Vegetation Response to Feral Hog (*Sus scrofa*) Disturbance in Seepage Slope Wetlands

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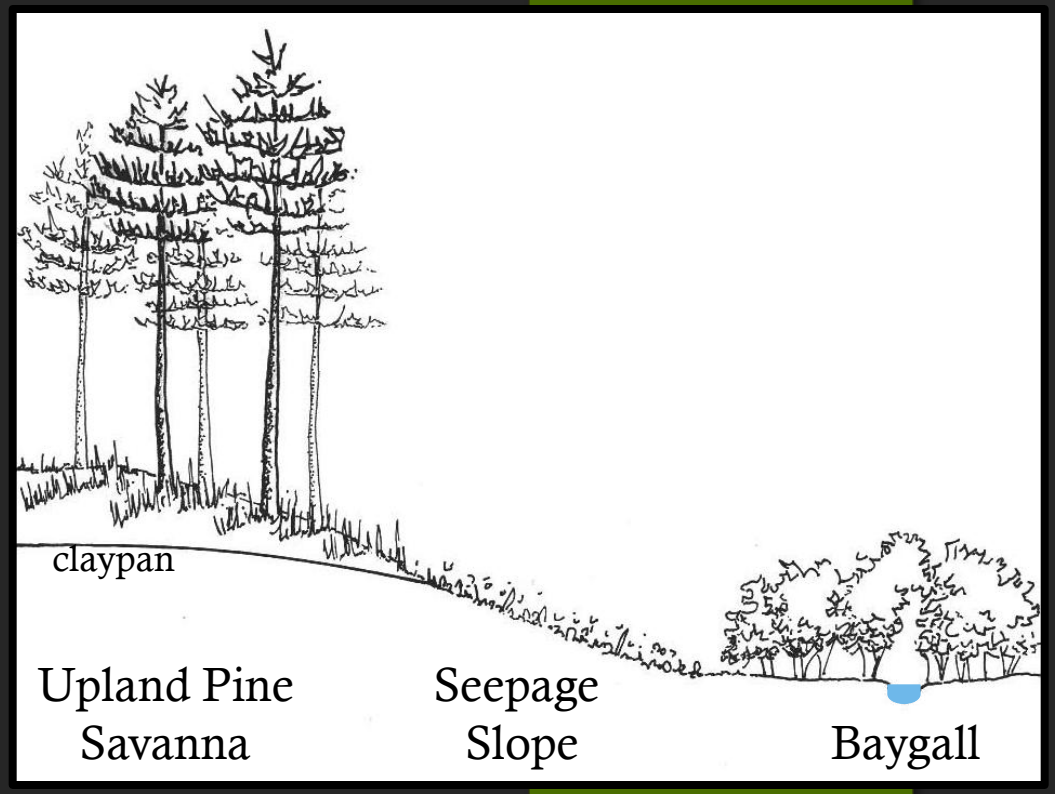
IGERT Integrative Graduate Education and Research Traineeship

UF UNIVERSITY of FLORIDA

Background

- groundwater fed
- fire maintained
- high diversity
- dense ground cover
- nutrient poor
- insectivorous and rare plants



Background

- ~1% of the original extent remains
- woody encroachment
- converted to pine plantations
- hydrology disrupted by fire lanes, roads, or ditches
- Eglin is important to the conservation of seepage slopes

Background

- hogs (*Sus scrofa*) introduced in FL in 1539
- no large numbers on Eglin until free-range domestic stock left uncaptured in 1960
- high reproductive success
- >500,000 hogs in FL
- require wet conditions for wallowing
- root belowground to forage for food

Statement of Problem

- rooting:
  - erosion
  - disrupts continuity of ground cover
  - changes species composition
  - sets back succession
    - facilitates exotic plants
  - alters plant population structure

- feral hogs serious threat to rare plant communities

- trapping began on Eglin in 2003

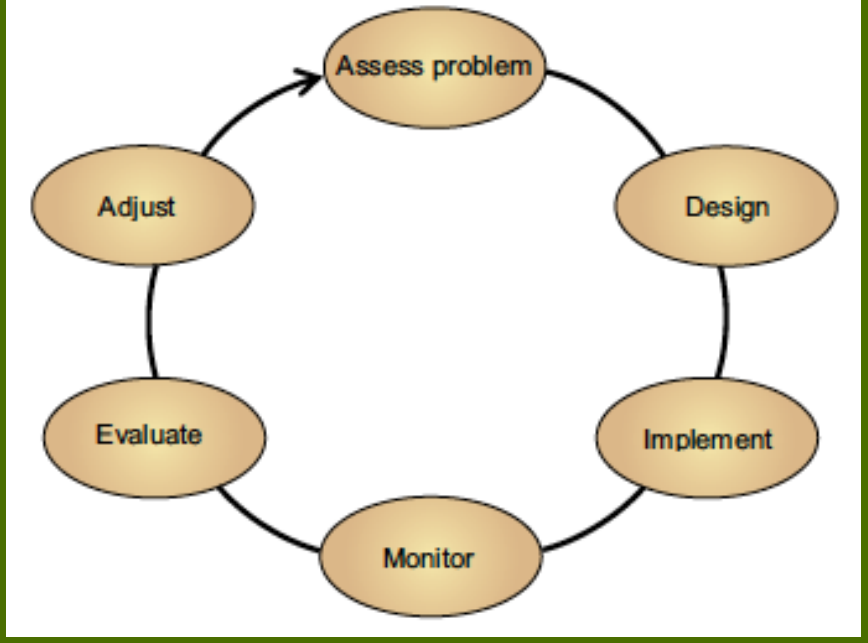
Adaptive Management

- management decisions with limited understanding

- research needed:

  -to address gaps in knowledge

  -evaluate effectiveness of management strategies over time



(Williams et al. 2009)

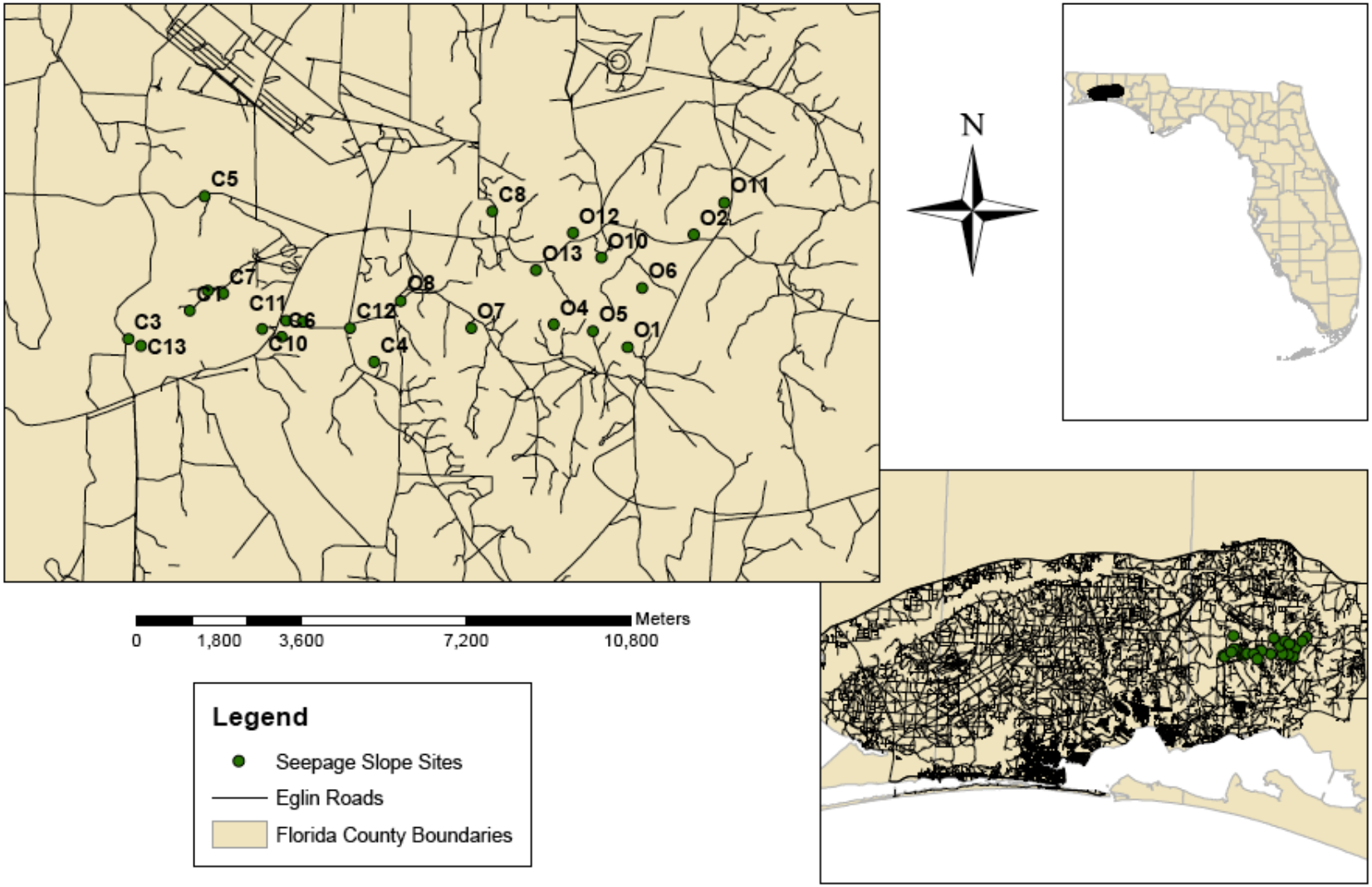
Research Objectives

- Objective 1: monitor long-term vegetation dynamics
- Objective 2: investigate effects of disturbance intensity on trajectory of vegetation development
- Objective 3: examine potential for autogenic recovery from experimental disturbances
- Objective 4: evaluate relationship between fire behavior and hog disturbance

Long-term Study: Questions

1. Has hog disturbance decreased from 2002-2010 on Eglin?
2. Have there been any shifts in dominant functional guilds in relation to hog disturbance on Eglin?

