

Assessing the impact of post-fire forest management on Mediterranean forests using beetles and ants as bioindicators

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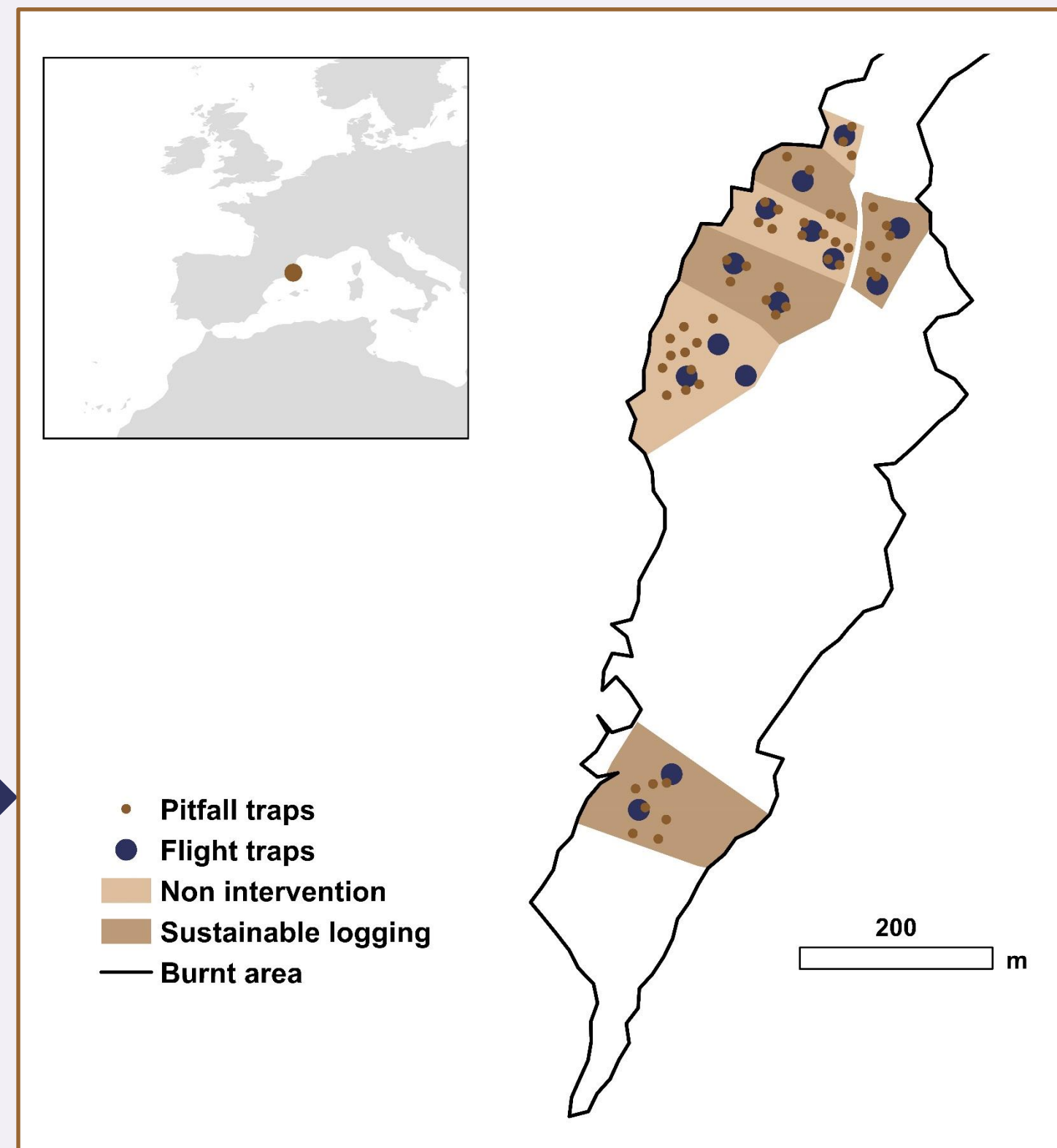
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STUDY AREA and MANAGEMENT



Wildfire July 2016, 30 ha



Post-fire management (2017)



SL Sustainable logging

4 plots of ≈1 ha logged using light machinery, leaving the canopies on-site as piles of branches and preserving standing living trees



