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Ecological restoration following the local eradication of an invasive ant in northern Australia

Hoffmann BD (2010) Biological Invasions

Ben Hoffmann

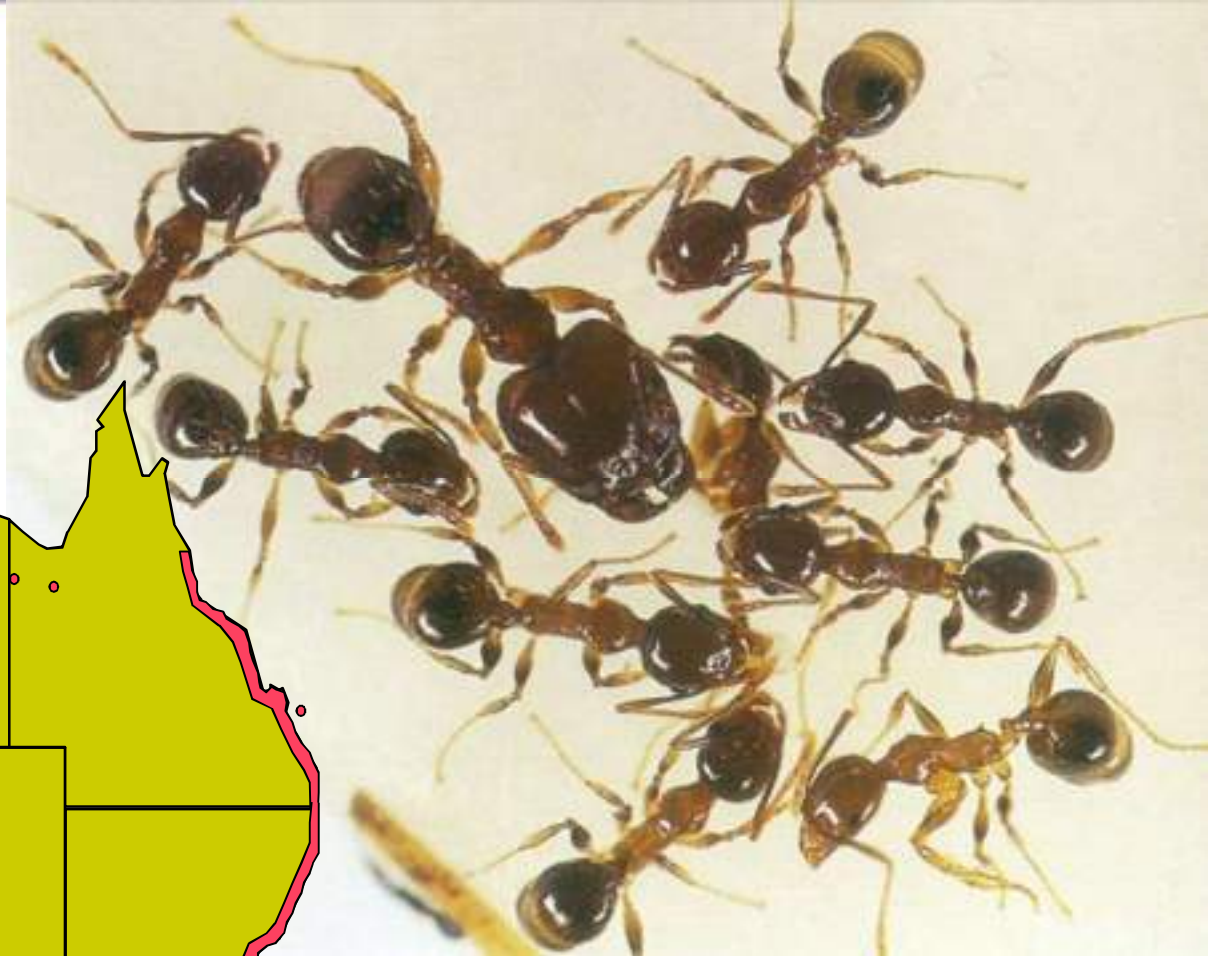
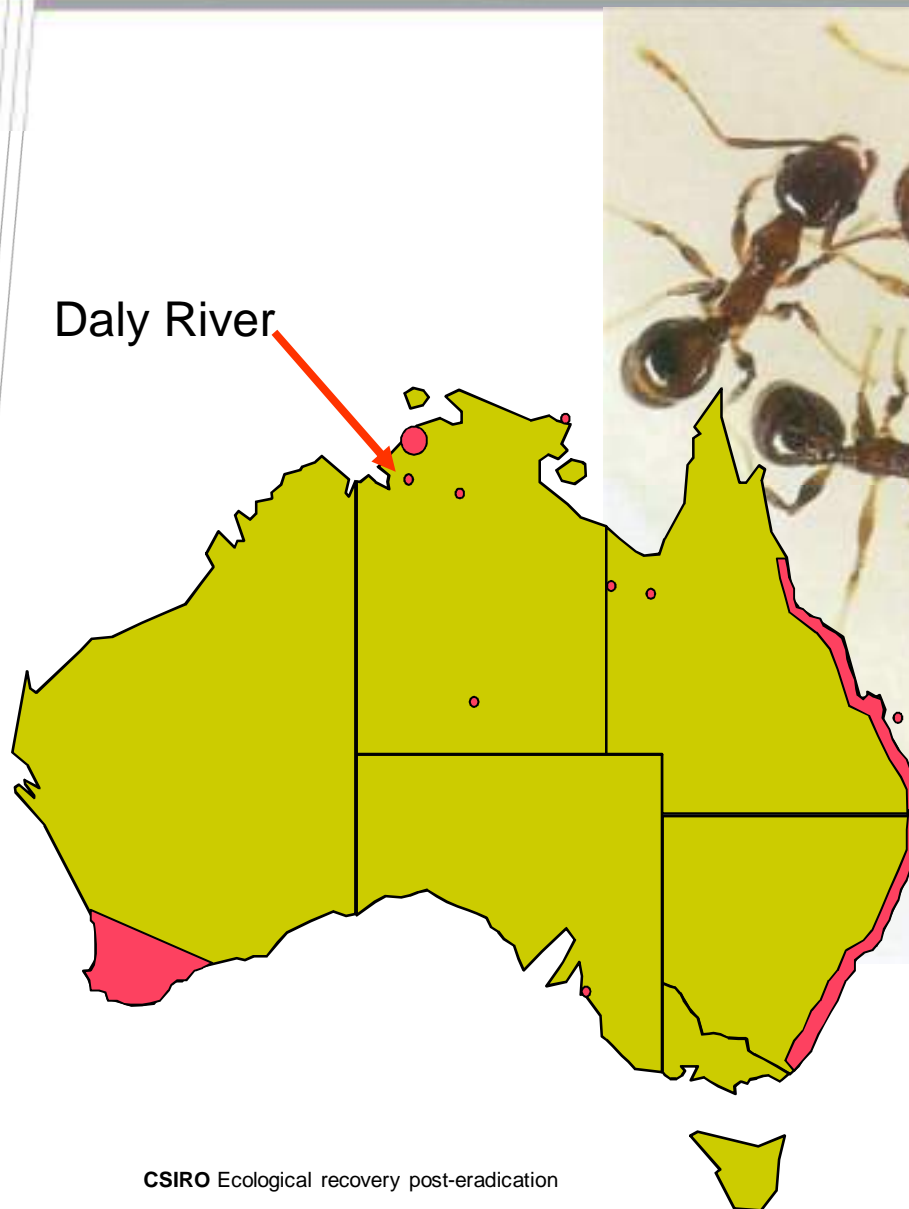
CSIRO Sustainable Ecosystems, Darwin

