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How does microclimate affect canopy insect communities?

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How does microclimate affect canopy insects communities ?

Main purpose

Understand the heterogeneity of microclimatic conditions (especially temperature) along a vertical gradient in a forest, and its impact on insect communities.

Material and methods



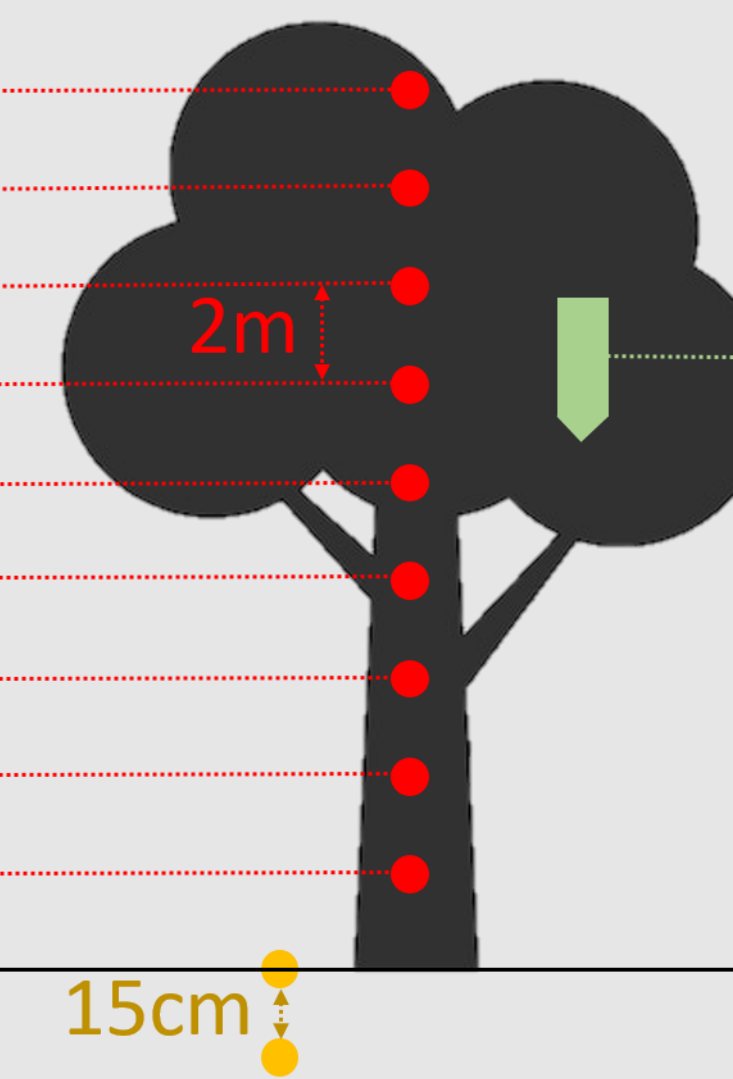
Study sites
Vierzon and Orléans
Forest type
Oak stands