NI Non-intervention

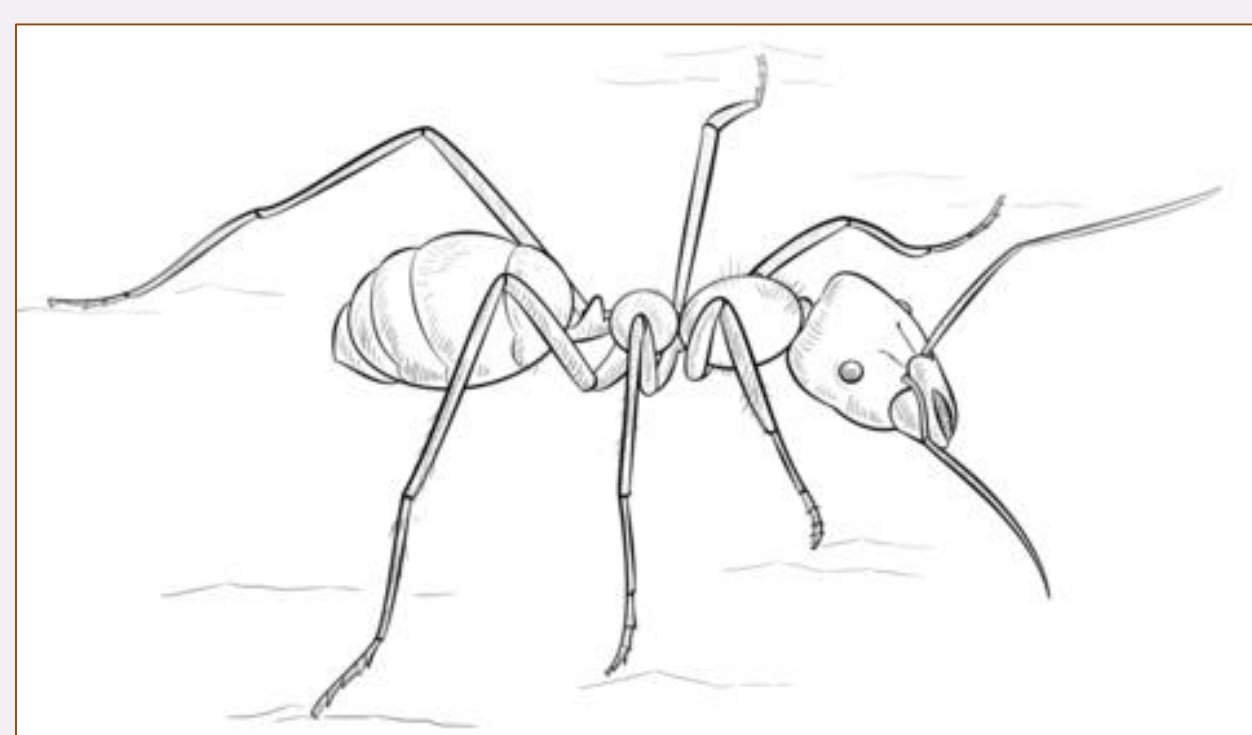
3 plots of ≈1 ha were unlogged

FIELD SAMPLING (spring-summer 2017; after logging)

Ant community

Variables:

Abundance
Species richness
Diversity



for 12 days



25 pitfall traps (5 cm diameter) x 5 microhabitats:

SL treatment

OG Open ground
BS Below sprouted shrubs
UB Under branch piles

NI treatment

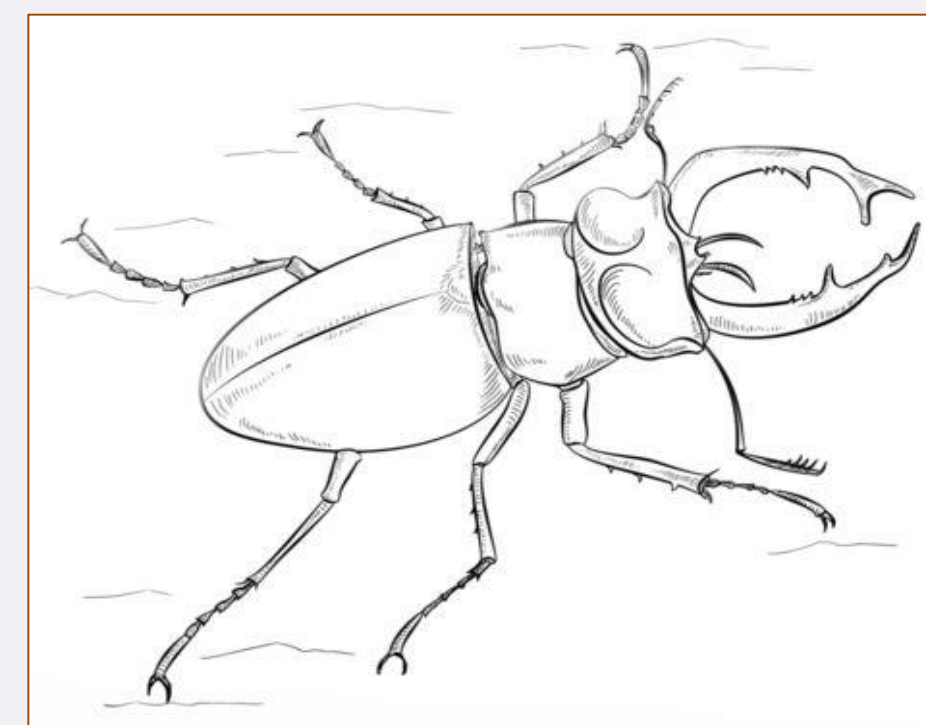
OG Open ground
BS Below sprouted shrubs

Beetle community

Variables:

Abundance
Species richness
Diversity

Feeding guild (*DE* Defoliator, *D* Detritivore, *S* Sap feeding, *G* Granivore, *F* Fungal feeding, *P* Predator, *PD* Predator-Detritivore, *V* Vegetation feeding, and *X* Xylophagous)



for 6 weeks

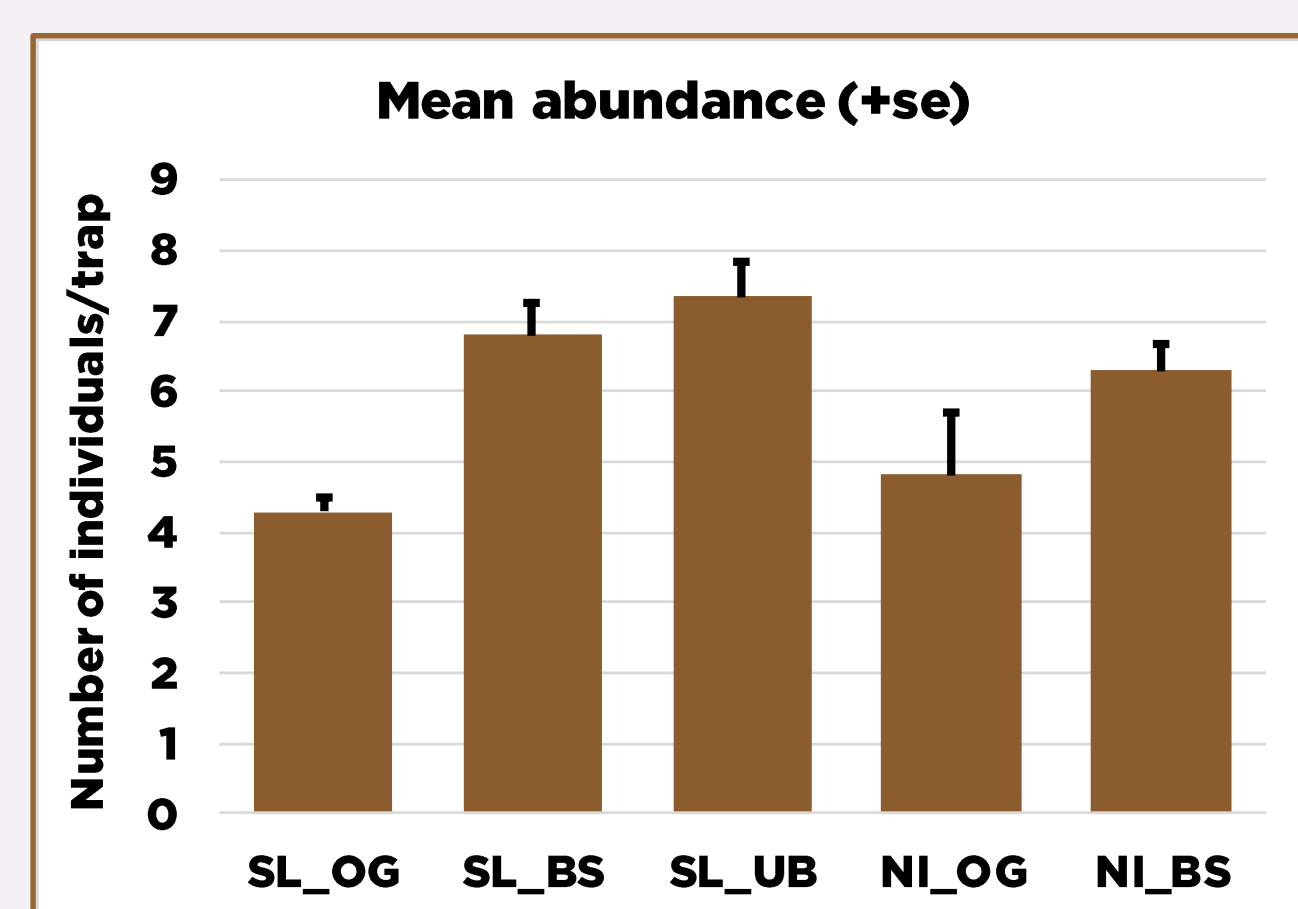


