

# Patch-burning and Grazing Monotypic Stands of Exoticgrass for Northern Bobwhite Habitat and Productivity



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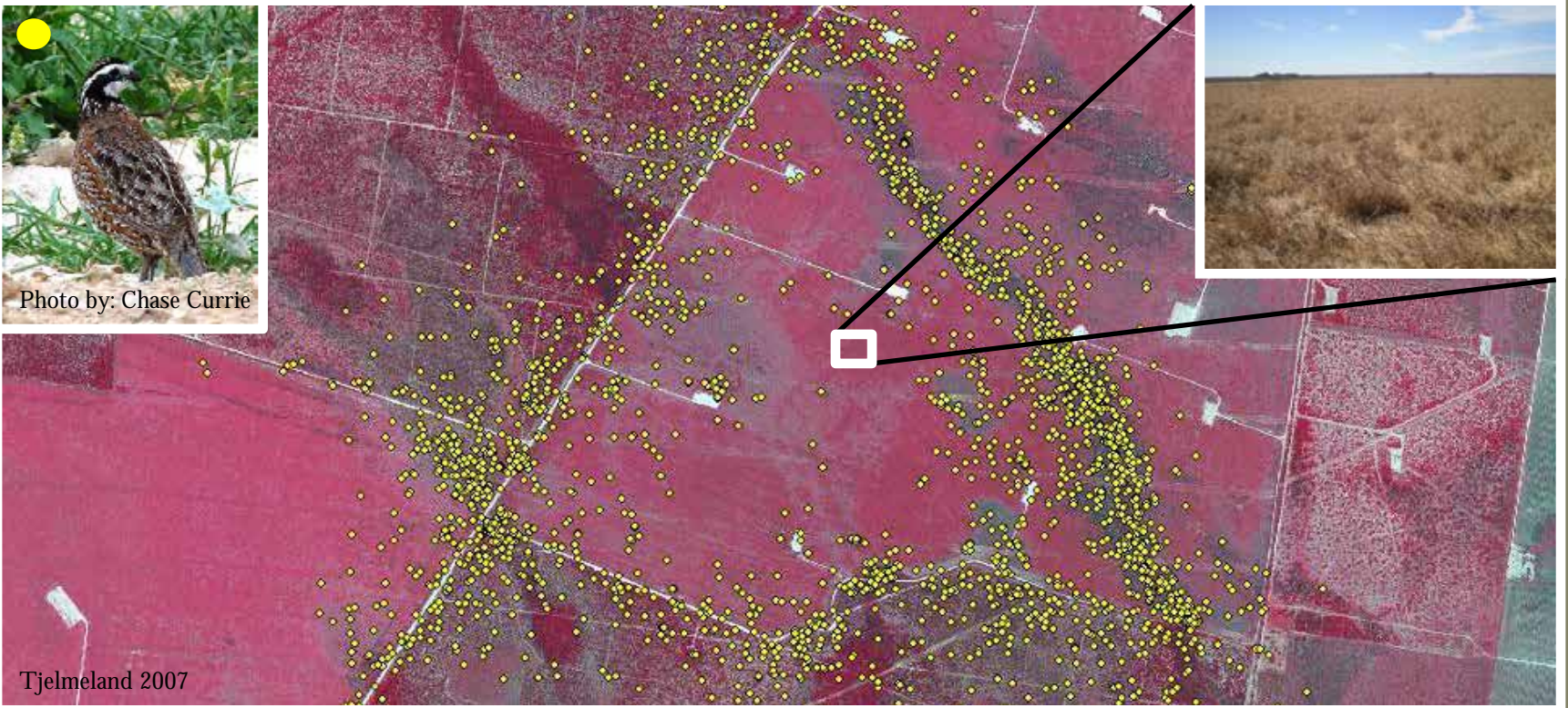
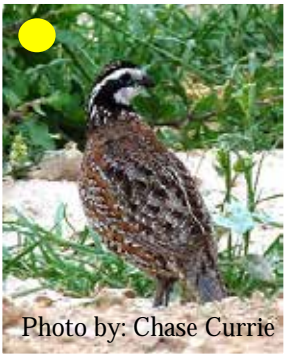
# Introduction

