

Insect sampling at BIFoR FACE: biodiversity abundance and phenology.

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Introduction

Documenting changes insect biodiversity, abundance and phenology at BIFoR FACE is key to understanding how woodland systems will respond to elevated CO₂. A detailed time series sampling programme is required to characterise insect community changes from ground to canopy. This will help identify species that are likely to become either winners or losers under predicted climate change, including key plant herbivores and pollinators. Given the central role of woodlands in agricultural landscapes this also has implications for food security.

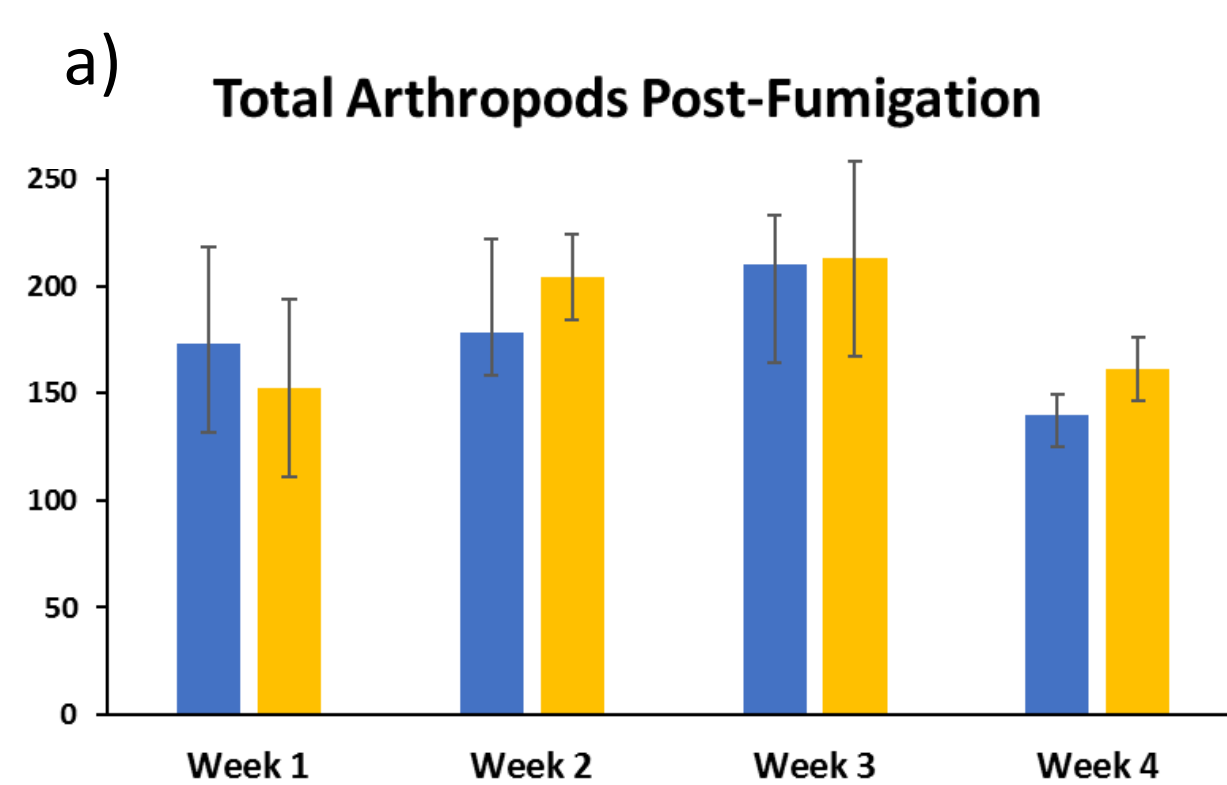


Insect Sampling Methods

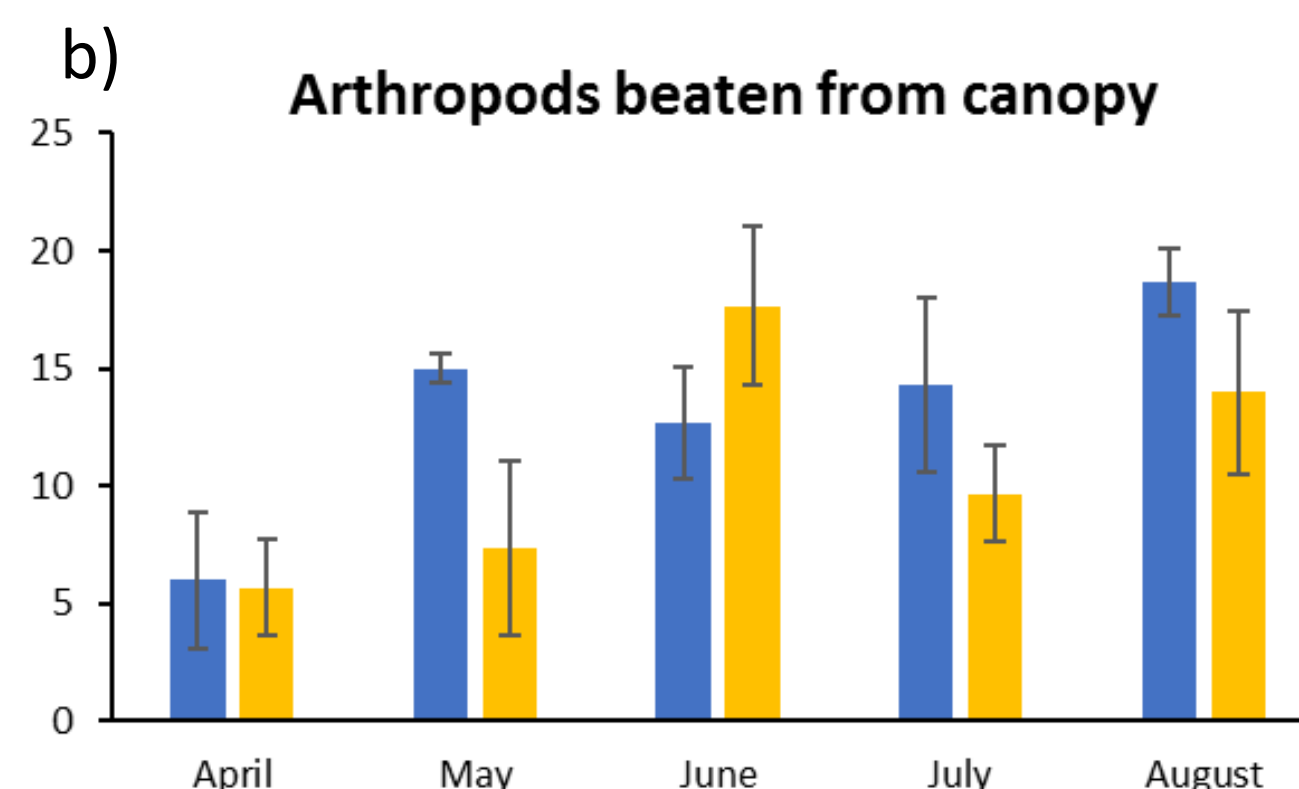
	Pitfall traps	Malaise traps	Pan traps	Beating
Layer	Ground layer	Field layer	Field layer	Canopy layer
Trapping period	1 week	24 hours	24 hours	30 seconds
Sampling interval	1 month	1 month	1 month	1 month
Number per array	2	1	1 x 3	1



