

Soil carbon in coastal and inland heathlands

A comparison between Lygra and Sogndal

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Soils play a key role in the global carbon cycle

Soil carbon content is influenced by the balance between plant carbon inputs and decomposition, which can vary with climate conditions such as temperature. Lygra (coastal) and Sogndal (inland) experience different climatic conditions, which may influence soil carbon accumulation.

Research question

Is there a difference in soil carbon stocks between open heathland habitats at Lygra and Sogndal?

Loss on Ignition



1. Soil sampling
Soil core from open heathlands at Lygra (coastal) and Sogndal (inland).

2. Loss on Ignition
Samples were dried, weighed, ignited and reweighed to estimate soil organic matter content using loss on ignition (LOI).

3. Analysis
Carbon stocks (kg C/m²) were estimated for soil, litter and roots at different depths and compared between sites.

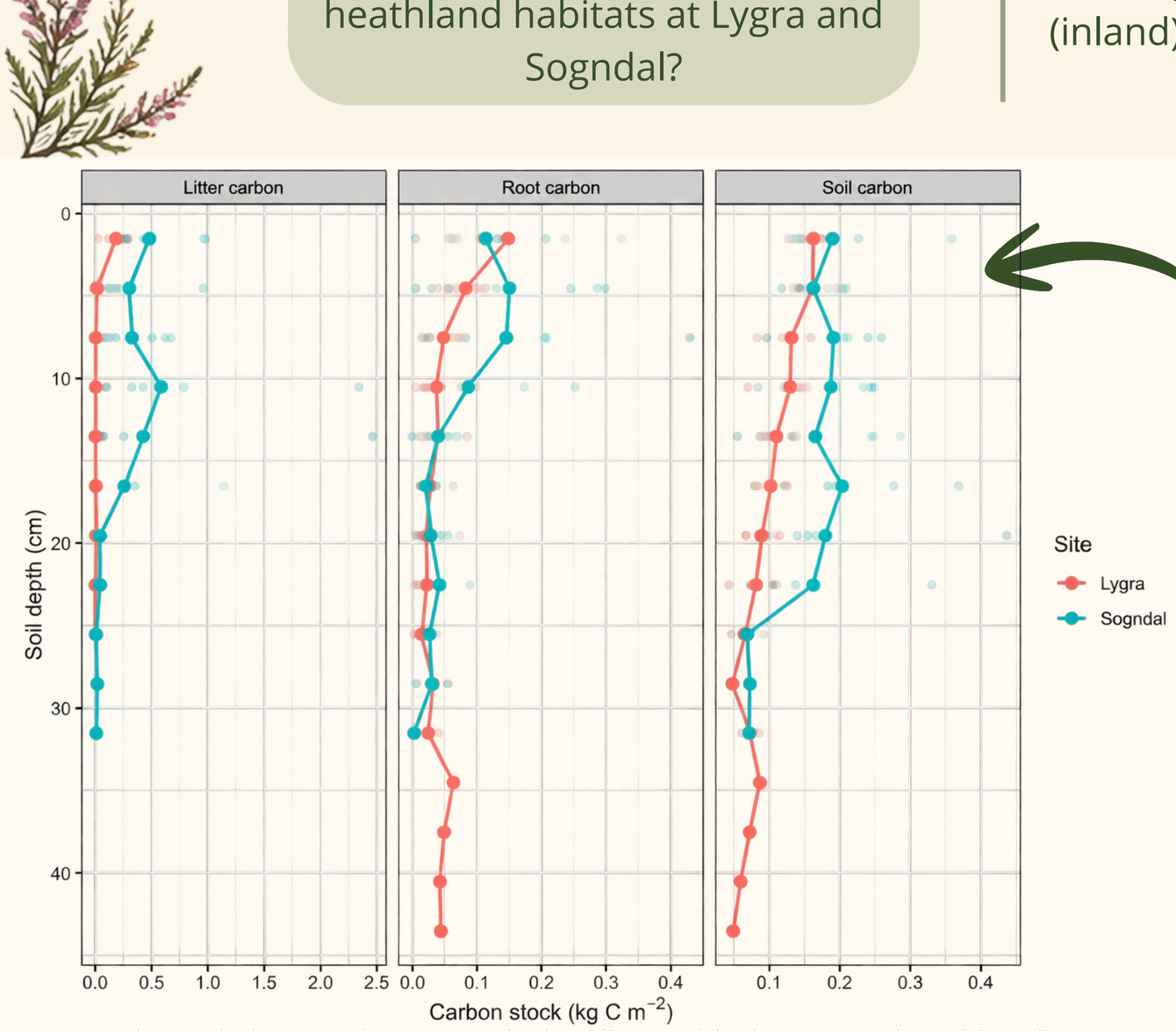


Figure 1. Carbon stocks (kg C/m²) in litter, roots and soil at different soil depths at Lygra and Sogndal. Small points represent individual measurements, while larger points and lines represent mean values. (7 plots per site).

Higher soil carbon stocks at 5–25 cm in Sogndal

- Soil carbon stocks were similar in the upper 5 cm, higher at Sogndal between 5–25 cm, and became more similar below 25 cm.
- Litter carbon stocks were generally higher at Sogndal and were also observed deeper in the soil profile
- Root carbon stocks showed no clear overall difference, but root carbon was recorded at greater depths at Lygra.



What might explain the differences?

Climate - Lower temperatures at Sogndal may slow down decomposition, allowing organic carbon to remain in the soil for longer.

Vegetation history - Previous forest cover at Sogndal and the presence of juniper may have contributed slowly decomposing plant material to the soil.

Soil depth - Similar vegetation at both sites may explain the similar carbon stocks in the upper 5 cm.

Soil carbon reflects multiple influences

Sogndal had higher soil carbon stocks than Lygra at 5–25 cm depth, contrary to the hypothesis that Lygra would store more carbon.

The difference between Sogndal and Lygra may reflect a combination of climatic conditions, vegetation history, and decomposition processes.

Further research is needed to determine the relative importance of these factors.

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