Do the ‘little things run the world’?:

What is the functional value of ants and termites? Manipulation experiments

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Theo Evans, National University of Singapore
Tom Fayle, University of Southern Bohemia (etc..)
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- Can we suppresss ants and termites effectively?
- What is the effect of this?
- How quickly can we detect an effect?

Pre-treatment sampling: termites

Pre-treatment sampling:
ants & other invertebrates

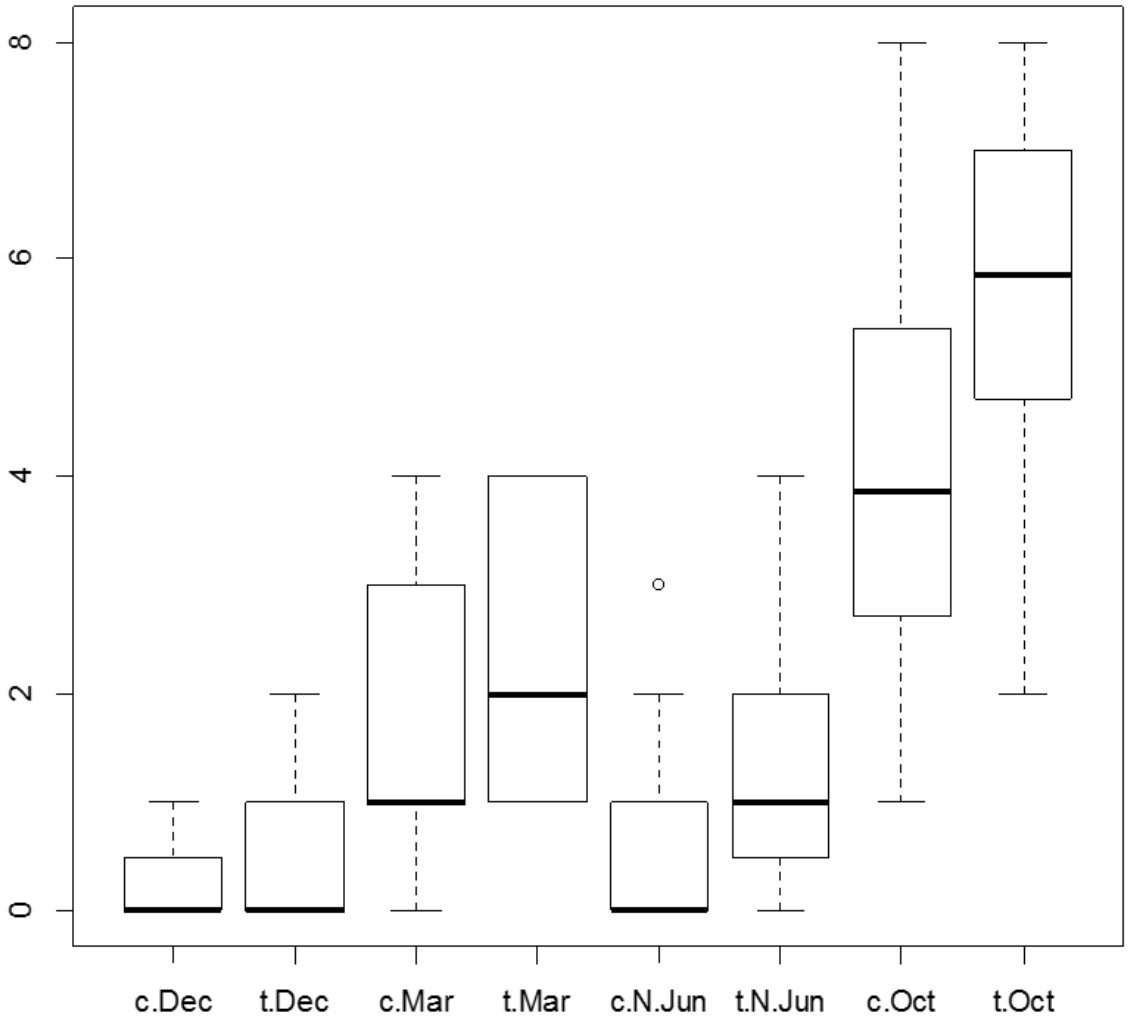
Termite exclusion treatments

Ant exclusion treatments

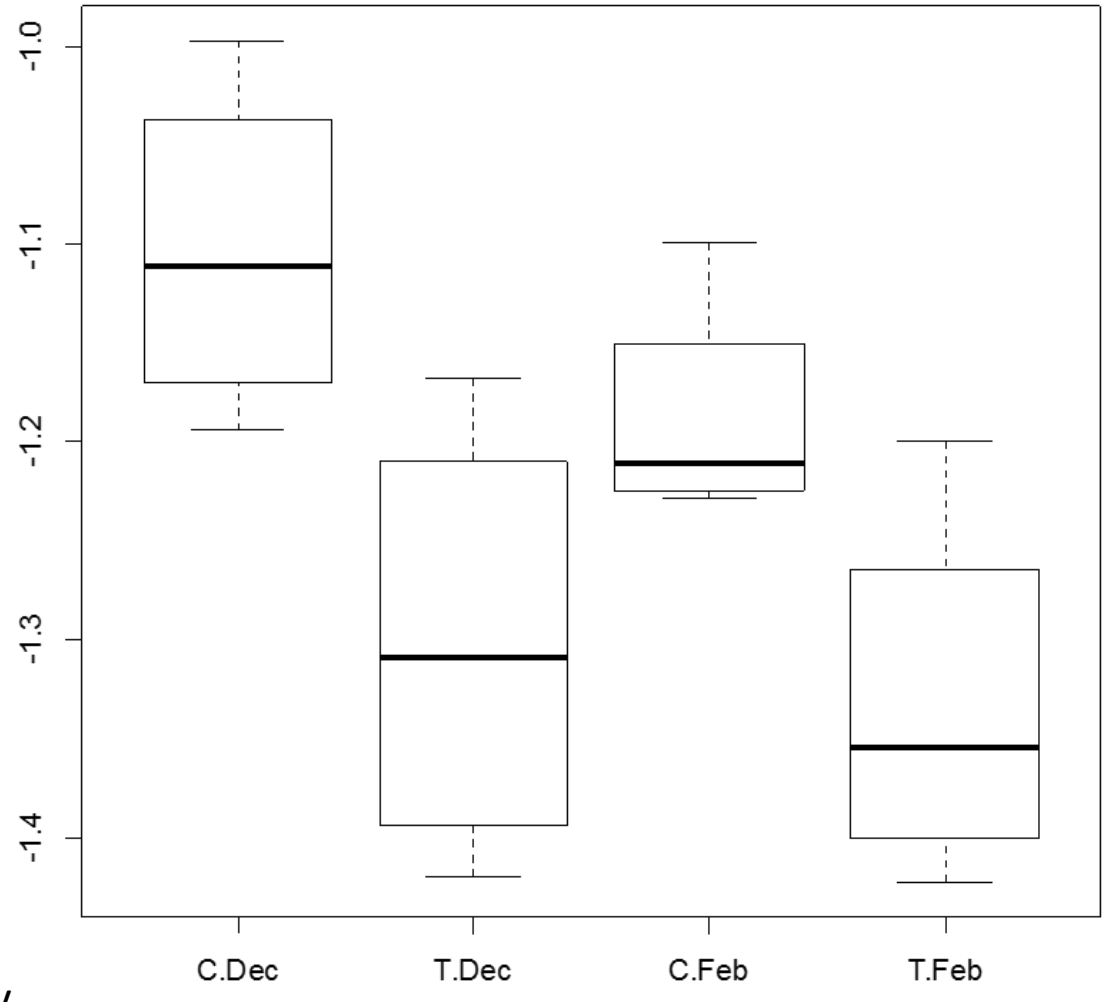
Response variables:

- Decomposition YES
- Invertebrate activity YES
- Soil /litter nutrients YES
- Soil infiltration rate NO
- Herbivory YES