Seepage Slope Sites Used in the Long-term Study



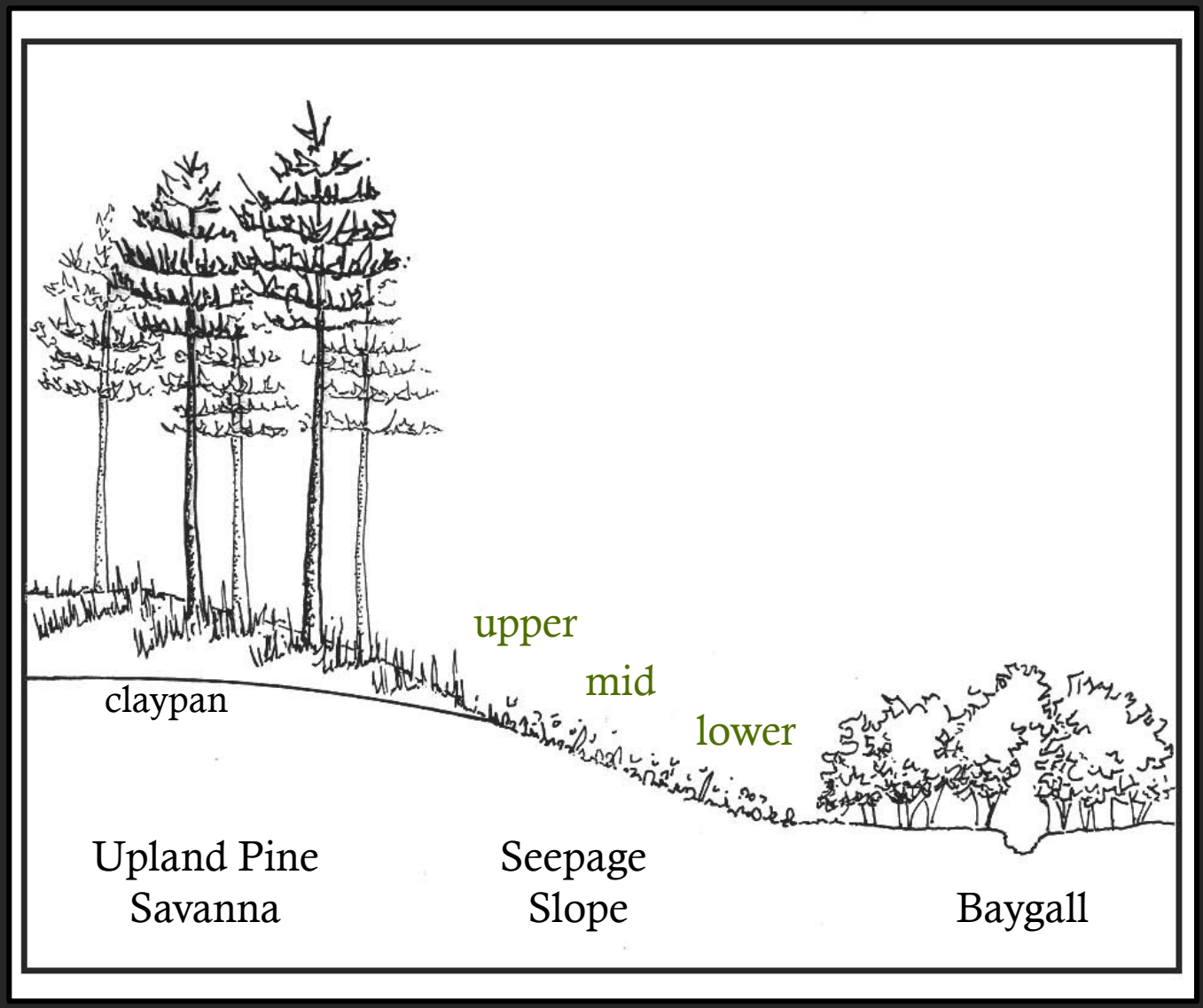
Long-term Study: Methods

- Surveyed 223, 1m^2 plots, in 24 sites from 2002

-hog damaged or undamaged
-estimated cover of:
total vegetation
litter
bare soil
forbs
grasses
woody species
Aristida stricta

