

Group and colony dominance among invasive ants

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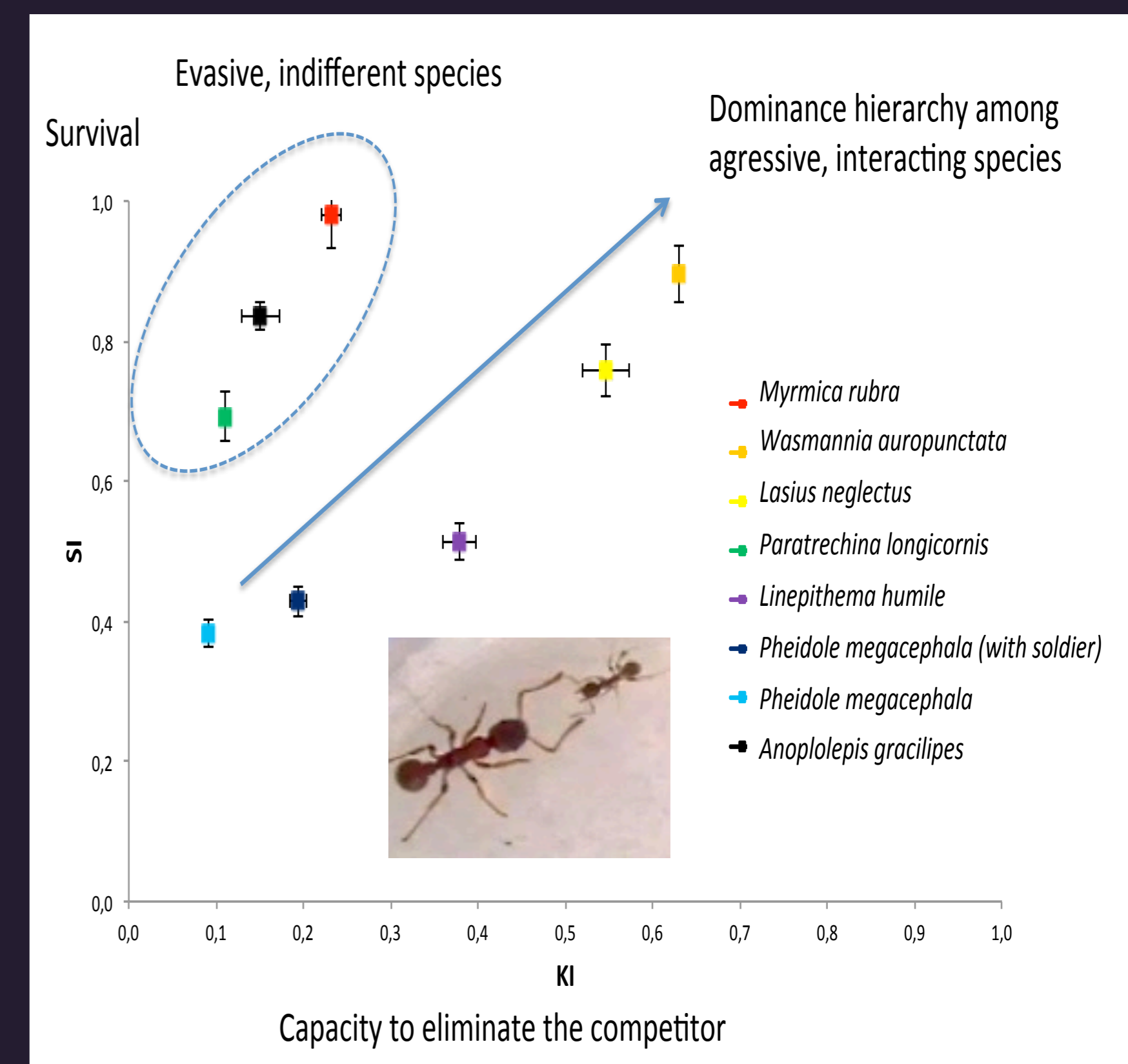


1. INTRODUCTION

- Invasive ants have enormous impacts on native fauna and flora. They impair many ecosystem processes, strongly affect biodiversity and cause major economic costs.
- All of these species alter communities of native species.
- Species distribution models suggest overlapping potential distributions of several invasive species. The question is: How would they interact?