7 flight traps (CROSSTRAP® Econex) x 2 treatments

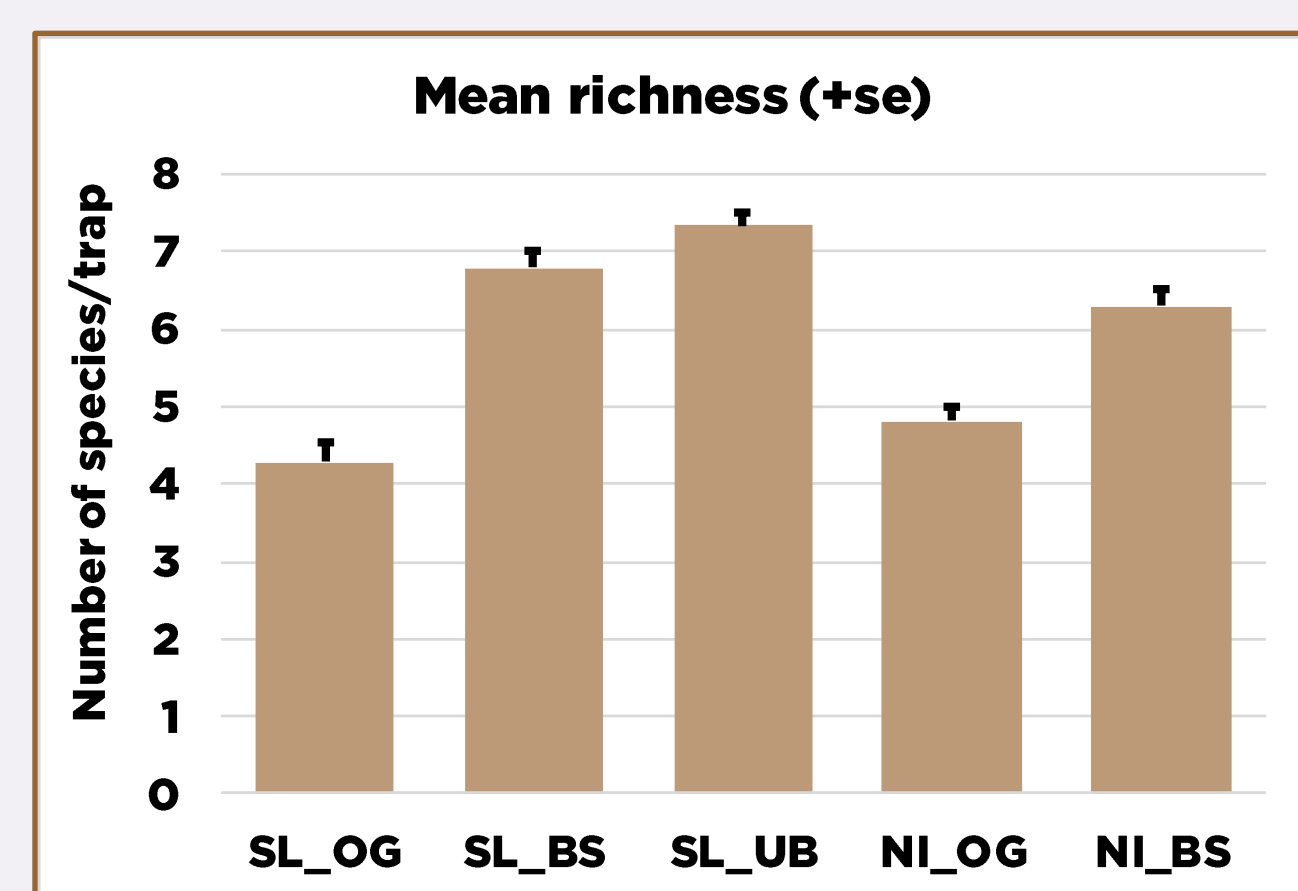
SL treatment
NI treatment

RESULTS AND CONCLUSIONS

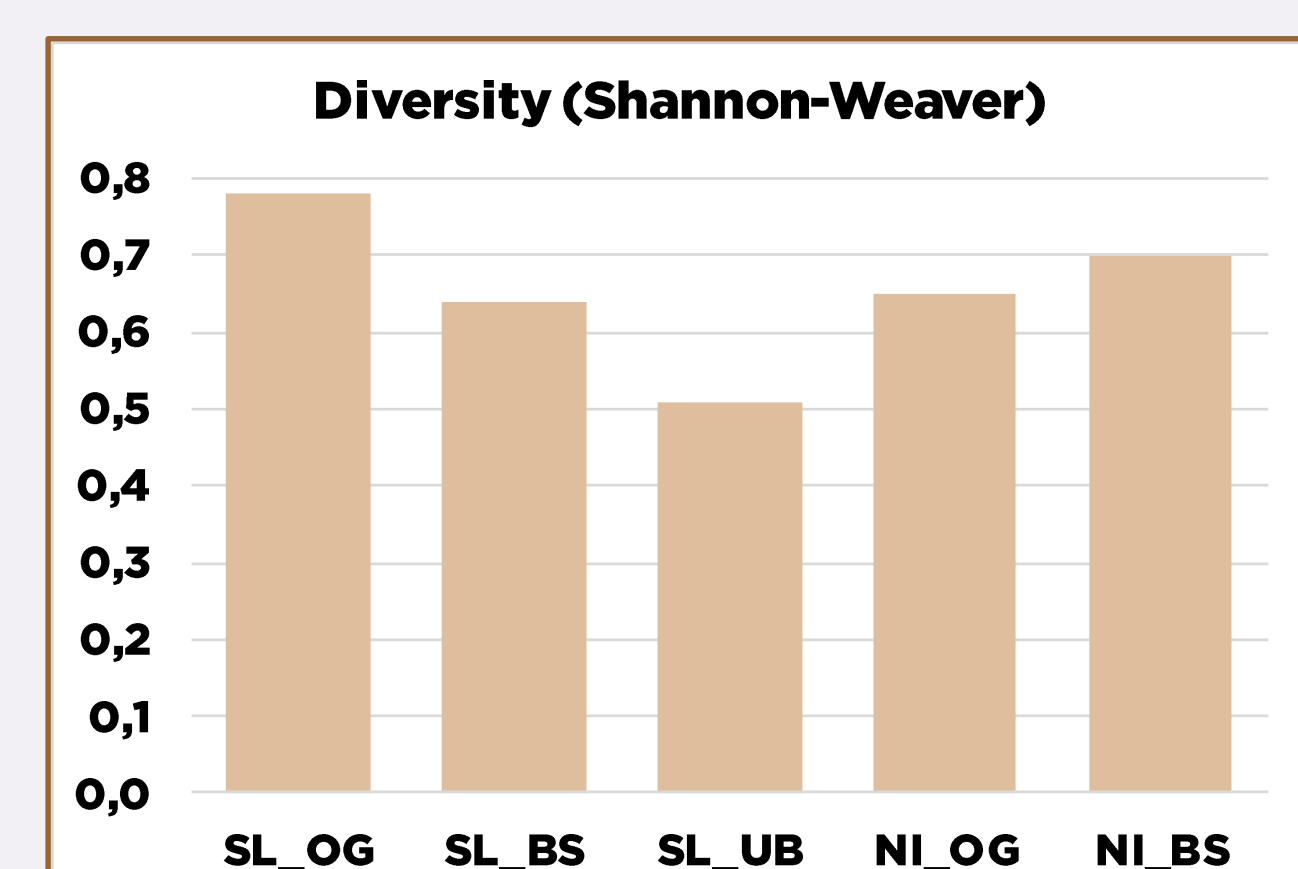
Ants (687 individuals from 13 species)



Significantly higher below shrubs (BS) and under branch piles (UB)

