

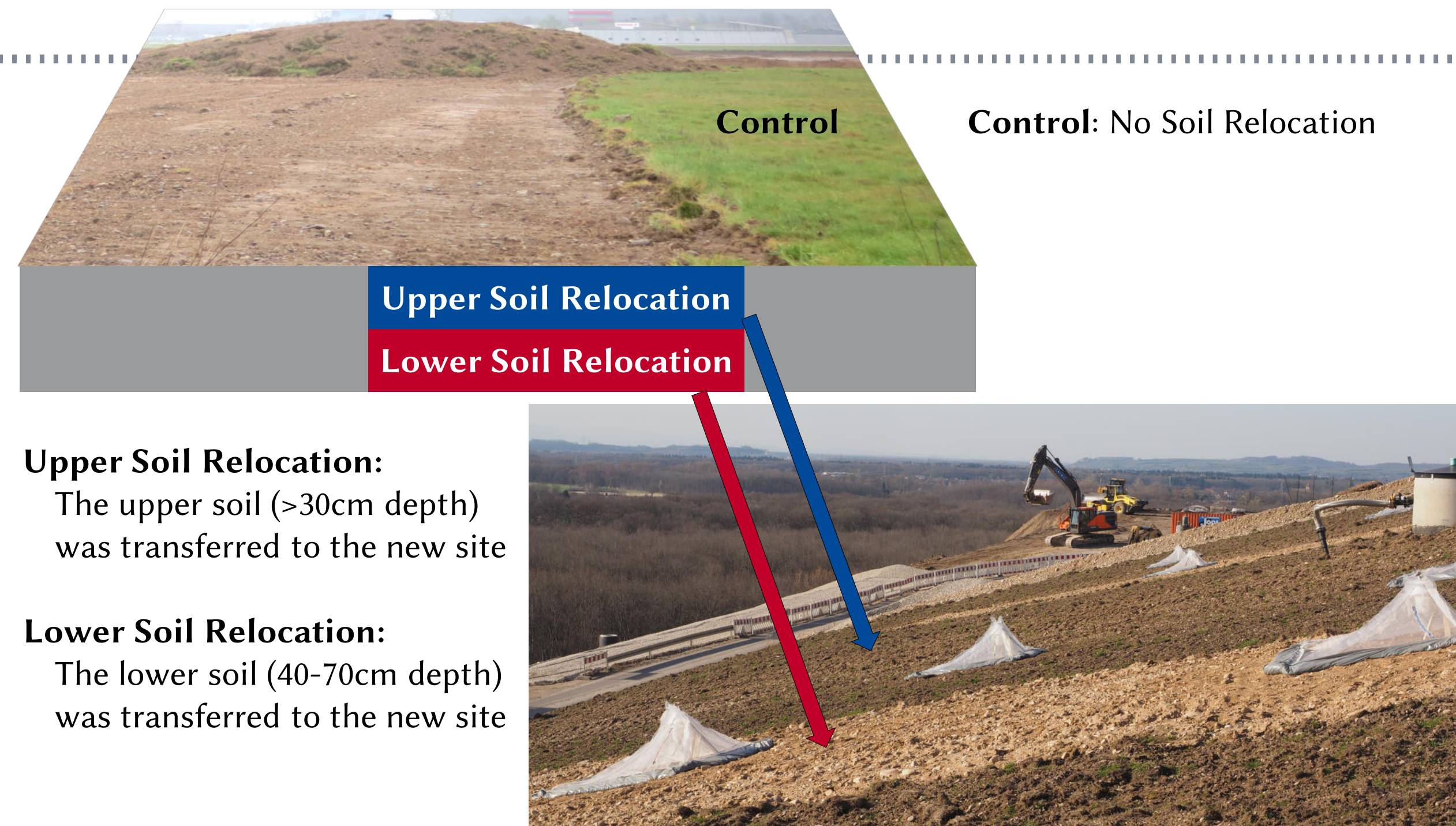


Conservation in Germany implies compensation measures, such as establishing lost habitats at new places. In Freiburg nutrient-poor grassland with a particular soil chemistry is lost due to the construction of a new football stadium. To compensate the loss, the soil was relocated to a new virgin site previously used as waste dump. The soil was relocated during the winter months.

