



The influence of elephants feeding on microhabitat selection of herbivores: An experimental approach

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Rina Grant⁴ and Mike Peel⁵ and other Tembo members

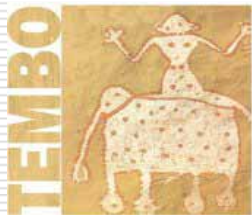
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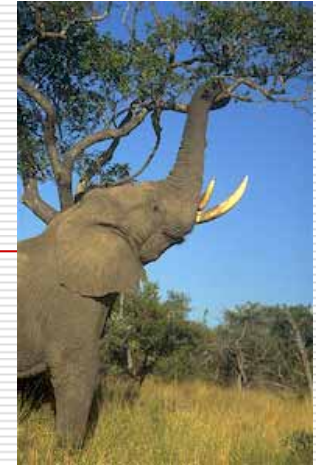


Introduction

□ Micro Habitat selection

- Forage availability
 - Quantity
 - Quality – Duncan 1983
 - Predation risk – Riginos and Grace 2008
 - Parasite avoidance – Hart 1990
 - Etc.
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Introduction



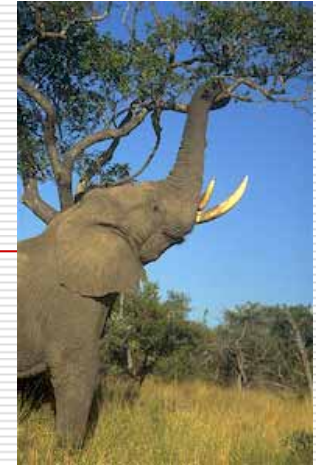
Elephant feeding habit

Elephant

- ❖ Branch removal
- ❖ Push over trees
- ❖ Snapping/pollarding
- ❖ Uprooting



Introduction



Elephant feeding habit

Elephant

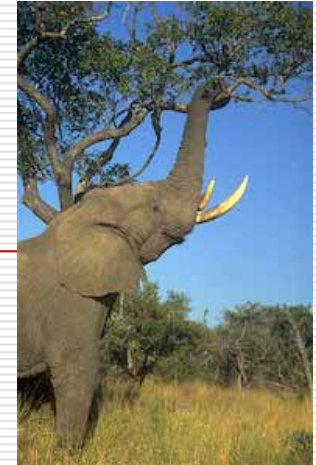
- ❖ Branch removal
- ❖ Push over trees
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- ❖ Uprooting

- Change vegetation structure
- Visibility
- Structure heterogeneity
- Forage availability

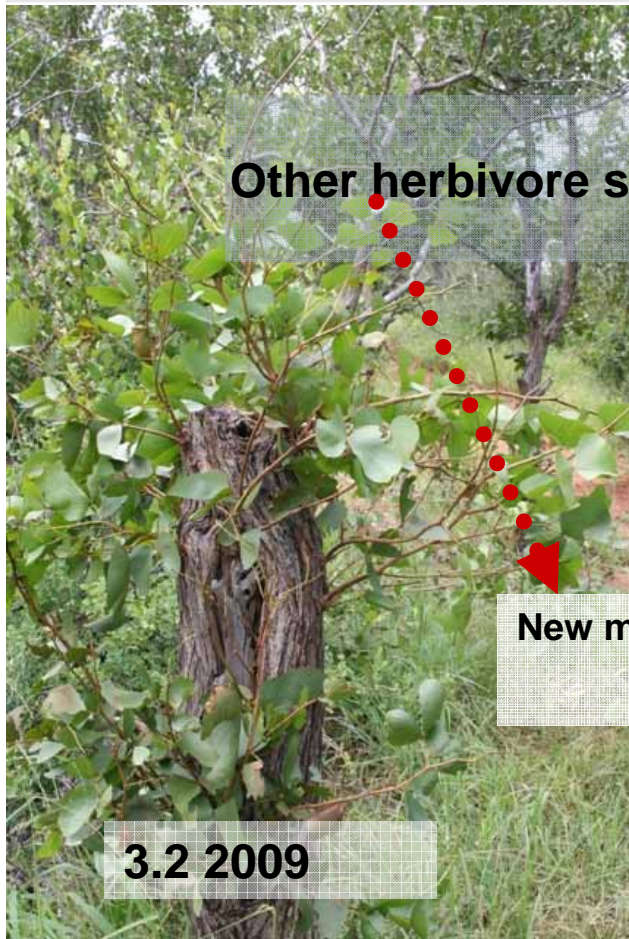


2.2 2009

Introduction



Elephant feeding habit



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New microhabitat

3.2 2009

Main question

What are the responses of herbivores spp on extreme elephant feeding strategies?

