



Indirect effects of mammalian herbivore exclusion on ant assemblages

Sithole, H¹, Parr, CL², Andersen, AN³ & Fisher, A⁴

1South African National Parks

2Oxford University Centre for the Environment

3Tropical Savannas Cooperative Research Centre, CSIRO Tropical Ecosystems Research

4Tropical Savannas Cooperative Research Centre, Biodiversity Unit

Introduction

- **Exclusion of large mammalian herbivores influence:**
 - **vegetation structure** (Schulz & Leininger, 1990)
 - **modify nitrogen cycling** (Sirotnak & Huntly, 2000)
- **Disrupt ant-plant mutualisms** (Plamer *et al.* 2008).
- **Aim: Determine if exclusion of large mammalian herbivores in Nkhuhlu has indirectly affected ant diversity and composition.**
 - Compare ground cover and ant diversity results of 2003; 2005 & 2009.



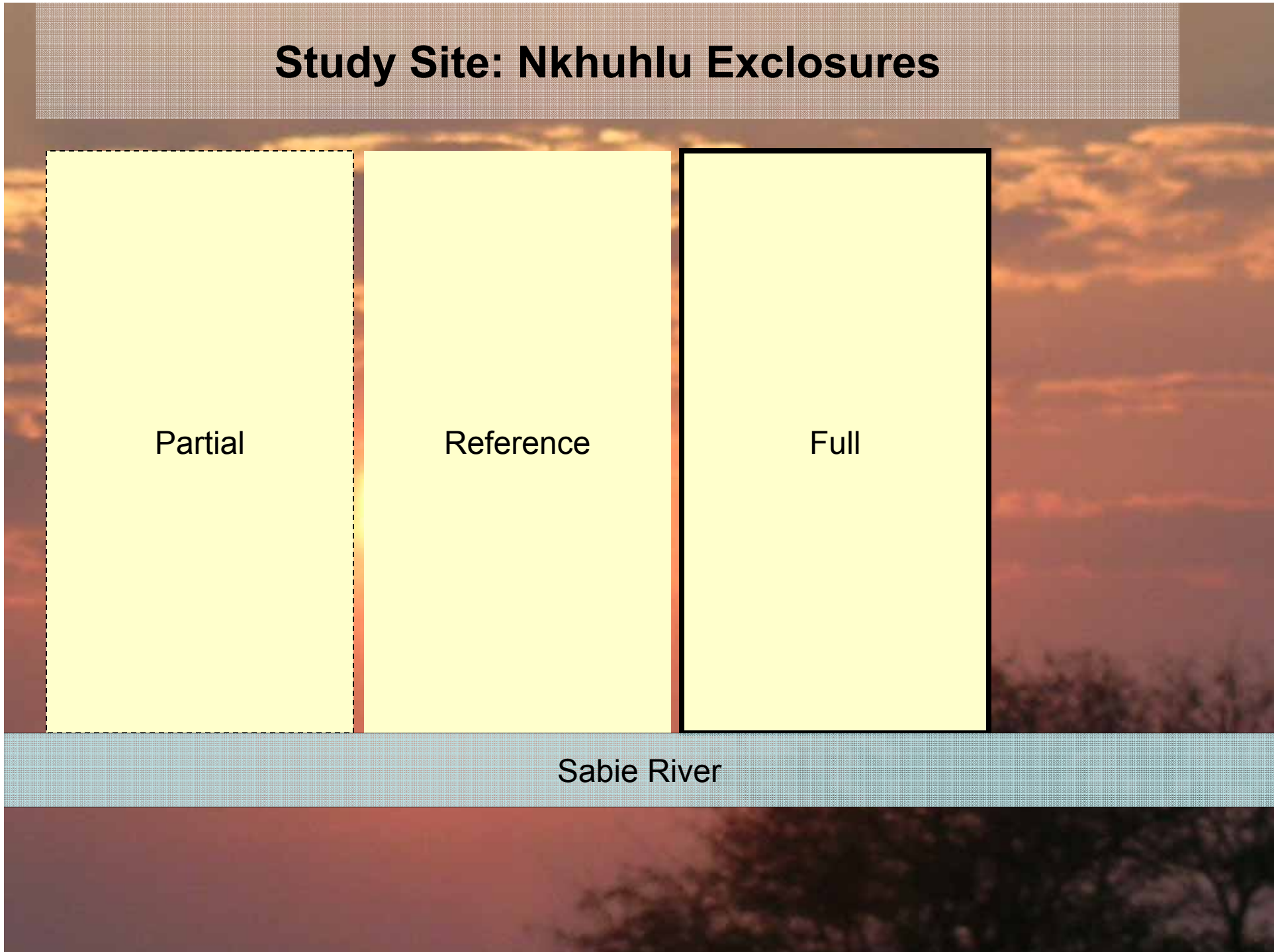
Study Site: Nkhuhlu Exclosures

Partial

Reference

Full

Sabie River



2003



2003



Study Site: Nkhuhlu Enclosures

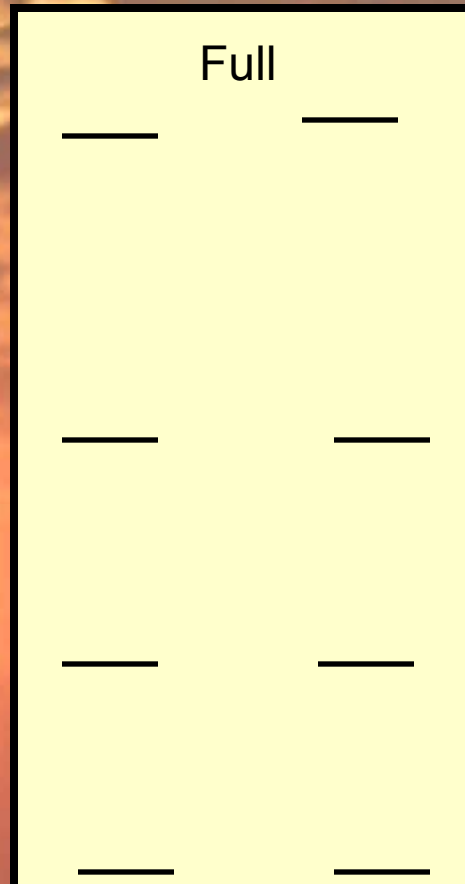
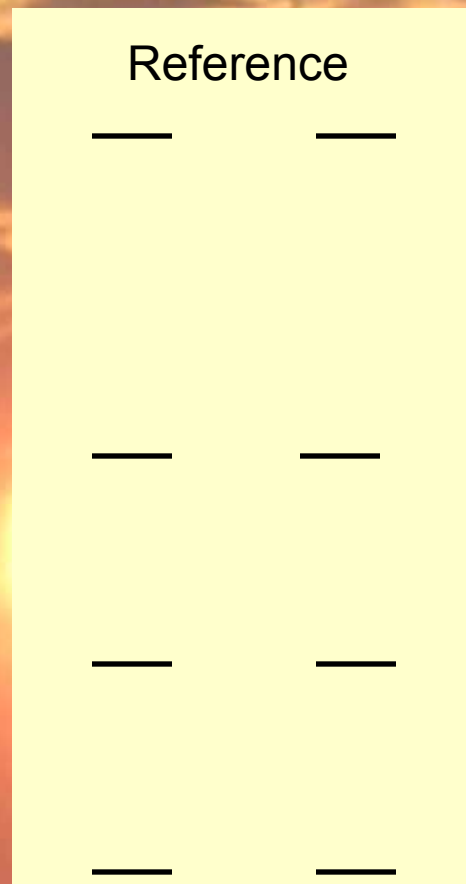
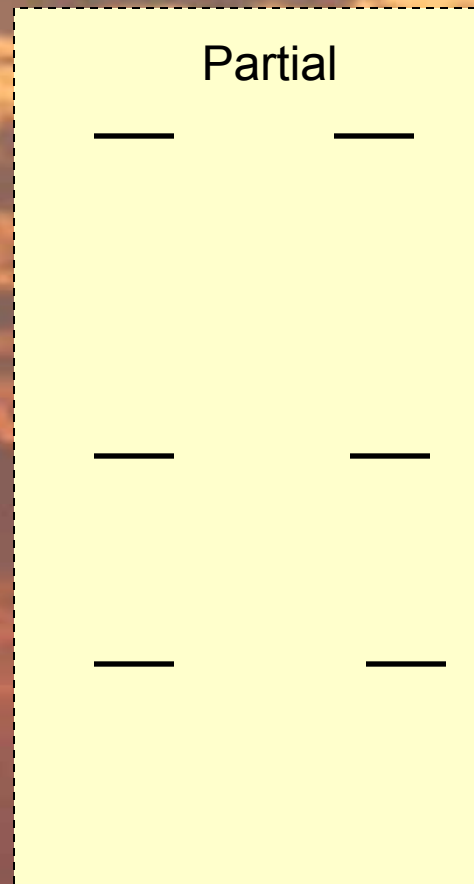
2009



