

# Sea Level Change in the Holocene Epoch

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## Introduction

This project was done on site at the island of Lygra, where there was previously a fresh water lake. It is hypothesized that before it became a fresh water lake it was ocean water, and so underwent changes through a brackish water stage into a fresh water lake. In the research, the proxies used were diatoms and pollen grains.

## Discussion

### Diatoms

As this work focuses on sea level change, six diatoms and eight pollen species were selected which indicate different water conditions. The abundance of *Tabellaria* and *Cymbella* increases from the deepest to the highest sample alternatively, the amount of *Plagiogramma* decreases. However not all species like Biraphid and Paralia show this transition.

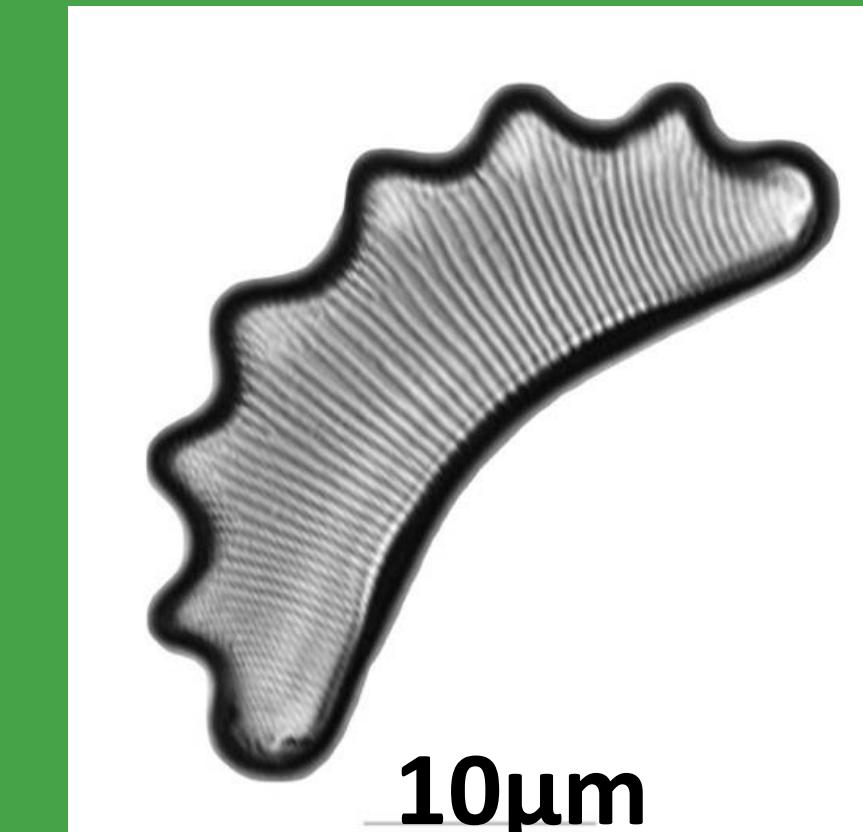
### Pollen

There were two approaches used to reconstruct the sea level decrease in the pollen samples. Firstly, small amounts of *Potamogeton* were found from 406cm to 369cm, which as a freshwater plant directly refers to the water conditions. Secondly, soil pH increases due to a higher water salinity [5], hence the species composition could change. The abundance of *Corylus*, which grows on neutral to alkaline soil, decreases with time. Conversely, there was an increase of *Ranunculus* and *Salix*, which grow on neutral to acidic soils.