## Research question: Do hibernating bees and wasps emerge from relocated soils?

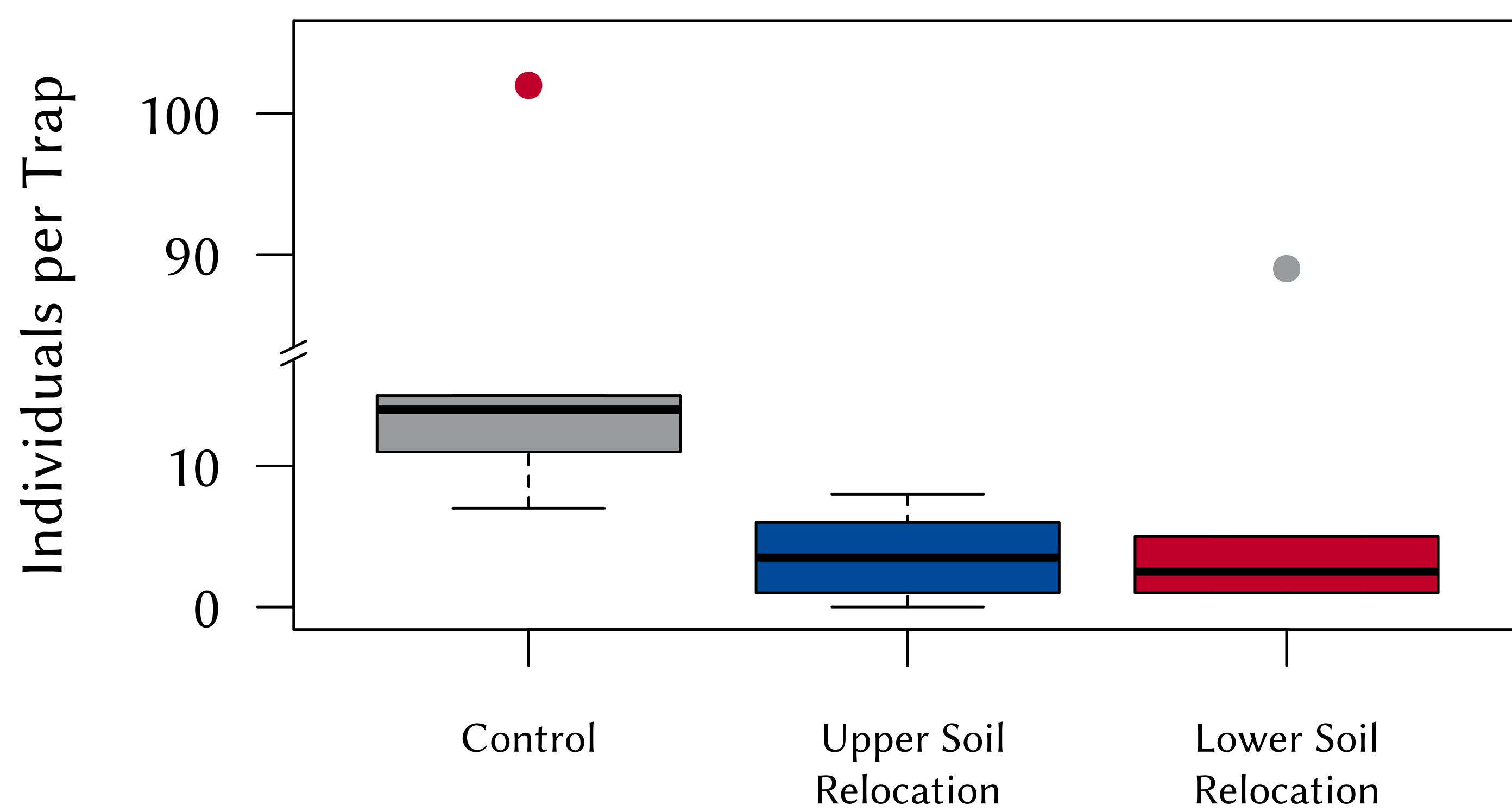
### Methods

- Study Location: Freiburg im Breisgau, Germany
- Soil was relocated in winter 2018/19.
- Six emergence traps per treatment, established in March 2018
- Traps were emptied weekly
- Insects emerging from the soil were sorted to order level
- Bees and Wasps (Hymenoptera) were classified to family level