2009



Study Site: Nkhuhlu Exclosures



Crests

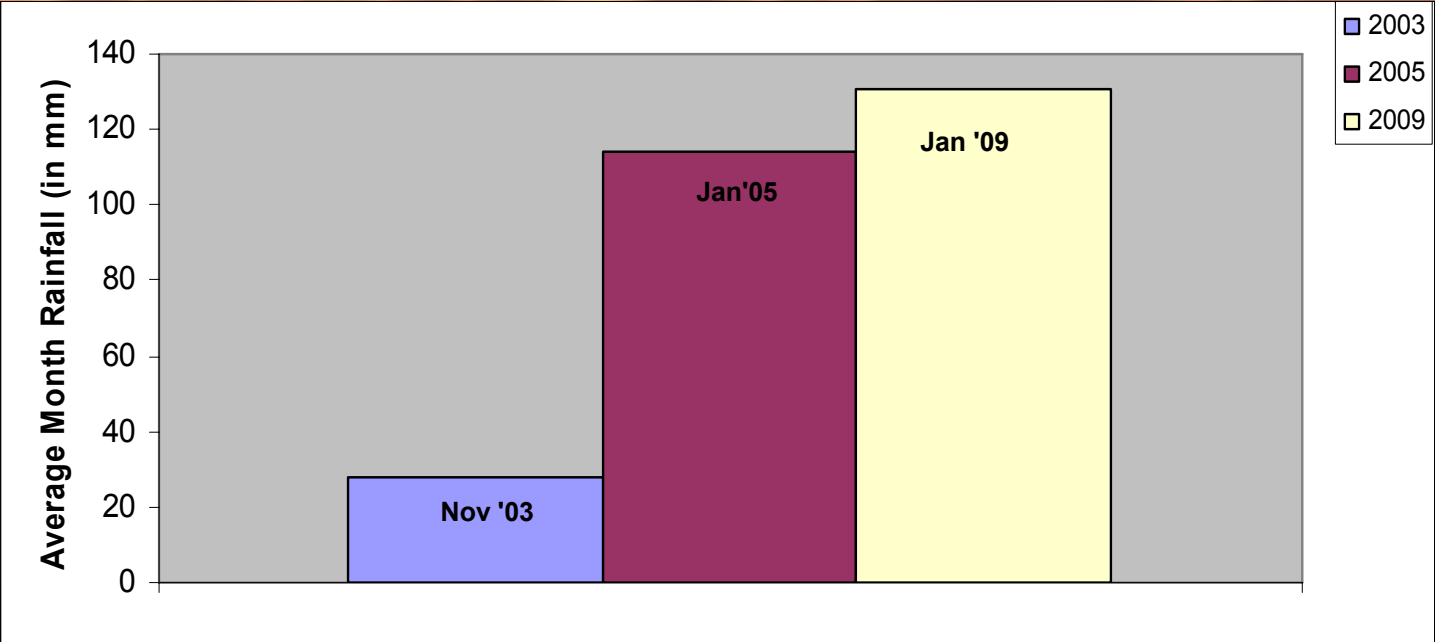
Slopes

Sodic

Riverine

Sabie River

Rainfall Condition



Sampling Methods: Ants



- Pitfall trapping at main catenal positions
 - 20 traps per grid
- Open for a week