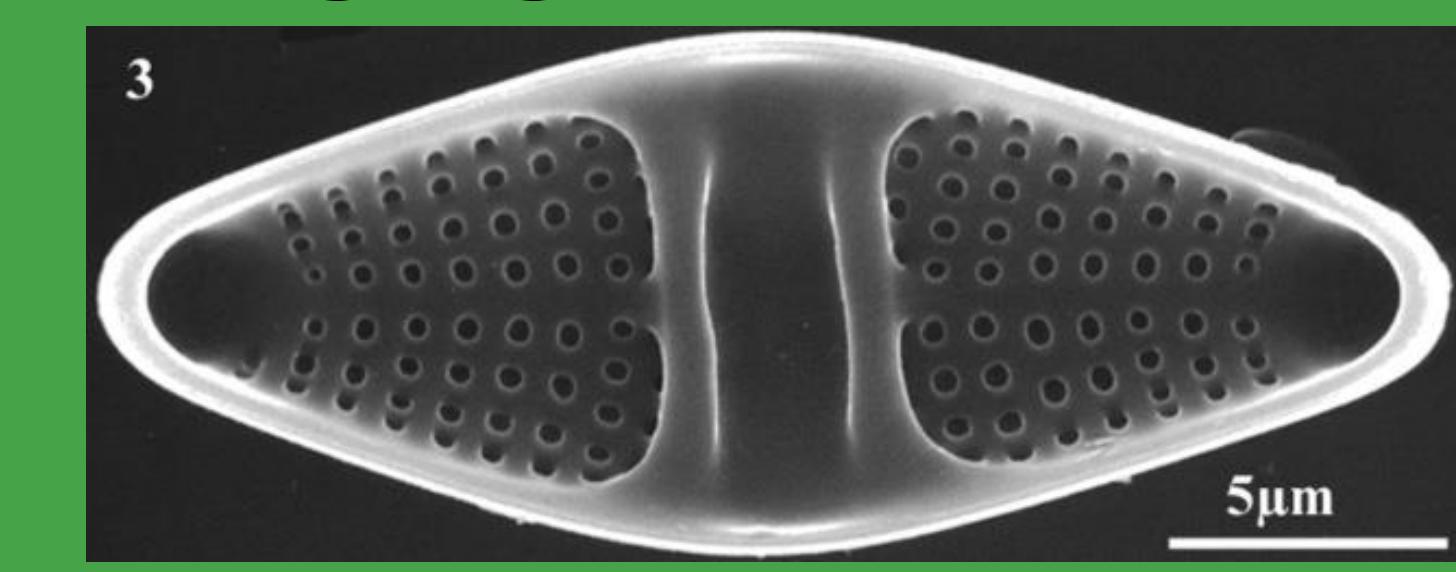
40 x 10 M



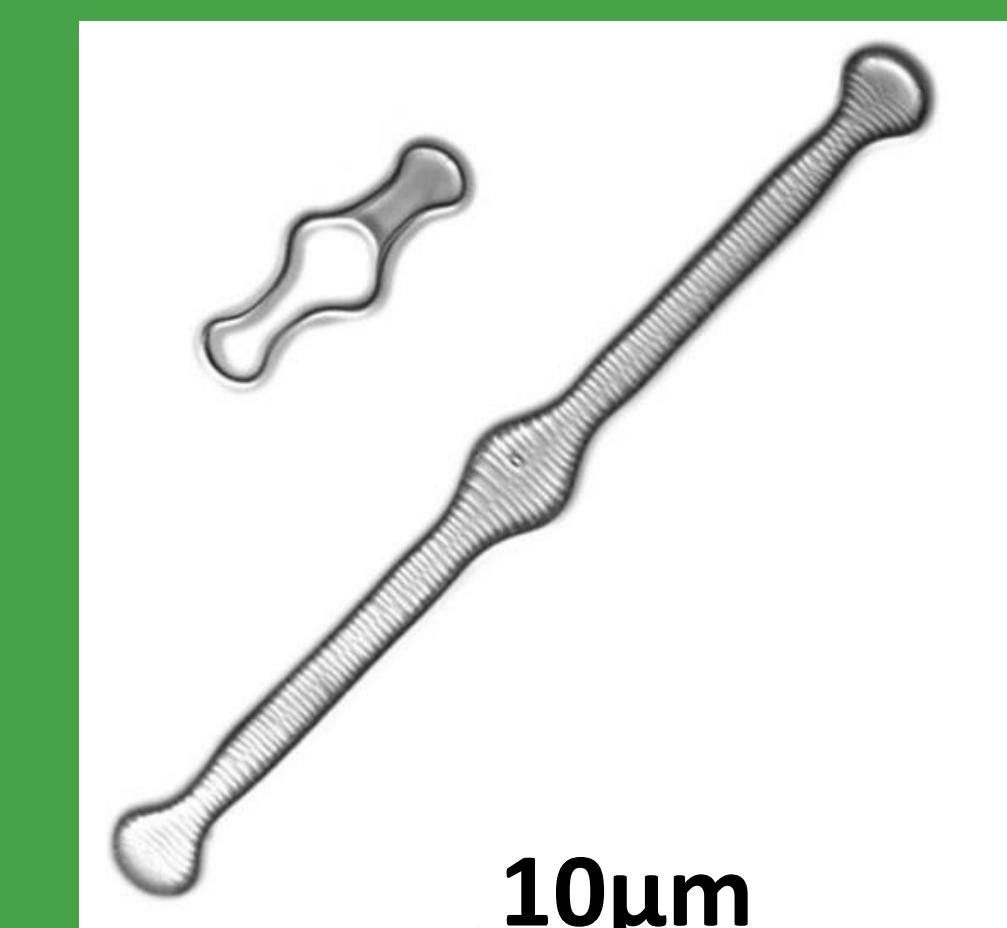
Eunotia



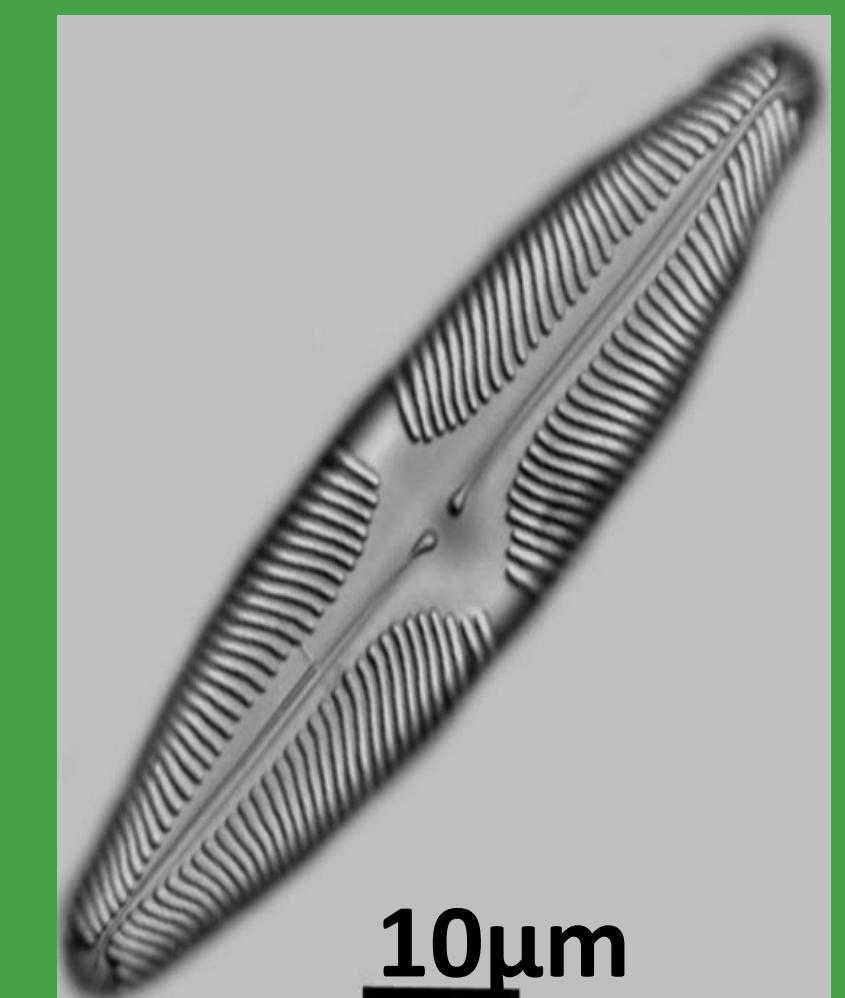
Plagiogramma



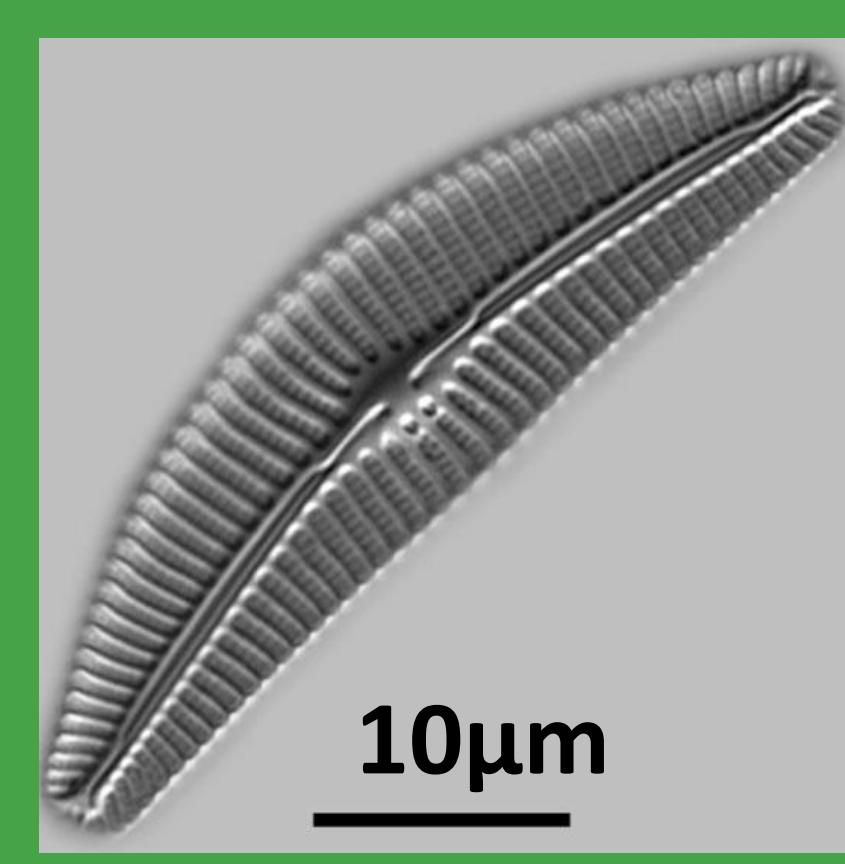
Tabellaria



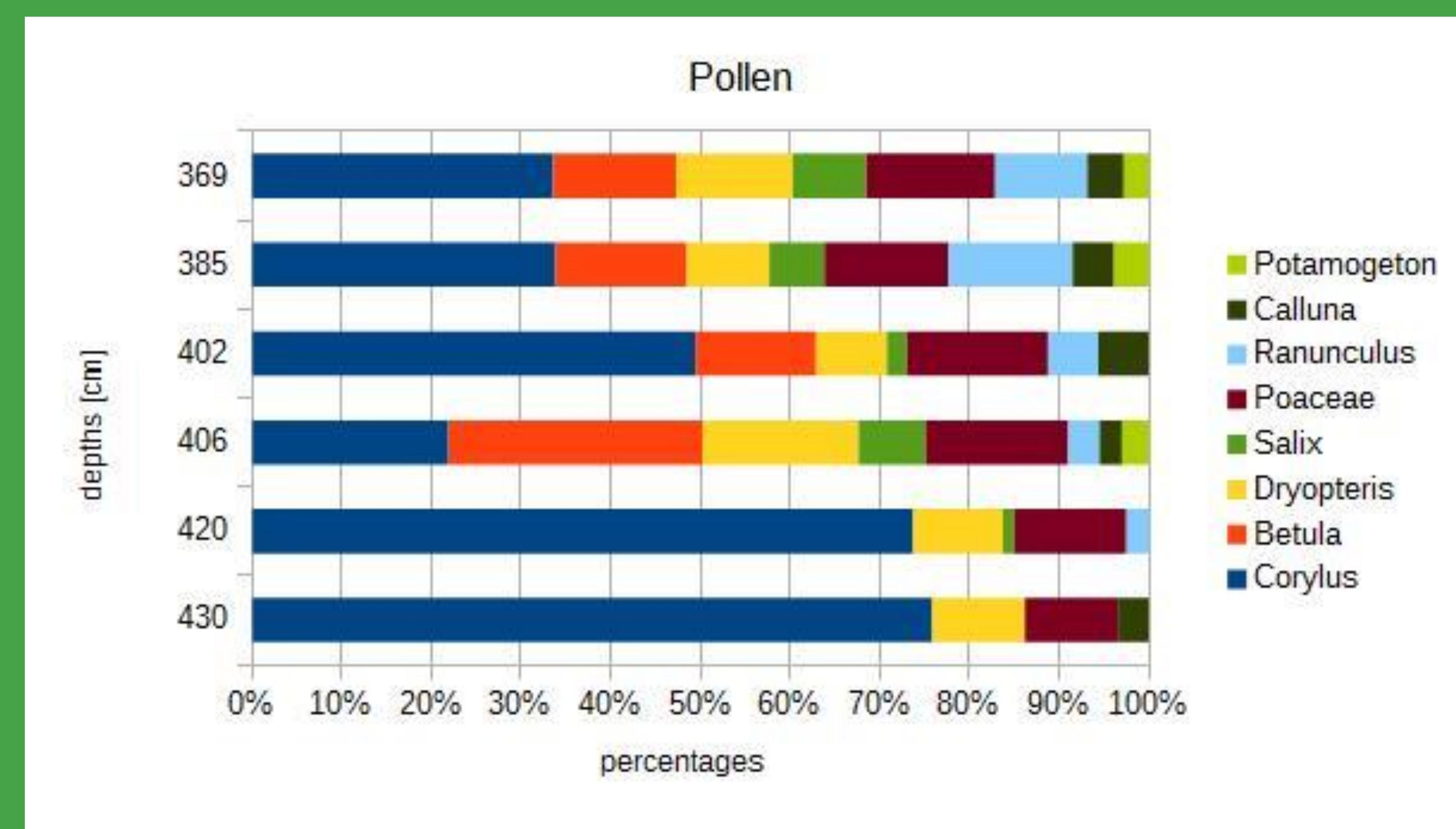
