

# LONG TERM DEVELOPMENT OF ASPEN STANDS IN MONGOLIA AND IN THE CZECH REPUBLIC

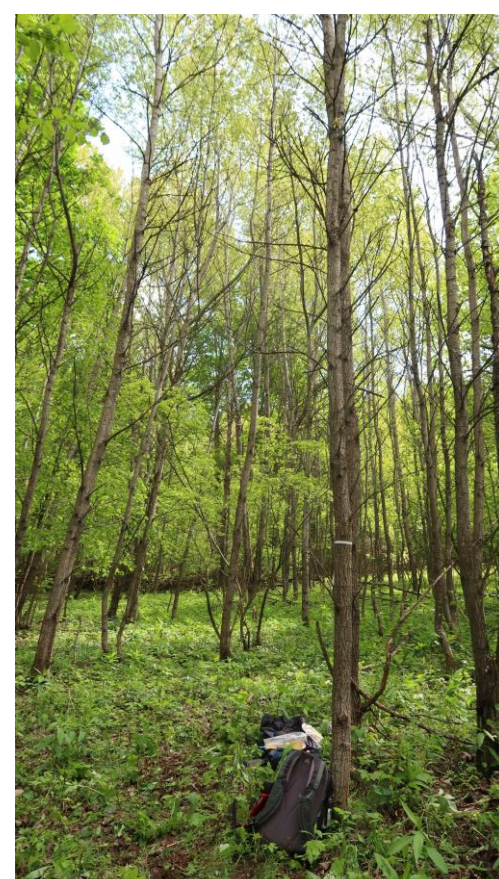
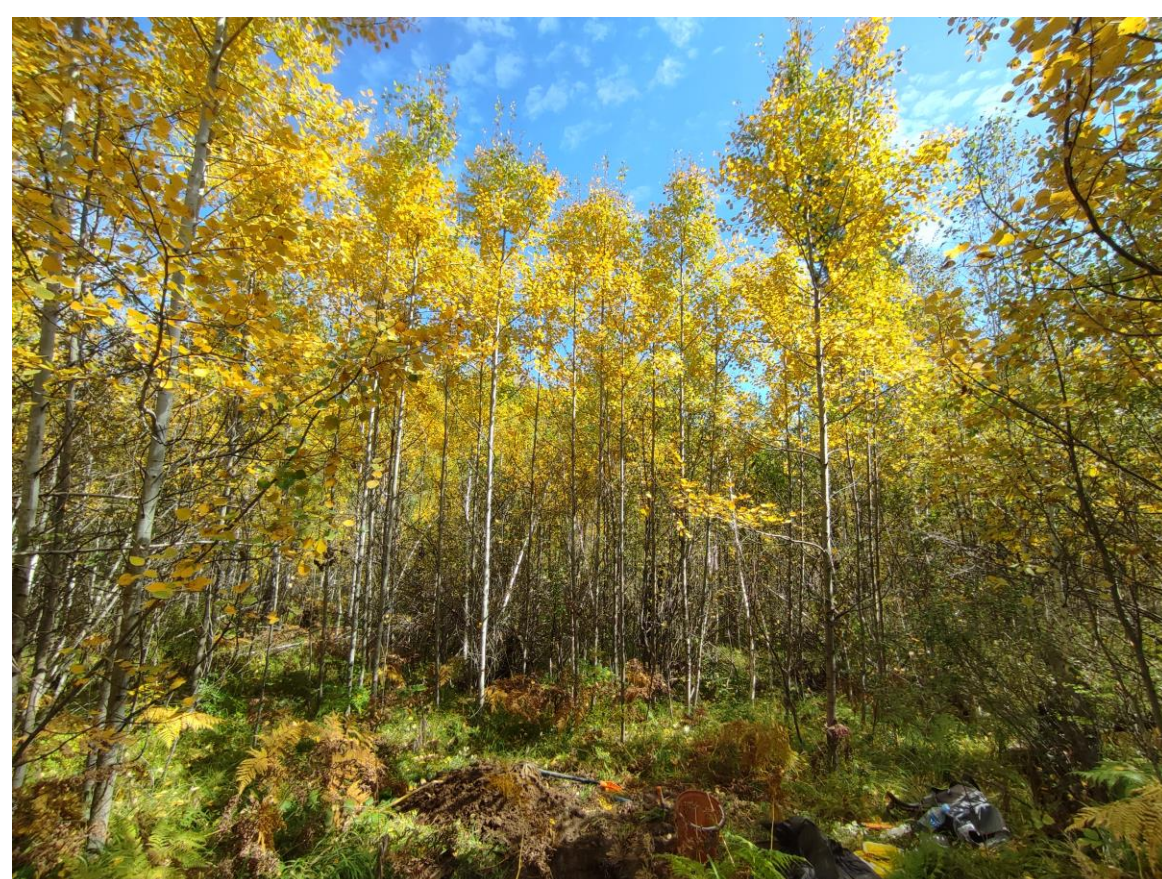
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## INTRODUCTION

