

# Influence of Feral Horses on Native Wildlife in the Great Basin

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# Introduction

Water is limiting in deserts

Competition for access to limited water sources

- ❖ Natural selection & adaptations



# Introduction

Horses currently exceed appropriate management levels

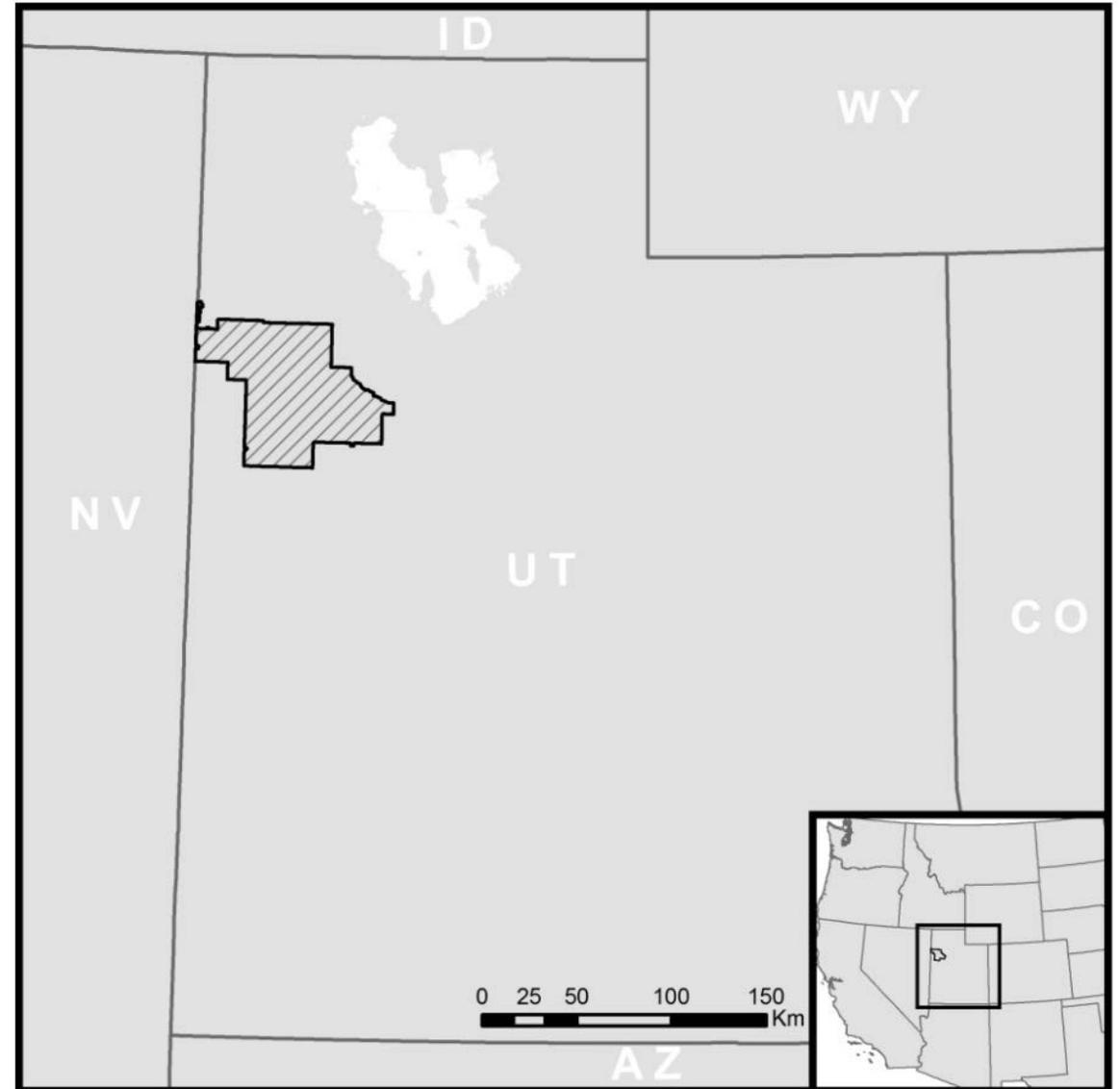
Horses may constrain access to resources that are already limiting