Focus not rehabilitation

- **Projects focus on non-target impacts**
- **Environmental rehabilitation should be a focus**



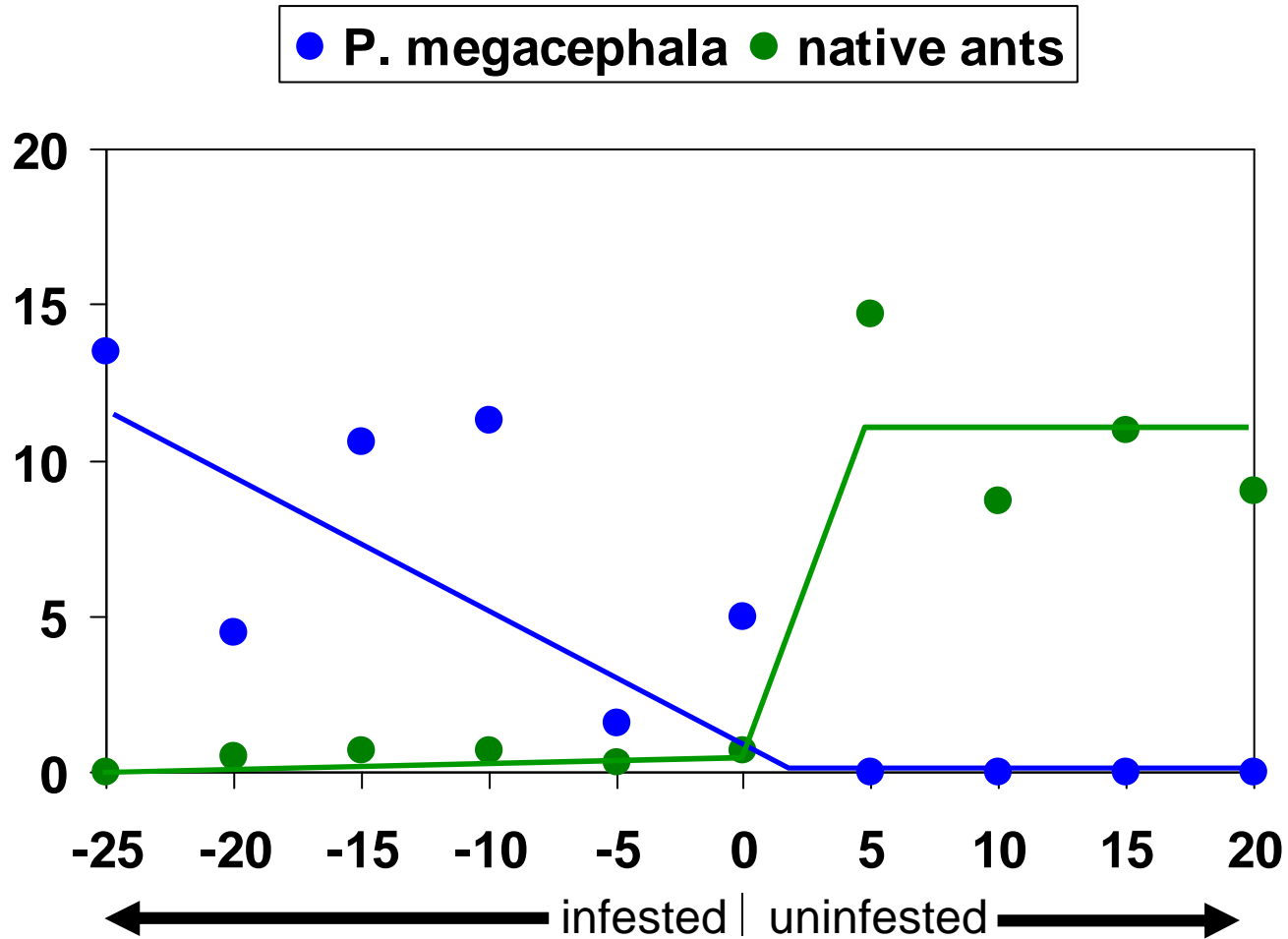
African big-headed ant



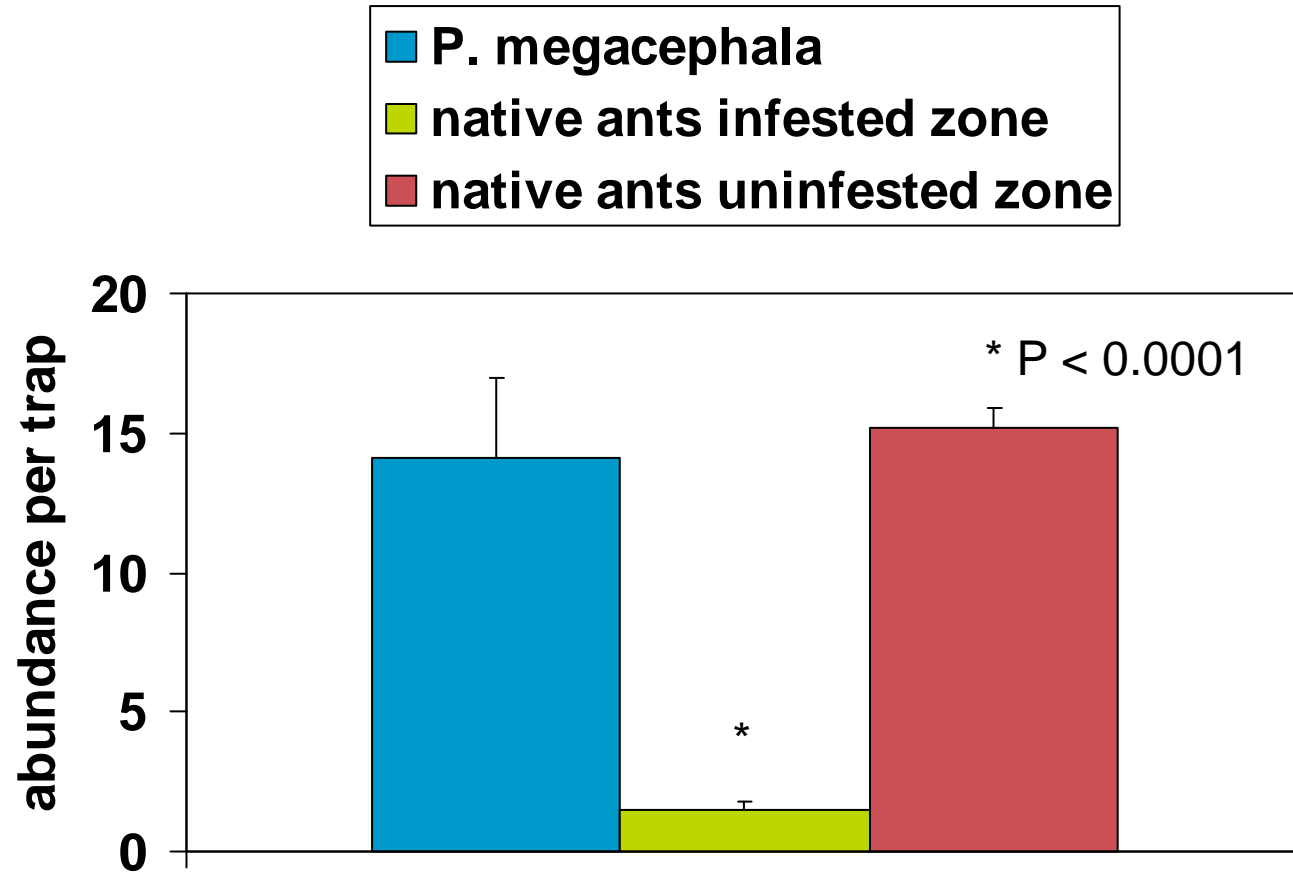
Daly River site (5 ha)



Ecological impacts pre-treatment - transects