In 200-year forestry history in Central Europe, aspen (*Populus tremula* L.) was marked an undesirable species with no commercial perspective. For that reason, aspen, birch and similar so-called „weedy“ species have been overlooked or even cut from “commercial forest stands” and kept in localities with low economic value. Nowadays aspen creates 0,7 % [1] of the composition of Czech landscape, despite its wide ecology amplitude. A general view on the aspen slowly changes on a background of the bark beetle outbreak in Central Europe. Positive ecological role of aspen includes high quality of humus, fast growth, wide ecology amplitude, carbon stock, support of biodiversity and aesthetics. More often we can hear challenges to using this tree for planting on calamitous places after a clear cut [2]. Insufficient complex knowledge of this species could be a limiting factor for wider use of aspen.

This project is focused on the long-term development of aspen stands in Central Europe (The Czech Republic) and Central Asia (Mongolia). In both localities, pedoanthracology samples were taken for a macrocharcoal analysis. Project aims to describe if aspen could create a stable long living systems species, or if it is just a temporary/seral species with its pioneer strategy.



Aspen stands in Mongolia (left side) and in the Czech Republic (right side)

Obtained data will be evaluated on:

- Stable aspen community- aspen will often repeat itself in individual (consecutive) layers, its representation will be similar across individual horizons, and the species composition of the following (younger, higher-lying) horizons will not be directed towards successional higher communities (towards a potential vegetation).
- Temporary aspen community - in the species composition, it is evident that the aspen community is replaced by a successional higher stage in time.

## RESULTS

Based on partial results (2 soil profiles in the Czech Republic) it seems that aspen is a succession species in climatic conditions of Central Europe. Several pieces of aspen charcoals were found in layers (0-10 cm; 10-20 cm; 60-70 cm and 70-80 cm) from the Javorníky Mountains. Rest of samples were determined as dominant fir (*Abies alba* Mill.) in the Javorníky Mountains, or beech (*Fagus sylvatica* L.) in the Lidečko region. In Javorníky, the Hercyn species composition of forest was dominant (Fig. 1.).

In the second layer, there is a significant increase of anthracomass. This could be caused by more intensive forest fire in this period.



Microanatomic structure of aspen charcoal (from left: transversal, tangential and radial section)

## METHODOLOGY

Communities of interest were forest stands where aspen has been currently dominant.

Samples for a subsequent pedoanthracological analysis were taken from a soil profile, which was divided into layers. Each 10 cm thick layer comprised a sample of 10 litres of a fine-textured soil [3]. Separation of charcoal fragments were done by wet sieving procedure [4]. The sieve mesh was of 1 mm in size. It is difficult or impossible to identify charcoals smaller than 1 mm [5]. Samples have been identified based on a standard identification key [6] using the microscope Olympus SZ 61. Determined charcoal pieces were weighed for accuracy of 0,1mg.

Empirically selected charcoals will be sent to Radiocarbon Laboratory in Prague for radiocarbon dating using the C 14 Accelerator Mass Spectrometry. Attention will be payed on *Populus* charcoal pieces.

