

How does fire change vegetation?

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Intro

The island of Lygra is a semi-natural heathland maintained by numerous human-made fires at regular intervals. This gives way to different stages of secondary successions, each dominated by certain types of plant and animal species.

The goal of our study is to use pollen and charcoal records to determine the past vegetation of this ecosystem, and its evolution through a human-made fire.



Charcoal layer in peat core

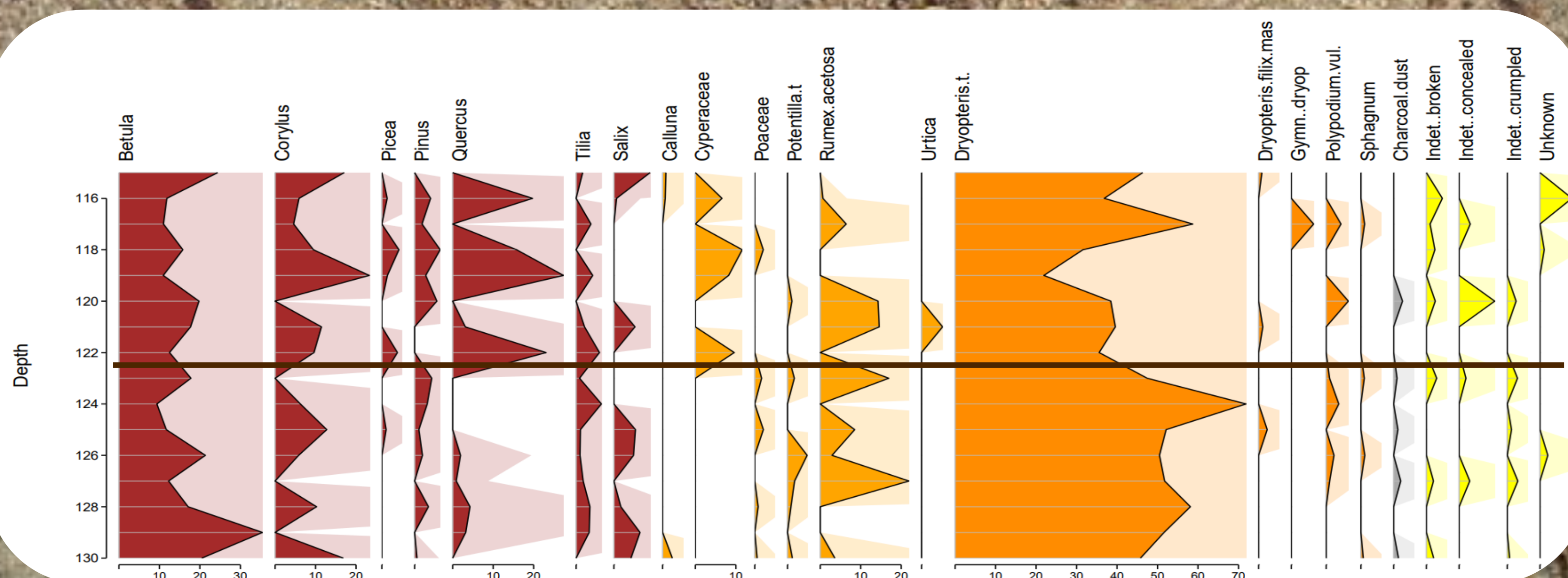
Method

At a bog on Lygra, samples were taken using a Russian corer. Individual samples were taken from an evident charcoal layer in the core (see picture above) and the layers surrounding it. After preparation, the samples were analysed with a microscope, and pollen were counted and determined with a minimum of 300 grains per slide.

Analysis was done using R.

Results

Quercus (oak) and *Cyperaceae* (sedge) both have increasing pollen counts after the charcoal layer. Grasses, herbs and some deciduous trees often appear as pioneer species after a fire. Other species' pollen vary in amounts around the time of the fire event, but not as clearly as *Quercus* and *Cyperaceae*. *Alnus* (not in diagram) was most abundant but showed no fire related trends.



Pollen diagram showing relative pollen amounts by depth. *Alnus* not shown to make data clearer. The horizontal line indicates the charcoal layer.

Limitations

Pollen production and dispersal

Thickness of sample layers

Sample size

Beginners in pollen analysis

Conclusion

We see some changes that might suggest a fire has cleared the area of bigger vegetation and opened it up for earlier stages of succession (some species increase, some decrease after fire), but since we removed *Alnus*, our sample size is extremely small. It is not possible to confidently conclude anything with such a small pollen count. If we were to repeat this experiment, we would take multiple core samples and count more pollen to remove some of the uncertainties.