Termite bait attacks

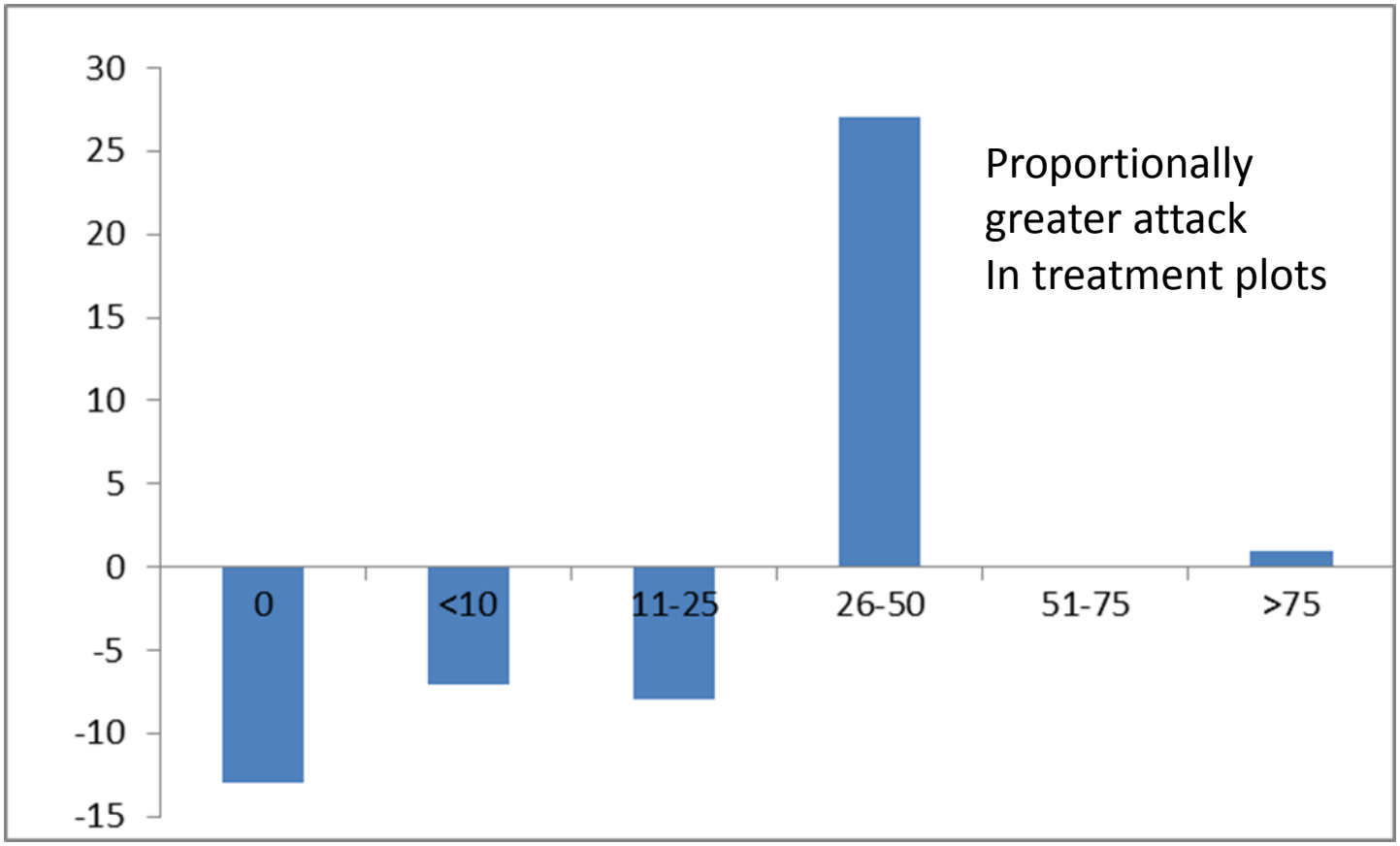


Litter C:N ratio



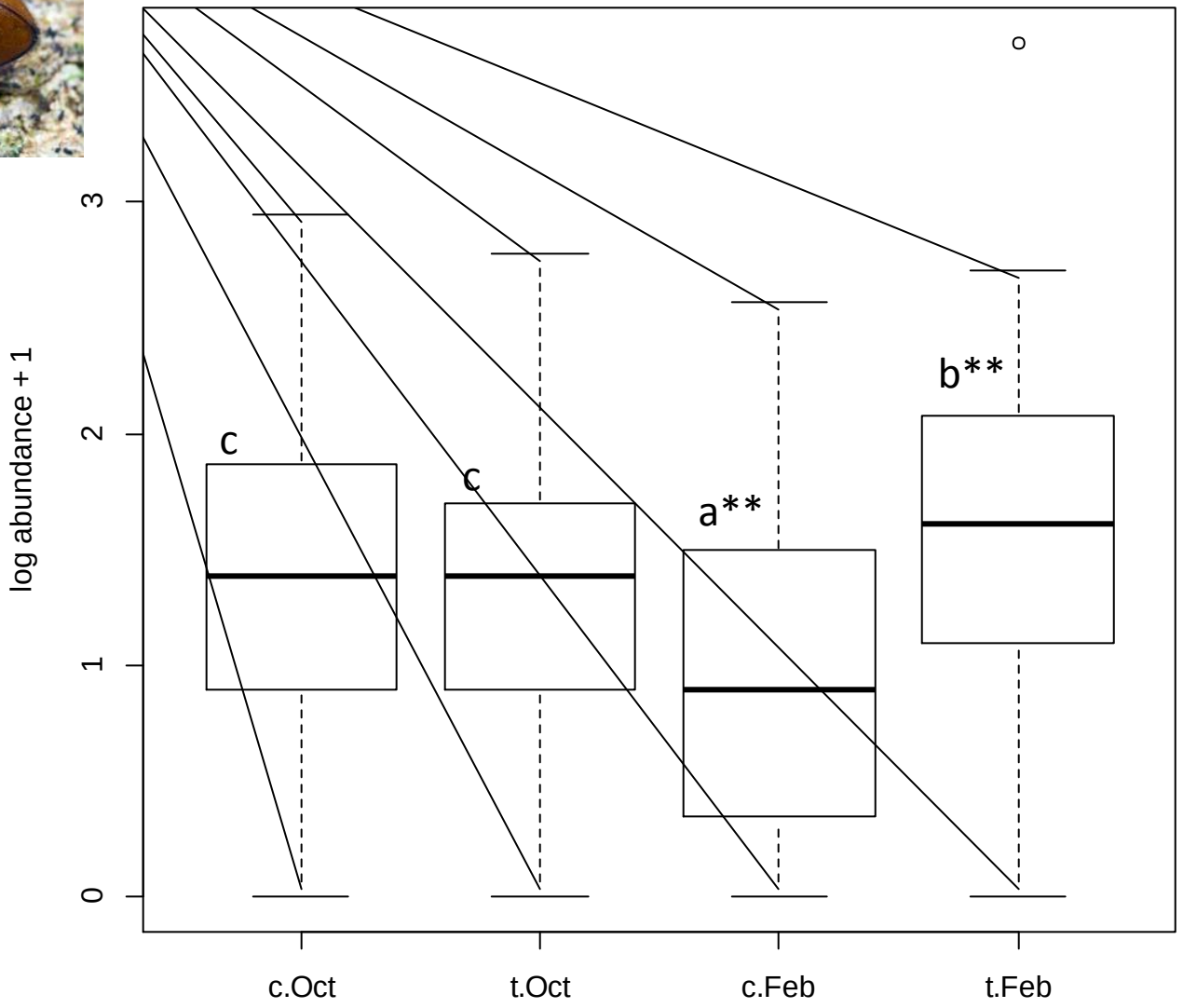
