Evaluating Native Bee Community Response To Fuel Break Treatments in Managed Forests

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Background: The importance of animal pollinators

- **90%** of the worlds flowering plants

- **87** out of 115 main global food crops rely on pollinators

- **over $195 billion** per year in ecosystem services globally

Images: BioRender

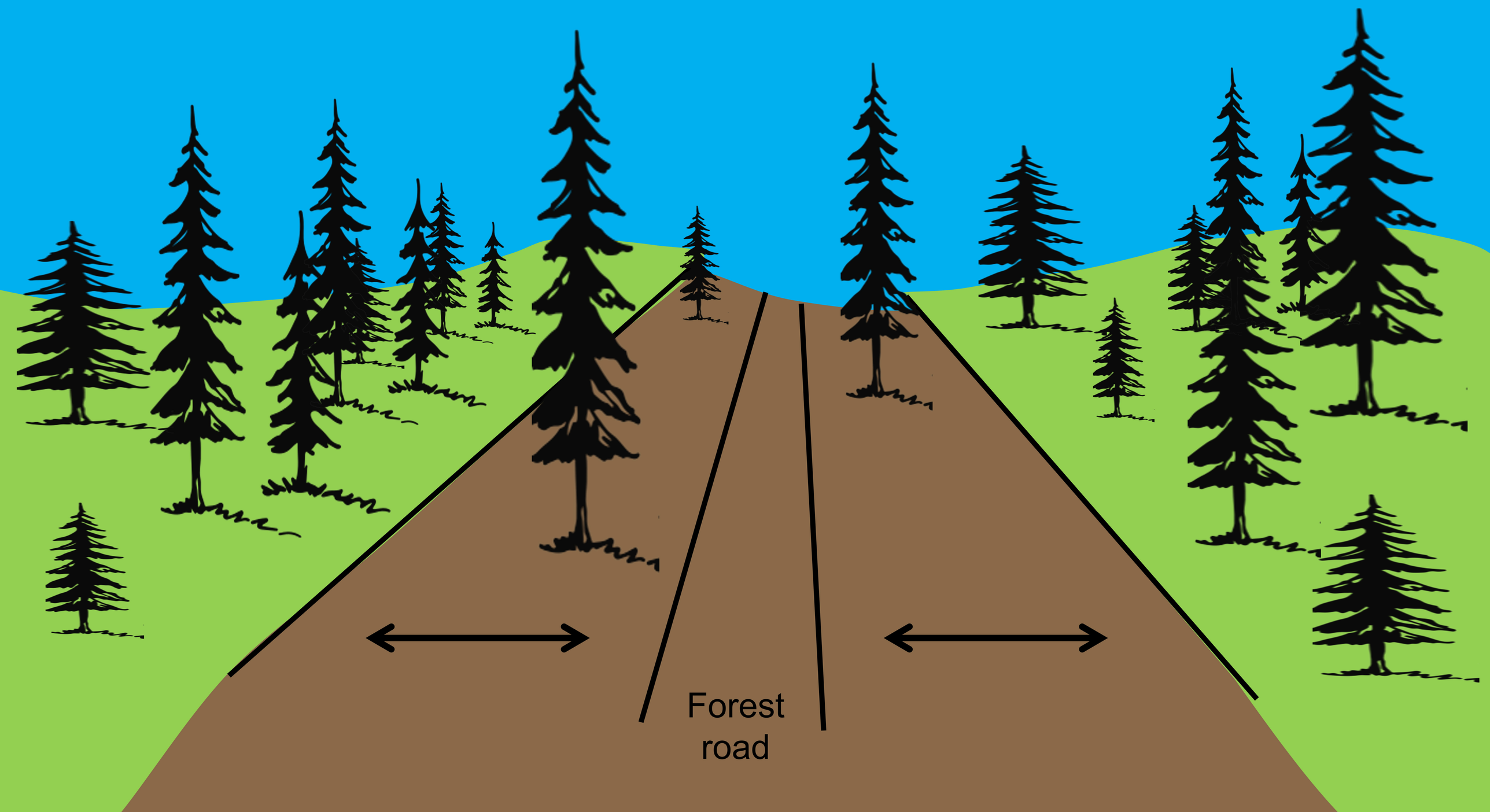
Critical resources for bees

Food

Nesting

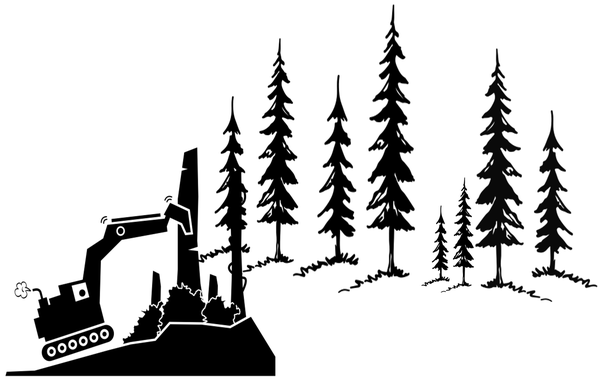
Fire Management for Fuels

Shaded Fuel Break



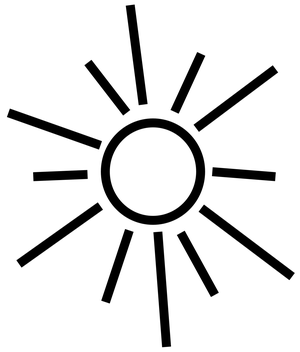
Impacts of Fuel Breaks on Bees

Treatment



Thinning trees and shrubs

Primary effects