Thermometers

Hobo sensors

8 to 9 per tree

2 in the ground

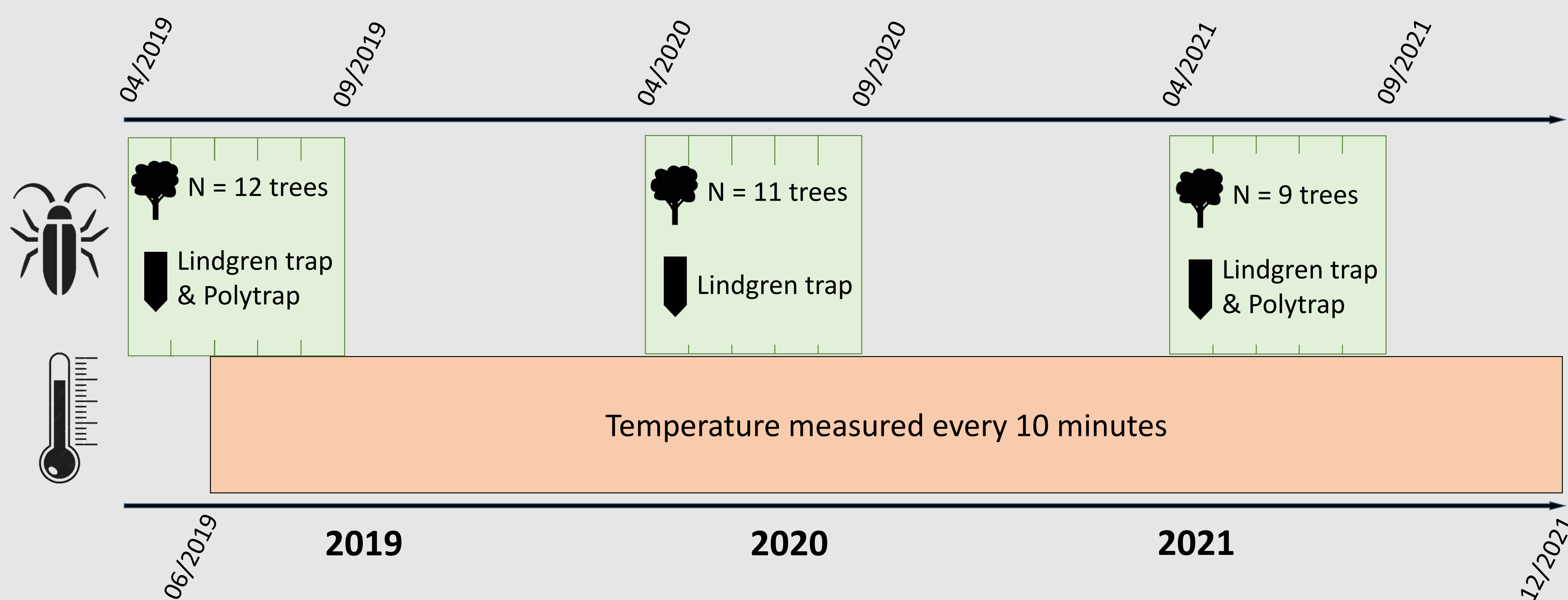


Insects traps

Collected every month

Studied taxa	2019	2020	2021
Coleoptera (all)	X		
Saproxyllic beetles	X	X	X
Hymenoptera	X		
Hemiptera	X		X
Mecoptera	X		

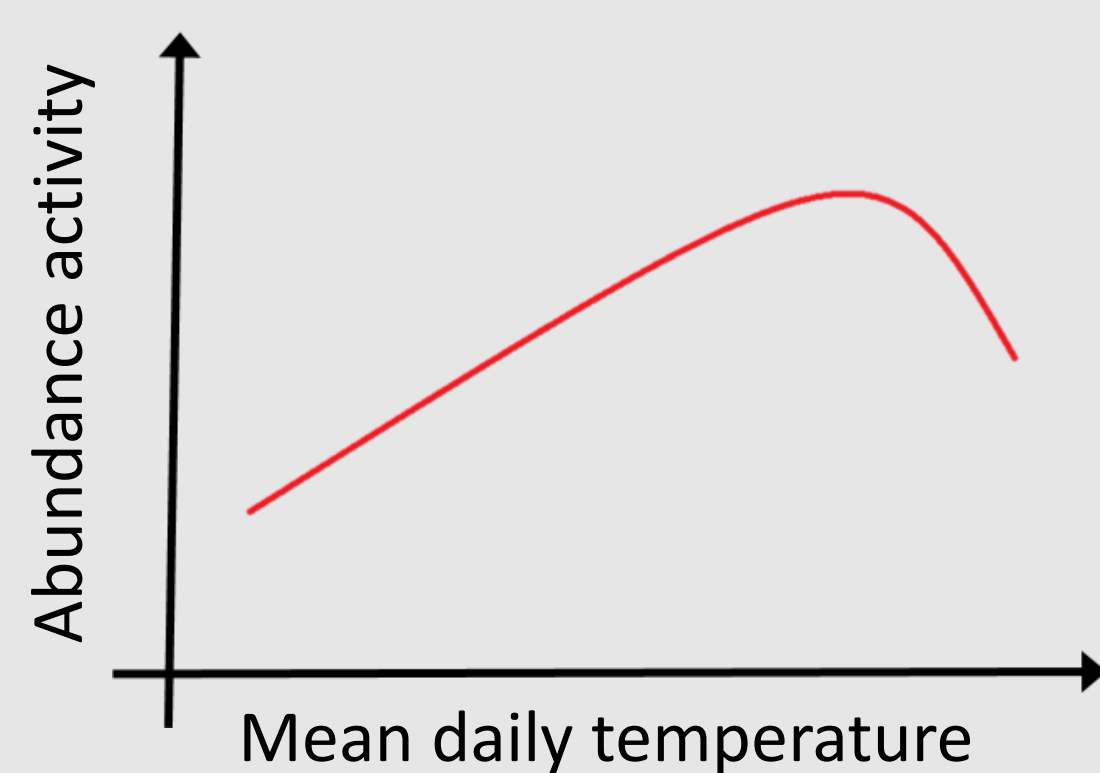
Experimental design: 3 years of entomological sampling and microclimate measures