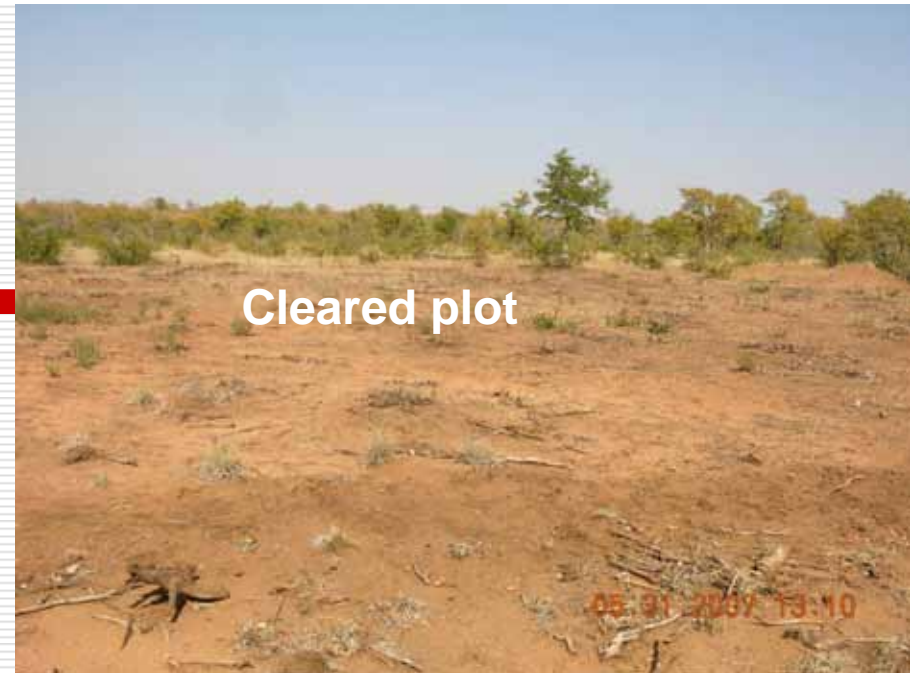
Hypothesis:

Browser species will frequently visit areas with pushed over and pollarded trees

Grazer species will frequently visit areas where tree are removed/pollarded.