Lower canopy cover, more light availability and bare ground

Secondary effects

More herbaceous flowering plants

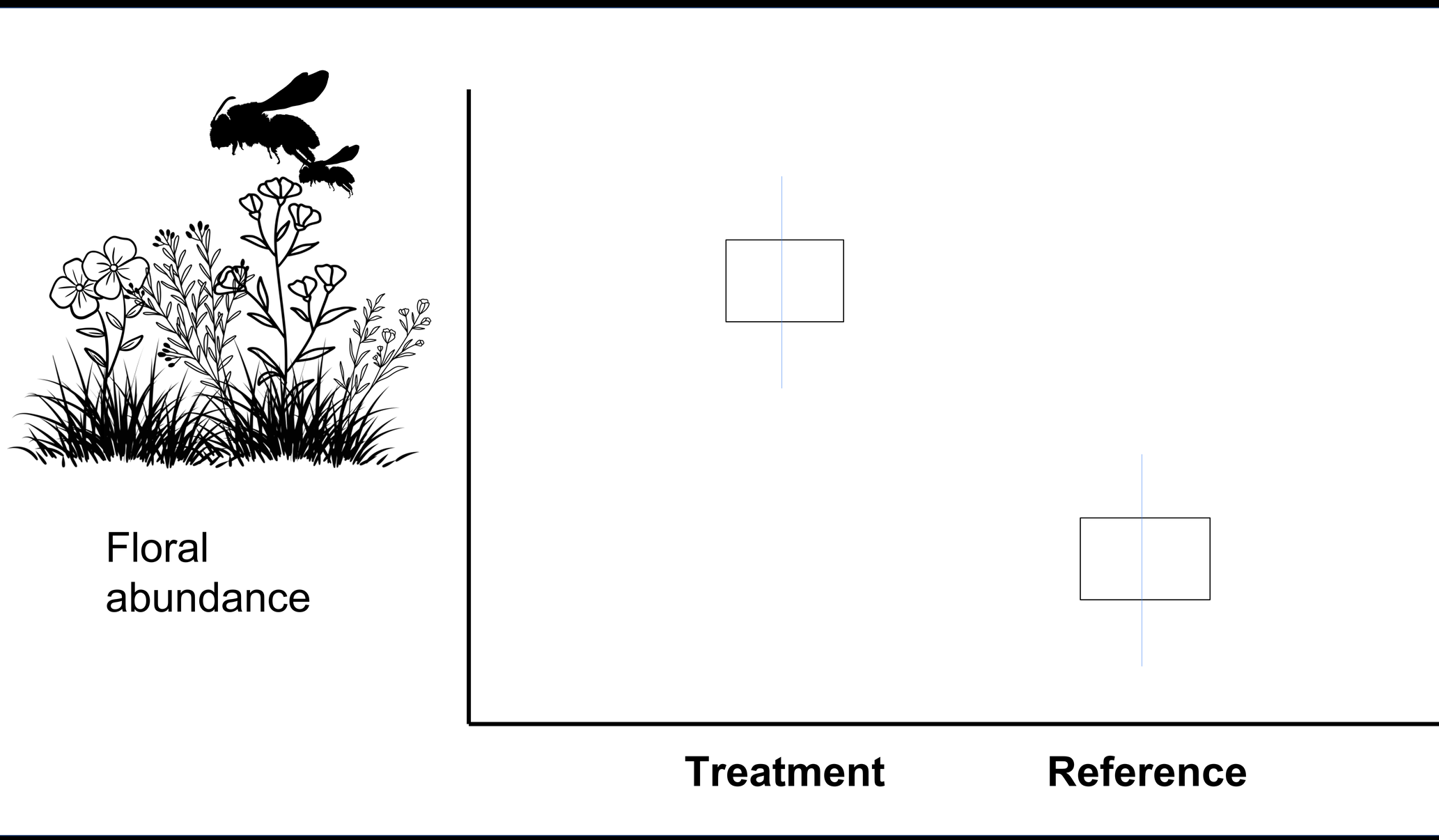
Images: The Noun Project, PhyloPic

Hypotheses

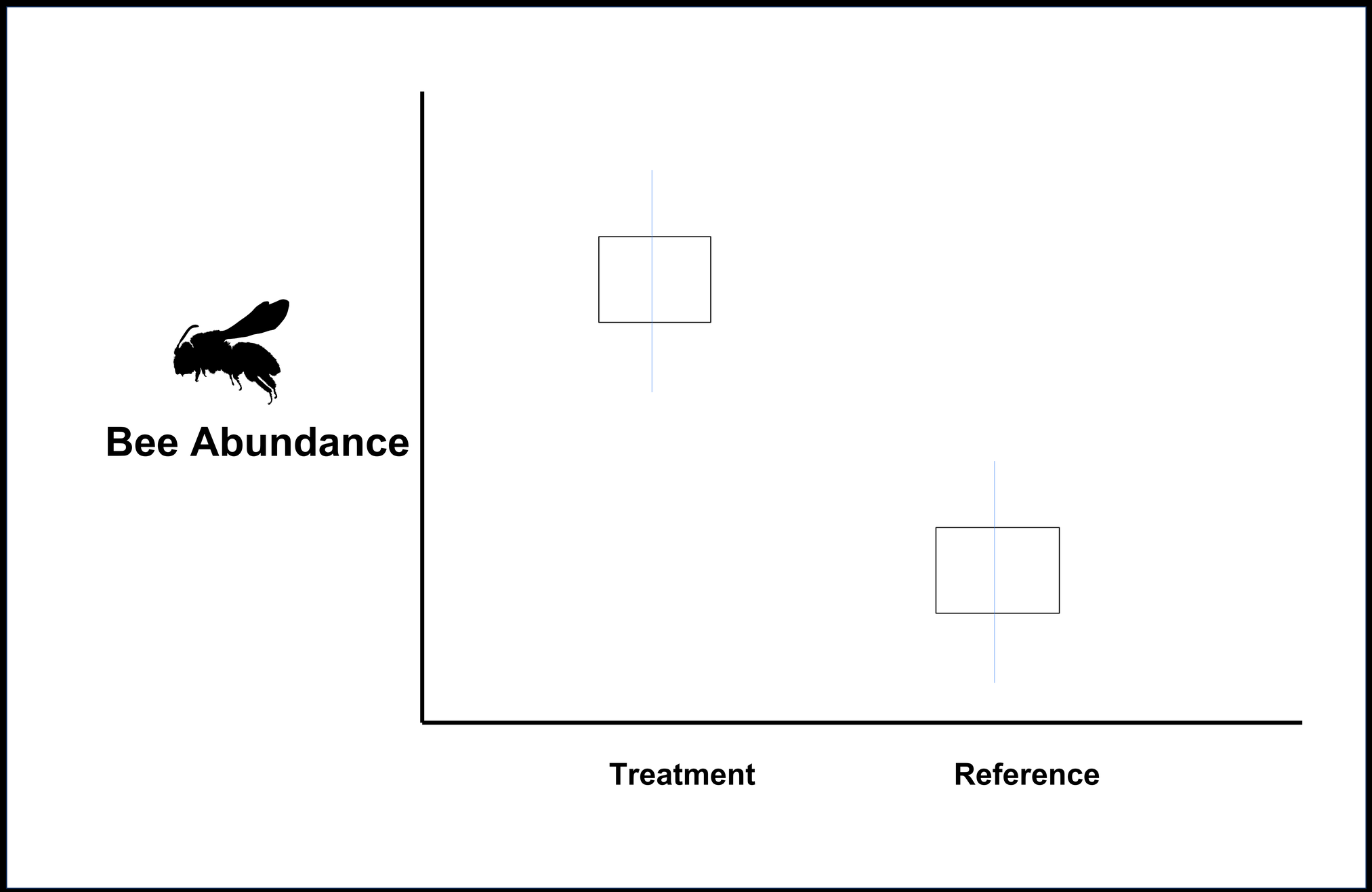
H1: Floral resources will be affected by environmental changes from fuel break treatments.