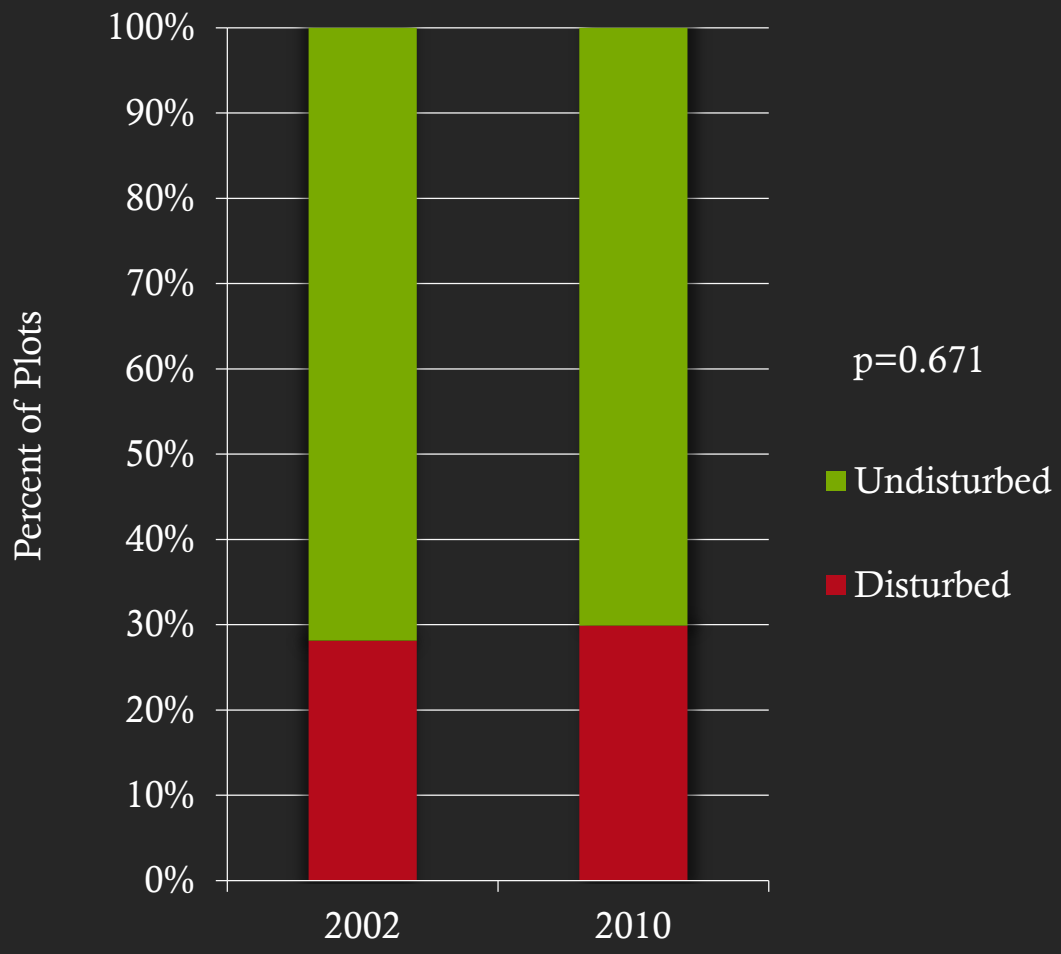
-stratified by position on slope

Long-term Study: Methods



Long-term Study: Results

1. Has hog disturbance decreased?



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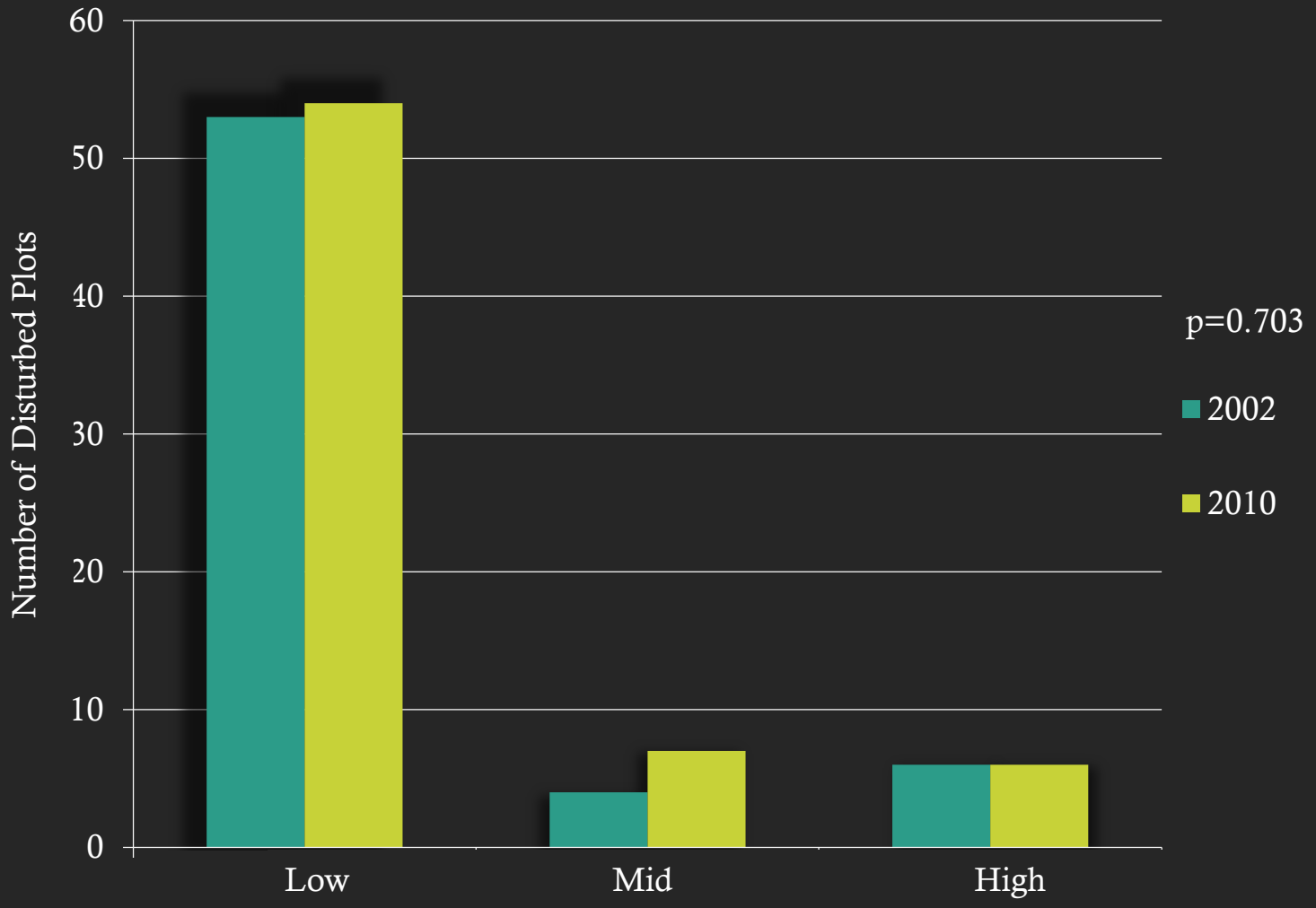

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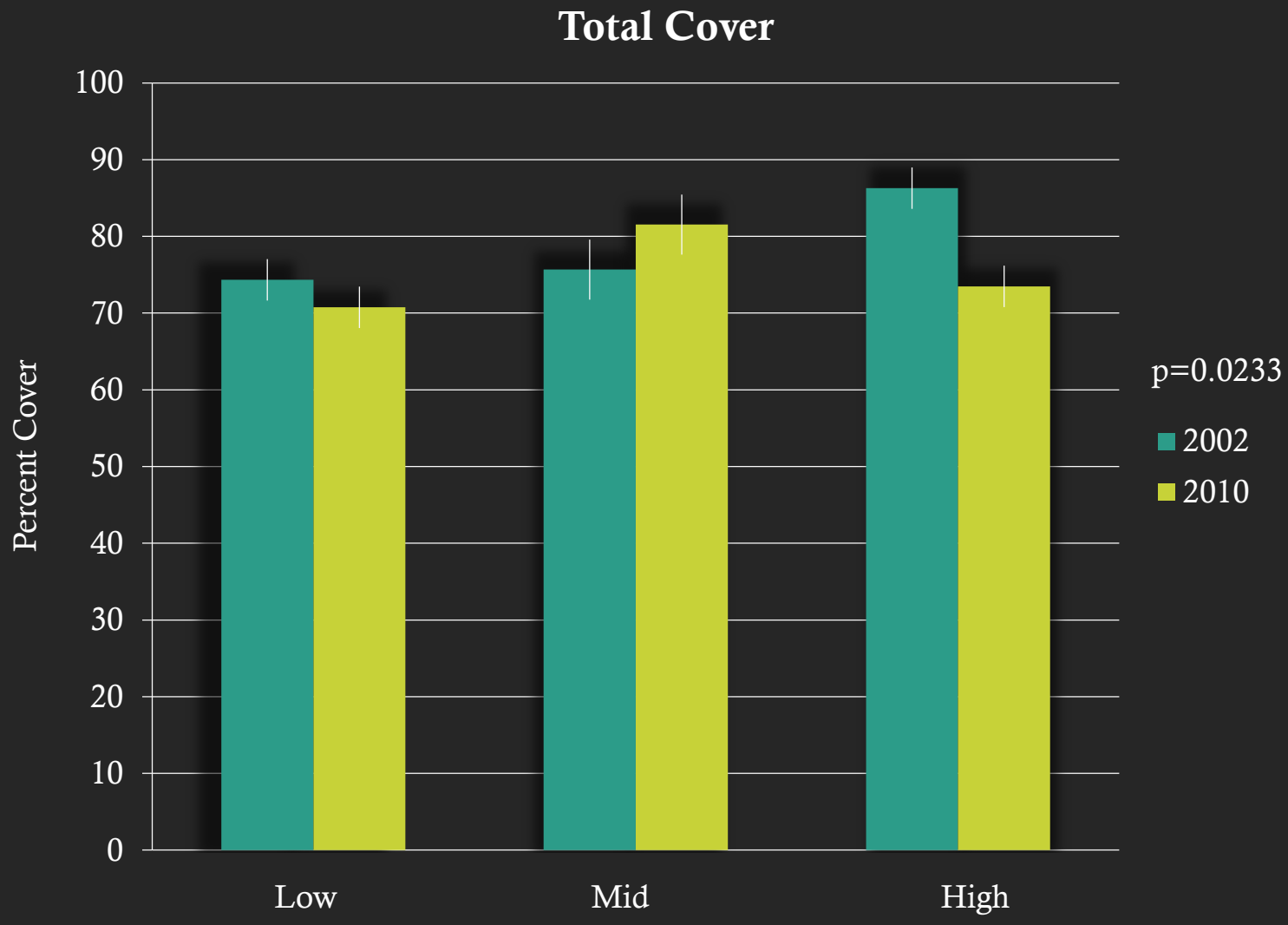
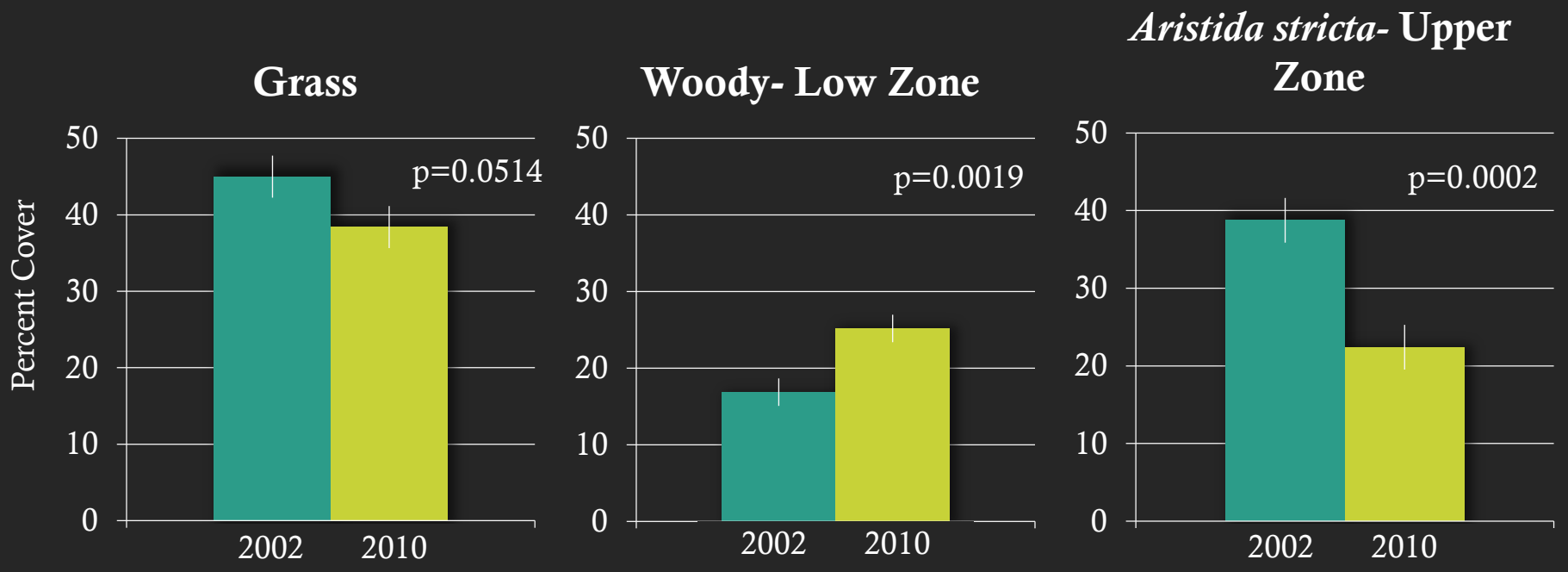


