

Early Stages of Agroforestry in a Nature Recovery Project Indicate an Increase in Insect Abundance and Diversity

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Summary

The Sapperton Estate farmland was purchased by Sapperton Wilder in 2021, intended to be the scene of a large-scale nature recovery project, while maintaining the economic value of the site through regenerative farming. The land was left fallow for 2 years, and a baseline survey of ground-dwelling invertebrates was conducted in 2022 prior to the implementation of major land management changes. At this stage, the land had already been divided into areas intended for different methods of agriculture: restorative grassland to the north, agroforestry across the central and regenerative farming in the southern region. One field to the very south is being conventionally farmed for arable crops to act as a control.

This research project was a survey of the ground-dwelling insect communities in the middle section of Sapperton Wilder, the conventionally farmed crop field, and the neighbouring semi-natural ancient woodlands, owned by Bathurst Estate and CP Farming. Comparisons were also made between the 2022 survey to the present year (2025).

The resulting Non-Metric Multidimensional Scaling (NMDS) graph presents a visualisation of how the insects present in the agroforestry area are also present in both the area intended for future agroforestry and the neighbouring woodland. The conventionally farmed field showed the least variety of insect families, all found within both fields surveyed in the agroforestry area, but none overlapping with the woodland. The results also indicate a doubling in diversity from 2022 to 2025 in the agroforestry area, while only a very slight increase in the conventionally farmed field.

Methods

Pitfall traps were deployed from February to June 2025, totaling 184 pitfall traps across the survey area. They were set once a month, filled with the preservative propylene glycol, and left for seven days before returning to collect the specimens and transfer them into 70% ethanol for subsequent identification. This was established to Family level, and to species where possible.



Pitfall trap viewed from above.



Pots for transporting trap contents.

Results

48 insect families were identified among 2117 specimens. The majority of these were beetles (16 families, 889 specimens), followed by ants, bees and wasps (8 families, 862 specimens), flies (17 families, 220 specimens), and true bugs (7 families, 136 specimens). 834 could only be identified to order, bringing the overall number of insect specimens collected to 2951.

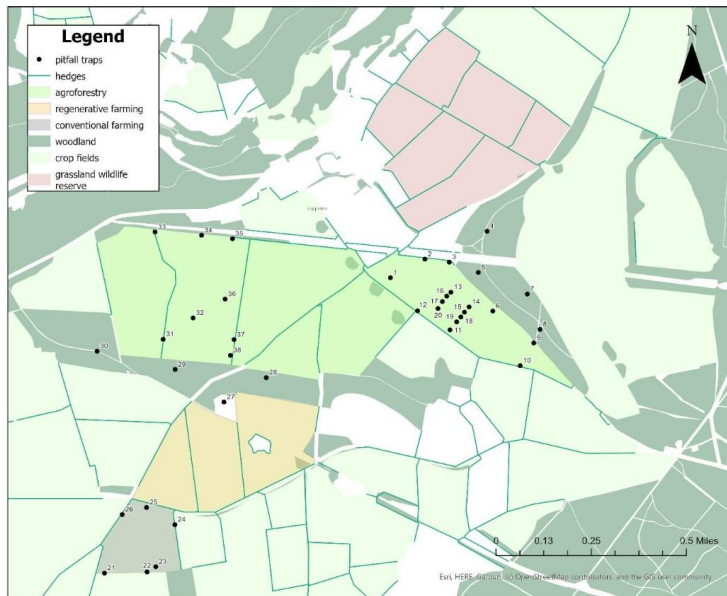
The total number of insects collected from February to April 2025 in the agroforestry section of Sapperton Wilder was 1272. For the same time period in 2022, using the same pitfall trapping method at the same coordinates, this number was 166. Many of the same families identified in 2022 were also collected in 2025, such as beetles belonging to the families Staphylinidae, Chrysomelidae, Carabidae, Leiodidae, and Lampyridae.



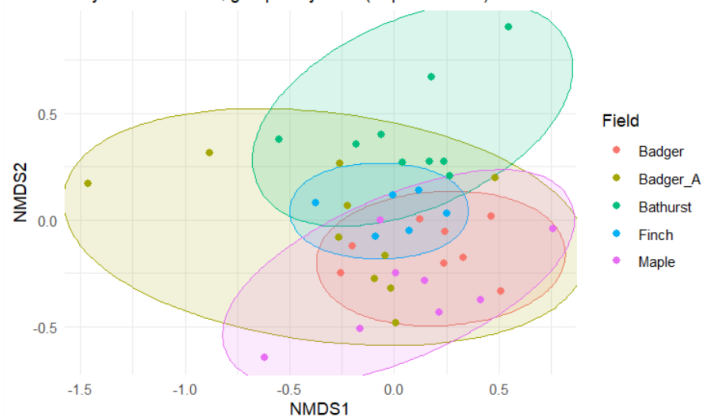
Glow-worm (*Lampyris noctiluca*) crawling on my hand!



Pitfall trap contents after 7 days, notably containing a violet ground beetle (*Carabus violaceus*).



NMDS of Insect Communities by Field
Bray-Curtis distance, grouped by Field (ellipses shown)



Field	Shannon (2022)	Shannon (2025)
Badger	1.4427833	2.134725
Maple	1.9926150	2.492353
Finch	1.8484983	1.858540

Conclusion

The results suggest that the practice of agroforestry has already begun to support a higher insect abundance and diversity, even at this early stage of the nature recovery project. The increased presence of *Lampyris noctiluca* (European glow-worm) is particularly notable, due to evidence that this species has suffered significant declines across England in the last decade. In 2022, only one individual was found over the entire Sapperton Wilder project site from February to April, while a total of six were collected in the same time period over the agroforestry area and conventionally farmed field alone.

The results of this study highlight the potential for agroforestry to contribute to biodiversity recovery while maintaining agricultural productivity.

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Sapperton Wilder For more information go to <https://www.sappertonwilder.co.uk/>