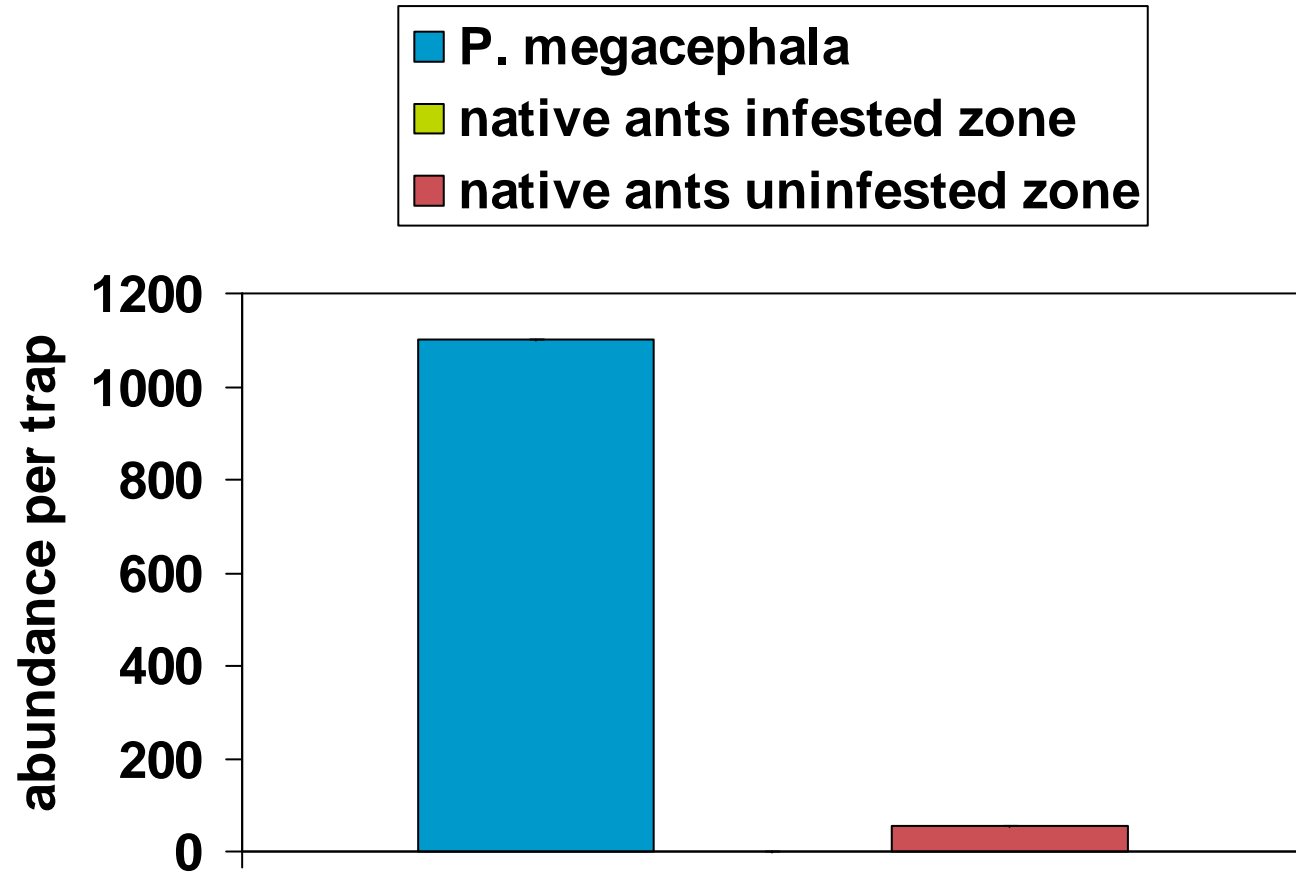
Ecological impacts pre-treatment – pitfall traps



Slide 6

hof036 1 impacts are clear, but surprisingly pmeg abundance indifferent from native ant abundance within uninfested area:
Hoffmann, Ben (CSE, Darwin), 8/26/2009