Long-term Study: Results

2. Have there been any shifts in dominant functional guilds?



Long-term Study: Conclusions

1. Has hog damage decreased from 2002-2010 on Eglin?

no significant difference in number of damaged plots; significantly less total cover in upper zone

2. Have there been any shifts in dominant functional guilds in relation to hog disturbance on Eglin?

significantly more woody cover in the low zone; significantly less grass and *Aristida stricta* cover in upper zone

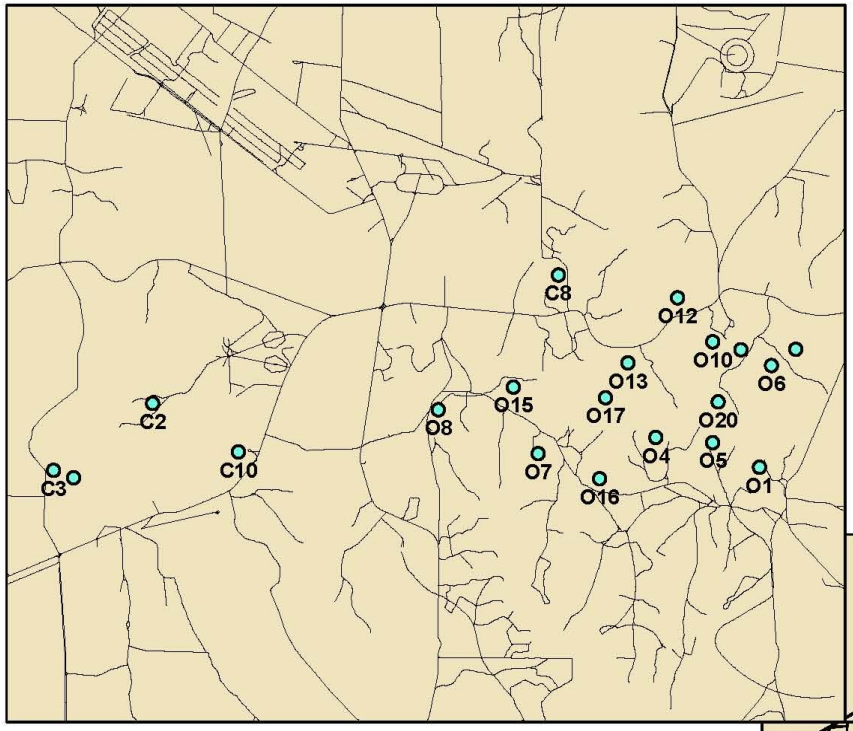
Disturbance Intensity Study: Questions

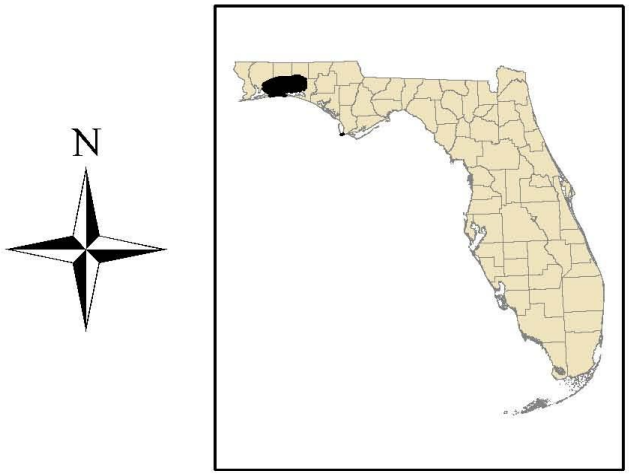
1. Does total vegetation or uprooted veg. cover differ in areas varying in disturbance intensity over time?
   -in/out exclosures?

2. Does functional guild cover differ between varying disturbance intensity?
   -*Aristida stricta* cover?

3. Does the presence of certain species differ in areas of varying disturbance intensity?

Seepage Slope Sites Used in the Disturbance Intensity Study





Meters

0 1,350 2,700 5,400 8,100

Legend

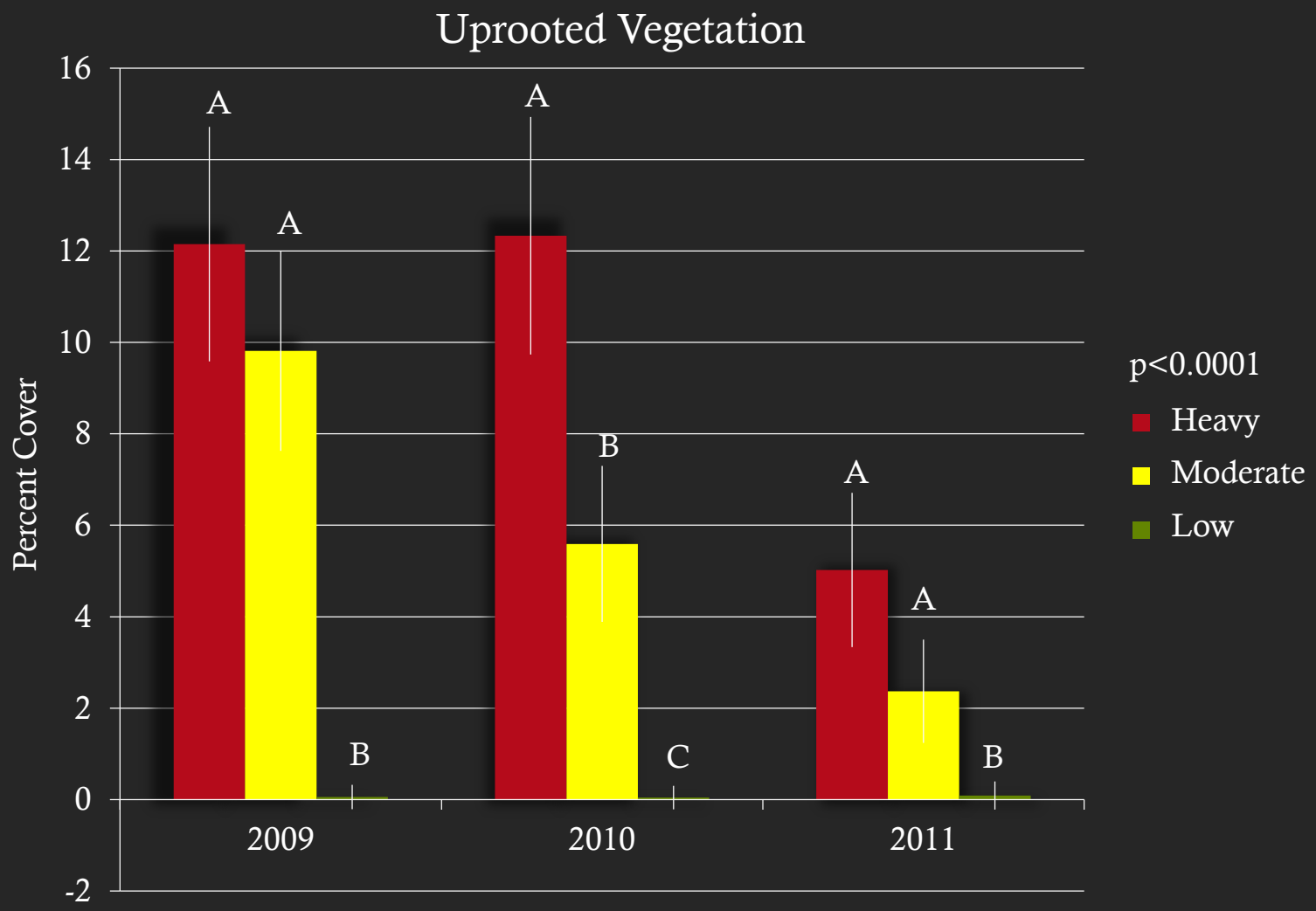
- Seepage Slope Sites
- Eglin Roads
- Florida County Boundaries