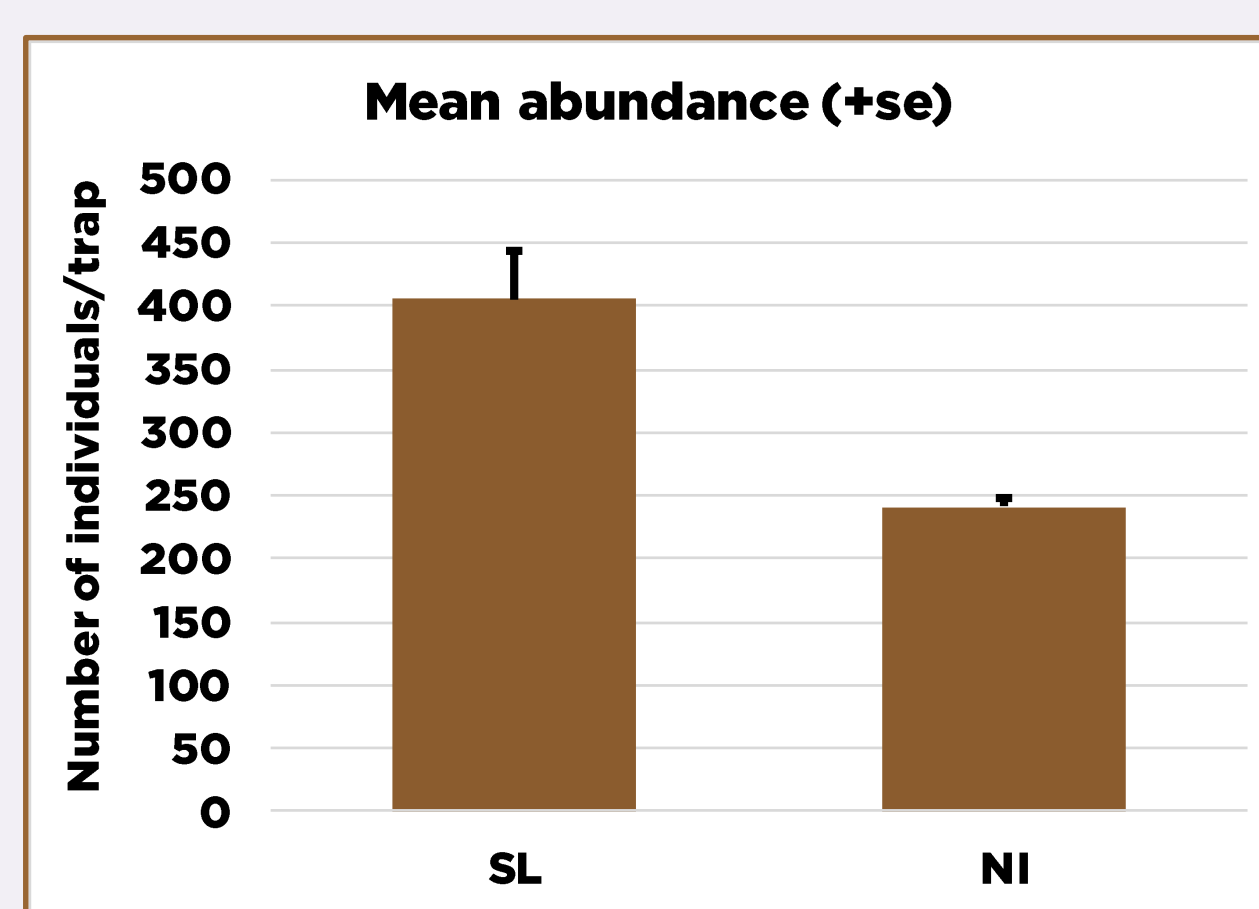


Non-significant differences between treatments and microhabitats