Ecological impacts at Howard Springs



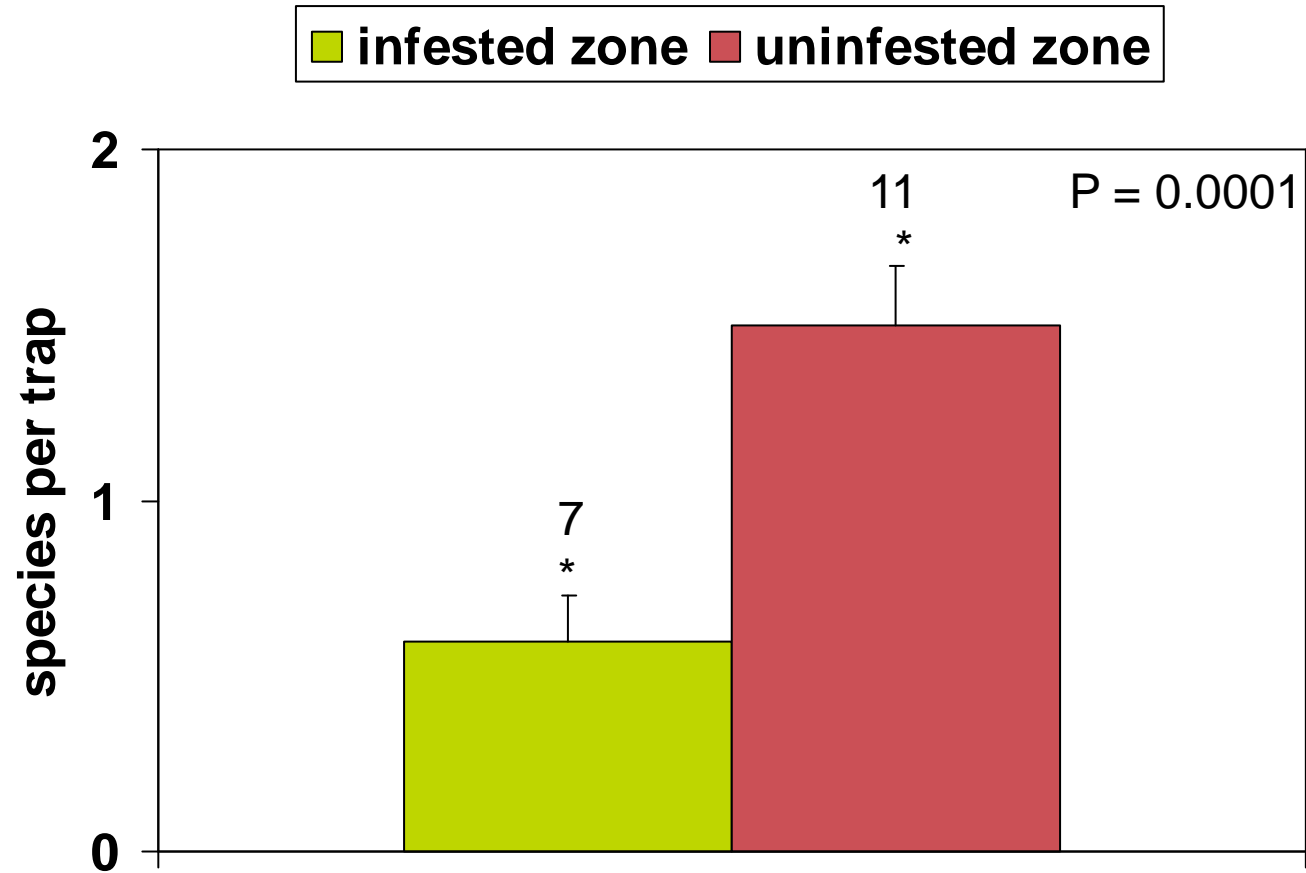
Hoffmann et al. (1999) Oecologia

Slide 7

hof036 2 in comparison, up to 110 fold increase in pmeg abund relative to native ant natural abundance levels, and almost negligible native ants in infested zone

Hoffmann, Ben (CSE, Darwin), 8/26/2009

Ecological impacts pre-treatment – pitfall traps



Slide 8

hof036 3 in comparison, up to 110 fold increase in pmeg abund relative to native ant natural abundance levels, and almost negligible native ants in infested zone