H2: Bee abundance and richness will be affected by fuel break treatments.

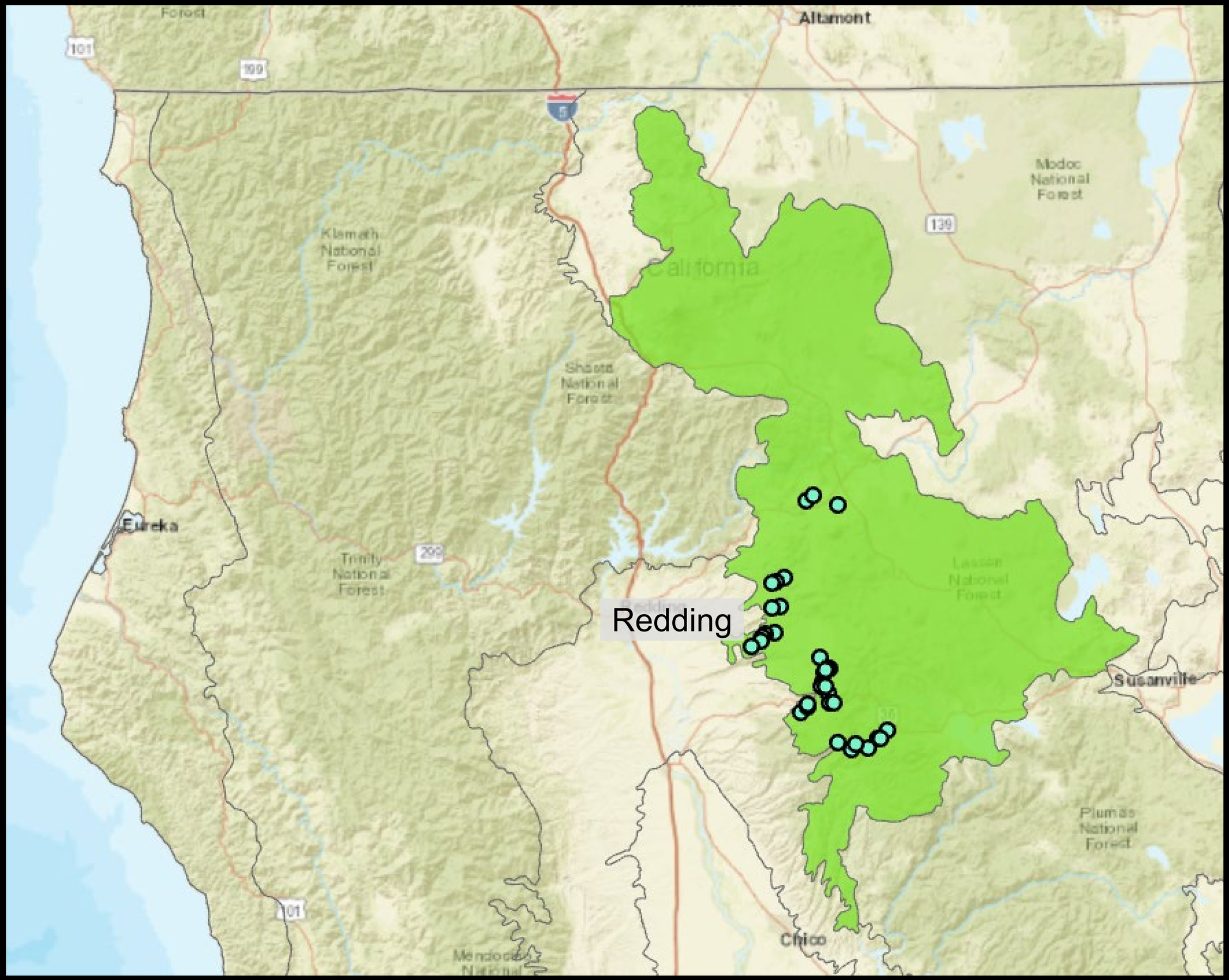
Prediction 1: Floral resources will be more abundant in treatment sites with lower canopy cover and less abundant in reference sites with higher canopy cover



Prediction 2: There will be higher bee abundance in fuel break treatments relative to reference sites



Study Area: Northern California, Cascades Eco-Region



SIERRA PACIFIC INDUSTRIES

EST. 1969
W. M. BEATY
& ASSOCIATES, INC.