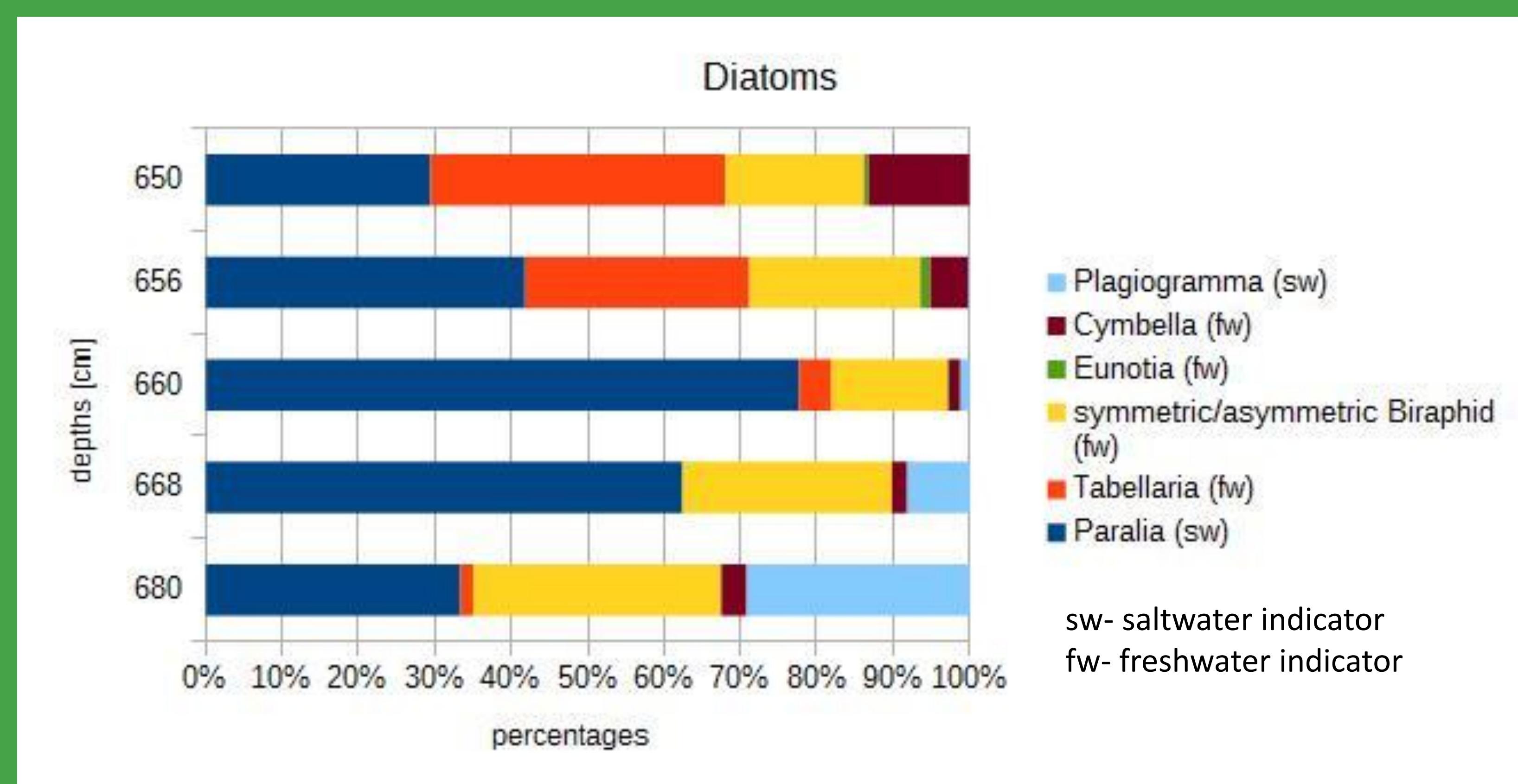
Biraphid



Cymbella



Paralia



## Method

The methods consisted of peat sampling using a piston corer and fixed microscopic slides of diatoms from previous years. Diatom samples were from the depths of 680cm to 650cm from the area of the bog that was closest to the sea. While pollen grain samples were used from depths of 430cm to 369cm from a variety of locations on site to have good idea of what flora was there at the time given.



## Conclusion

Overall, the results support the hypothesis that the site underwent a change from saltwater to brackish and, finally to freshwater. However, some of the data does not follow this trend therefore more data and knowledge would be needed to get a more accurate pattern.