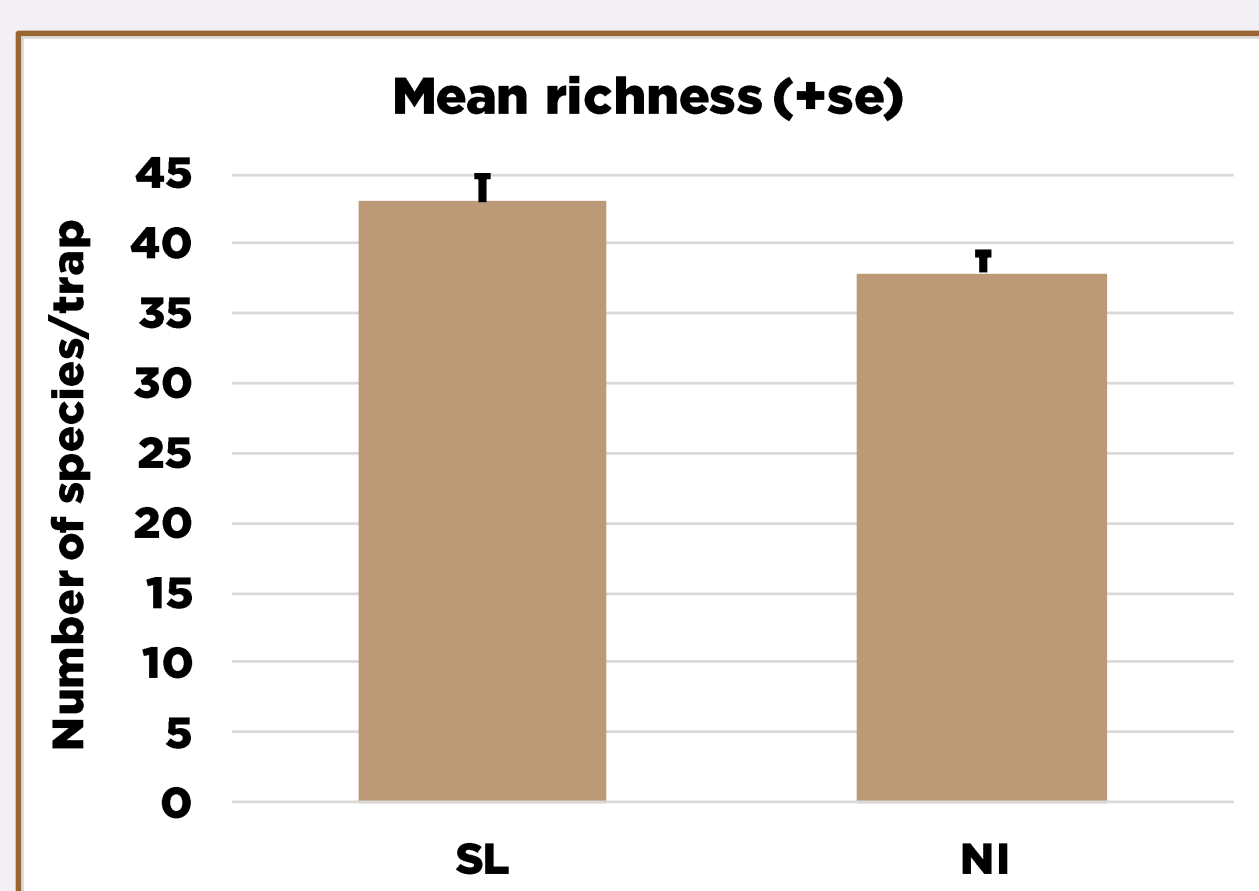


Significantly higher in the open ground of Sustainable logging (SL_OG)