Collins

Site Selection: 36 sites

1 km

Site

2 km

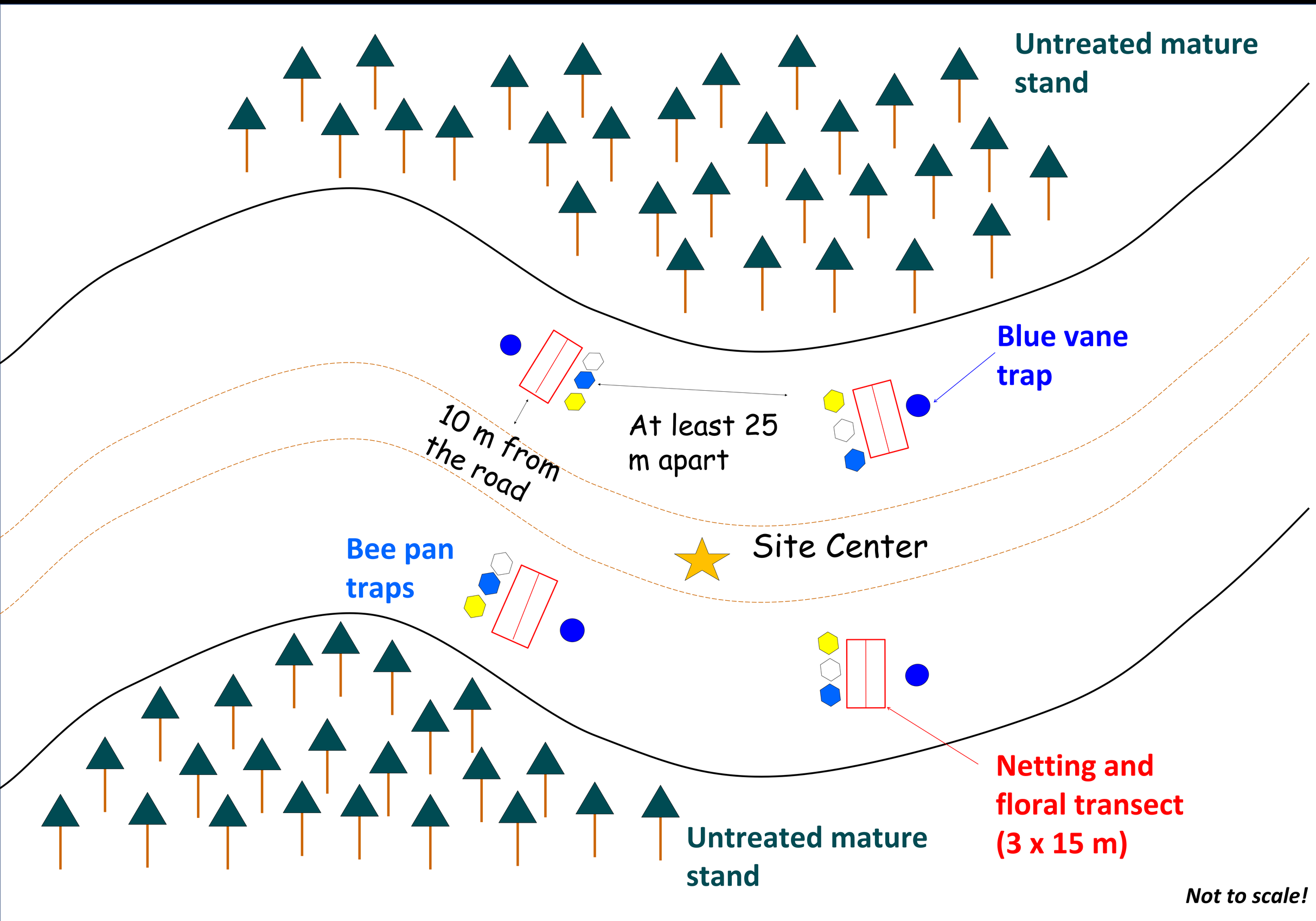
Recent logging

Recent burns

Reference

Fuel Break

We sampled bees in fuel breaks and reference sites during summer 2023-2024



Bee sampling methods

Hand Netting

Blue Vane Traps

Pan Traps

Quantifying floral resources: Bee food!

