the development of **completely new grassland restoration mentality** in local conditions.
- Same **machinery and methodology** is now used on different habitats and financed by national funding and other EU projects.



Large scale restoration – keeping the result

- **GRAZING must follow the restoration immediately!**
- Otherwise the restored area is overgrown with leafy shrubs in few years.
- Part of the LIFE to alvars project is to build grazing infrastructure in all the restored areas.



Dissemination

- More than 100 articles in newspapers and magazines
- 4 annual meetings (20)
- 6 educational trips
- **6 farmer training events**
- **60 farmers**
- 2 exhibitions
- 1 app for the kids
- 51 information boards
- 14 000 booklets in 4 languages
- best practice guidelines
- webpage and FB page





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Thank you!

More information on website:

<http://life.envir.ee/elualvaritel>

or in Facebook LIFEtoalvars