Methods

- Plot size 900m²
- 3 treatment
- 3 replicates
- Observation every 12 days



Analysis

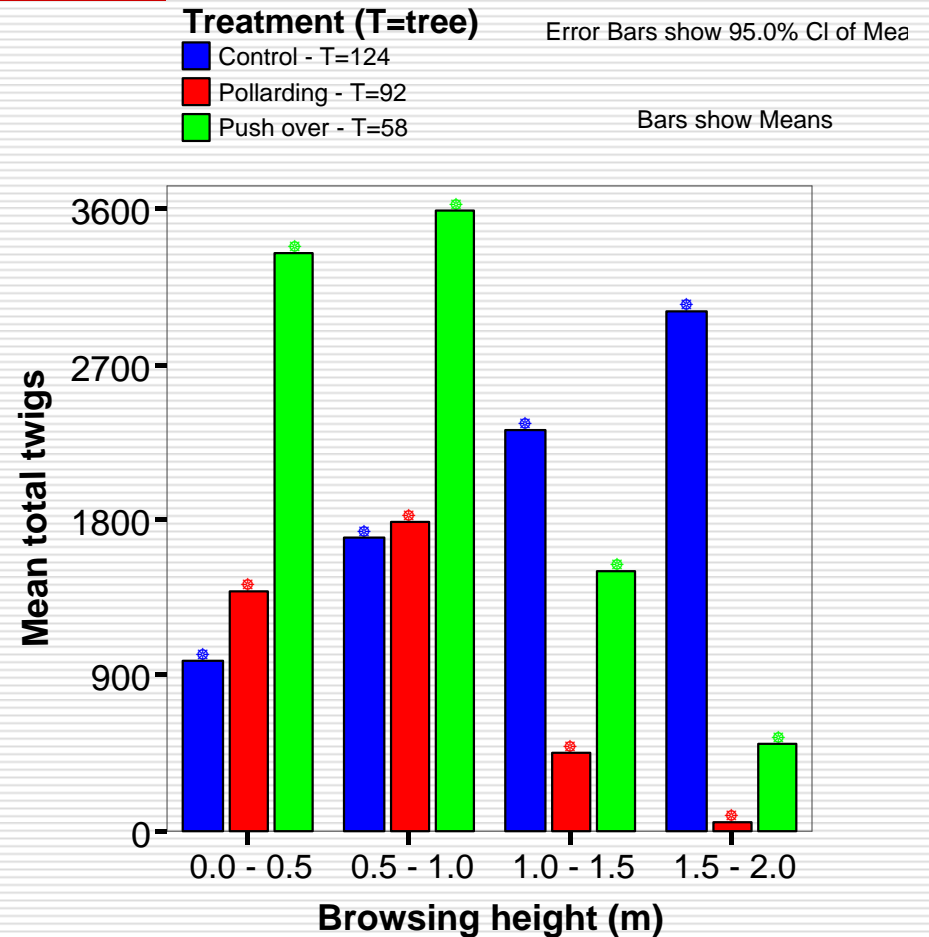
- Browse estimation
 - Twigs counts in 4 height levels
 - Proportion of browsed twigs per browsing height per treatment
 - Spoor count
 - Total individuals/time since counted
 - Herbaceous estimation
 - Disk pasture meter –Zambatis et al 2006
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Results – Browse patterns

❖ Biomass: Twigs Distribution

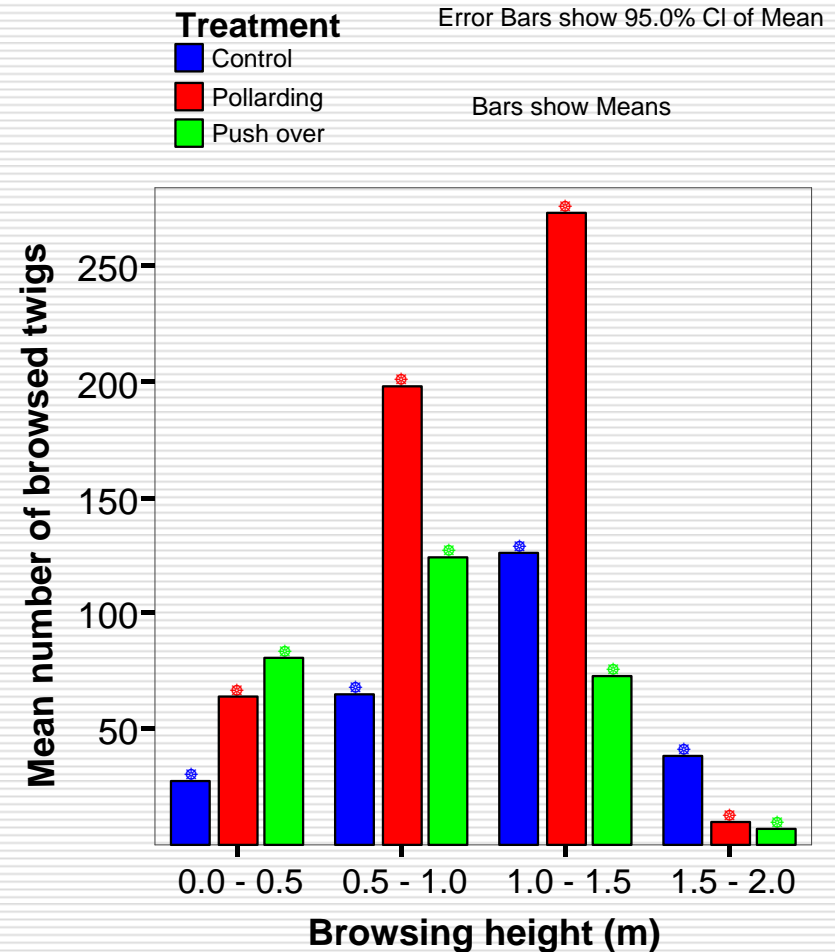
✓ Number of twigs in control trees increases with height