Hoffmann, Ben (CSE, Darwin), 8/26/2009

Treatment



Eradication assessment – 12 months post-treatment

16,407 lures = 1 lure per 2.9m²

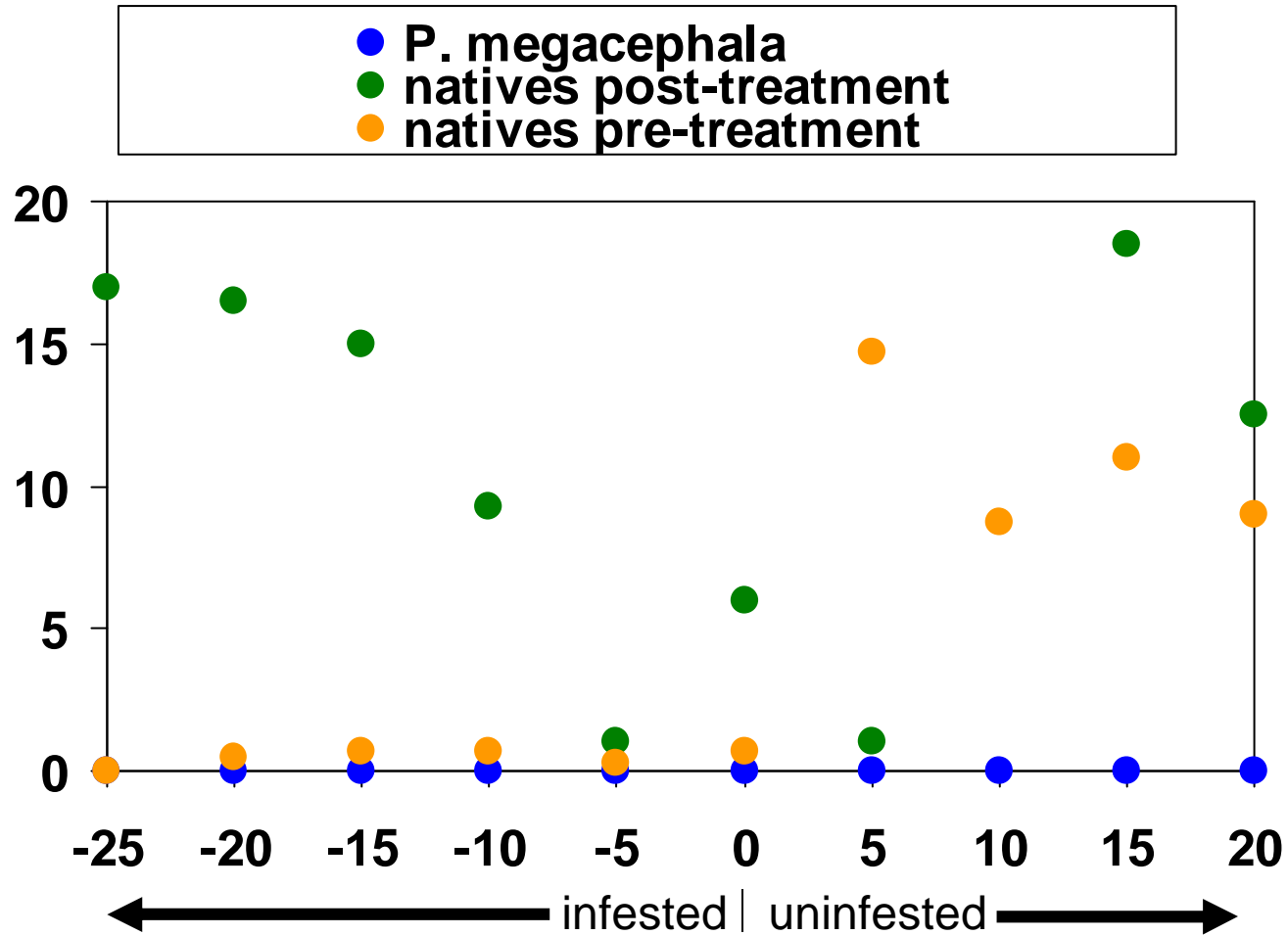


Eradication assessment – 24 months and beyond

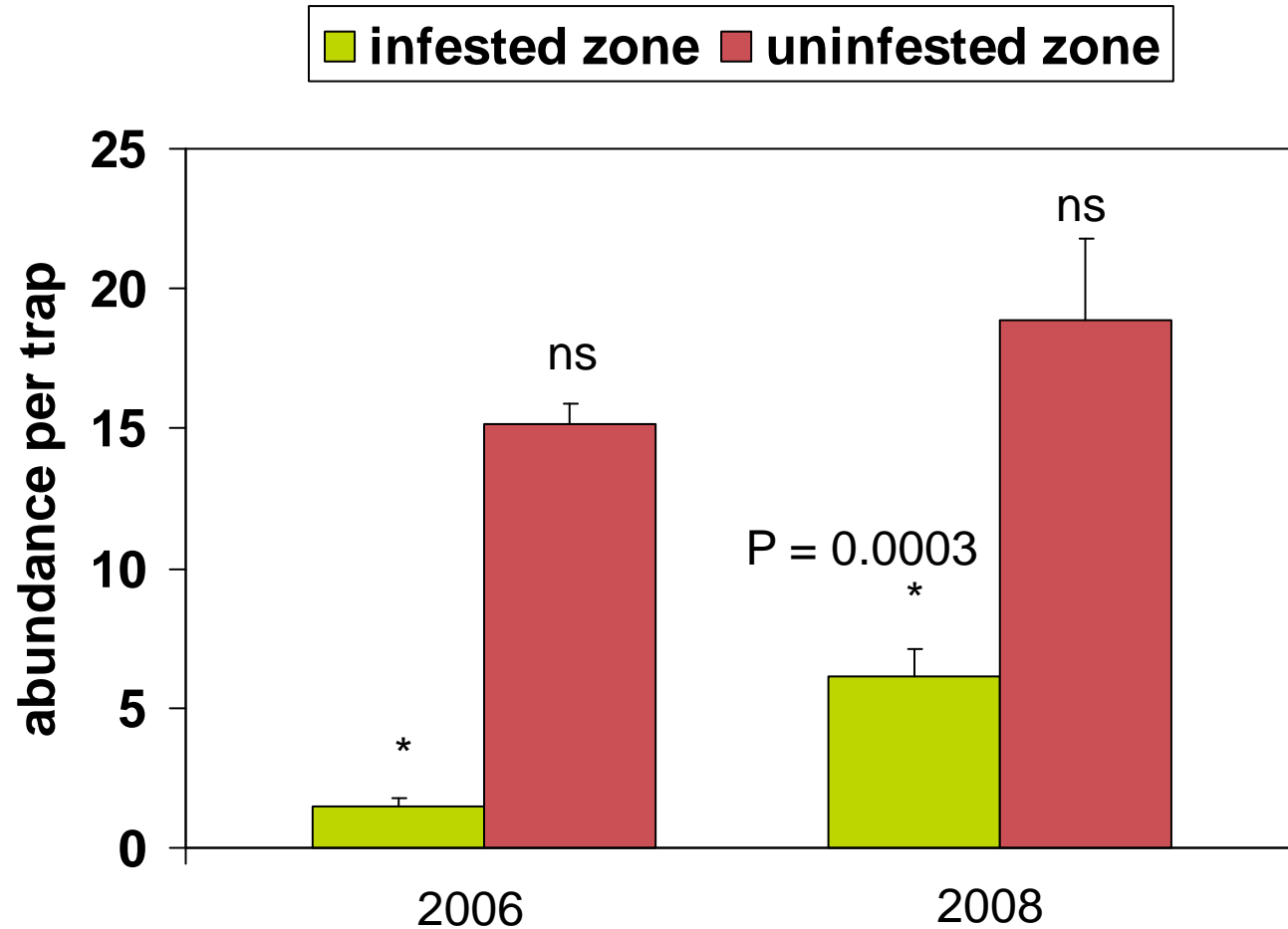
- Re-survey of ecological impacts study (transects & grids)
- 41 lure plots
- Visual observation
- Active surveillance part of on-going management