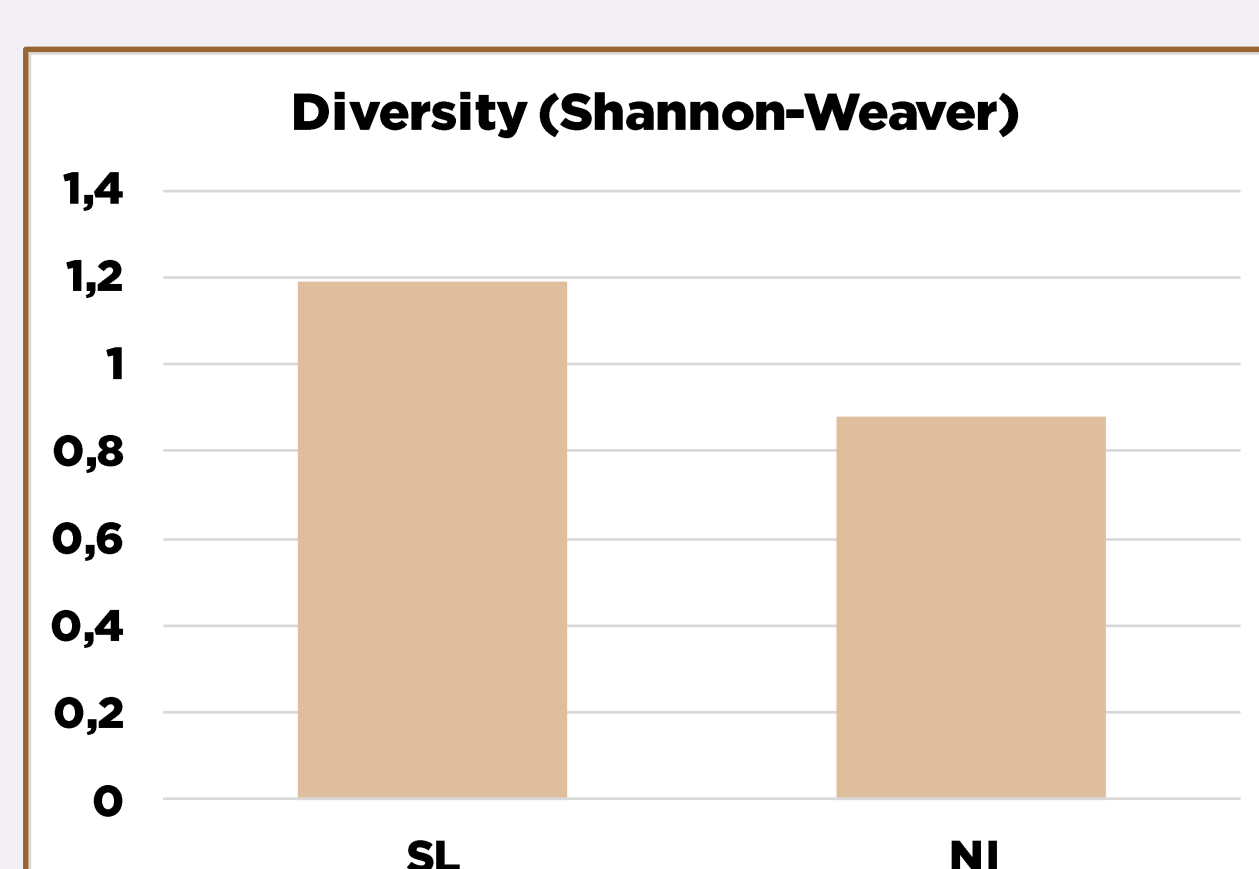
Beetles (4533 individuals to 123 species)