Sampling Methods: Vegetation Ground Cover



- **1m² quadrat at main catenal positions**
 - At each trap
- **Sampling % cover:**
 - Bare ground, Grass
 - Forbs, Litter, Wood

- **Sampling periods:**
 - » **Winter 2003; Summer 2003**
 - » **Winter 2004; Summer 2005; Summer 2009**
- **Ants active more during summer**
 - » **Sample mostly in summer**



Results

Partial

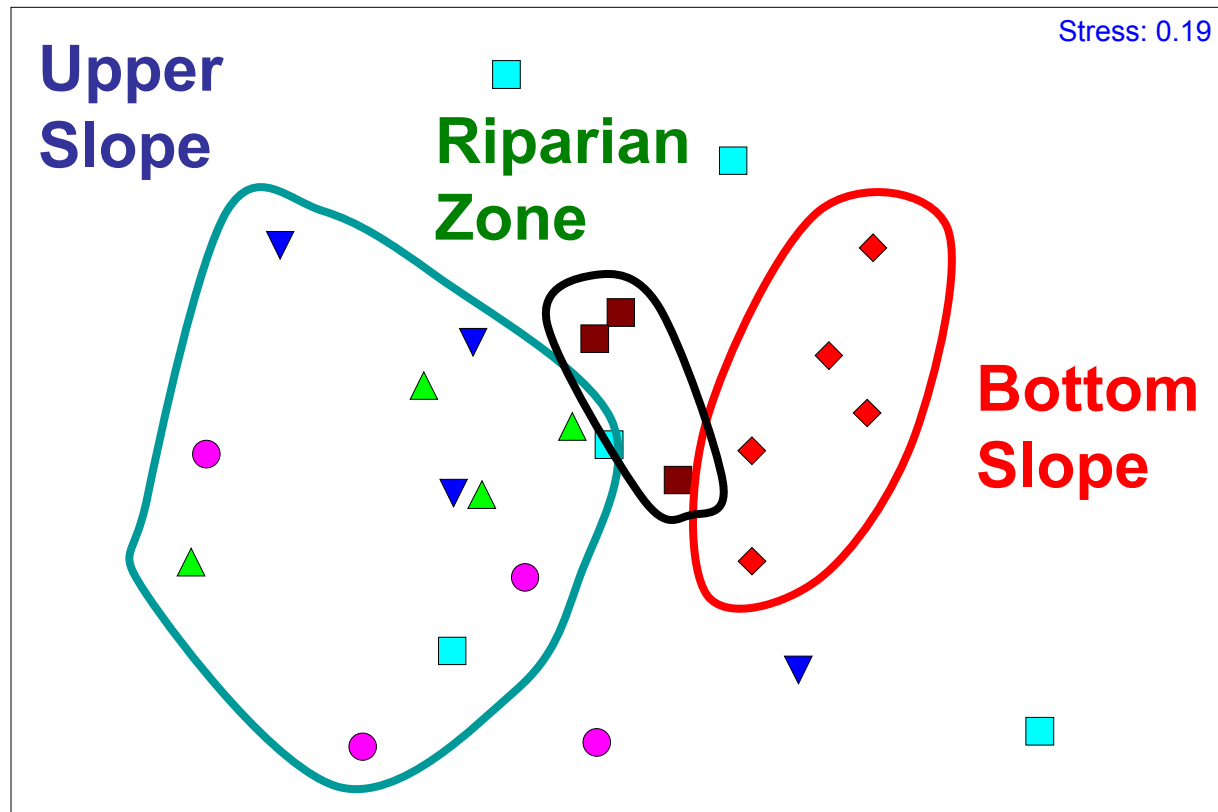
Reference

Full

Sabie River

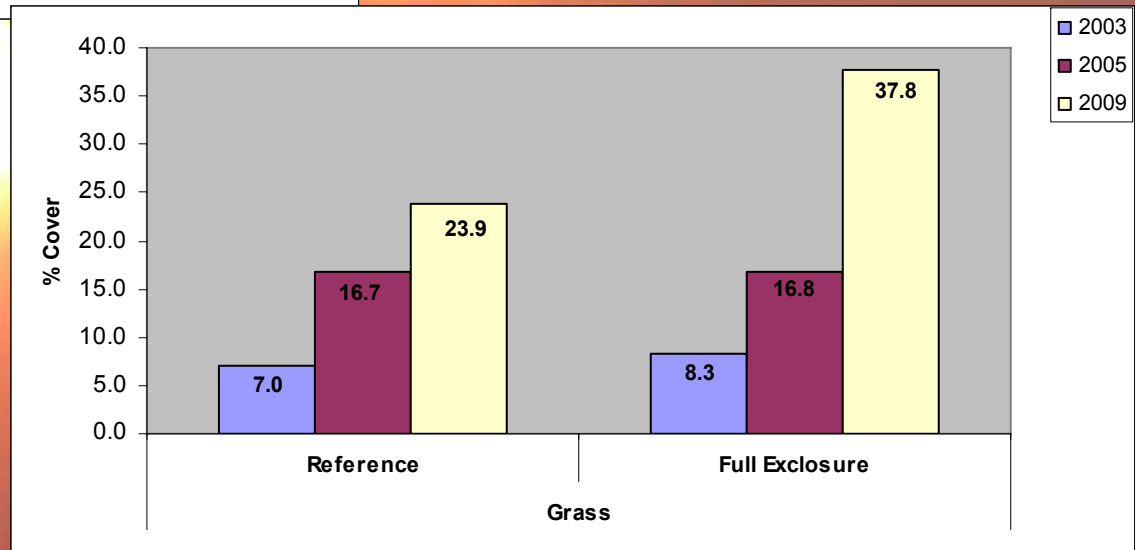
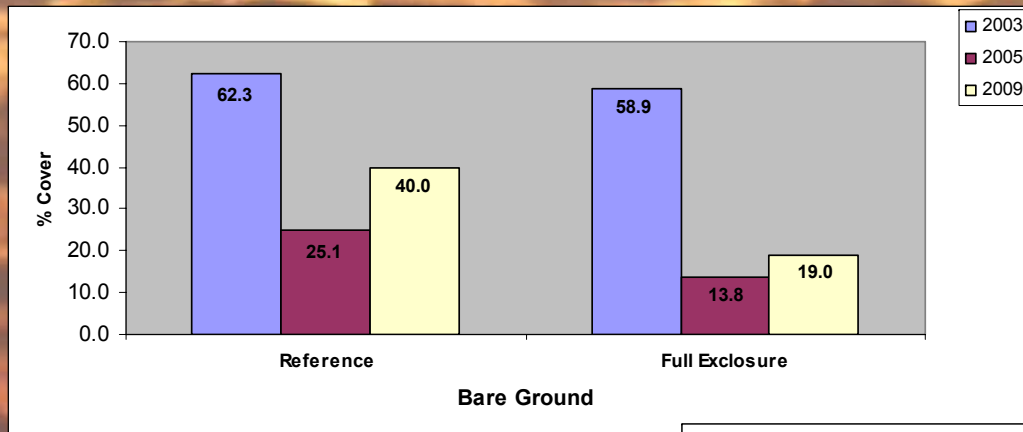