- Buffelgrass is an invasive, exotic grass that degrades bobwhite habitat in south Texas
- Reduces
  - Bare ground
  - Forbs
  - Arthropods
  - Plant species richness
  - Traversability
  - Heterogeneity



# Introduction

- Buffelgrass used for nesting and roosting up to 600 ft but avoided otherwise





# Introduction

- Exotic grasses here to stay
- Millions of acres invaded
- Management rather than eradication in most areas
- PB&G - Forbs, plant species richness, and heterogeneity greater on the tallgrass prairie

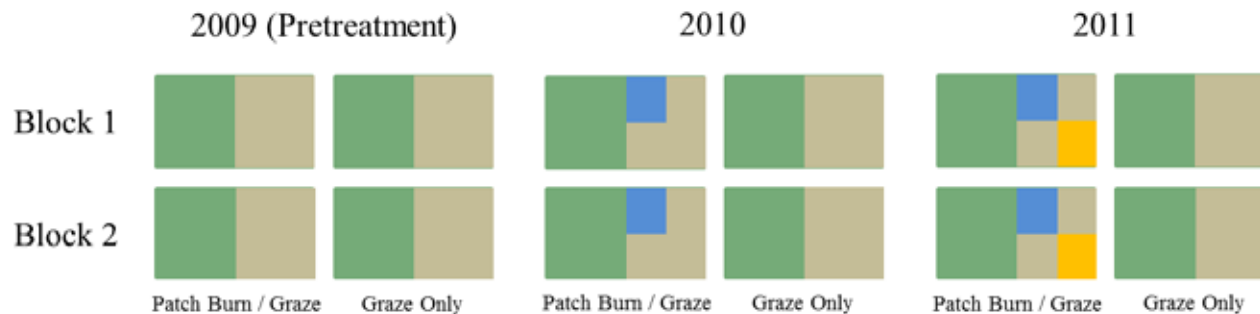
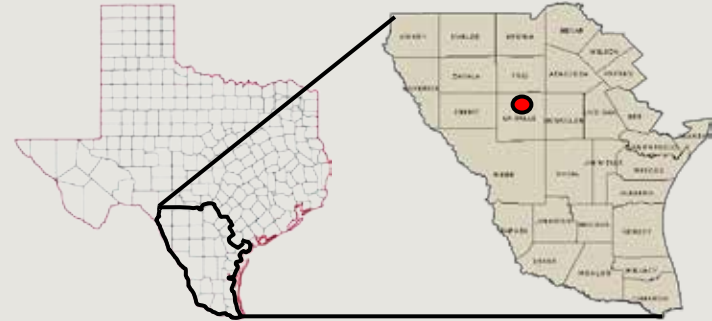


# Study Objectives

- Increase use of exotic grass communities and population densities of bobwhites
  - Reduce
    - exotic grasses
  - Increase
    - bare ground, traversability, forb and subshrubs, and species richness
    - patch heterogeneity
    - use of exotic grass
    - productivity