Expected results

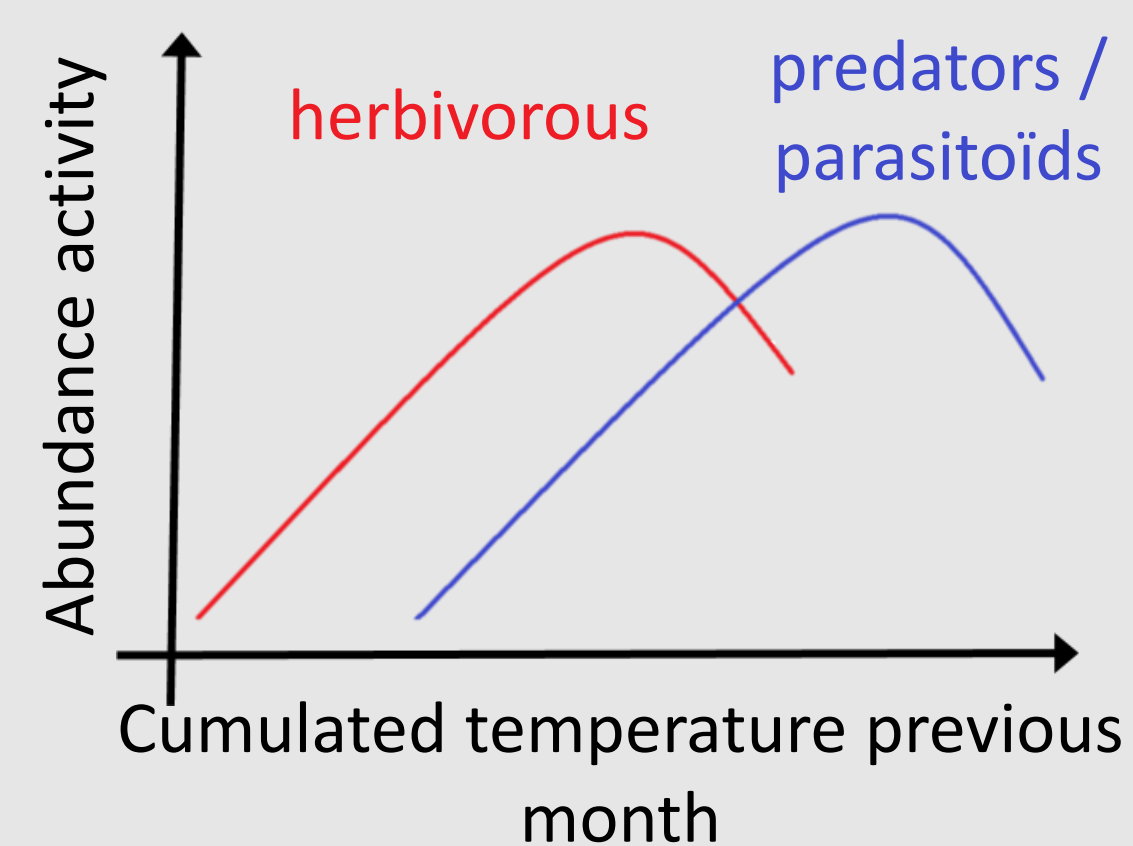
Simultaneous effets

Insects living in buffered microhabitats (wood, cavities...) should be less impacted by microclimate variations.