Results: Ordination of sites by species

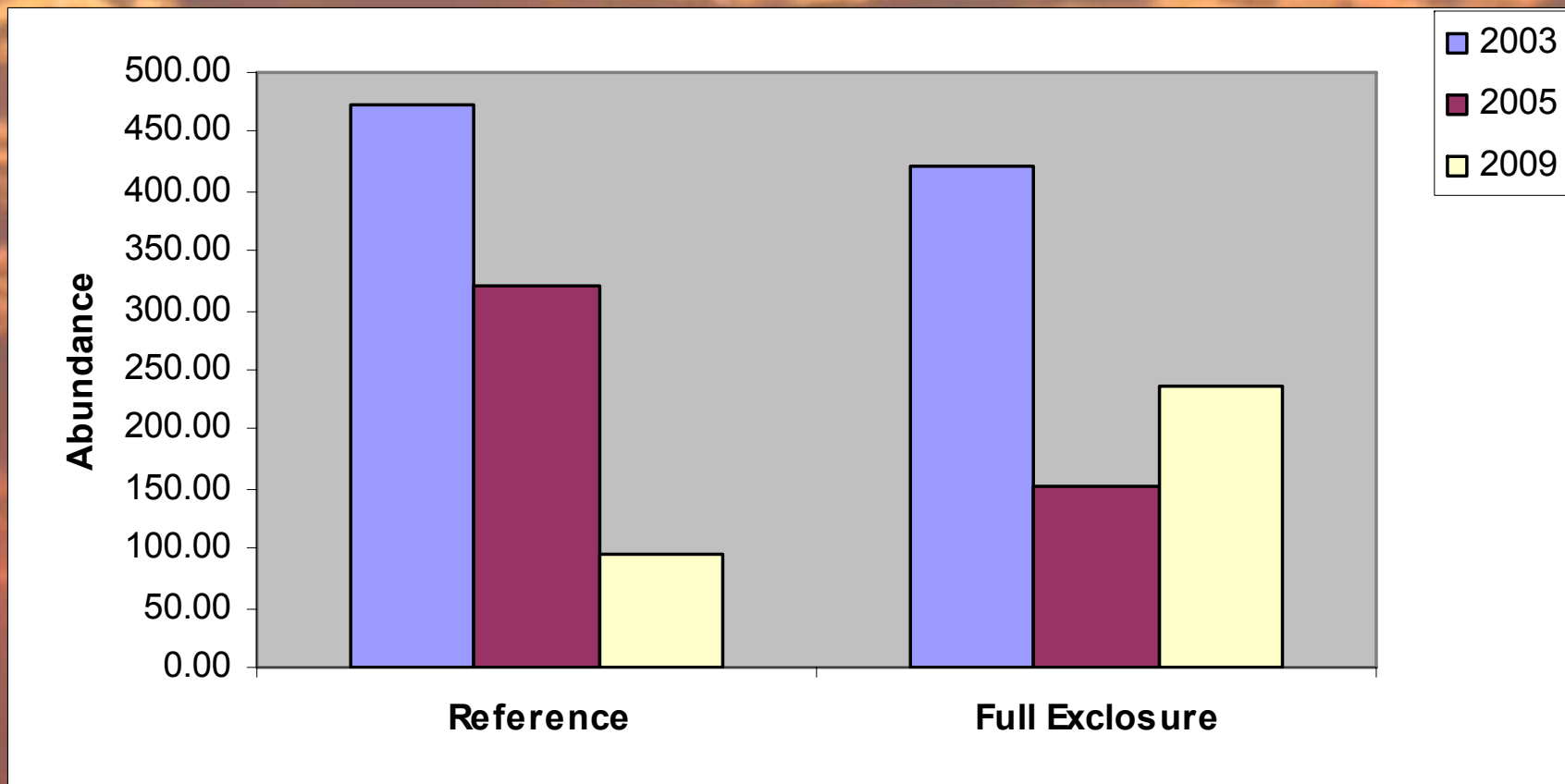


- ▲ CR
- US
- ▼ MS
- LS
- ◆ BS
- DR

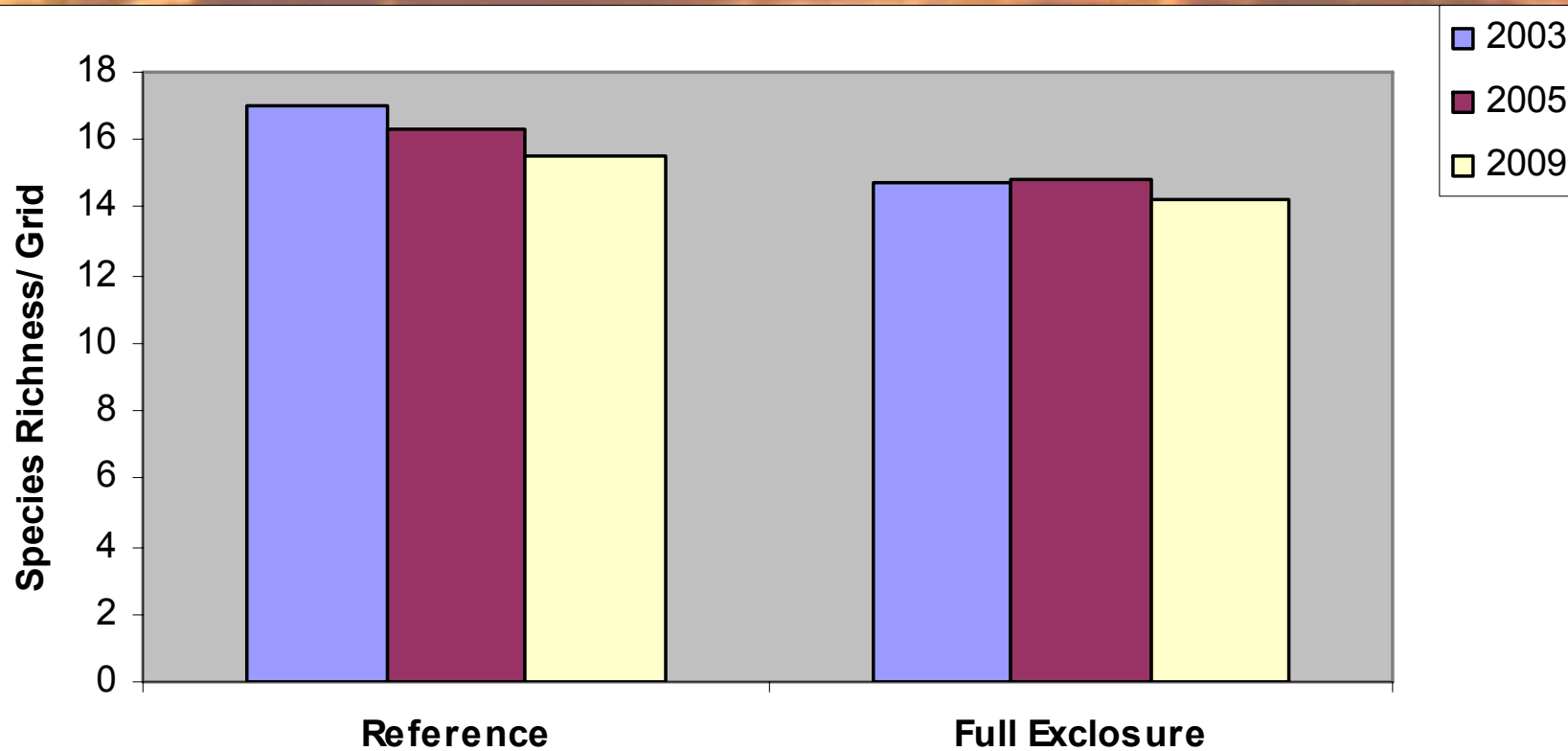
Results: Change in Ground Cover



Results: Ant Response



Results: Ant Response



Predictions (on Habitat Specialist Ants species)

- Increase in ground vegetation cover:
 - ↓ Open ground specialists
(e.g. *Ocymyrmex fortior* & *Tetramorium sericeiventre*)
 - ↑ Shaded ground specialists
 - ↔ Habitat generalists
(e.g. *Monomorium junodi*)