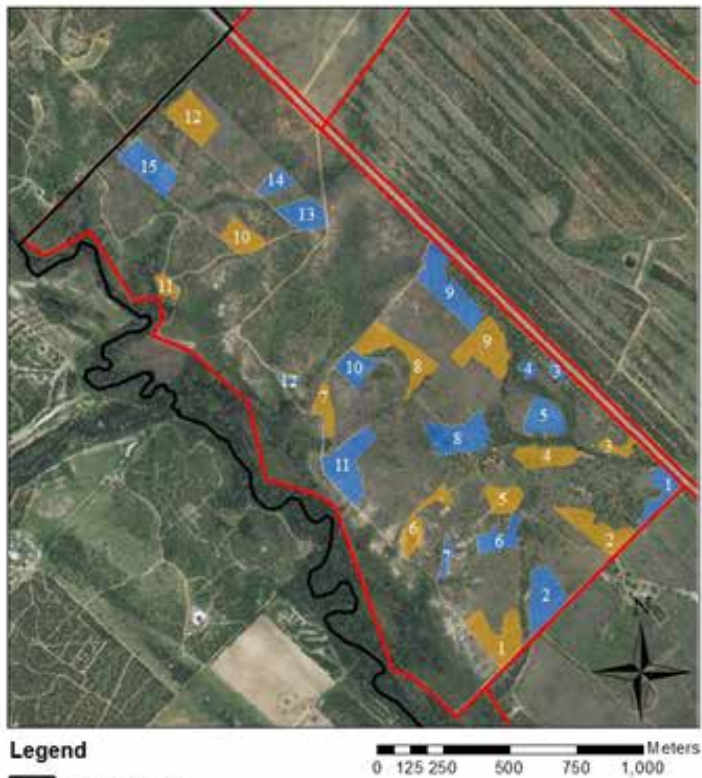
# Study Site/Design

- LaSalle County, TX
- 2009 - 2011
- 4,500 ac pastures
  - 2 Treatment – Burn 20% of the exotic grass landscape  
Graze stocker steers (1/4 ac)
  - 2 Control – Graze stocker steers