Intensity Study: Methods

- erected exclosures around 1m^2 plots in areas of low, moderate, and heavy hog disturbance
- exclosure plots are paired to adjacent open plots
- 2 plot pairs per disturbance intensity
- estimated cover of: total veg., functional guild, bare ground, uprooted vegetation, species

Intensity Study: Results

1. Does cover of uprooted vegetation differ by disturbance intensity over time?



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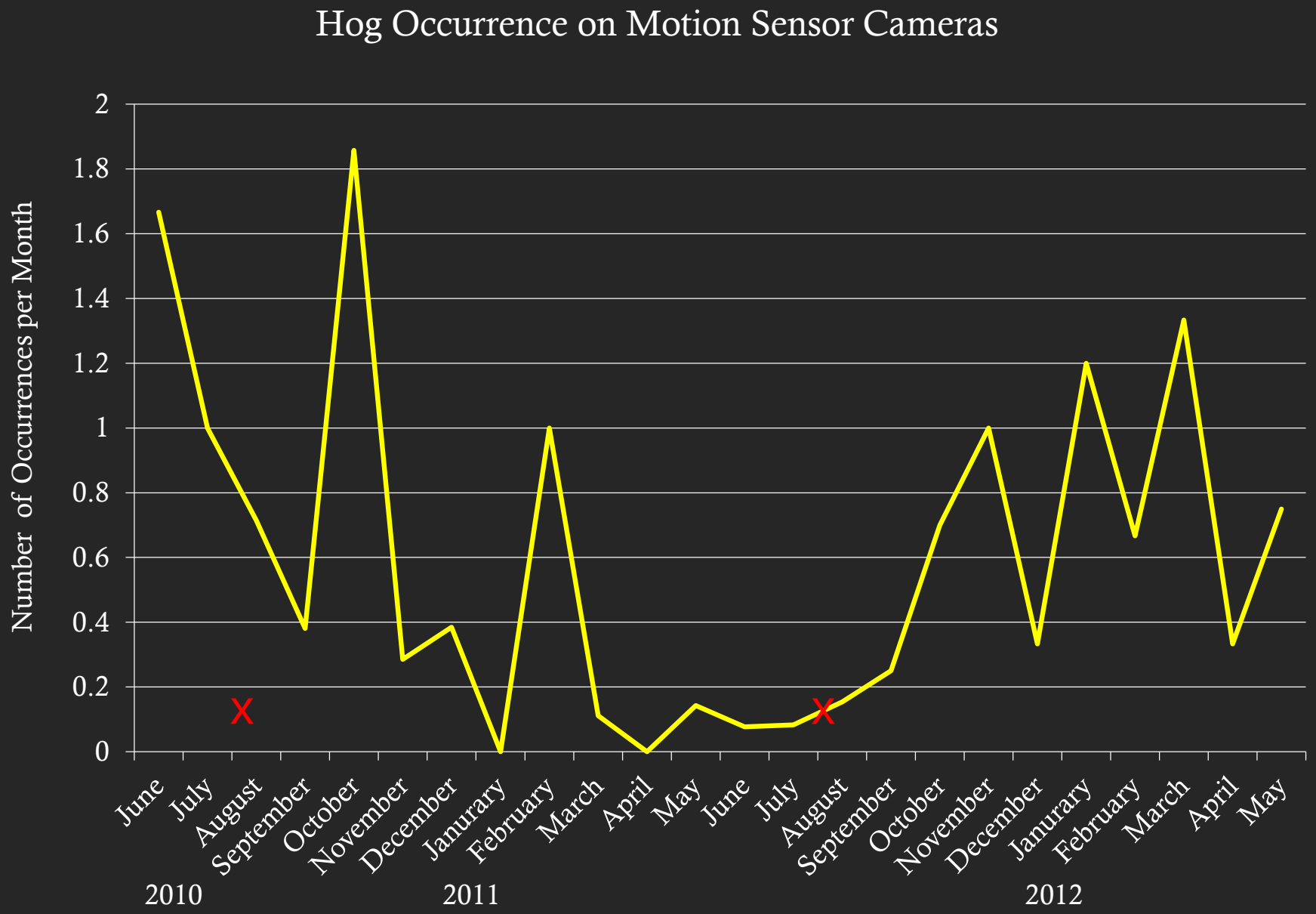
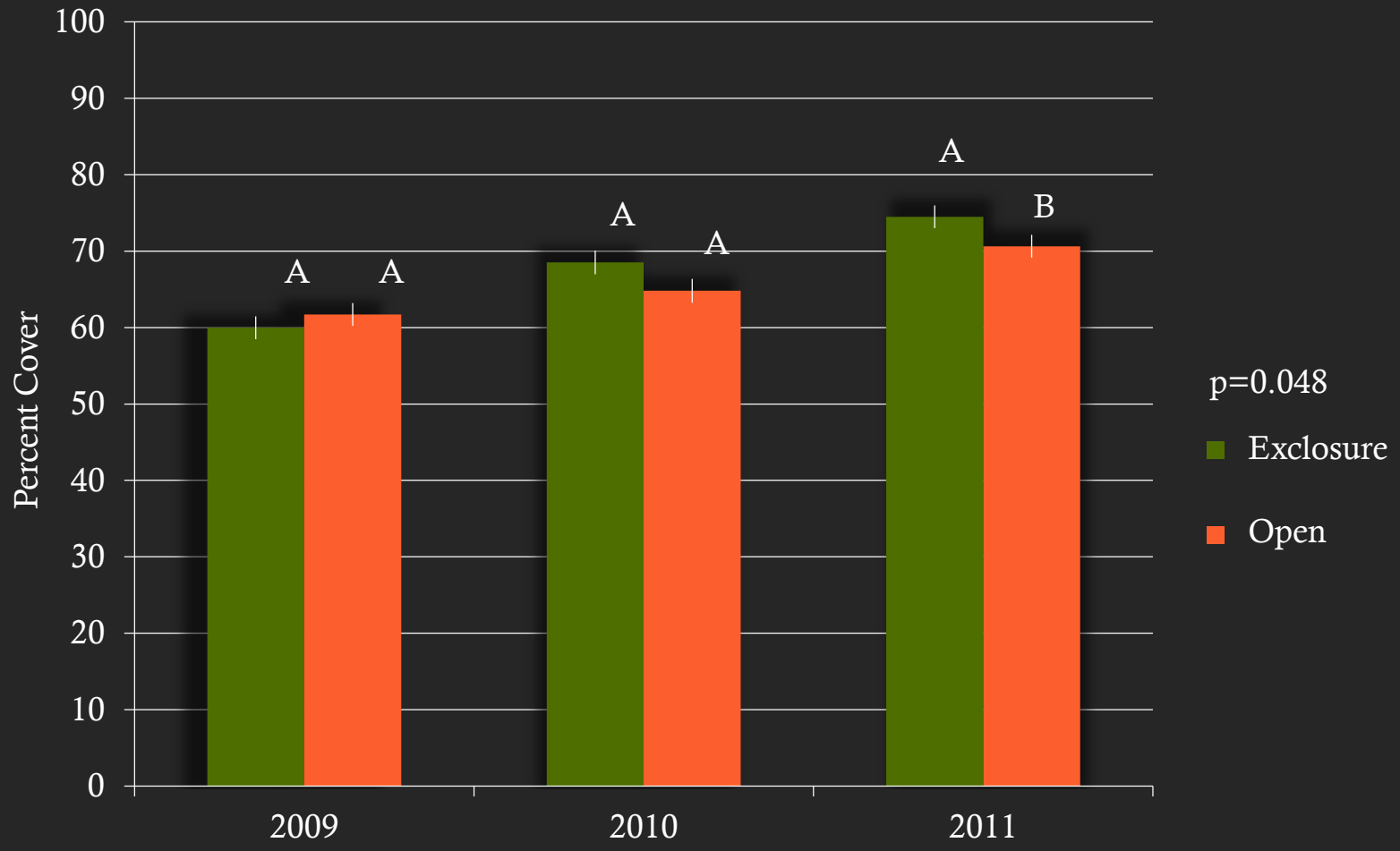