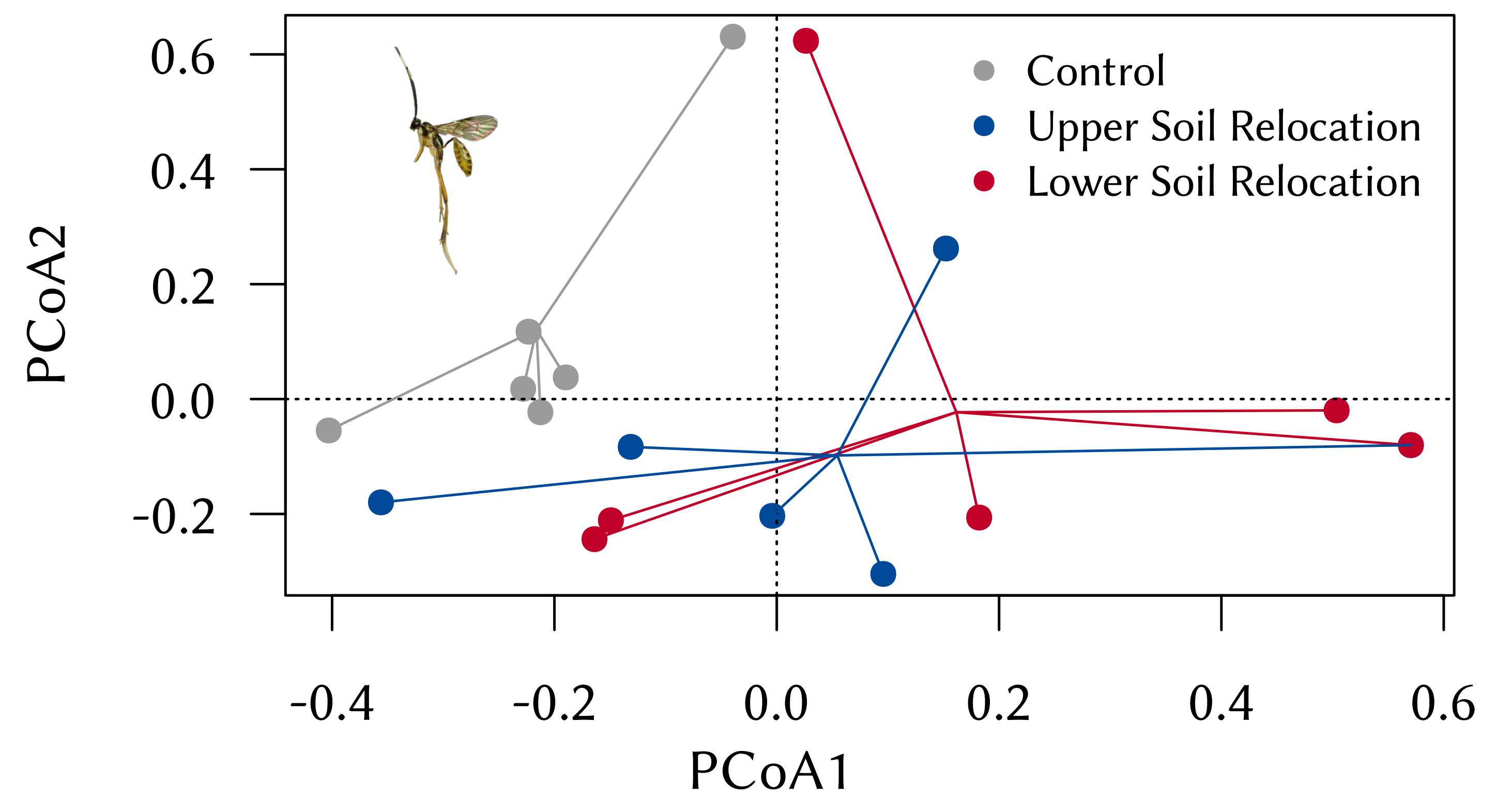


### Results

#### Abundance

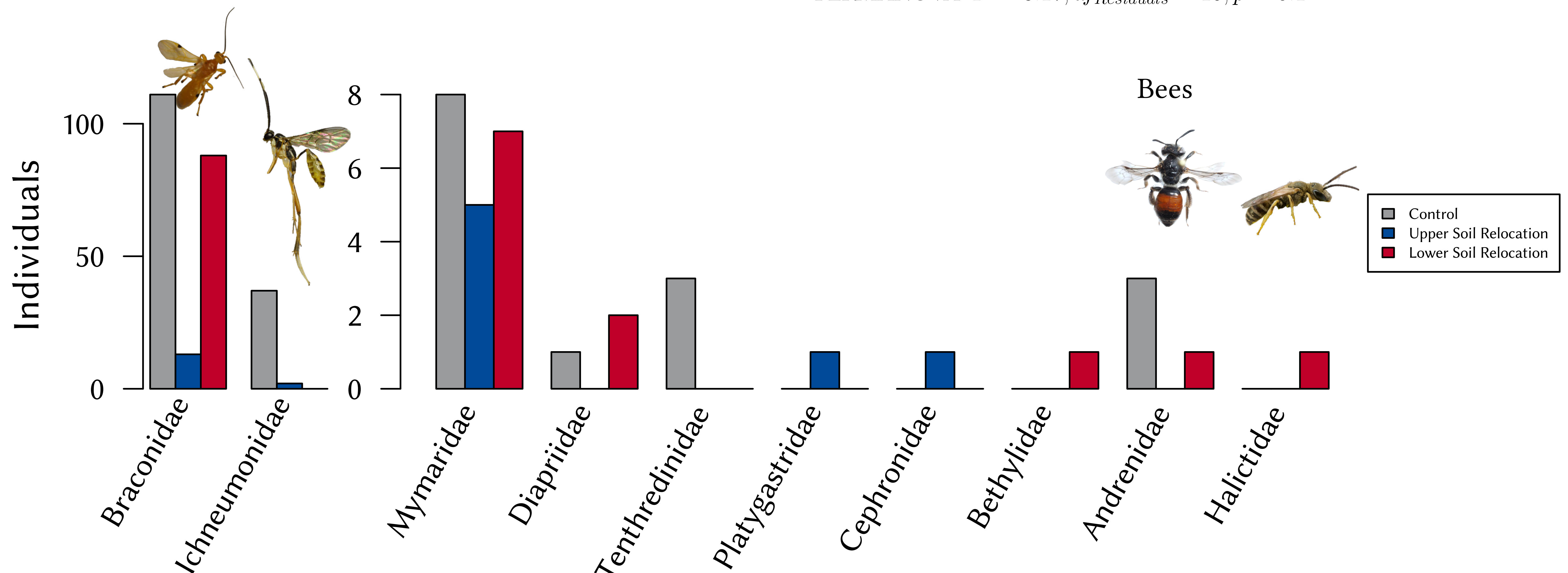


#### Community composition



Bees and wasps are less abundant in the relocated soils.  
ANOVA:  $F = 0.95$ ;  $df_{Residuals} = 15$ ;  $p = 0.4$

Community composition between control and relocated soils differ, mainly due to Ichneumonids. There is no difference in upper or lower soils.  
Multidimensional Scaling based on Bray-Curtis dissimilarity.  
PERMANOVA:  $F = 3.17$ ;  $df_{Residuals} = 15$ ;  $p = 0.1$



### Conclusions

- Bees and Wasps emerge from relocated soils, but appear to be less abundant and differ in community composition compared to the control.
- **Wasps** - mostly Braconids - may be successfully relocated with the lower soil. Ichneumonids were not successfully relocated.
- **Bees** did hardly emerge at all, though they were present and foraging in the control site. We need to improve trapping strategies.