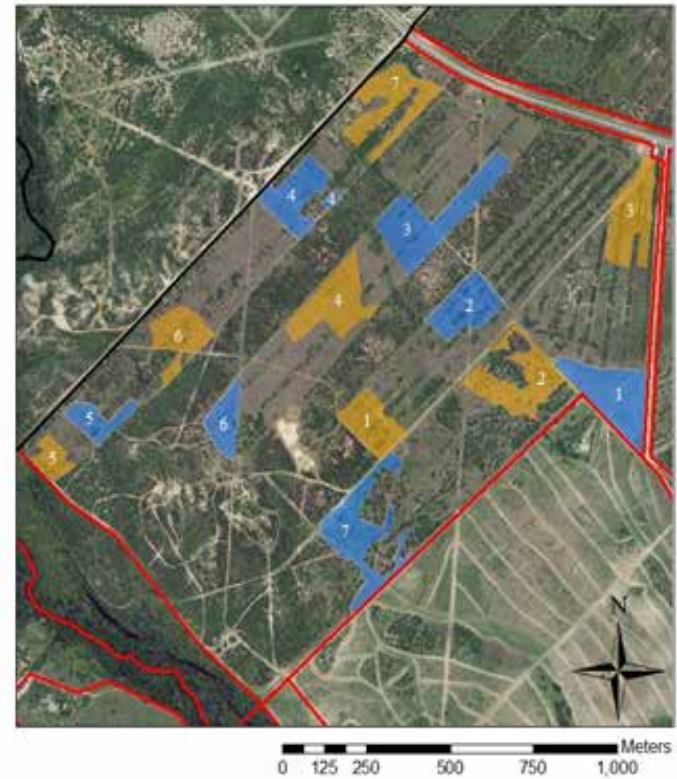


# Study Design

**Block 1 Treatment Pasture Burns**



**Block 2 Treatment Pasture Burns**









# Study Design

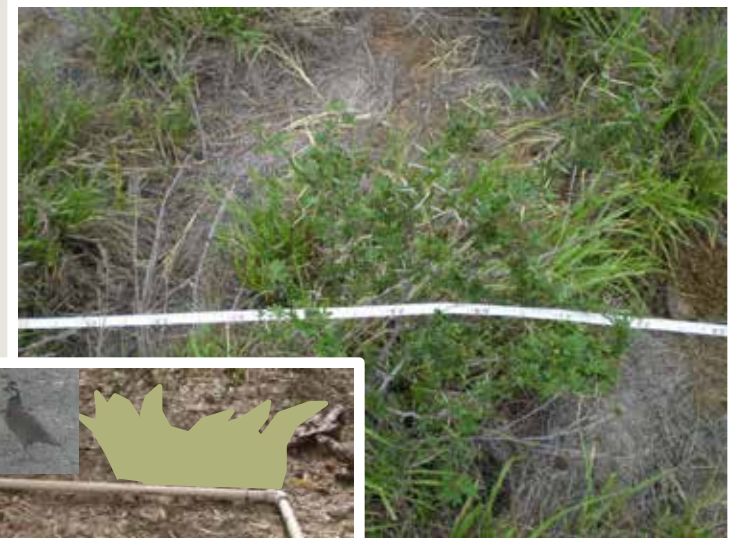




# Data Collection (Veg)



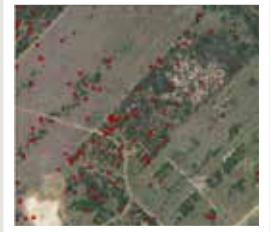
- Standing crop (4 days from steer removal)
  - 3, 2.4 m<sup>2</sup> grazing exclosures/community type
  - 4, 1m<sup>2</sup> frames/exclosure
- Canopy cover (October)
  - 120, 50 m transects
    - 30 m woody line intercept
  - 0.2 X 0.5 cm quadrats
    - Herbaceous canopy
    - Traversability







# Data Collection



- Community type use and bobwhite productivity (April – Oct)
  - Radiotelemetry 2-3 times/week
- Bobwhite density
  - Covey call counts (December - January)
  - Minimum number of known birds/pasture (Mar and Oct)
  - Trap data (March – September)



Photo by: Dr. Tim Fulbright



# Statistical Analyses

- Vegetation and bobwhite community type use and productivity
  - Mixed Models
    - Fixed Effects - Treatment and study year
    - Best fit model  $AIC_c$
    - Repeated measures (Veg transects)
- Bobwhite density (# coveys)
  - Repeated measures



# Results: Vegetation Response



No major effects on exotic grass or forb cover

# Results (Grazing Intensity)

- Grass removal (49%)                      Forb removal (46%)
- 2010 (wet year)
  - 40% grass removal in areas not burned
  - 90% grass removal in burns