No *P. megacephala* seen for 2 years = eradicated

Post-treatment recovery - abundance



Post-treatment recovery – pitfall traps

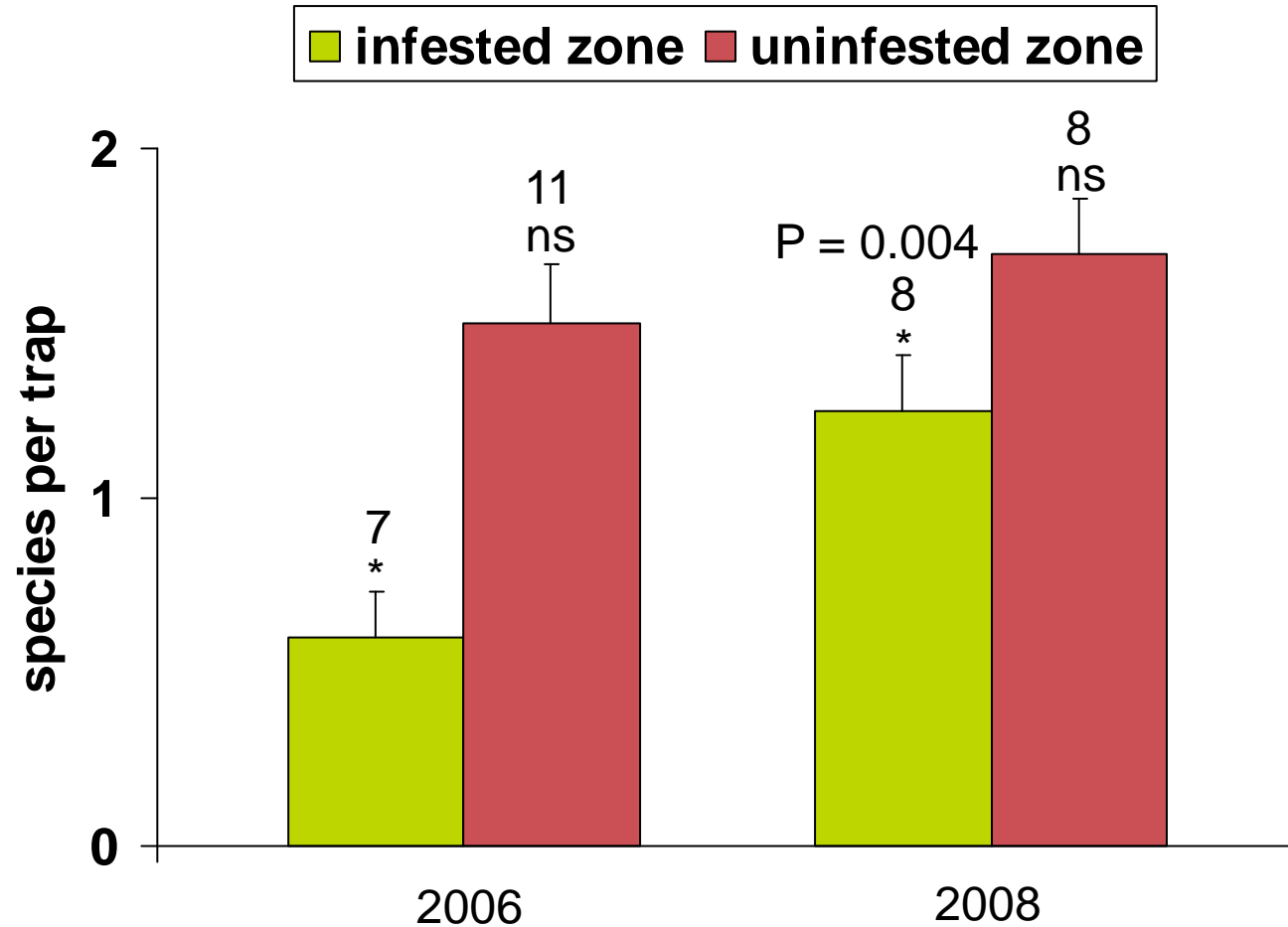


Slide 13

hof036 5 in comparison, up to 110 fold increase in pmeg abund relative to native ant natural abundance levels, and almost negligible native ants in infested zone