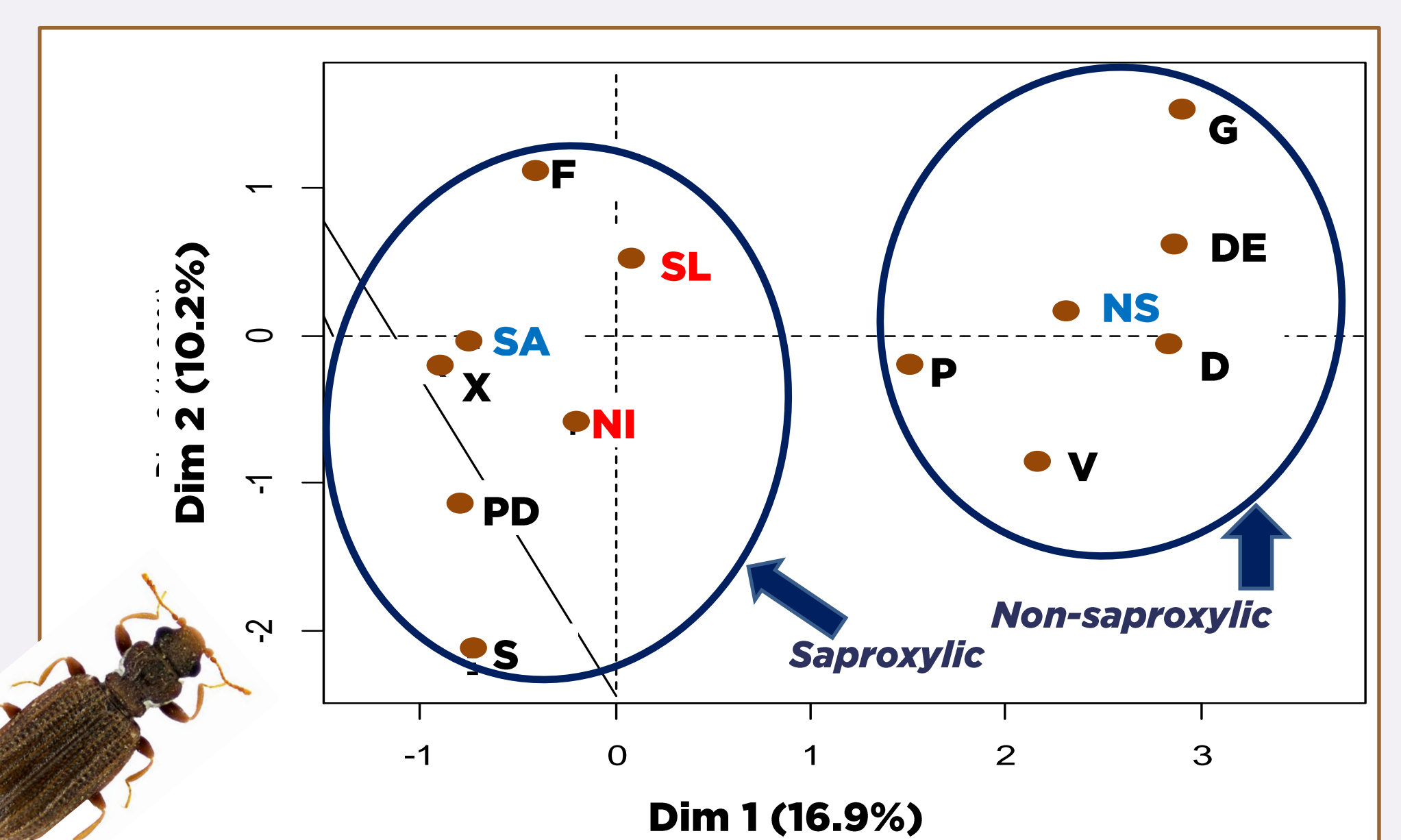
Significantly higher in Sustainable management (SL)



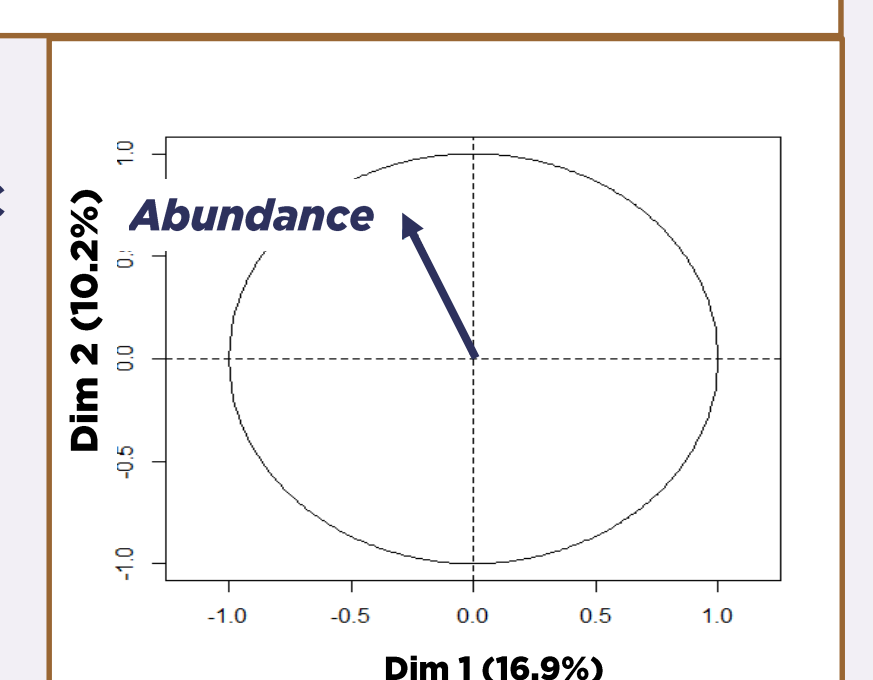
Non-significant differences between treatments



Significantly higher in Sustainable management (SL)



• Two well-differentiated groups: saproxylic (SA) vs. non-saproxylic (NS).
• SA are more abundant in SL
• Greater differences between SA and NS than between SL and NI treatments



Conclusions and prospects:

1. Postfire logging practices using light machinery and leaving coarse woody debris on-site, can be a more sustainable alternative to conventional salvage logging.
2. In general, we found more saproxylic beetles in logged plots and more ants below sprouted shrubs and under piles of branches.
3. These provisional results will be completed with new plots managed by conventional salvage logging (until 2020) and with the parallel monitoring of vegetation, spiders, birds and mammals.
4. We hope to provide diversity indicators to be used in decisions regarding the management of burnt forests.