2. Group interactions (10 vs 10 workers)

- Dyadic interactions among 7 species of invasive ants
- Filmed over 30 min, 10 replicates
- Summarized as a single survival and killing index
- 2 behavioural strategies: evasive & aggressive
- Linear hierarchy among 4 species: *Wasmannia auropunctata* > *Lasius neglectus* > *Linepithema humile* > *Pheidole megacephala*
- We chose these 4 species to carry out colony interaction experiments



3. Colony interactions

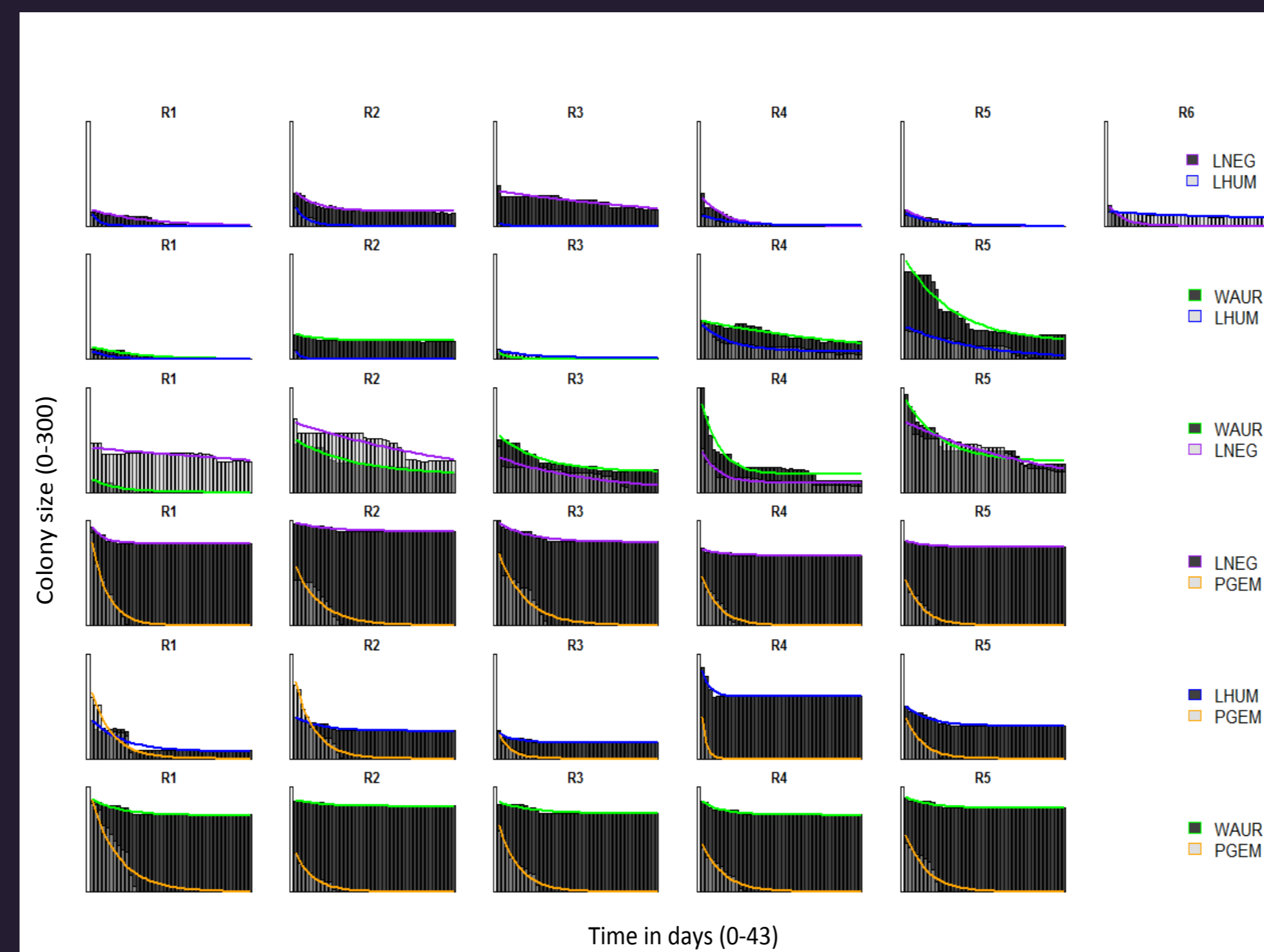
Species A Nests Species B

Li. humile *La. neglectus*

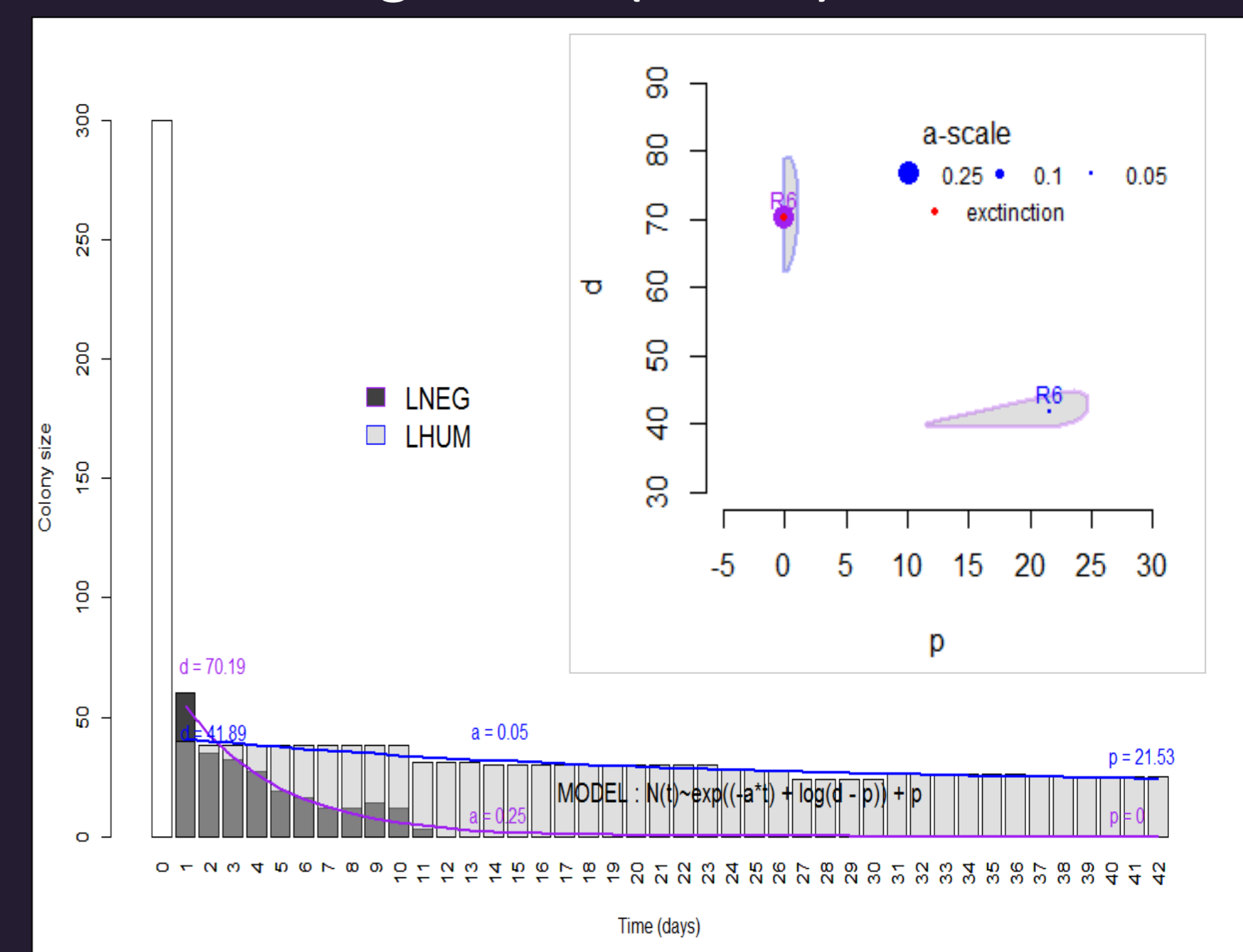
P. megacephala *W. auropunctata*

- 300 workers + Queen per colony
- Recorded mortality over 42 consecutive days
- 5 replicates per interaction
- In total: 30 pairs of colonies

- Survival of all 30 colony pairs
- Non-linear survival model for each colony.