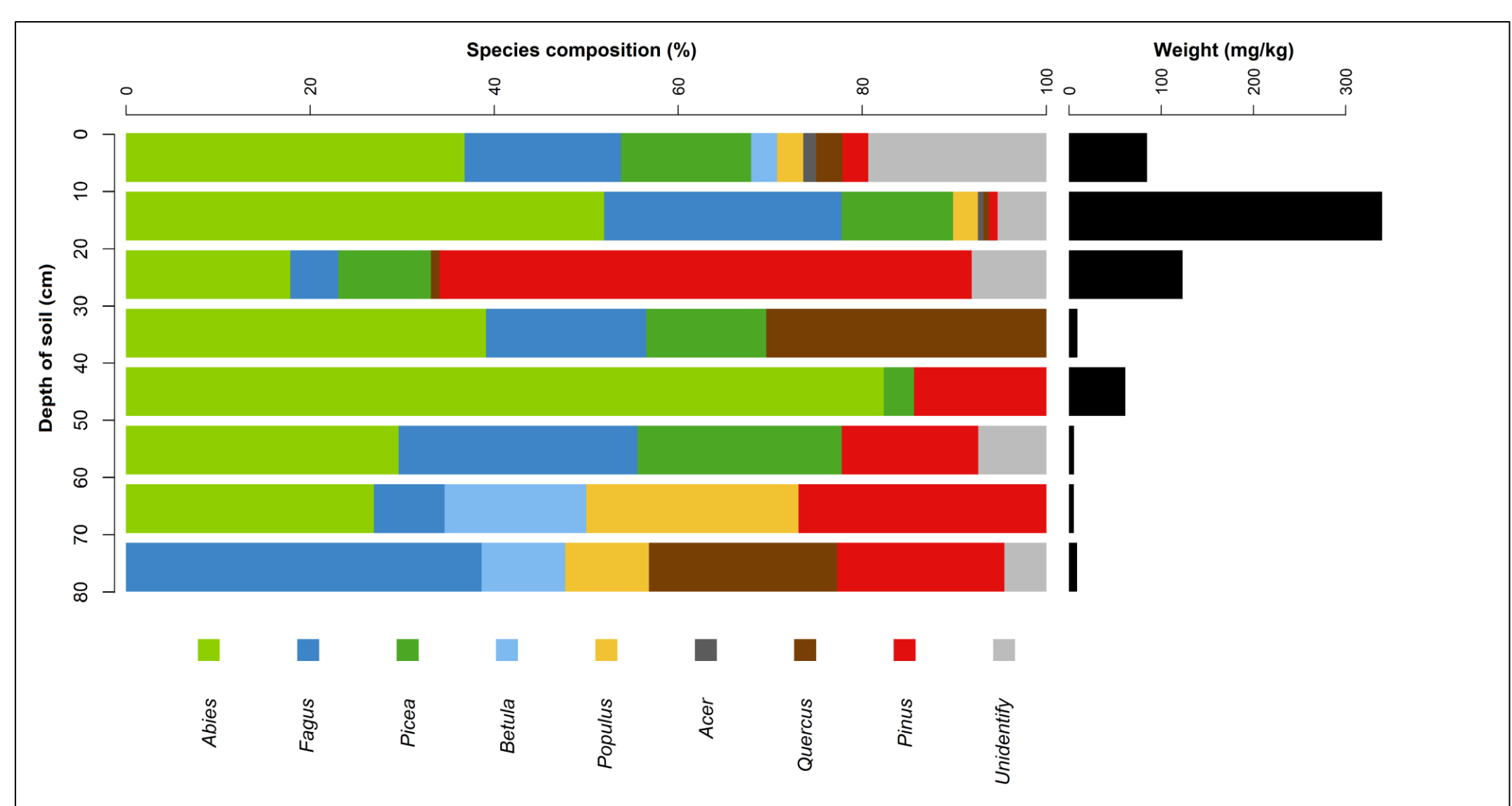


Fig. 1: Results from Javorníky Mountains

## ACKNOWLEDGEMENT

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## LITERATURE

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