# IS REPEATED BURNING OF A LANDSCAPE ACTUALLY BENEFICIAL TO IT'S BIODIVERSITY?



#### INTRODUCTION

The island of Lygra, located about an hour north of Bergen, is famous for it's protected and preserved **heathlands**. But that is not their 'natural' state: Humans use **fire cycles** to preserve the open landscape and stop forest landscapes from taking over. But is this manipulation of the landscape actually beneficial to it's biodiversity?

### **METHODS**

Taking samples from a bog on Lygra we were able to look at pollen **preserved** from **thousands of years ago**. We analysed them under the microscope and checked the slides for charcoal.



**Fig. 1:** Palaeoecological diagram showing the charcoal level (levels 0-3, 0 = no charcoal present, 1 < 5% of sample, 2 < 10% of sample, 3 < 25% of sample), relative amount of pollen by species by age and palynological analysis. *C. avellana, A. glutinosa, B. verrucosa* and *Dryopteris sp.* were not exagerrated, all but the latter belong to the category 'trees', *Dryopteris sp.* being a 'fern'.



We then used R for statistical analysis of our findings, creating the diagram on the right.

### RESULTS

The vegetation stays very similar until around 2000 years ago, when there is a clear trend towards an **opening of the landscape**, demarkated by a rise in *C. vulgaris* pollen, along with an increase in pollen of shrubs, grasses and charcoal. The N0 and DCA1 curves support these results statistically with the biggest changes in vegetation composition taking place towards the beginning and end of the studied period.

# **CONCLUSION & DISCUSSION**

The first sections show a **forested landscape**. Species like *T. cordata*, *C. avellana* and *Q. robur* would have needed a warmer climate than is the case today as well as soil with high organic content.

Around 2000 years ago, a rise in charcoal levels along with pollen that suggest the opening-up of the landscape show the **start of repeated burning cycles**. The N0 curve further suggests that there is an increase in taxa richness that correlates with the burning cycles. The fire cycles do indeed **increase the number of species** in the landscape.



More research is needed to measure biodiversity using other indices to support these findings.

# REFERENCES

Background image: Olichon, A. (2021) Heidelandschaft. Photography. Accessed via <u>https:://www.pexels.com/de-</u> <u>de/foto/landschaft-natur-horizont-wachstum-9305345/</u>

A palaeoecological study by **Charlotte Niewijk**, **Tonje Sætre Olsen**, **Katrina Marie Rørhus & Julie Müller** 



BI0250 HØST2022