Initial increase in litter quality

Herbivory

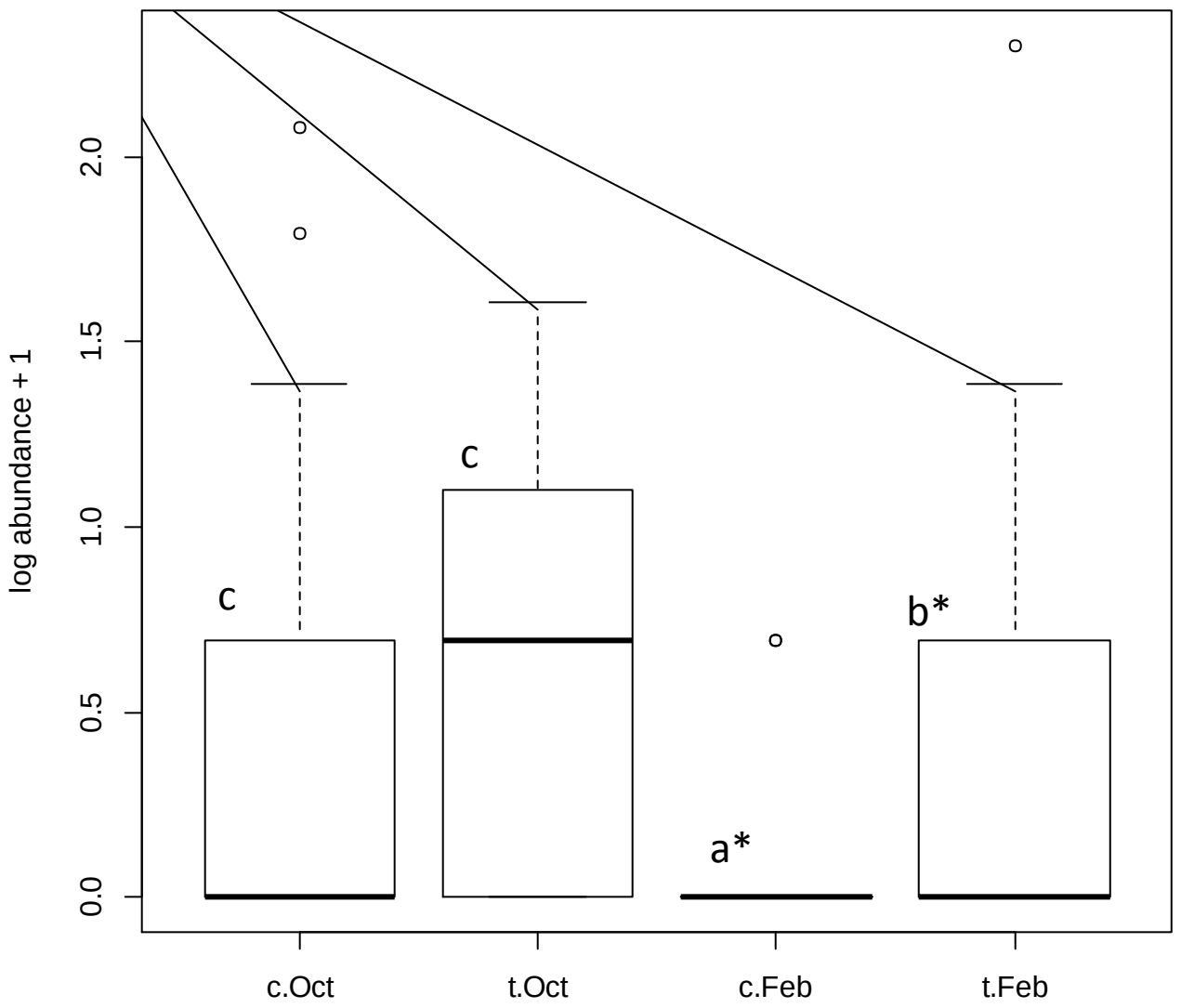


% attack on leaves