Intensity Study: Results

1. Does total vegetation cover differ by intensity?

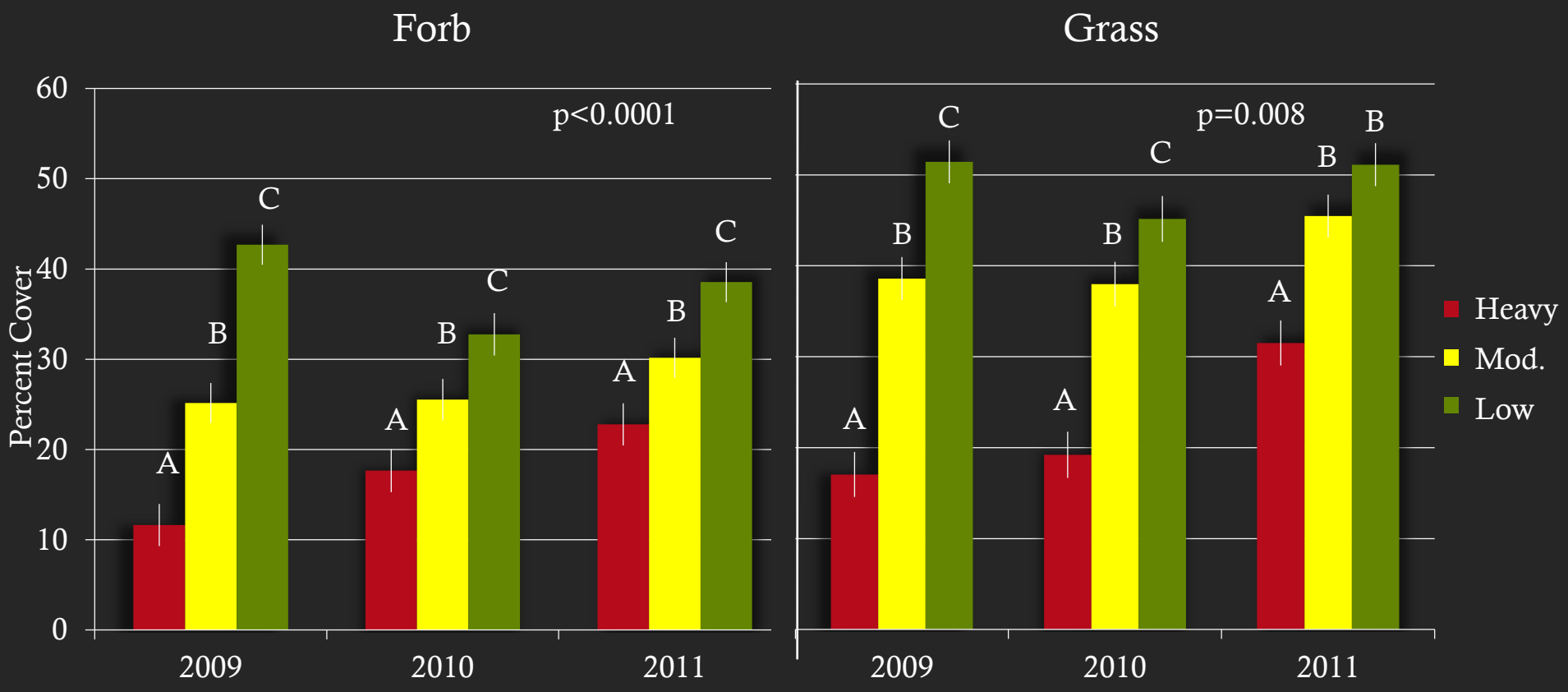
Intensity Study: Results

1. Does total vegetation cover differ with hog exclusion?



Intensity Study: Results

2. Does functional guild cover differ by disturbance intensity?



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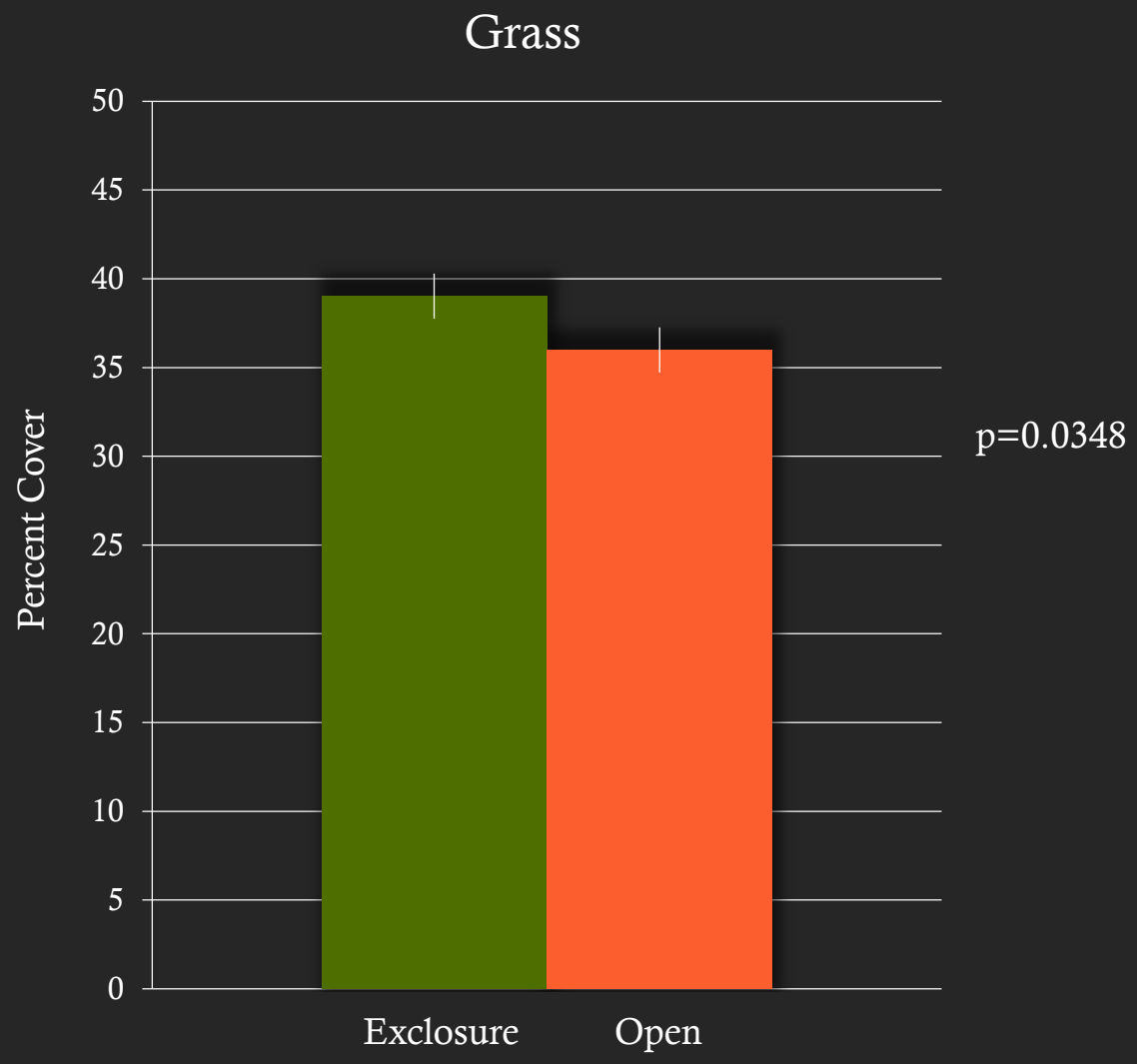

