Can the Age and Success of a Woodland be Attributed to its Soil?

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Introduction

- The predominant habitat in the UK pre industrial revolution was deciduous woodland.
- Large demands for wood by industry and war has left the habitat type largely destroyed.
- The project aims to determine if the concentrations of particular vital minerals and soil characteristics could be distinctly attributed to the three major woodland type in the UK

Methods

- 4mm Sieve and leave soil to air dry
- Weigh out 10g and place in oven over night to record soil moisture content
- Incinerate the oven dried sample at 550^{o}C and re-weigh for C content
- Use Olsen's Method for available P to determine P content
- Soil texture was analysed using rough descriptive terms

Results

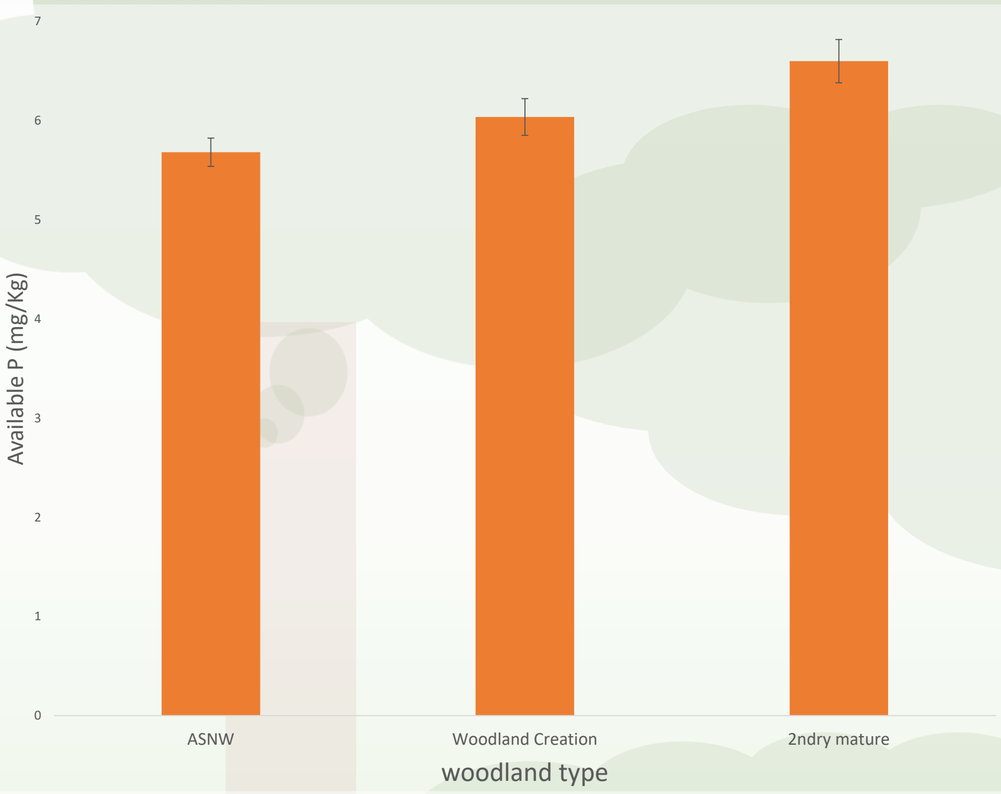

Figure 1 Mean available Phosphorus for 159 soil cores from the three woodland types. Error bars show +/- standard error. Data collected 17/07/17 - 01/09/17

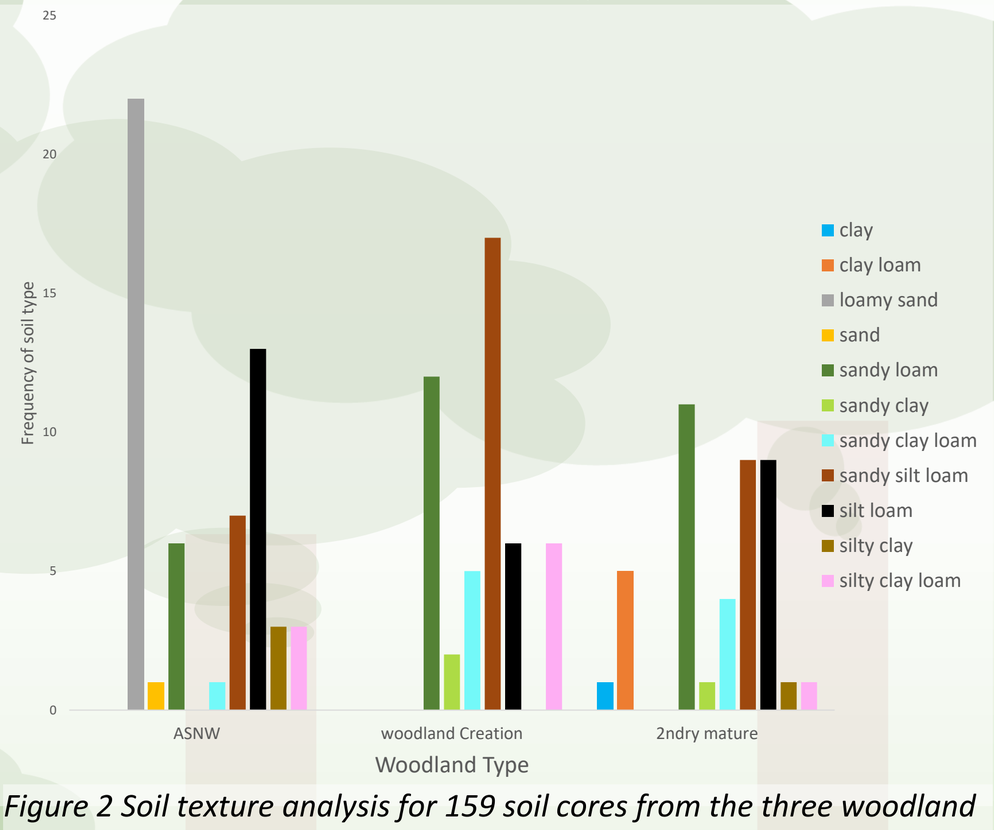

Figure 2 Soil texture analysis for 159 soil cores from the three woodland types. Data collected from various locations around Northumberland 17/07/17 - 01/09/17

- There was a significant effect of woodland type on both available P and Soil texture. (MANOVA) F=2.2218, D.F=154, P=0.004
- There was a significantly lower level of available P in ASNW (figure 1)
- Large Variation in soil texture across all three woodlands
- Woodland type did not have a significant effect in Soil Moisture (MANOVA) F= 2.16, D.F= 154, P=0.076 or Carbon(MANOVA) F=0.38, DF=154, P=0.824.
- Loamy Sand is the most frequent texture in ASNW and only found in this forest type

Discussion

- Phosphorus and soil texture were both shown to be effected by woodland type however soil features such as carbon and moisture were not effected suggesting woodland type may not be the cause of the variation.
- There are other soil features to be considered such as pH, available potassium, available Fe that may influence growth
- Further studies should focus on a more comprehensive analysis over a longer period of time.

References and acknowledgements

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