✓ Height between 0.5 – 1 m had more twigs in Push over and pollarded trees



Results – Browse pattern

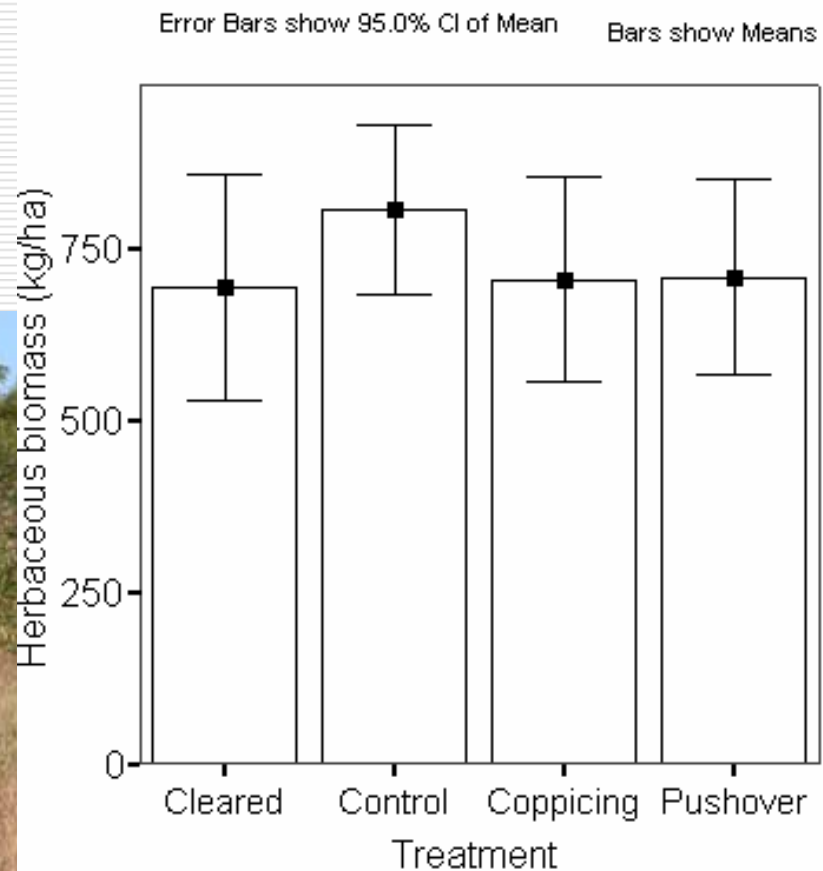
- Frequent browsing: between 0.5 – 1.5 m for all treatments