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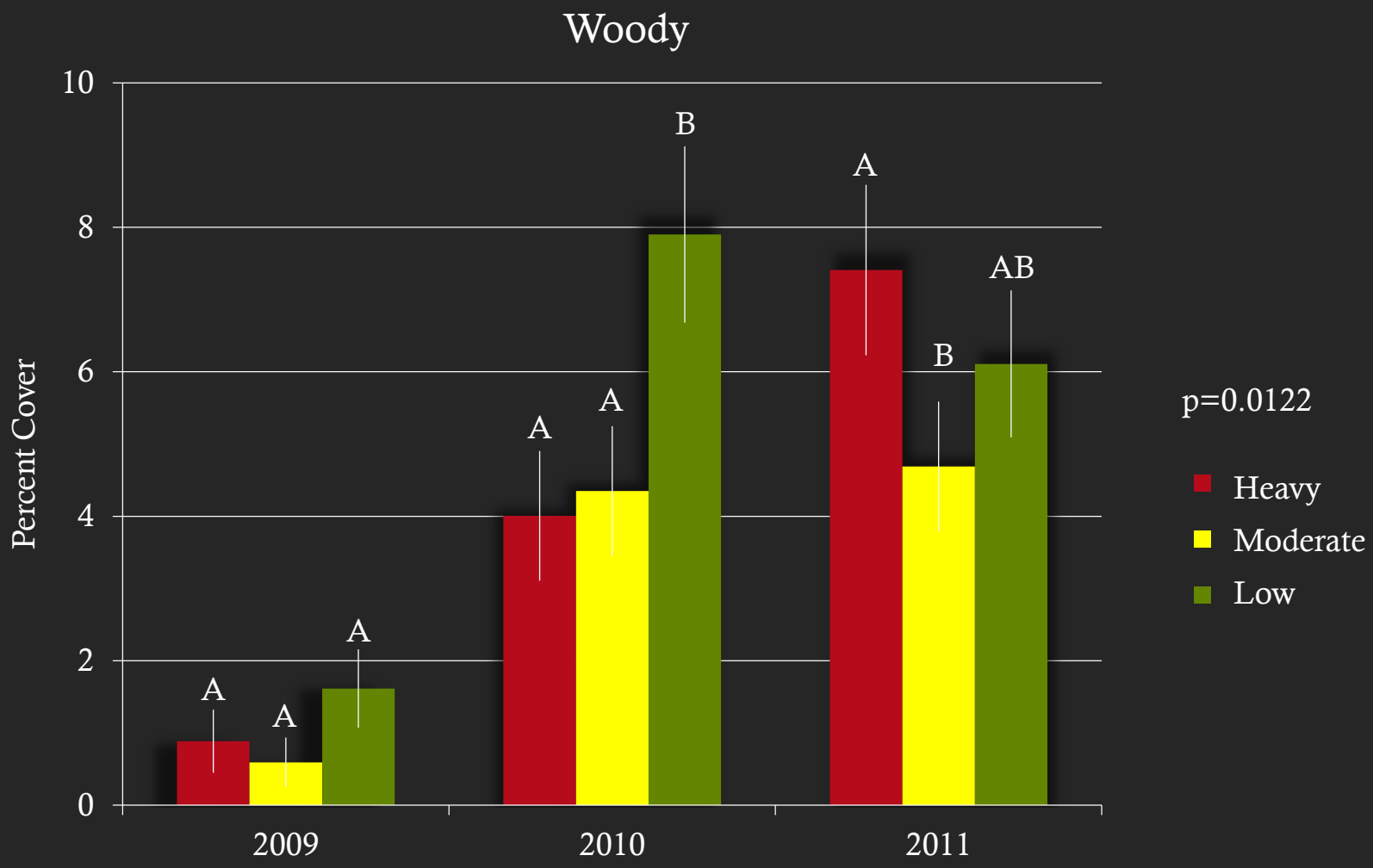

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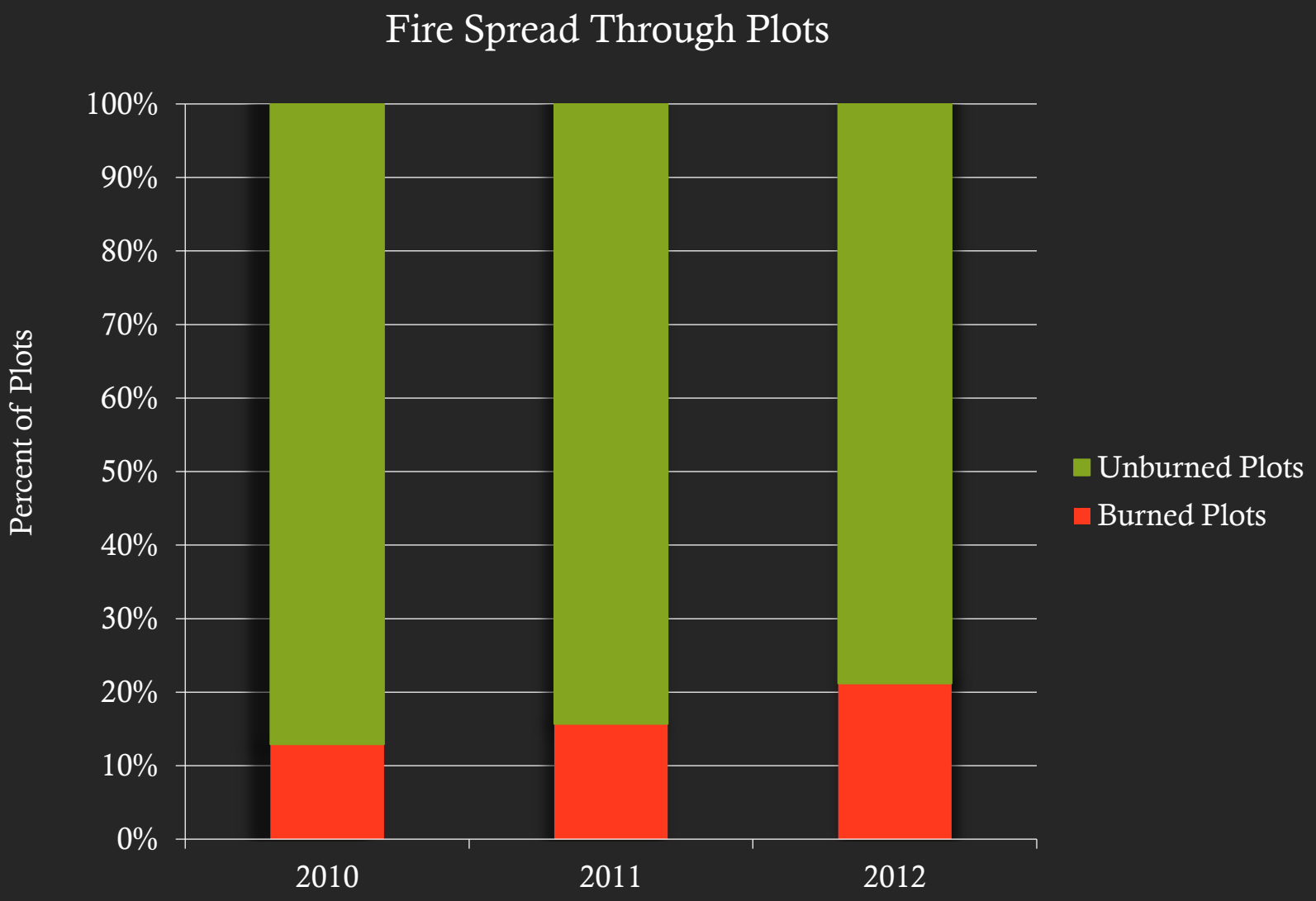
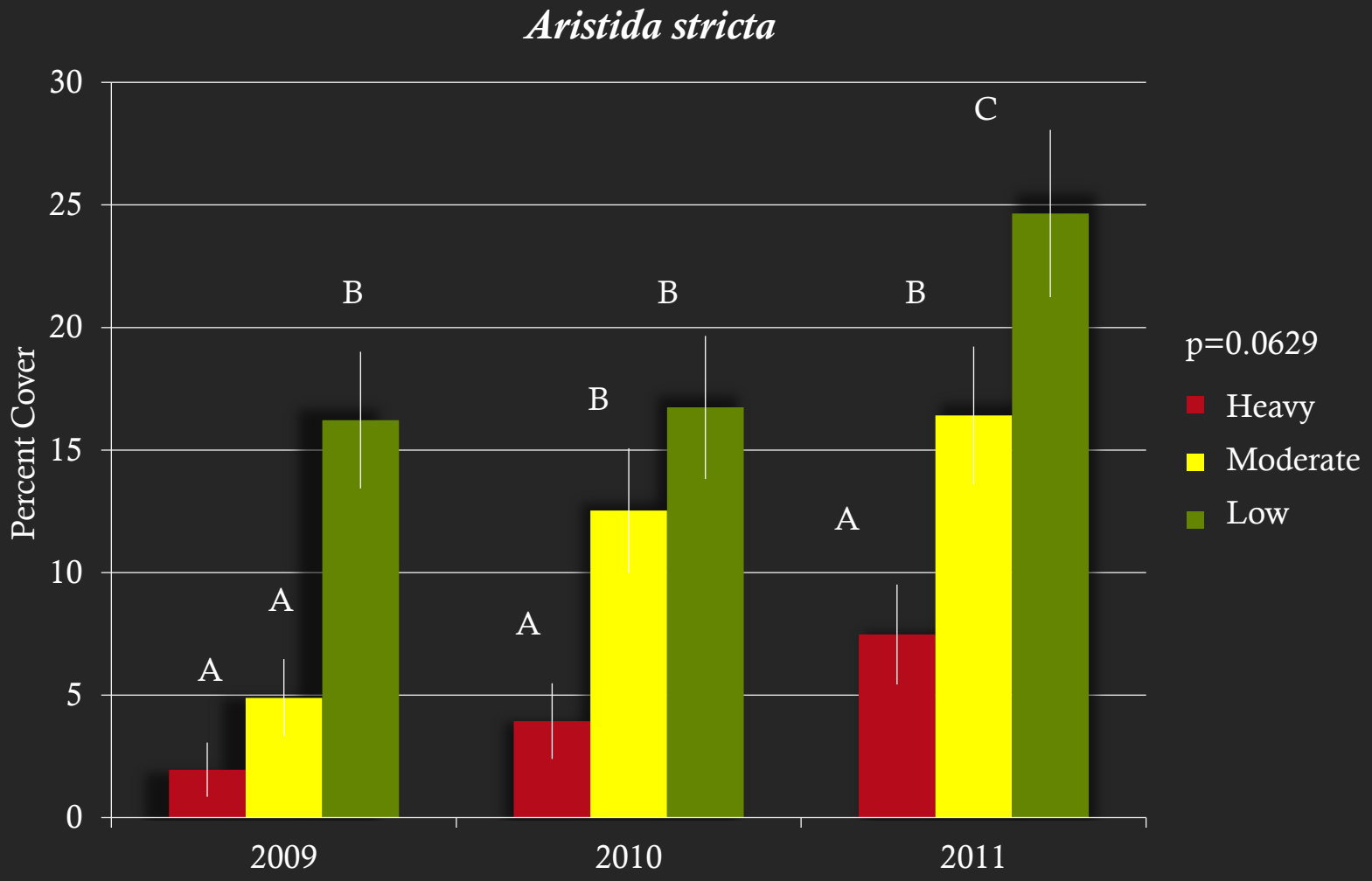


