

FOREST OR SHRUBS OF BETULA?

A paleoecological study of *Betula* surrounding Lake Bolshoye Shchuchye, in Russia.
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Purpose of study: Was Lake Bolshoye Shchuchye surrounded by forests or shrubs of *Betula* 10.000-15.000 years BP?

Why this is of interest:

Paleoecological studies can be used to gain perspective on historical ecology. Observing changes in the species composition dating back to a specific time period, tells us a lot about previous ecosystems and the climate. For this study Lake Bolshoye Shchuchye is of interest, as pollen data from this area has high amounts of *Betula* pollen at the end of the last glacial period. It has been partly ice free since the last glacial period started (MIS 4). Therefore looking at pollen samples dating back to 10.000-15.000 years BP which encompass the last glacial period ending around 11.700 year BP.

Measurements of pollen grains:

As traditional pollen analysis cannot separate between *B. nana* (shrubs) and tree birch pollen, more detailed size measurements are needed. Determining of species is done by measuring length of the grain diameter and depth of the pore and then estimate the ratio from these values. Illustrated in figure 1, the **red line** is how to measure the diameter of the grain and the **blue line** is how to measure the pore depth. Pollen of *B. nana* is smaller and has a bigger ratio than the grains of tree birch. In this project *B. nana* has a ratio $<10\text{ }\mu\text{m}$, and tree birch ratio $>10\text{ }\mu\text{m}$.

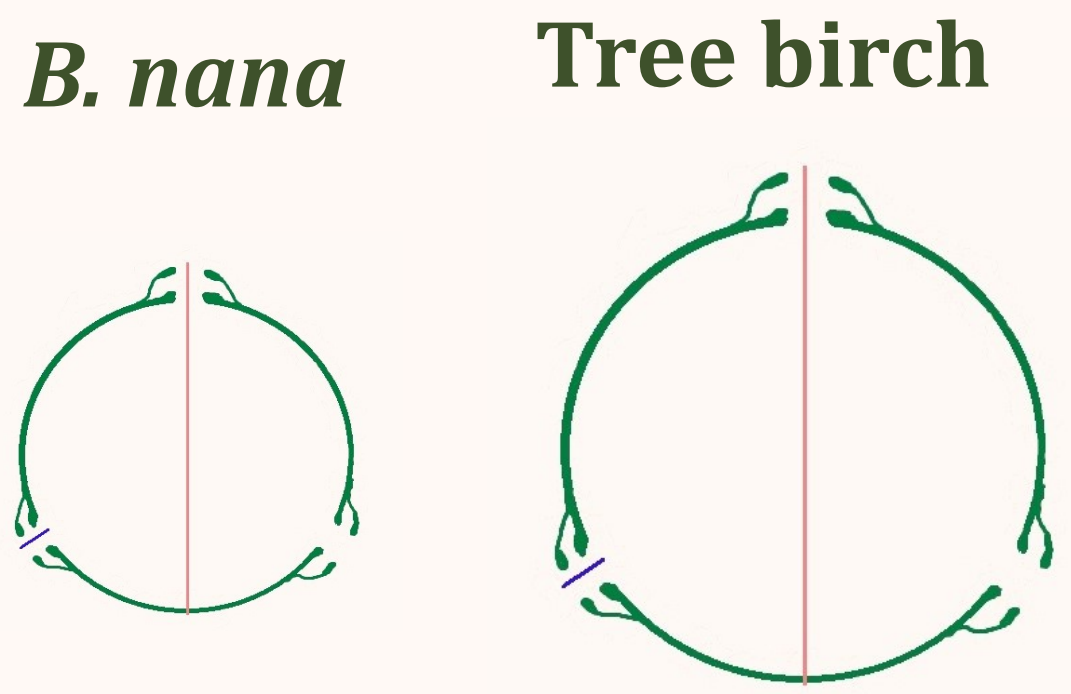


Figure 1. Different size of pollen grains

Tree birch dominated Lake Bolshoye Shchuchye between 10.000-15.000 years BP

From the diagram in figure 2, *B. nana* is present in the entire selected time interval, but seems to substantially decrease around 13.000 years BP, while the high proportion of tree birch remains quite constant.

