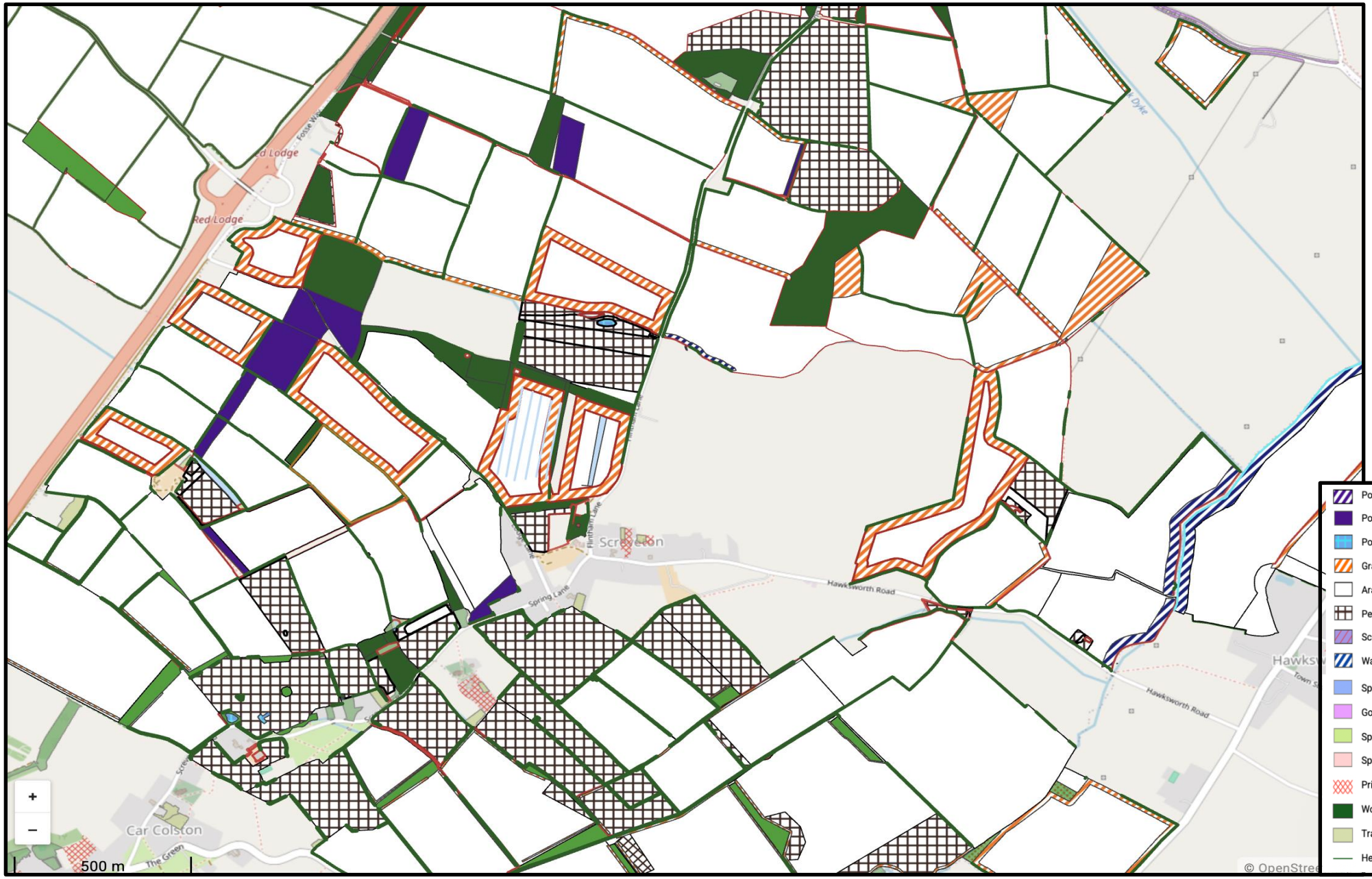
Farming Systems at FarmEco

Habitat and Connectivity
FarmEco and Neighbouring Farms



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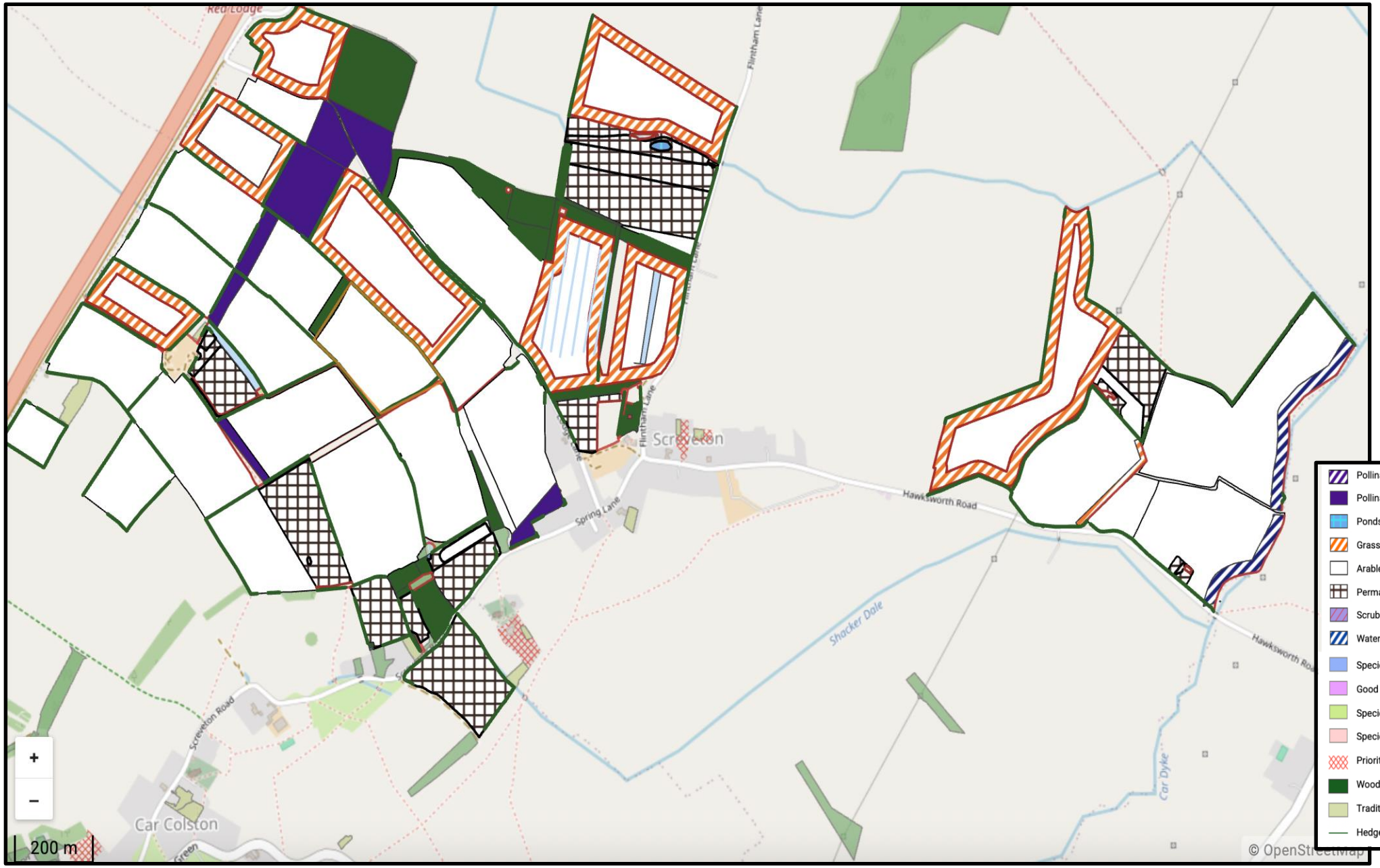

Earthworm *(Lumbricidae*) abundance in different conservation agricultural systems and crop type: Nottinghamshire United Kingdom (FarmEco)

BSc (Honours) Environmental Science - J.Thompson - final report

Abstract

It is widely accepted that conventional agricultural practices, including chemical inputs and heavy cultivation, impact soil health and contribute to the broader environmental pressures of climate change and biodiversity loss.
To improve soil health and elevate these pressures, varying complex conservation farming practices, often with many system and crop choices, are being proposed as a solution.

This research considers soil health in three different conservation agriculture systems and poses the question of whether different conservation practices of organic agroforestry, traditional organic and min-till, and crop types; wheat, wild bird seed cover, and fallow (cover) crops impact soil health using earthworm abundance as a proxy.

Earthworm abundance (numbers: count per 0.1225m^2) were completed for 20 replicates of each combination of system and crop type to investigate the difference in mean earthworm numbers. The results of the earthworm counts were statically analysed using a two-way ANOVA and Tukey test.

The results suggested that there is a significant difference in earthworm numbers for different conservation agricultural systems and crop types (Two-way ANOVA <0.05); however, there was no significant interaction between system and crop (Two-way ANOVA >0.05). Min-till systems provided the highest mean number of earthworms, being 12% and 21% greater than traditional organic and organic agroforestry respectively.
For each of the three systems, mean earthworm numbers were highest in the fallow crop, being 60-65% greater than wild-bird seed cover and 200-250% greater than wheat. The wild-bird seed cover was also between 100-130% greater than wheat in all three systems.

This research indicates that different conservation farming practices and crop selection impact earthworm numbers and soil health. The studies also highlighted the complexities in different systems and the need for further research into how the combined effect of systems and crops can benefit soil health.