Hoffmann, Ben (CSE, Darwin), 8/26/2009

Post-treatment recovery - Species richness

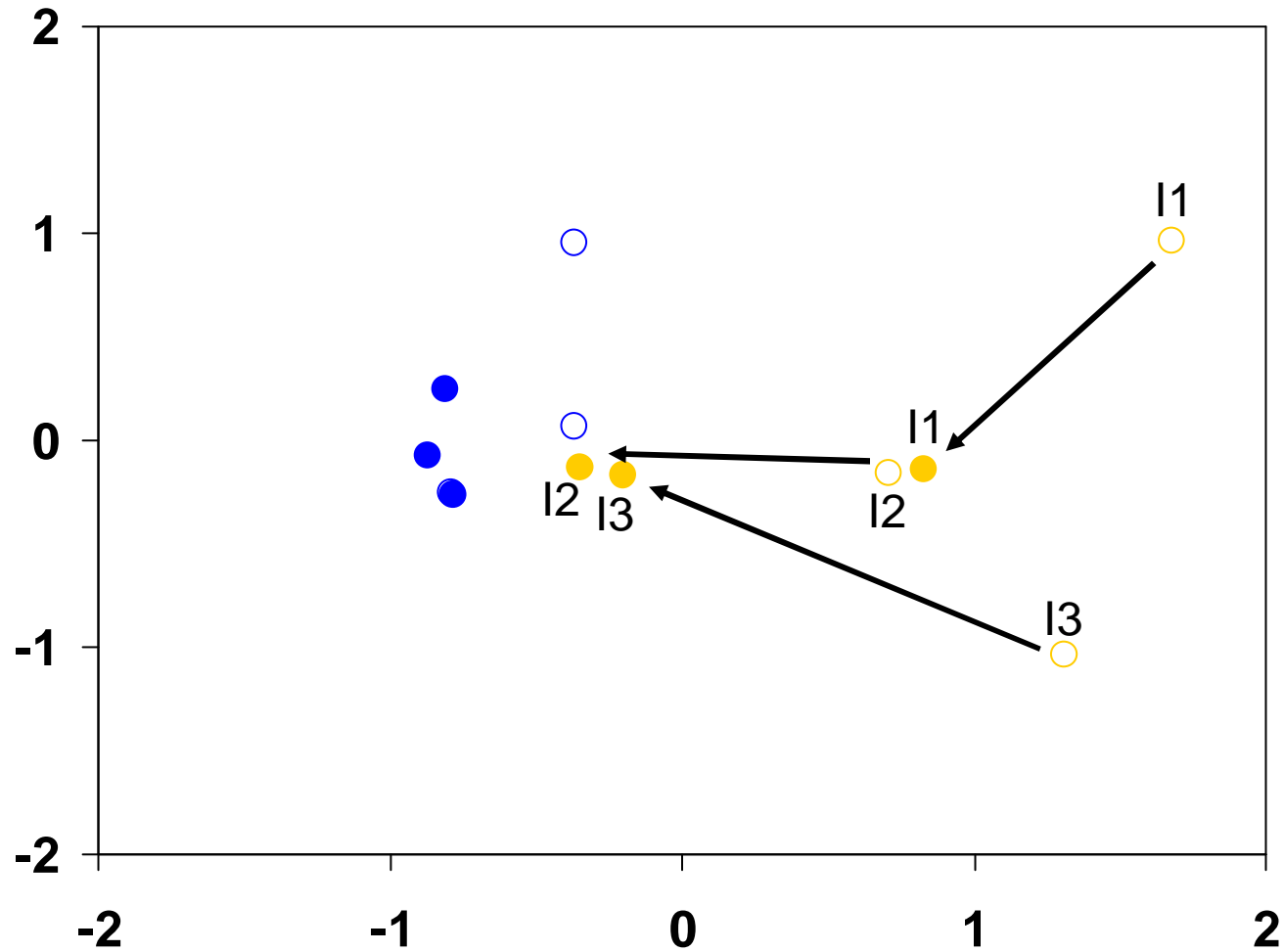


Slide 14

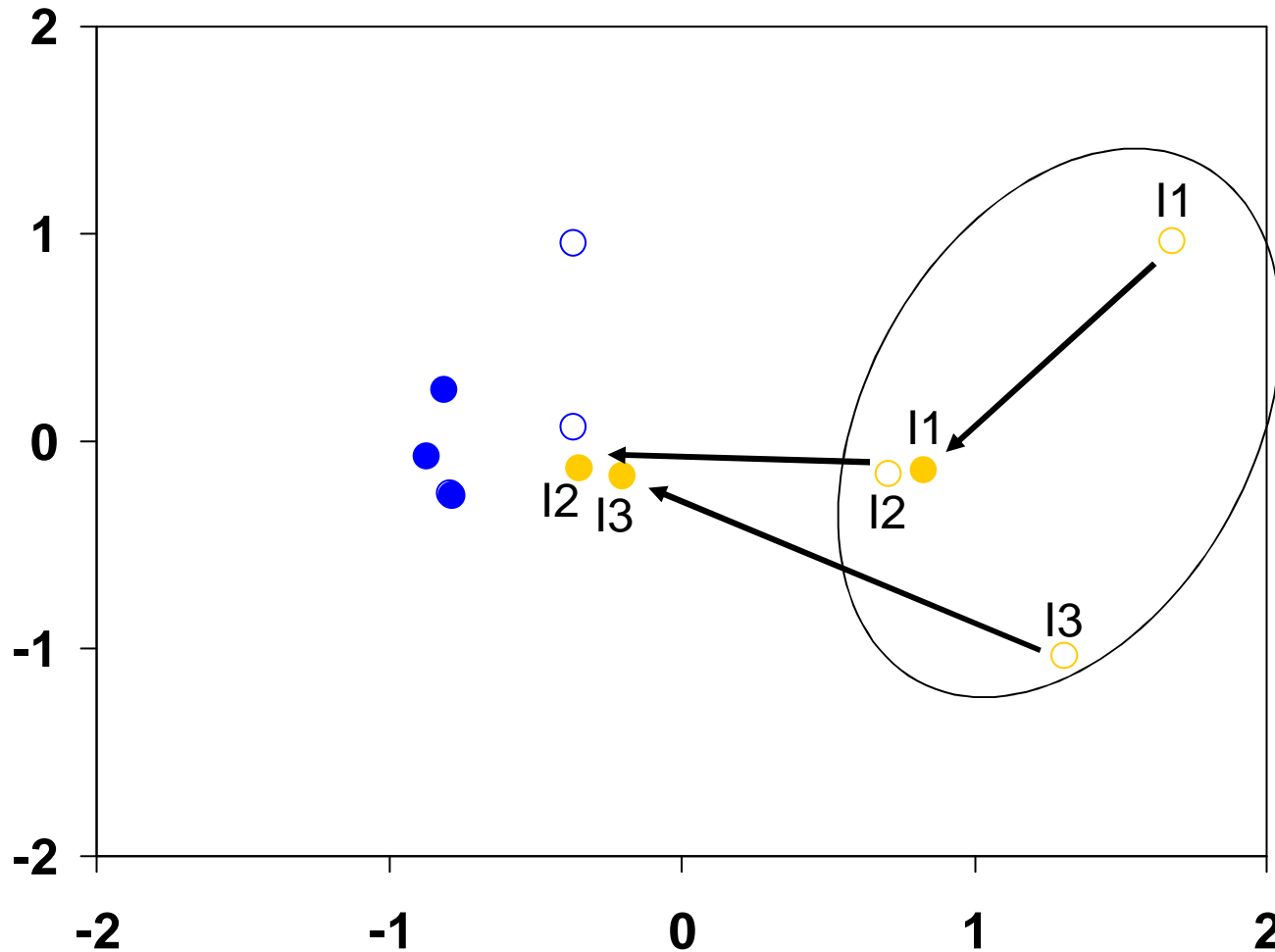
hof036 4 in comparison, up to 110 fold increase in pmeg abund relative to native ant natural abundance levels, and almost negligible native ants in infested zone

