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Title

Did European larch (*Larix decidua*) survive the Holocene in
Central Europe? Combining paleoecology and
phylogeography

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Did European larch (*Larix decidua*) survive the Holocene in Central Europe? Combining paleoecology and phylogeography

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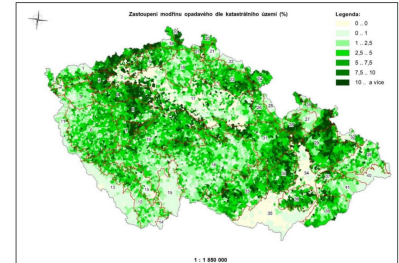


Traditionally assumed native distribution range of larch in Europe (red)

European larch (*Larix decidua*) is a deciduous conifer tree that was common across Europe in the last glacial.

Larch gradually declined during the Holocene into what is nowadays considered its native range.

Larch was planted nearly everywhere in the last 300 years with material of nowadays mostly unknown origin.

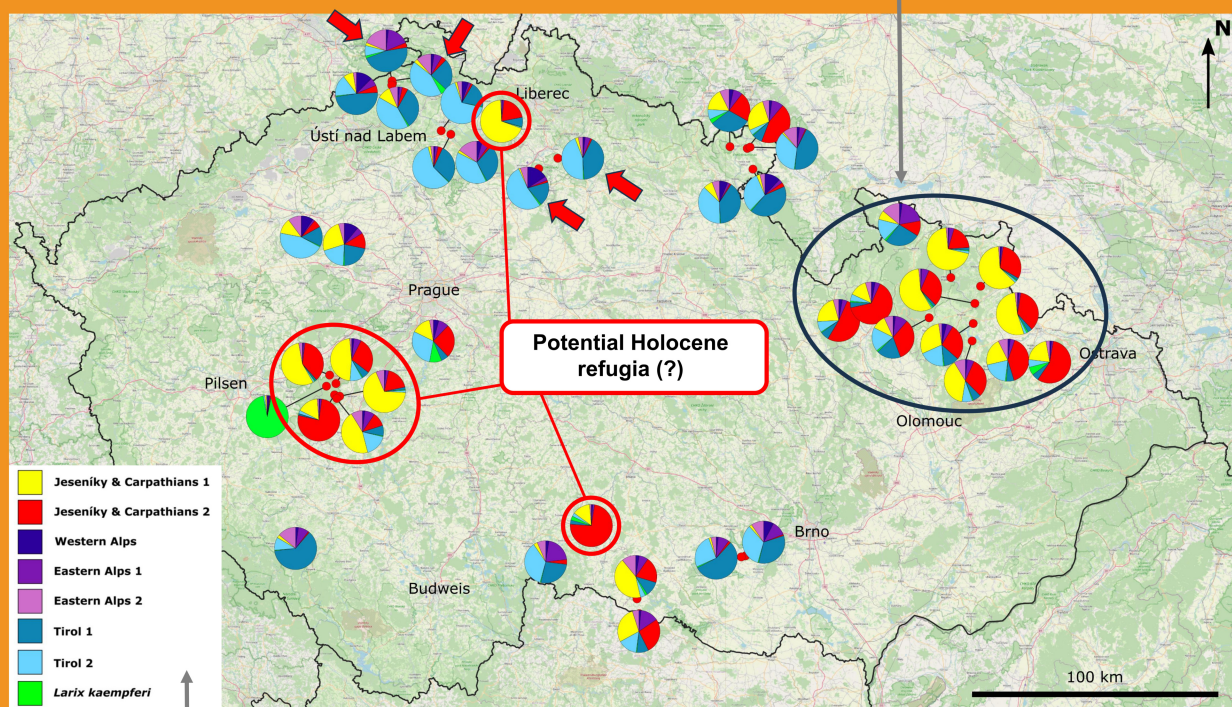


Current distribution of larch in Czechia

AIM: To confirm wider long-term survival of larch during the Holocene and understand the current genetic structure of its populations

We found new paleoecological evidence of long-term Holocene survival of larch - pollen and phytolites. Sites marked by: ➡

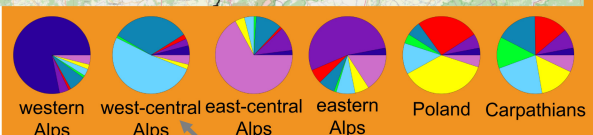
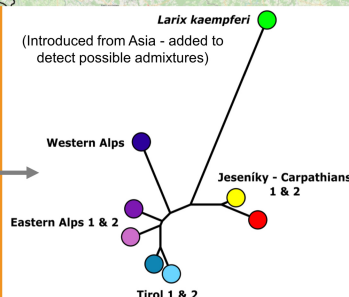
In Czechia, larch was traditionally considered native only in this small region (Jeseníky Mts.) - confirmed but with alpine admixture.



Genetic clusters from the Structure analysis, K=8 (the most likely solution).

Neighbour-joining tree of the Structure clusters.

Funded by:



Most of the larches in Czechia artificially introduced from a specific region in the Alps (Tyrol).

Distinction of refugia from specific plantations is difficult and still to be done.

Methods

- Molecular genetics – sampling in situ, 13 nuclear microsatellite loci, Structure analysis
- 1058 analyzed trees, 110 sites – work still ongoing
- Paleoecology – fossil pollen and phytolites from newly analysed profiles (4-5 successful so far)

Summary of results

- Larch is native also to other regions of Czechia
- Majority of the larches in Czechia are of artificial alpine origin, some belong to the local genetic lineage
- So far no correlation between paleoecological and genetic results