of broad-leaved trees

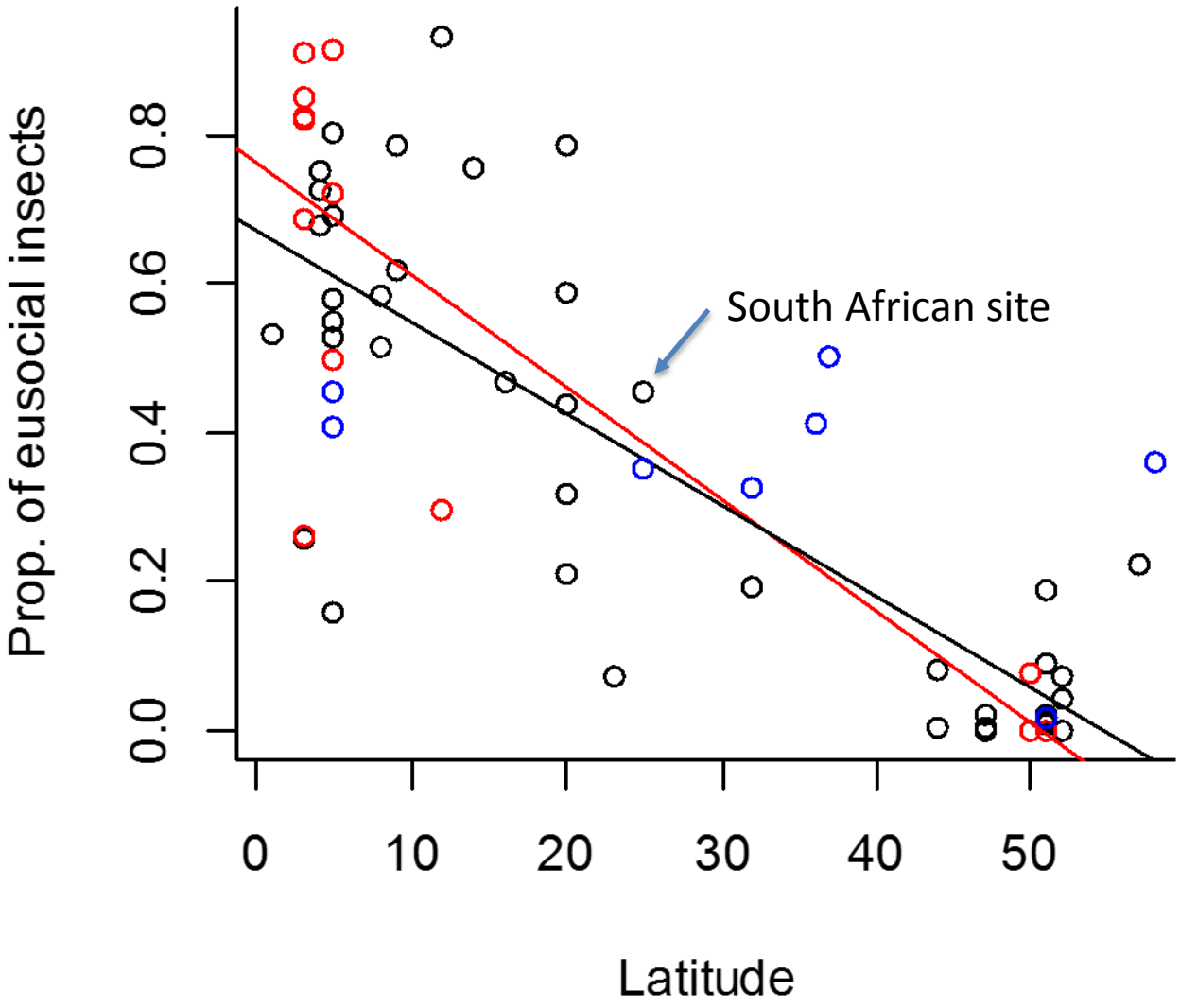
Non-target invertebrates
Coleoptera, pitfall traps