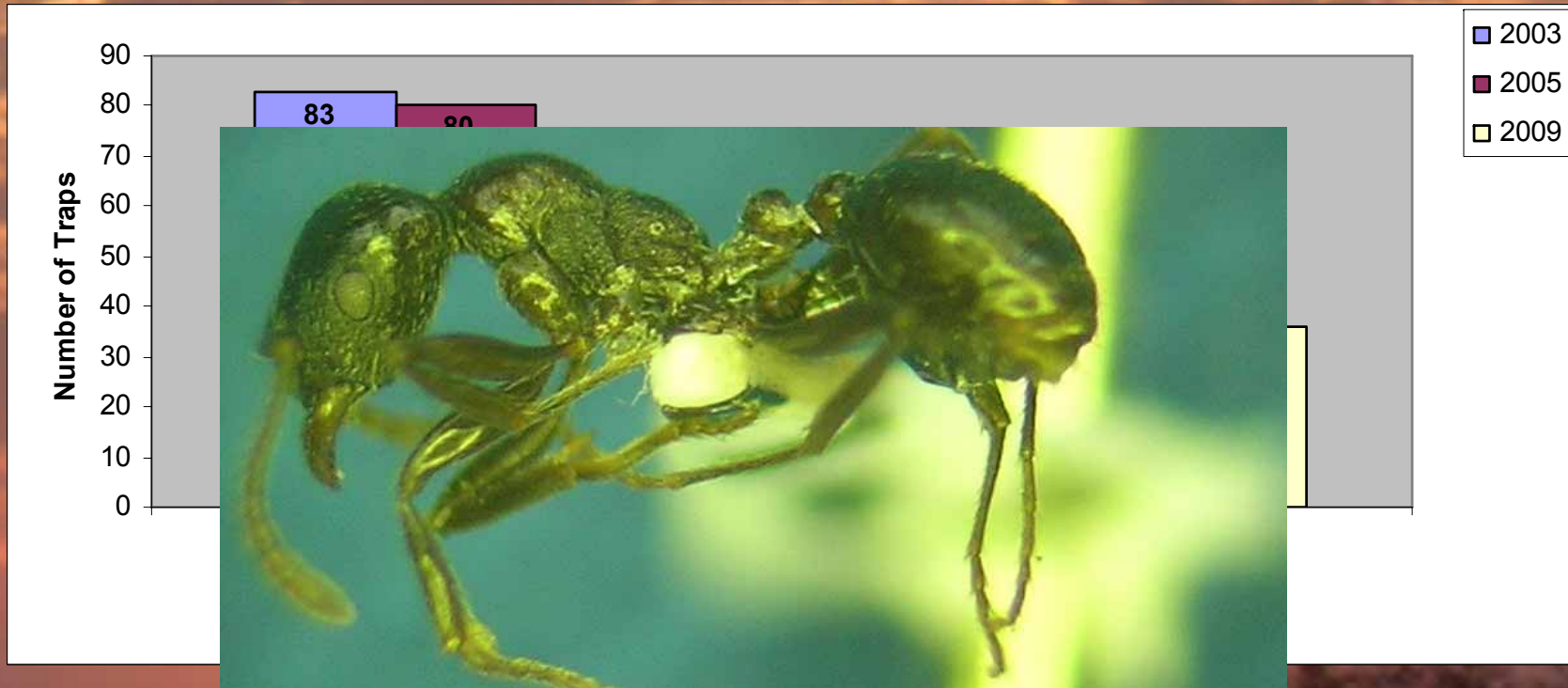
Results: Ant Response



Results: Ant Response



Results: Ant Response



Conclusion

- Response has started:
 - Reduction
 - » *Ocymyrmex fortior* & *Tetramorium sericeiventre* distribution (Open ground specialist ants)

No trend:

- Ant Species richness & abundance
- Shaded habitat specialists
- Preliminary Results
 - Three Sampling periods
 - Seven year exclusion





Thank you

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