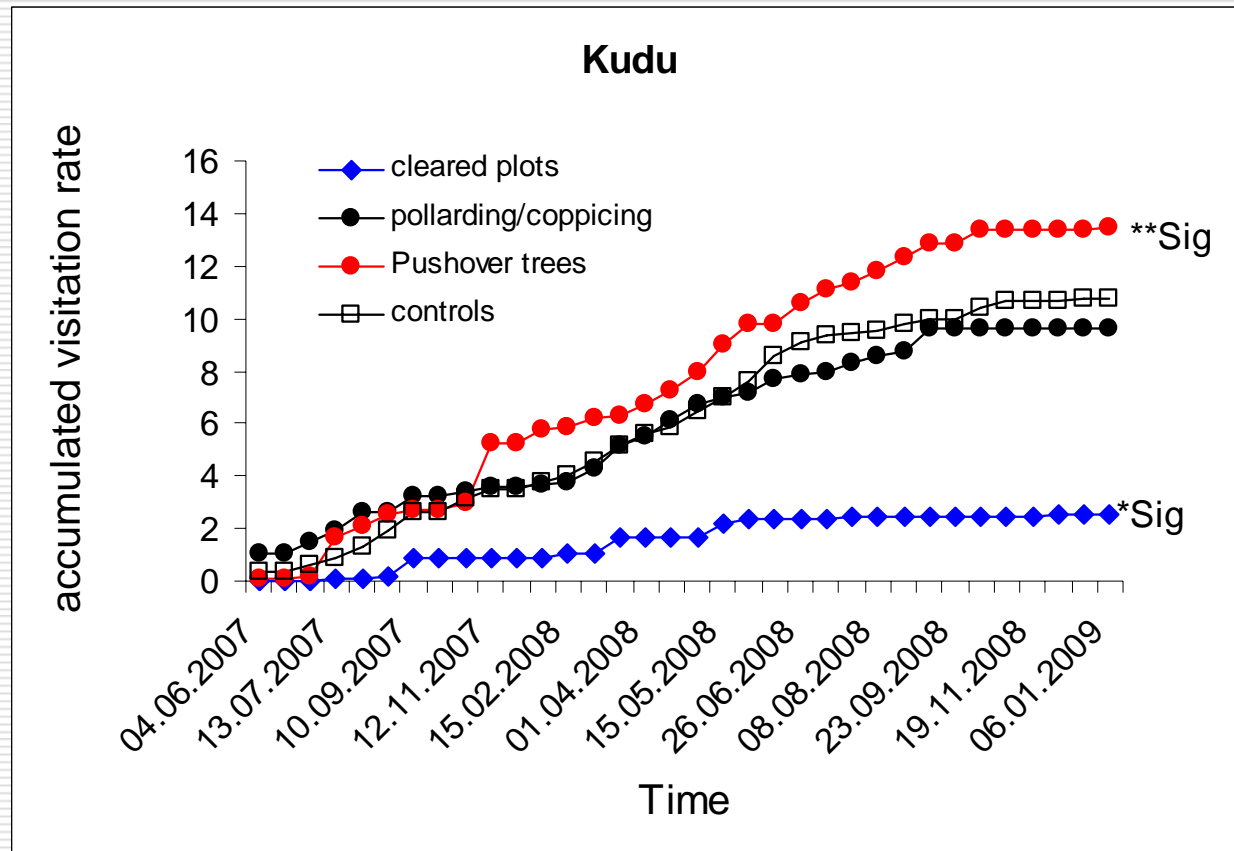
Herbaceous biomass

Herbaceous Biomass

- No sign. difference
- Control plots have relatively more biomass