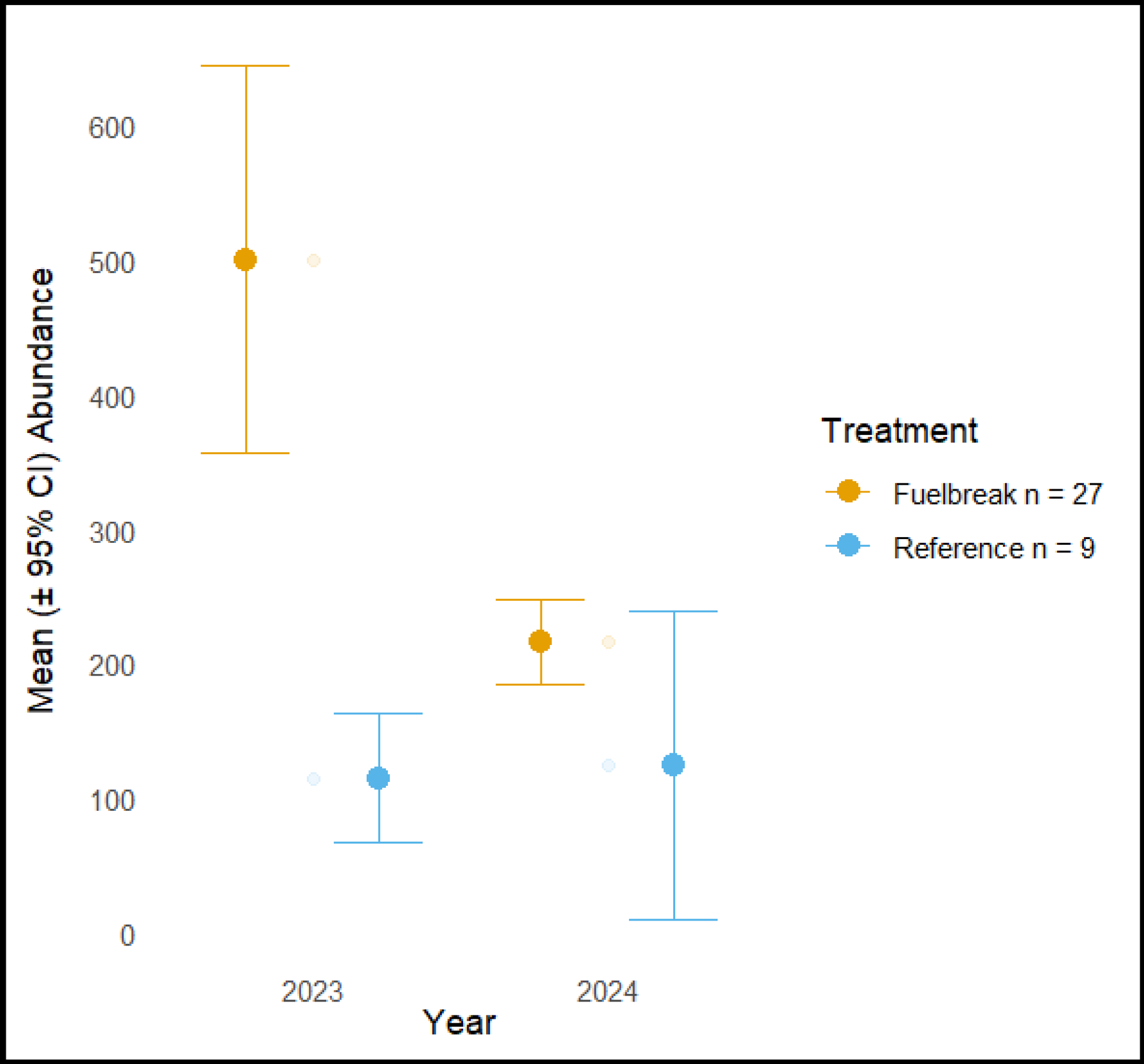
Vegetation survey:

- Canopy cover
- Shrub cover
- Nesting resources
  -Bare ground
  -Woody debris

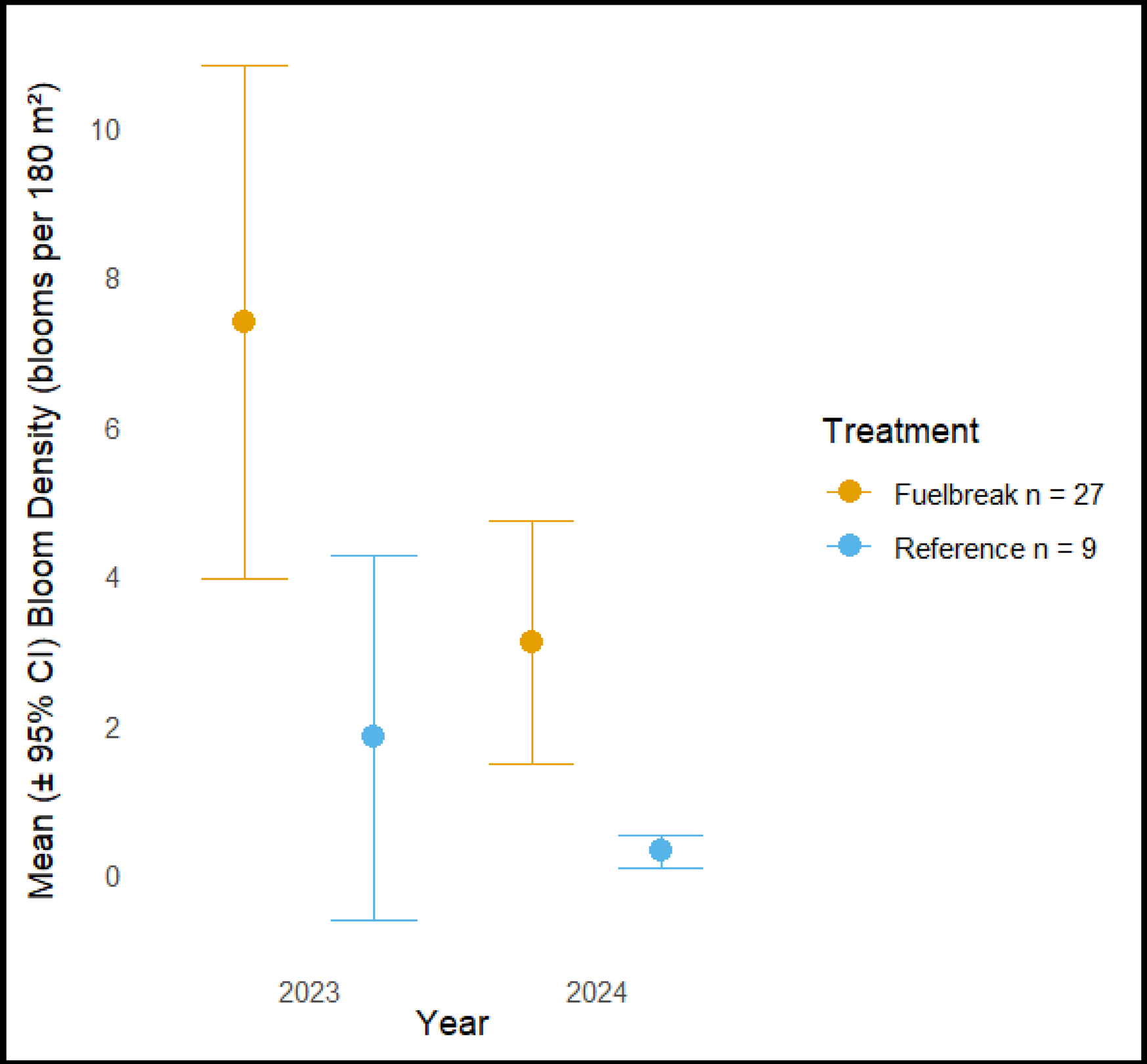
Specimen Processing

Image: Jane O' Sullivan

Treatment may affect abundance of bees, flies and wasps



Bloom Density was higher in Fuel breaks relative to Reference sites



Key Takeaway:
Fuel breaks appear to influence pollinator communities

Thank you for making this research possible!

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