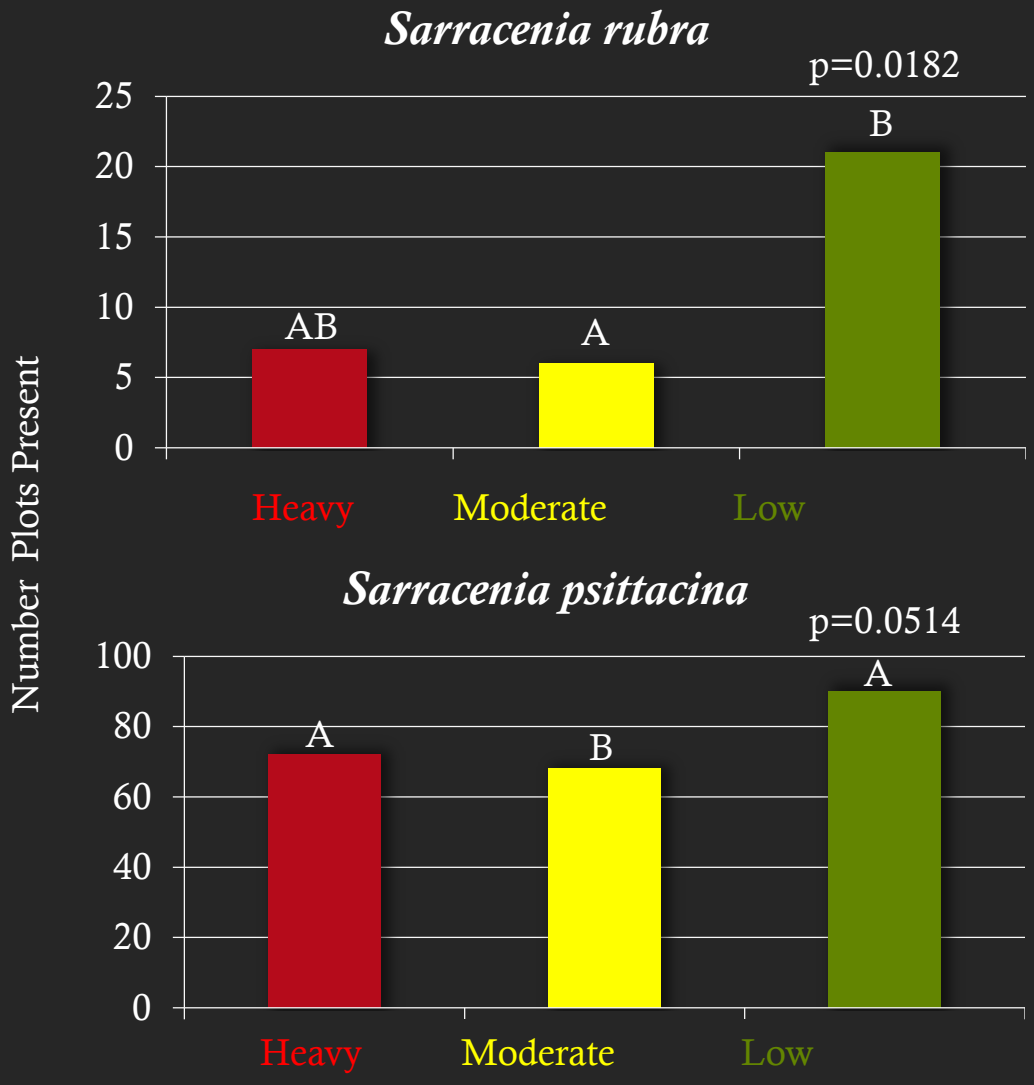
Intensity Study: Results

2. Does *Aristida stricta* cover differ by disturbance intensity?



Intensity Study: Results

3. Does the presence of species differ by disturbance intensity ?



Intensity Study: Results

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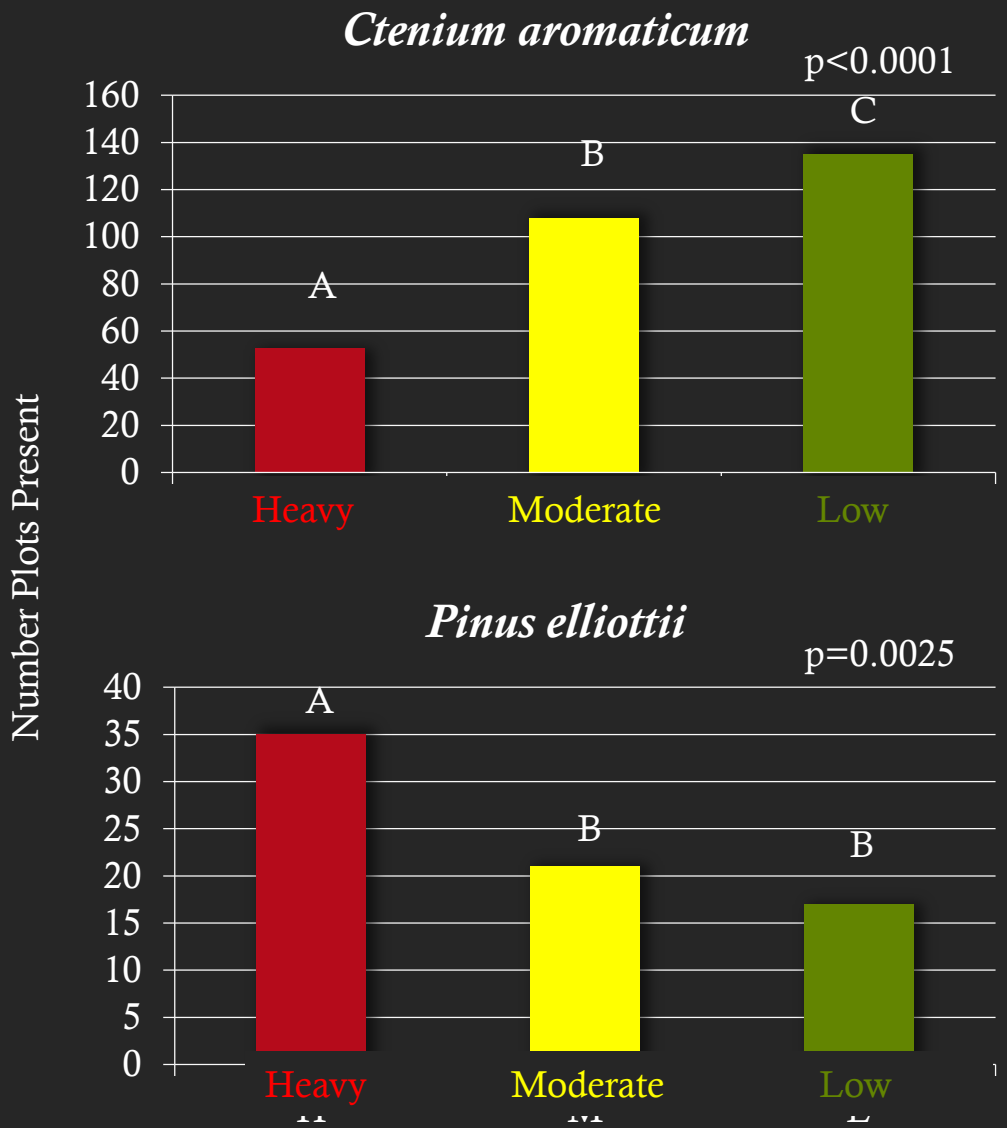

Intensity Study: Conclusions After 3 Years

1. Does total vegetation cover differ by disturbance intensity?

   yes- differences decrease due to less hog use

2. Does functional guild cover differ by disturbance intensity?

   forbs- yes

   grass- mod. and low disturbance become indistinguishable

   woody- increases, especially in heavy disturbance

3. Does the presence of species differ by disturbance intensity?

   S. rubra, S. psittacina, and *Ctenium* more frequently found in low dist.

   P. elliottii more frequently in heavy distu

Management Implications

- longer term data is necessary to determine direction of trend or if disturbance is highly variable

- management strategies must be adapted to address:

  -heavy hog use in low wet areas

  -loss of cover and lack of recovery even in year of low hog use

  -lack of important species in areas of heavy disturbance

  -woody encroachment in absence of fire

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