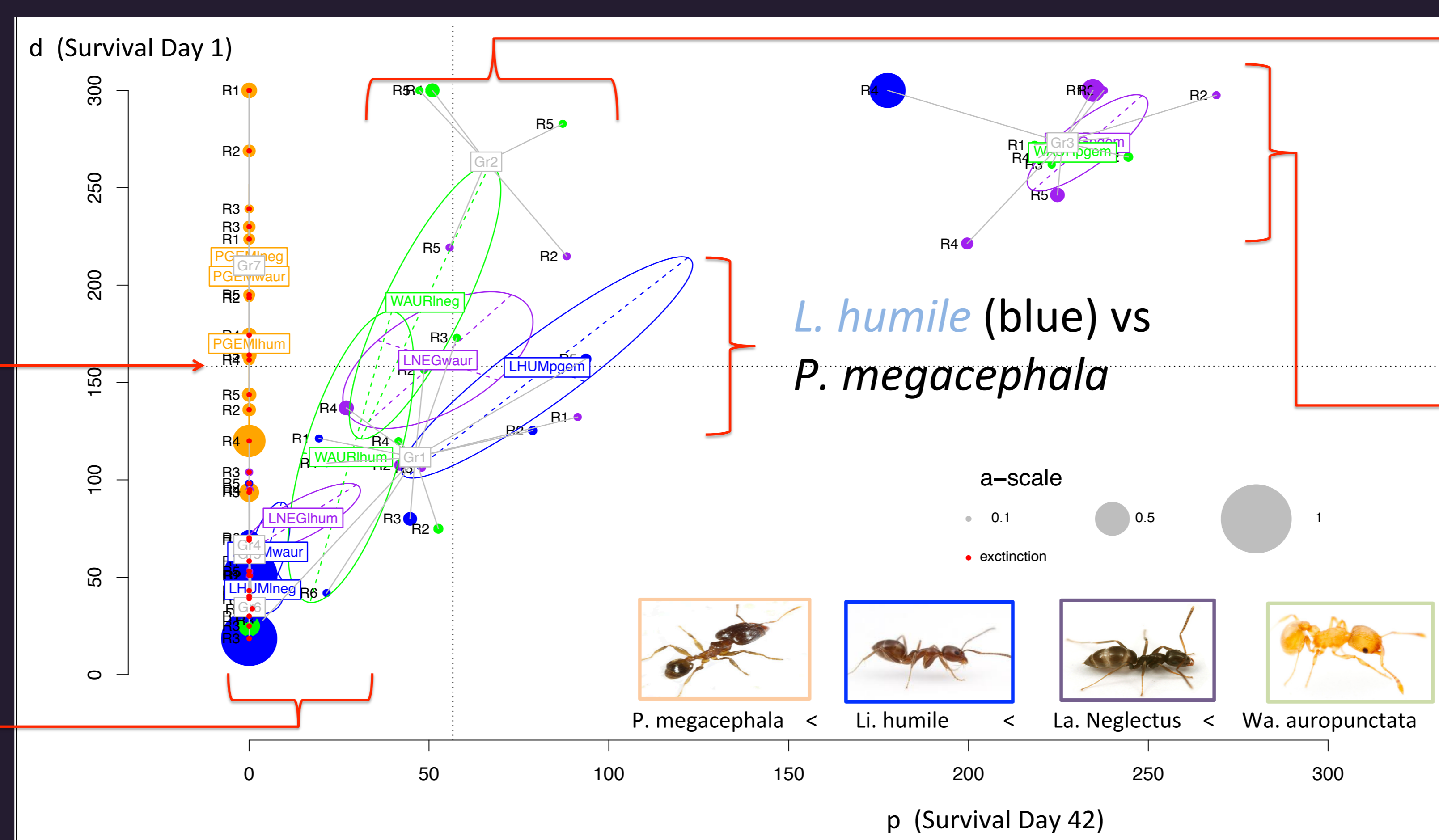
- Estimated parameters for each colony can be represented in parameter space.
- Here: Example with *Li. humile* (LHUM) and *La. neglectus* (LNEG)



Representation of all 60 colonies in parameter space

P. megacephala colonies (yellow) vs all others. The final survival (p) is always 0. All colonies went extinct, although the survival at day 1 of the confrontation (d) was high.

Li. humile (blue) vs *W. auropunctata* & *La. neglectus*



La. neglectus (purple) vs *Wa. auropunctata* (green). Great variability, intermediate survival.

La. neglectus / *Wa. auropunctata* vs *P. megacephala*: High initial survival (d), high final survival (p) of all colonies.

4. CONCLUSIONS

- 2 behavioural strategies among 7 invasive ant species: Evasive and aggressive.
- Same overall hierarchy among 4 aggressive species in group and colony interactions
- But many exceptions at colony level
- Additional level of complexity, different processes leading to extinction events in colony interactions