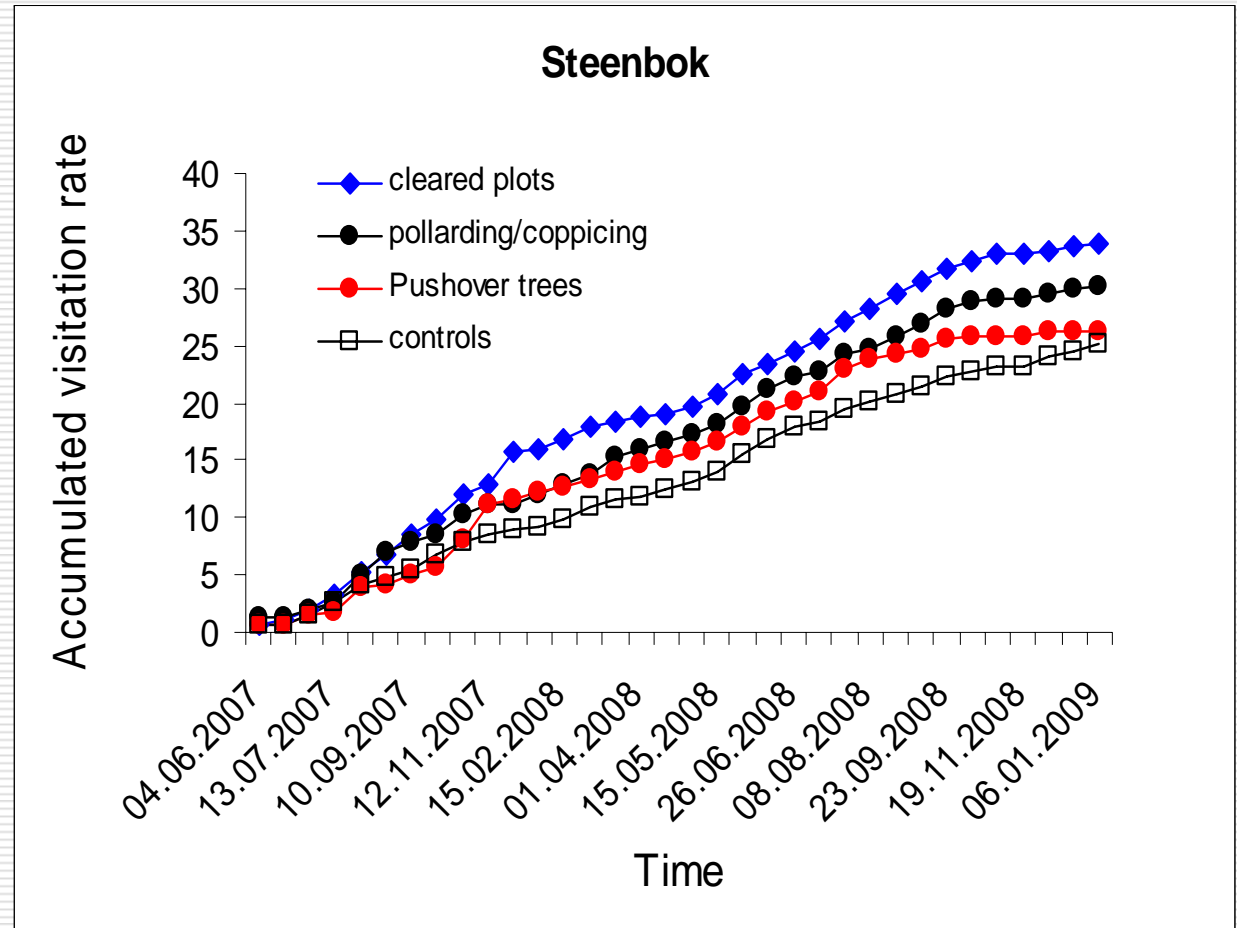
Kudu



Steenbok

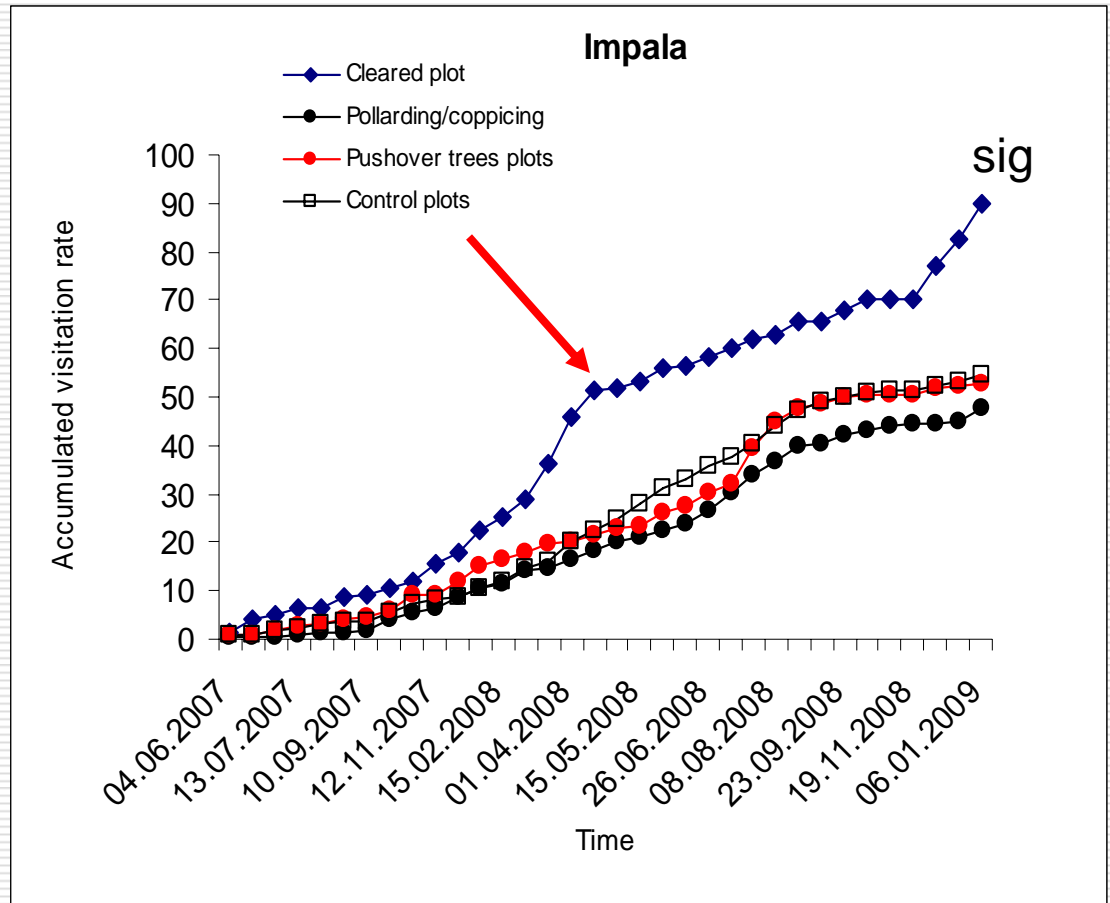
High proportion of forbs in cleared plots