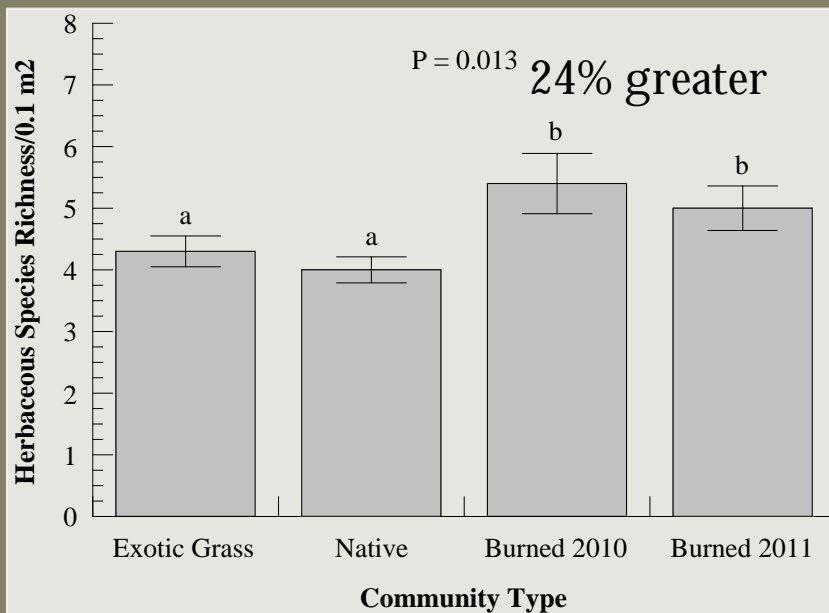




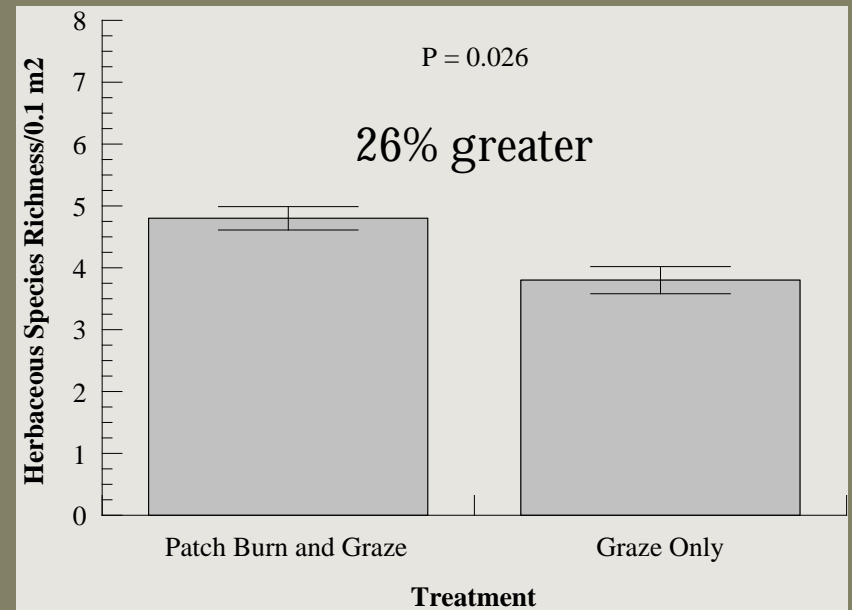


# Results (Herbaceous Species Richness)

No statistical differences during 2009 and 2010



2011



2011



# Results (Bobwhite Habitat Use)



- Bobwhites used exotic grass community types less than at random



# Mixed Results (Bobwhite Habitat Use)

19/26 burns



7/26 burns

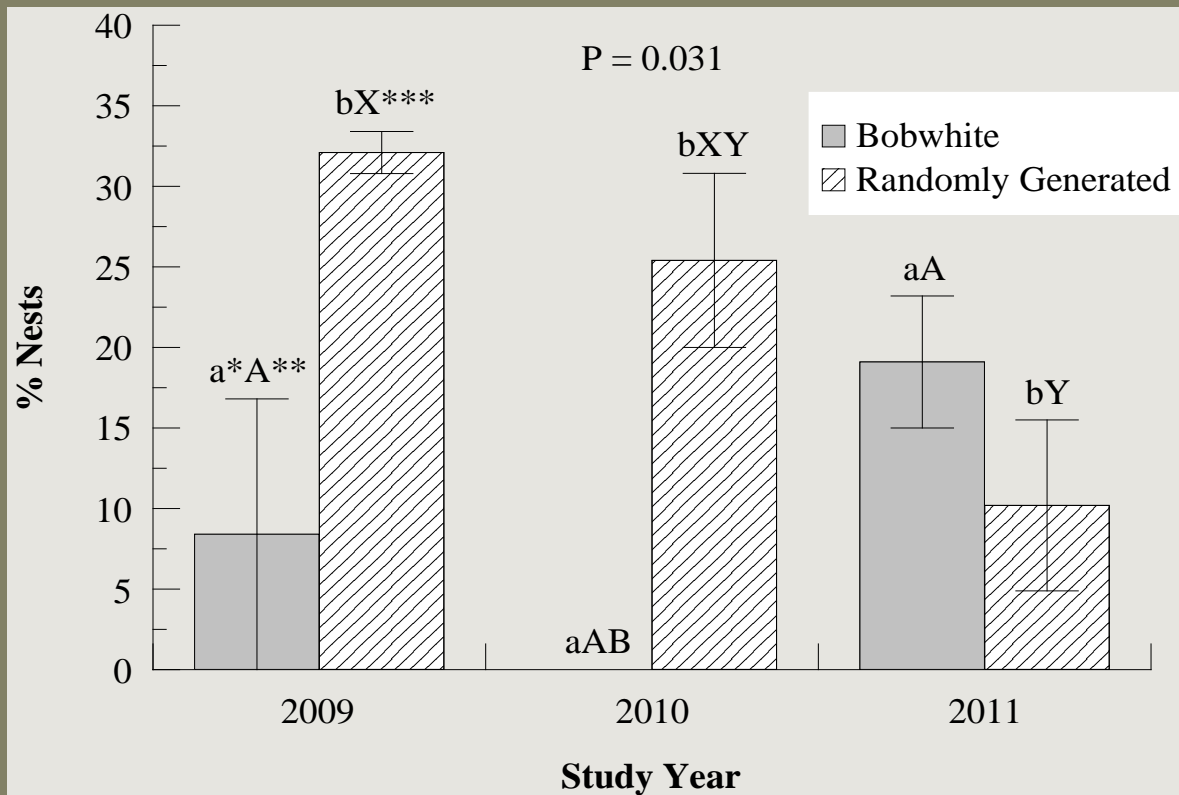


Before: Sept. 2009



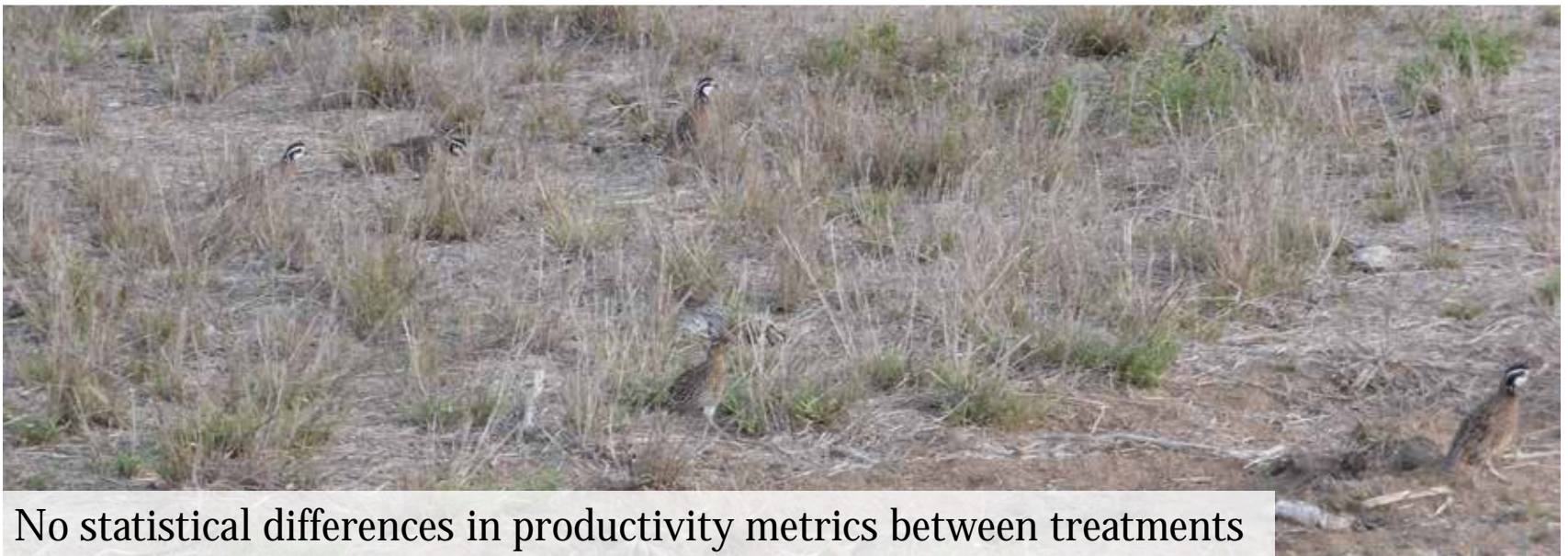