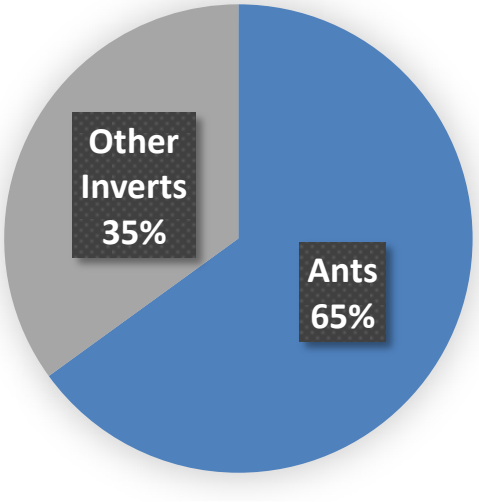
Diplopoda, pitfall traps

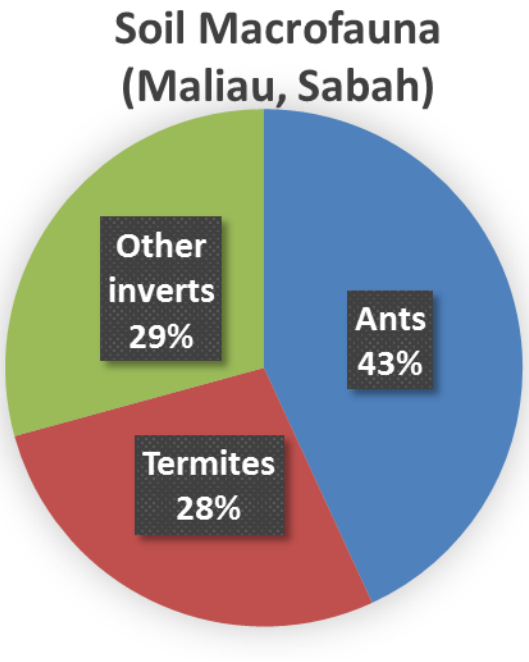


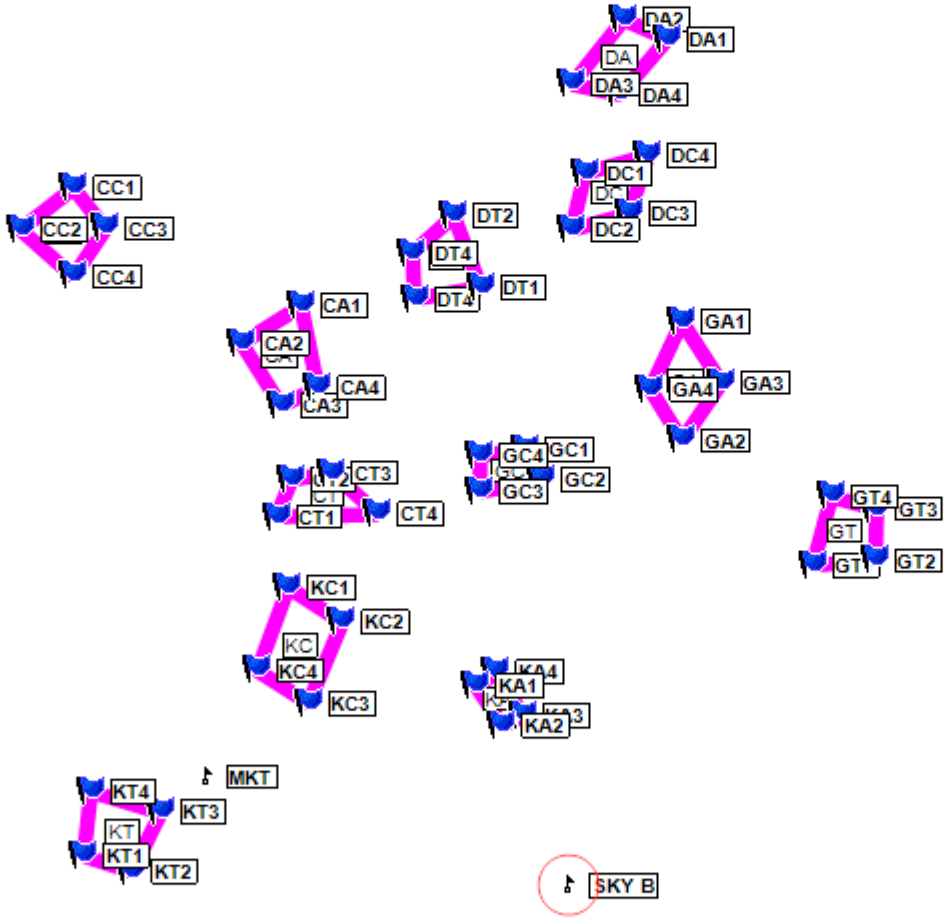
Relative importance of ants across latitudes



