PALEOECOLOGY BIO250

FIRE AND *PINUS* - IS IT A MATCH?

Analysis of *Pinus sylvestris* response to the Lygra fire regime

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INTRODUCTION

- Coastal heathlands are an anthropogenic ecosystem of high ecological and cultural value.
- Traditional management practices (grazing, cutting and perscribed burning) help prevent woody encroachment.
- *Pinus sylvestris* is a fire-tolerant native tree species. However, effects of fire may differ between mature and juvenile individuals.

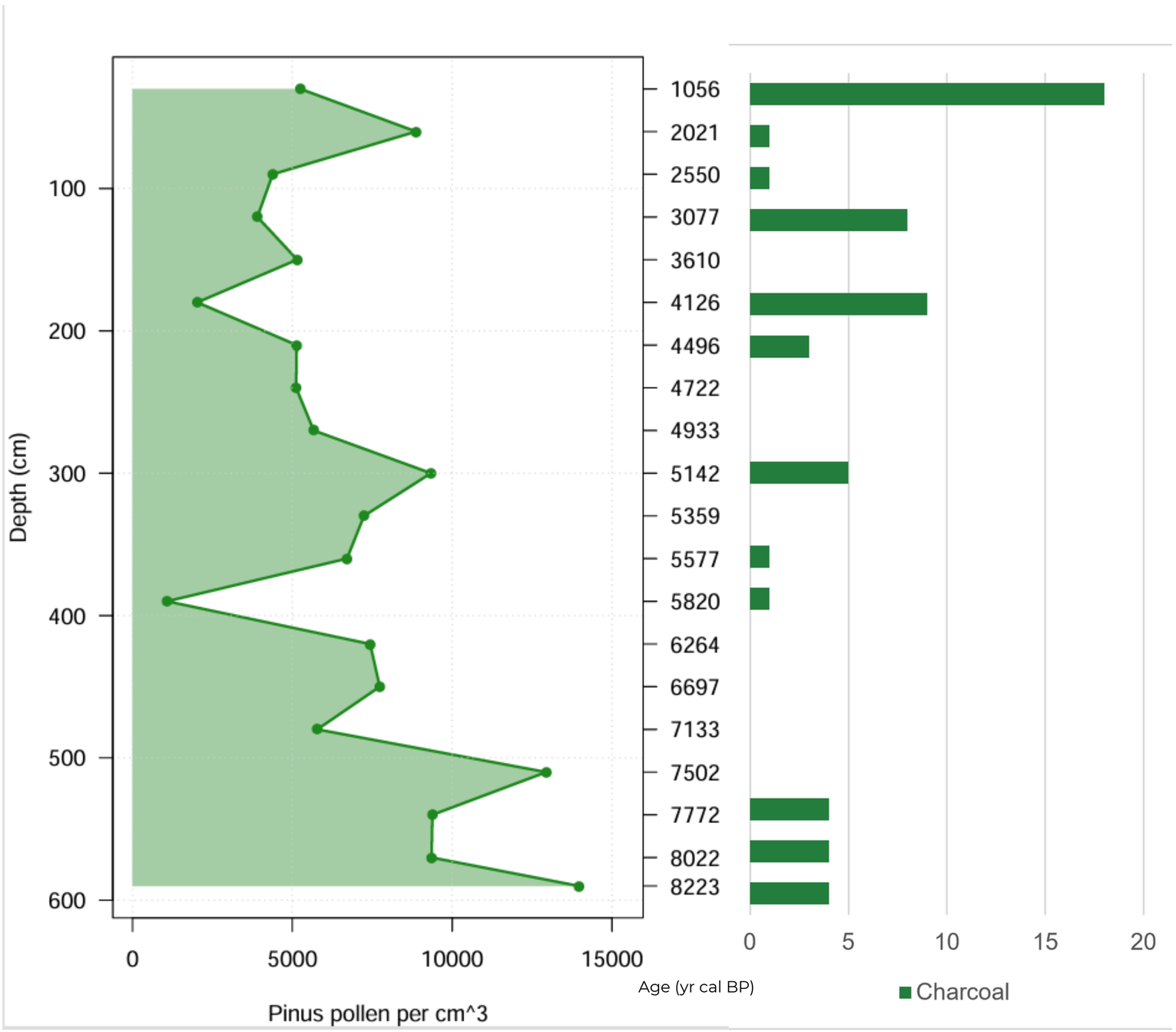
Hypothesis

Periods of increased fire activity are positively associated with local abundance of *Pinus sylvestris*

METHODOLOGY

- The samples were collected using a Russian peat corer at 4,85 m and 14,30 m.
- Pollen grains of *Lycopodium clavatum* and *Pinus sylvestris* were counted in previously collected cores.
- *Lycopodium* was used as an exotic marker to calibrate *Pinus* pollen concentrations.
- Data processing was done in Rstudio.
- Spearman's rank correlation coefficient was used to test statistical correlation.

RESULTS



- Pinus pollen abundance generally increases with depth, reaching its maximum at 590 cm (~8223 yr cal BP). A sharp decline occurs at 390 cm (~5820 yr cal BP), followed by a slight recovery at 300 cm. Between 3610 and 1056 yr cal BP, relative abundance stabilizes just above 0.1, interrupted only by a minor peak at 60 cm.
- The charcoal record reveals three primary peaks at approximately 4126, 3077, and 1056 yr cal BP (at depths of 180, 120, and 30 cm, respectively). The highest peak is at 30 cm (~1056 yr cal BP).
- Spearman test confirms there is no statistically significant relationship.



DISCUSSION

- Although *P. sylvestris* is relatively fire-tolerant, this is primarily true for mature individuals. Consequently, fire may neither negatively affect the overall *Pinus* population nor promote establishment, as saplings and seedlings remain vulnerable to fire-induced mortality. This may explain the lack of correlation observed.
- The charcoal dataset collected is insufficient for a confident interpretation of patterns present in the results.
- Future research could benefit from comparing samples from charcoal layers with control samples. This approach may provide a better dataset for investigating the relationship between *Pinus* occurence and charcoal deposition.

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