Key-message:

- **Decline in *B. nana* abundance ca. 13.000 years BP.**
- **The forest seems to have remained constant.**

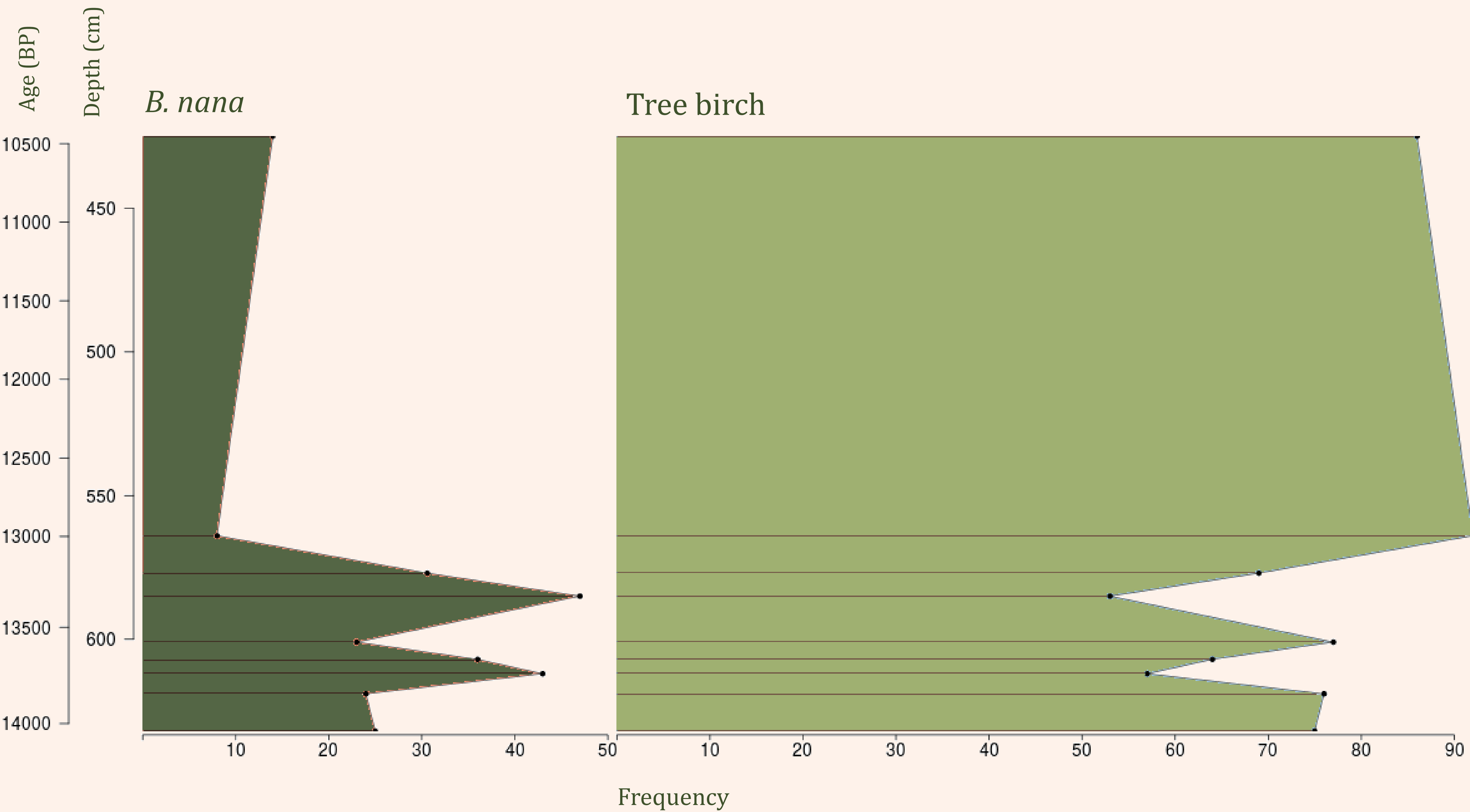


Figure 2. Diagram illustrating the frequencies of *B. nana* and tree_birch at different depths and ages.