# Results (Proportion Nests in Burned Community Types)



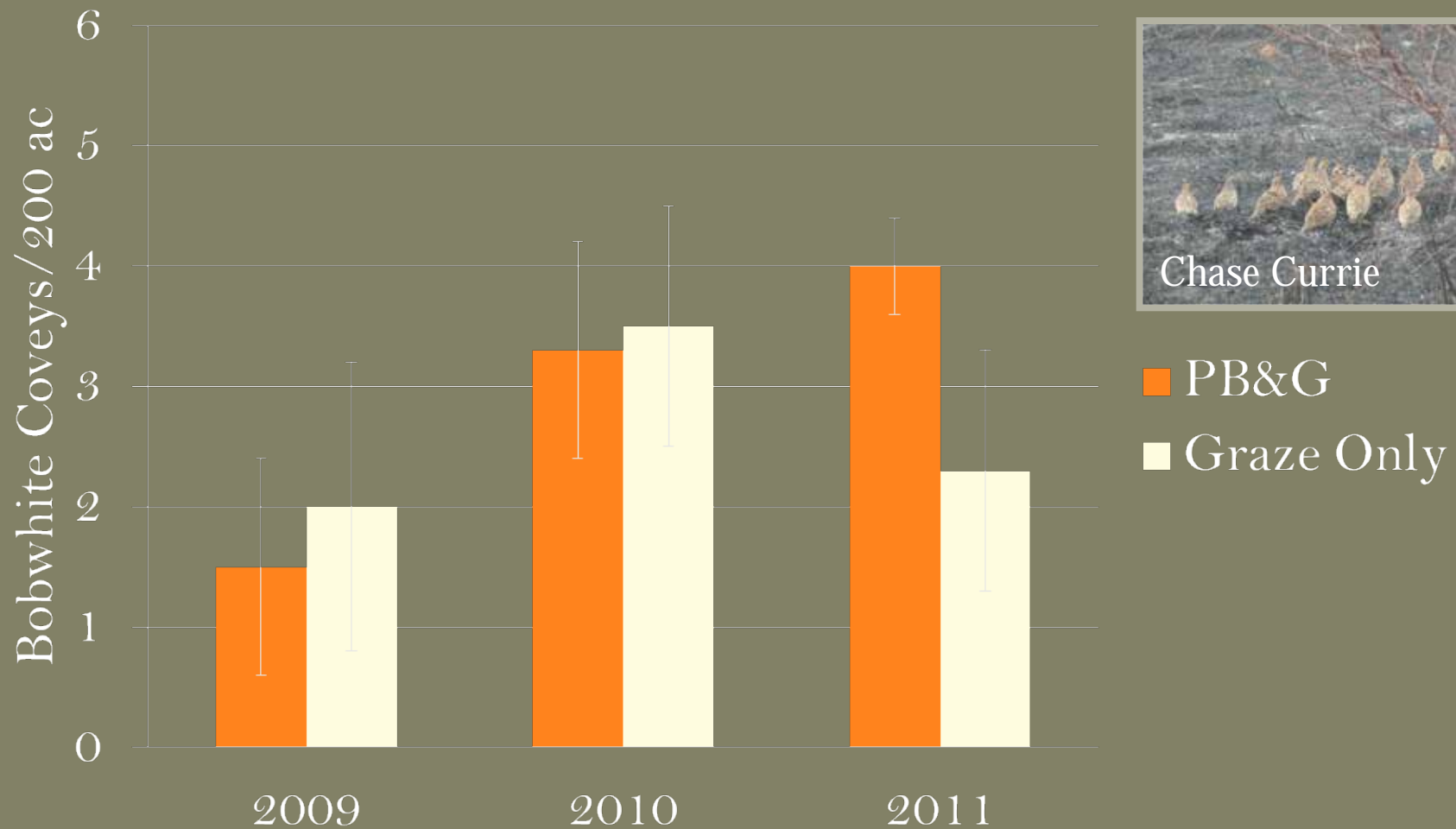


# Results (Bobwhite Productivity and Density)



No statistical differences in productivity metrics between treatments

# Results (Density)



# Conclusions

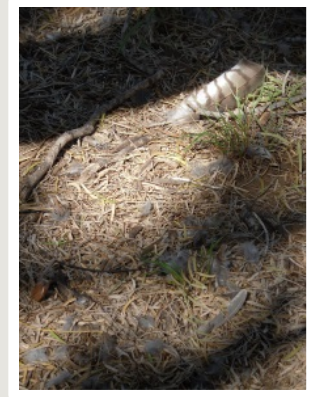
- Patch-burning and grazing did not...
  - Greatly decrease exotic grass cover
  - Increase forb and subshrub cover in most burns





# Conclusions

- Patch-burning and grazing did...
  - Result in greater heterogeneity
  - Increase species richness
  - Increase bobwhite density





# Burning Lag Effects

- Burns not usable until 1.5 years post treatment
  - i.e. lag for response in 2012

Burn 2010: 5 months later



Burn 2010: @ 1.6 years



Burn 2010: @ 2.5 years



Burn 2011: 5 months later





# Acknowledgments

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# Questions?

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Bobwhite  
Transmitter