Delayed effets

Insects positioned at a higher trophic level should respond with a delay to variations in the microclimate.



Importance of microclimate compared to other structural forest variables

We expect microclimate to explain variations in insect activity that are not explained by other structural variables.

Further study:

How are insects vertically distributed within a tree with vertically structured microclimatic conditions ?

When

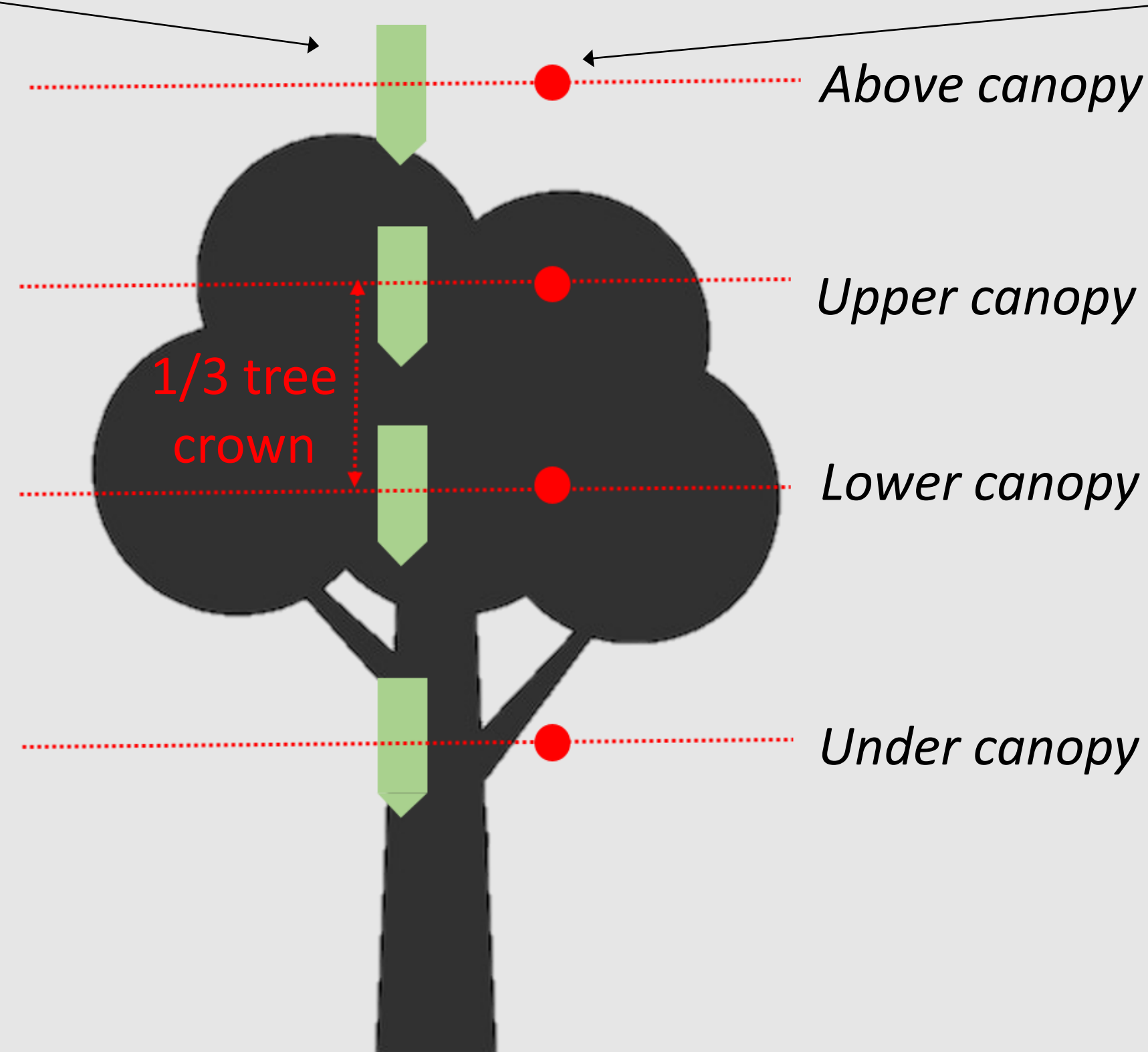
From March to September 2024

Where

In Tronçais and Vierzon forests

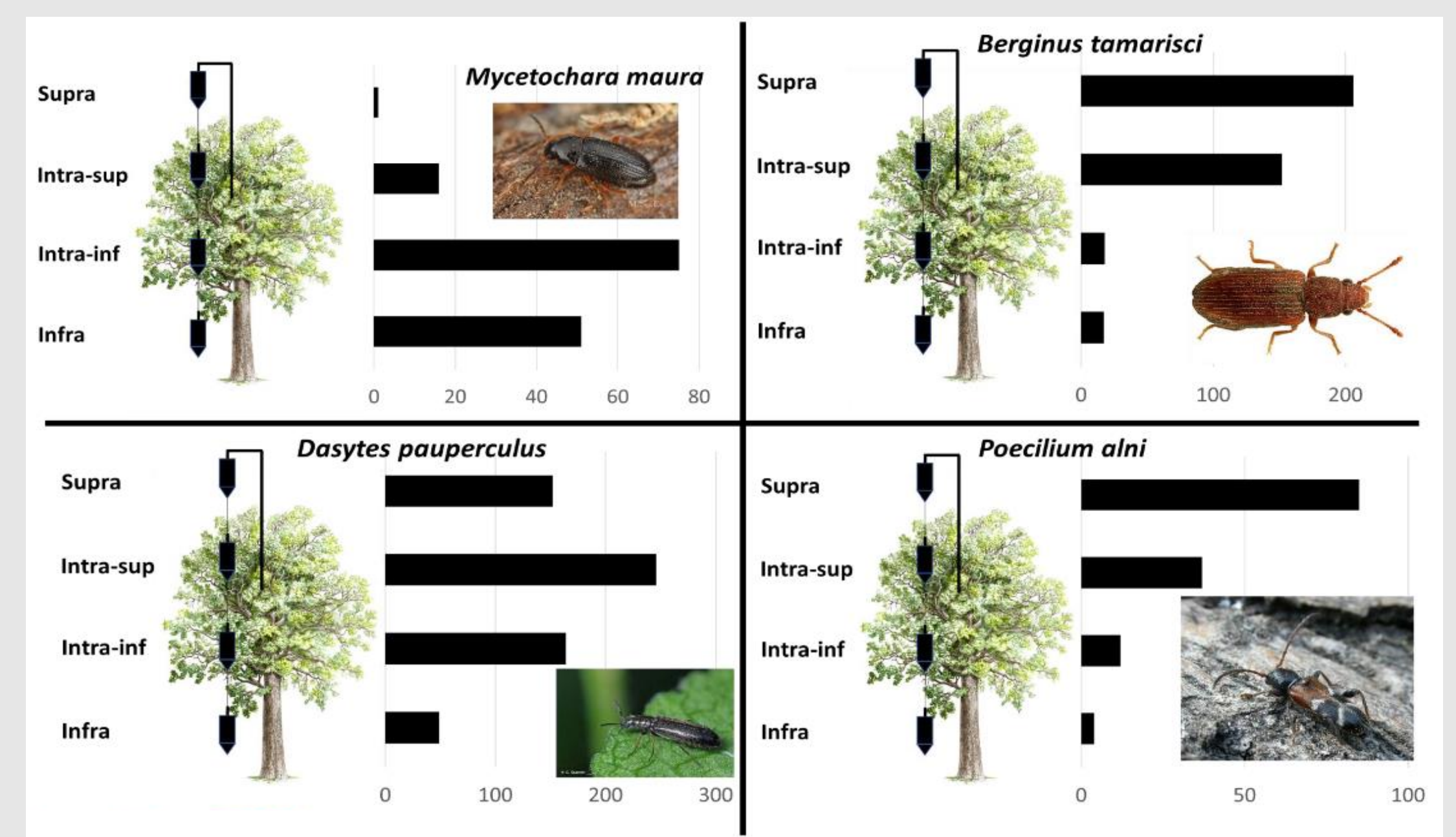
How

20 trees equipped with 4 microclimatic sensors and 4 Lindgren traps



2024 experimental scheme

Preliminary results



Insects species are distributed unevenly along the vertical gradient depending on their ecological traits.