Importance of ants and termites at Maliau



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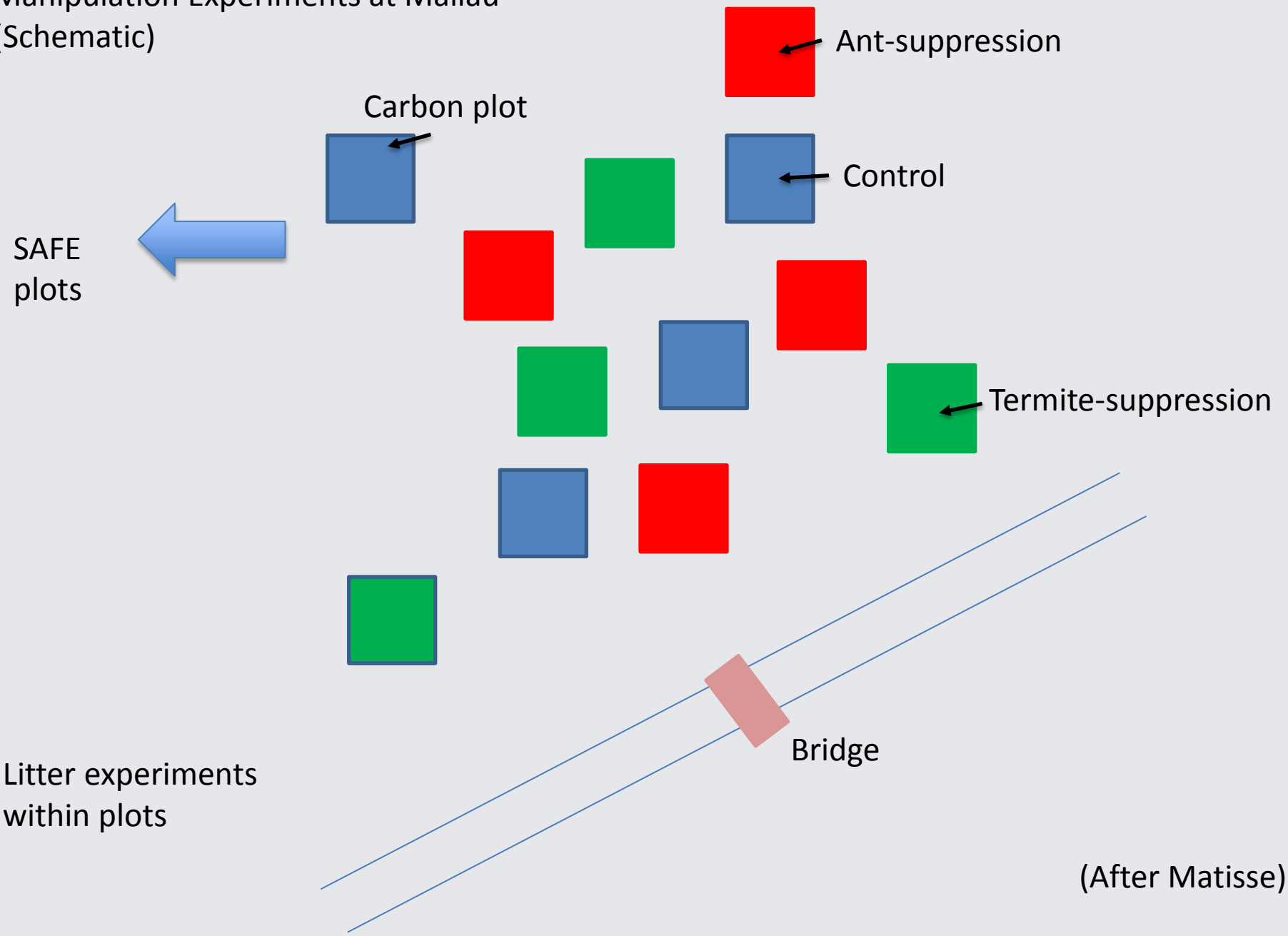
Manipulation Experiments at Maliau
(Schematic)