High visibility in cleared and pollarded plots

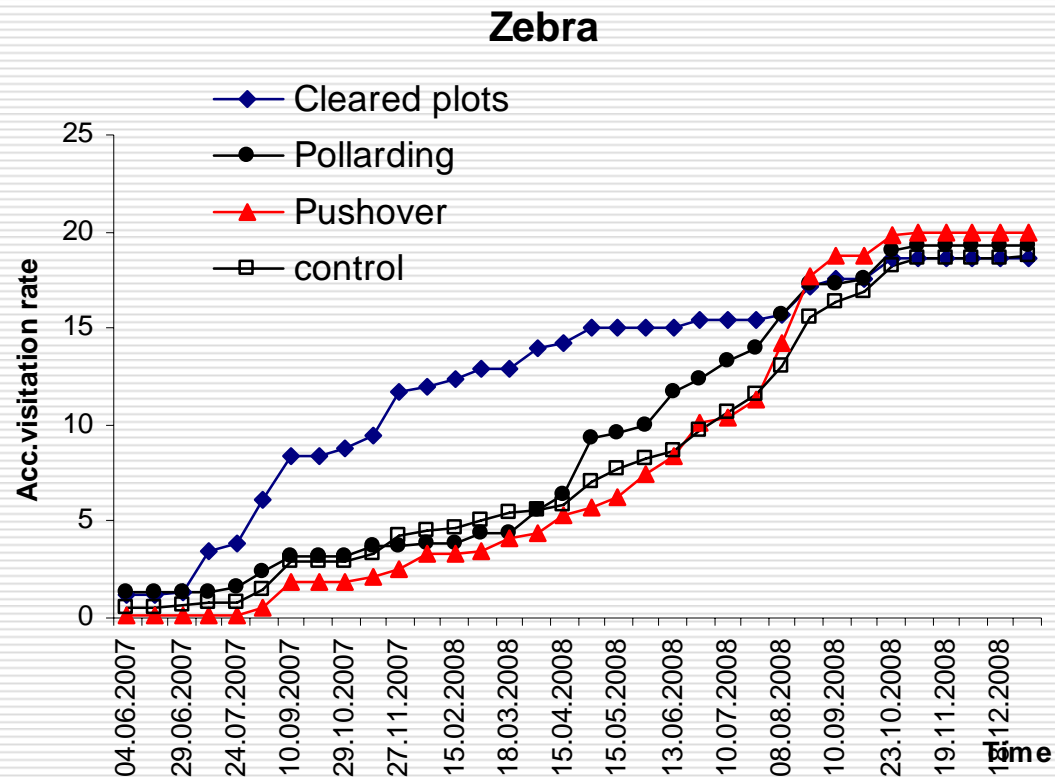


Impala

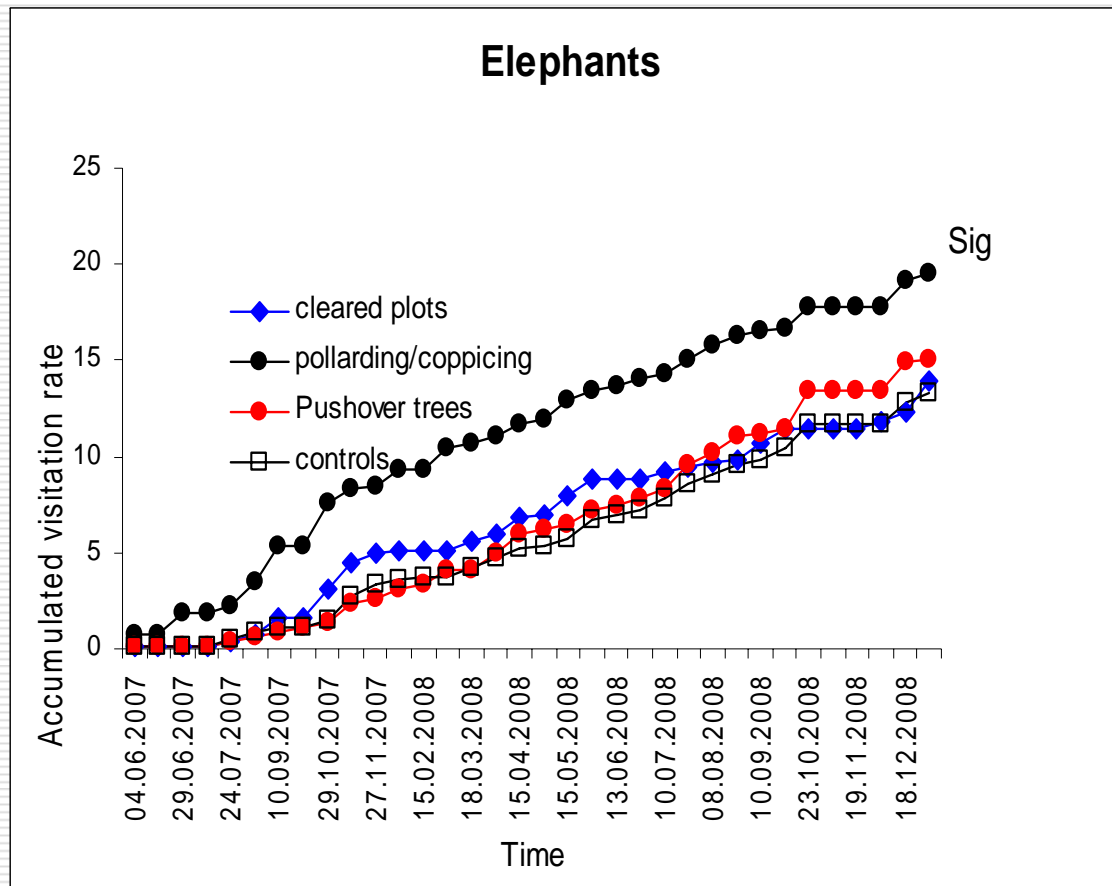
Impala responded in Cleared plots possibly due to both safety and forage availability



Zebra



Results



Discussion

- Small herbivore spp: higher visitation rate on cleared (no tree) plots:
 - Predator avoidance strategy
 - High grass: forbs ratio
 - Nutrients cycling (Dung and urine) → forage quality?
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Nutrients heterogeneity - dung

| Treatment | elephant | Impala | Steenbok | Total |
|-------------|----------|--------|----------|-------------|
| Cleared | 18 | 564 | 214 | 796 |
| Control | 23 | 46 | 38 | 107 |
| Coppicing | 20 | 30 | 60 | 110 |
| Pushover | 24 | 16 | 2 | 42 |
| Grand Total | 85 | 656 | 314 | 1055 |

Preliminary observation

- Elephants revisits pollarded plots –(Jachmann and Bell 1985, Rutina et al. 2005, Makhabu and Skarpe 2006), Kudu revisited push over trees while Impala and steenbok revisited cleared plots
 - Forage availability/quality and safety influence habitat choice
 - Impala and steenbok maintain cleared plots: nutrient hot spot
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ACKNOLEGDEMENT

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RESERVE**



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RESERVE**



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Impala Vs Zebra