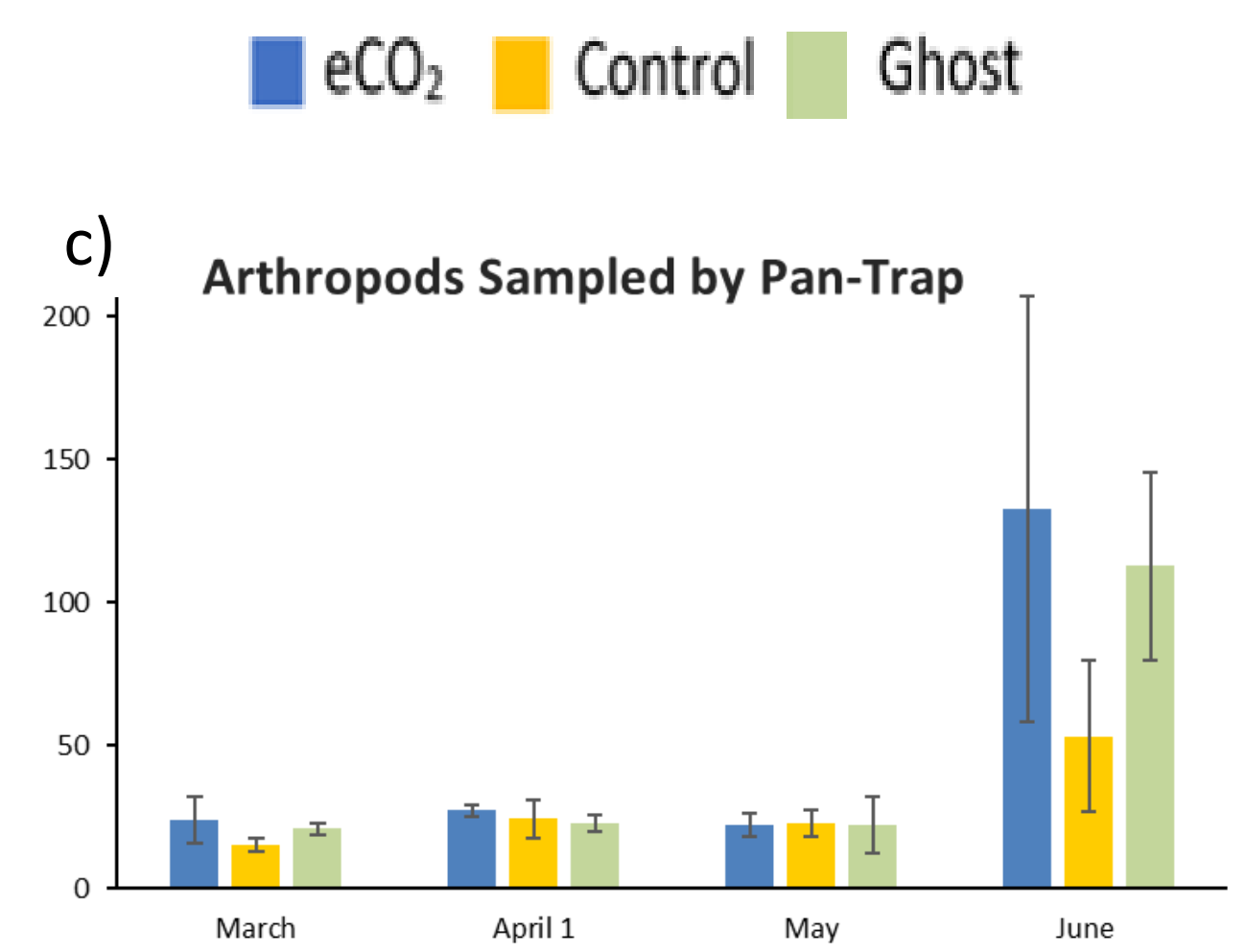
Results



a) Mean (+/- s.e.m.) total arthropods caught in all traps for treatment verses control plots across the first 4 weeks following initiation of fumigation in April. N= three rings per treatment.



b) Mean (+/- s.e.m.) total arthropods sampled from canopy for treatment verses control from April to August. N= three rings per treatment.



c) Mean (+/- s.e.m.) total arthropods caught in all coloured pan traps (mainly pollinators) for treatment verses control verses ghost from March to June. N= three rings per treatment.

Discussion

These early results indicate that:

- All rings (both treatment and control) provide a good representation of this woodland habitat, i.e. there are no significant differences in insect biodiversity, abundance (Fig. 1 a) or phenology patterns (Fig. 1b & c) across rings.
- The sampling techniques have effectively collected diverse functional groups (herbivores, pollinators, predators and detritivores), with 21 different arthropod Orders sampled and 72 insect Families collected from pan traps alone.
- The time series collection is effectively characterising phenology patterns – this will continue over the next 10 years of the FACE project.
- Key species identified for detailed study under controlled lab conditions include: aphids (= herbivores and key agricultural pests) and pollinators (bees and hover flies etc.).