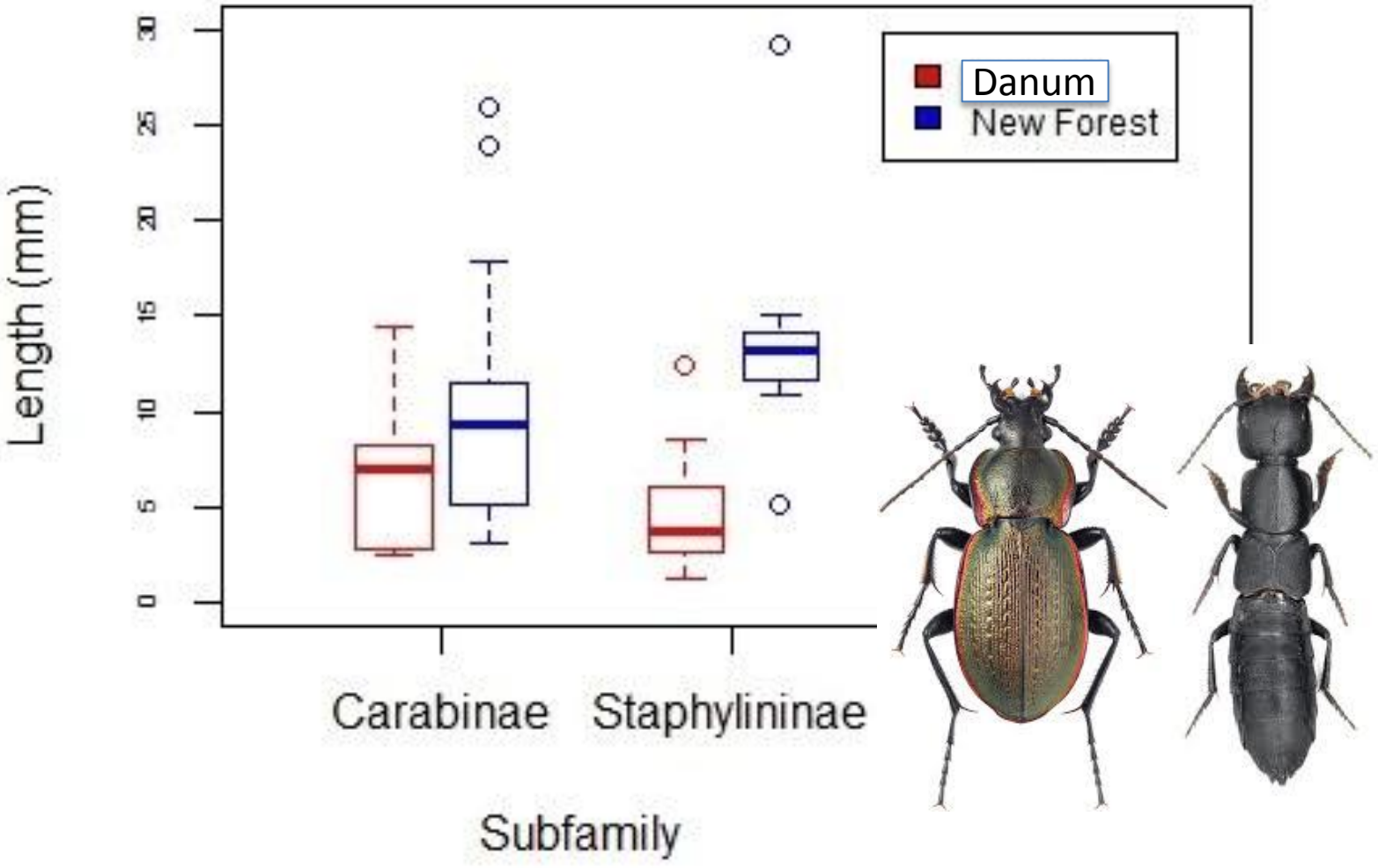
Litter experiments
within plots

(After Matisse)

- What do we expect in tropical rain forest?
- Ant suppression (most clear predicted effects):
  - Larger overall effect?
  - Effect on BGC (gas fluxes etc)?
  - Enhanced termite activity in soil
  - Expect increase in litter and wood decomposition
  - Increase in herbivory
  - Effect on non-target inverts?
    - Latitudinal data gives us some clues?

Many species of pselaphine Staphylinidae with “ant-handle” antennae
Such species not found in UK samples

Comparison of the distribution of species median body size values from Pitfall Trap samples



What do we expect in tropical rain forest? Beetles.

- Ant suppression:
  - Reduction in “loose myrmecophiles”
  - Increase in large-bodied, long-legged, surface-foraging predators.

  - Manipulations started this month
  - First results in April / May 2015