Hoffmann, Ben (CSE, Darwin), 8/26/2009

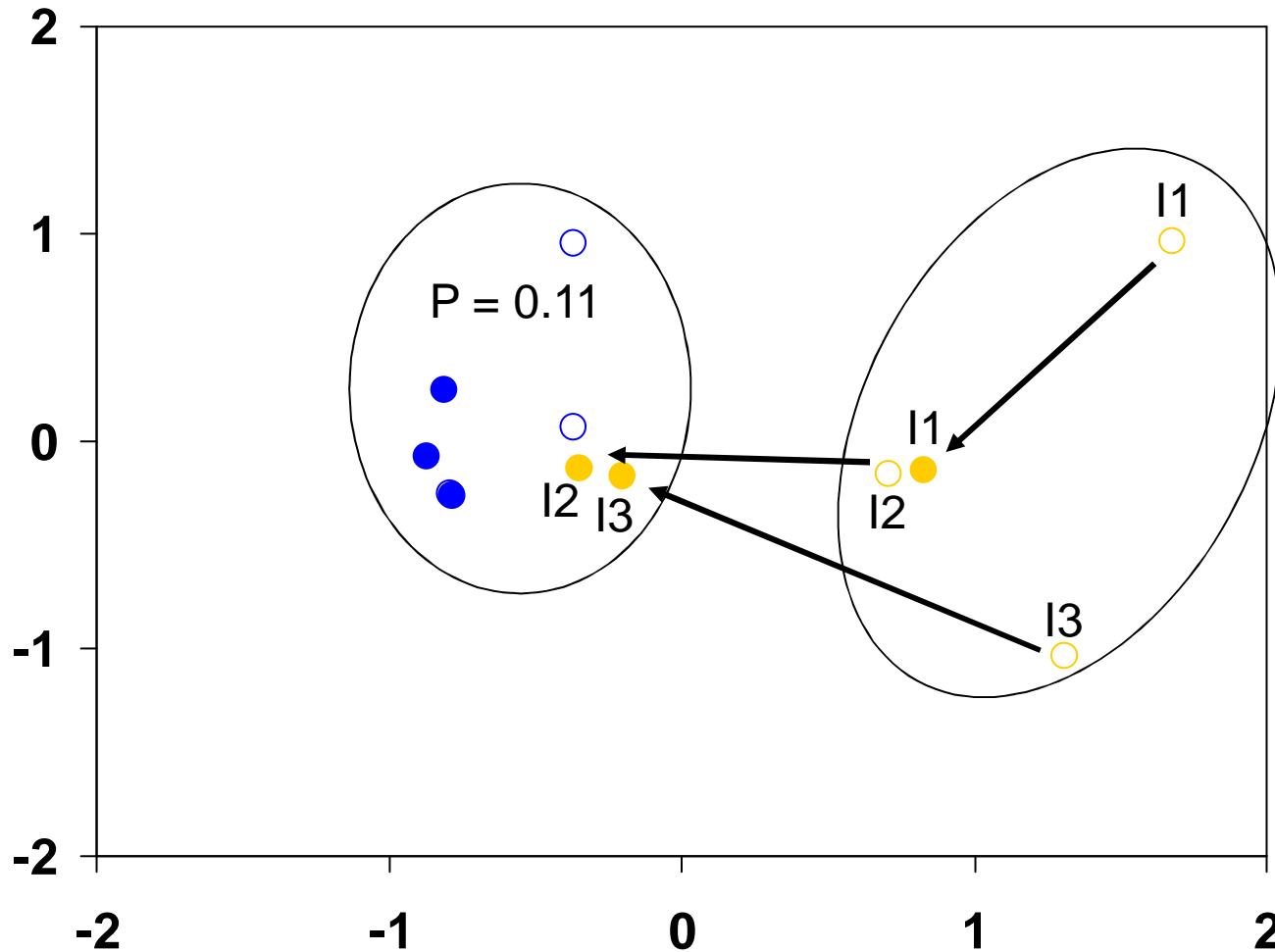
Post-treatment recovery – community structure



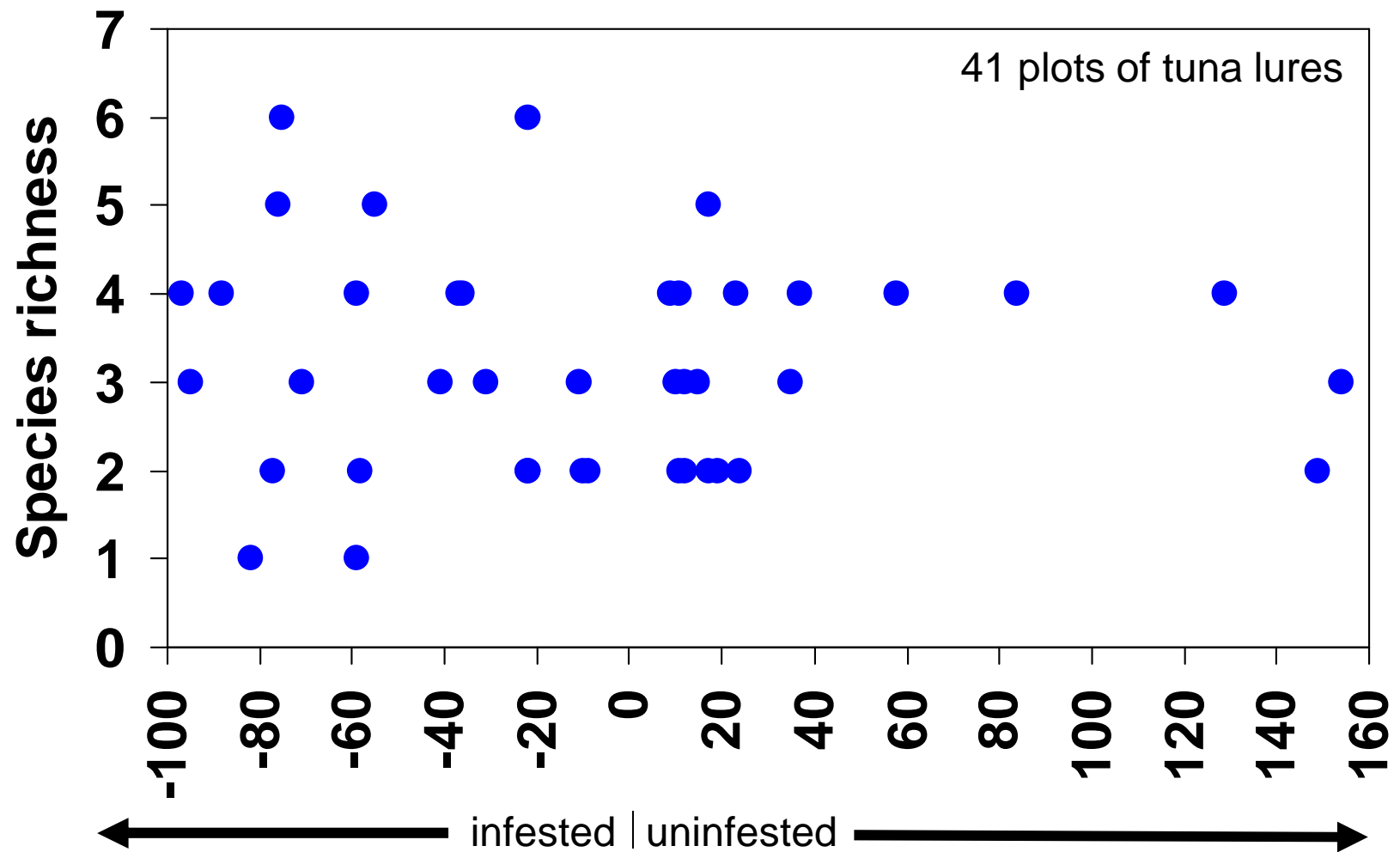
Post-treatment recovery – community structure



Post-treatment recovery – community structure



Post-treatment recovery – species richness



Conclusions

- **P. megacephala declared eradicated**
- **Native ant abundance approaching non-treated levels**
- **Species richness at non-treated levels**
- **Ant community structure indifferent from non-treated areas**
- **This system at threshold of full ecological recovery**
- **Ecological restoration should become a greater focus of eradication programs**

Post-treatment recovery, NE Arnhem Land