# Objective

Determine the influence of horses on water use by native wildlife

- ❖ Richness
- ❖ Diversity
- ❖ Temporal activity



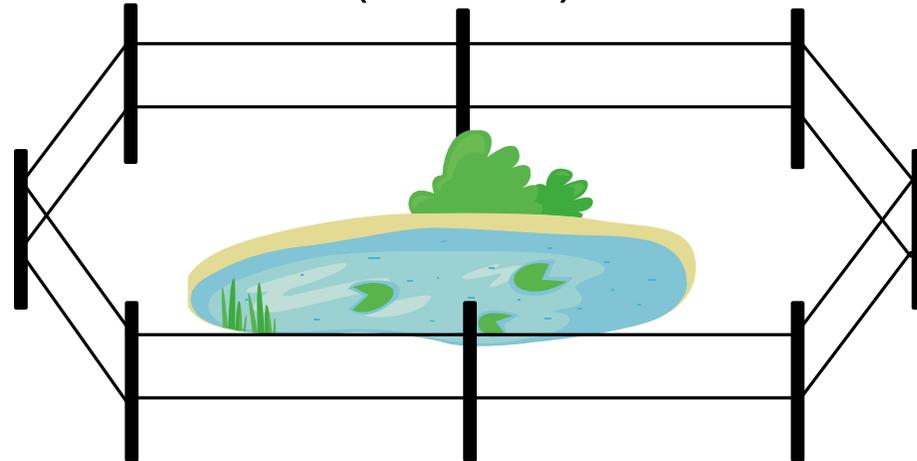
# Methods

- ▶ July 2010-11: remote cameras to monitor species visitation
- ▶ Measured habitat characteristics at each site

Horse-included (HI)  
(N = 12)



Horse-excluded (HE)  
(N = 13)

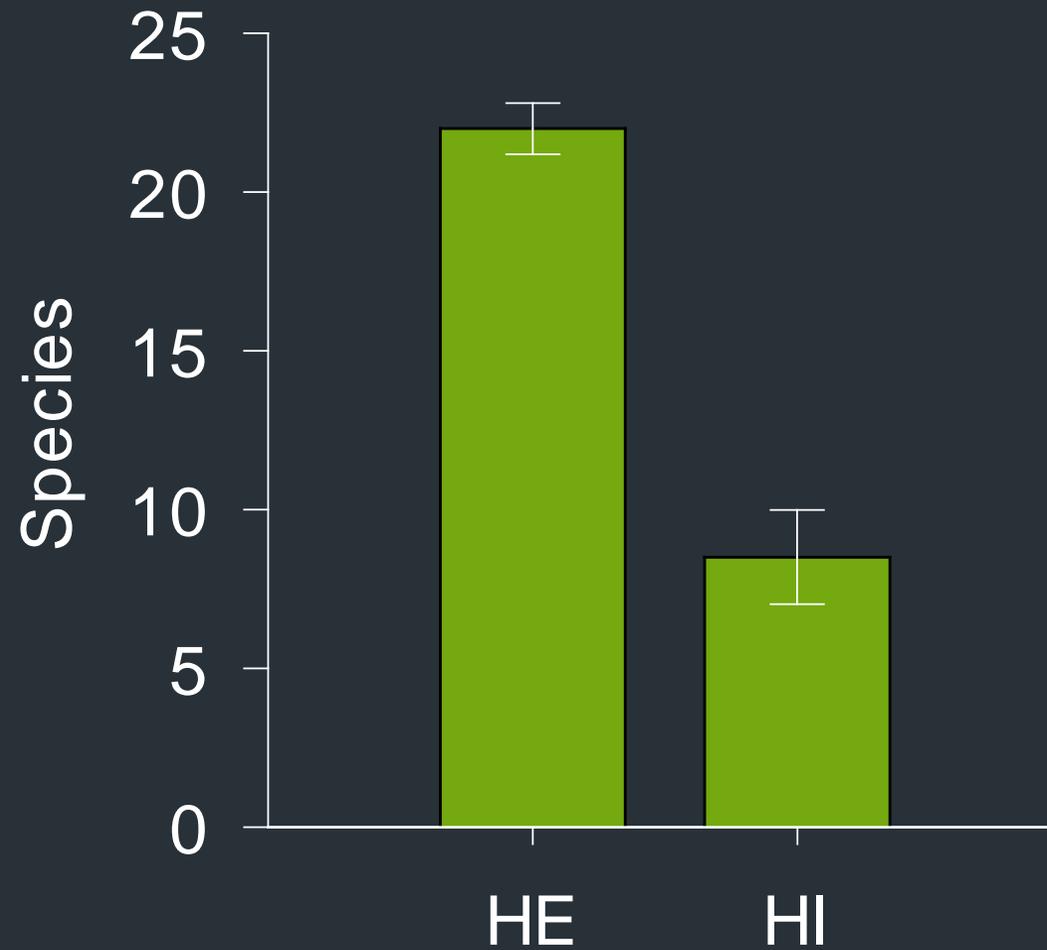


# Results

- ▶ 101,496 pictures of animals
  - ▶ 48,268 pics of native wildlife at 25 water sources
  - ▶ 53,228 pics of feral horses at 12 water sources
- ▶ Distinct differences between horse and no-horse sites...

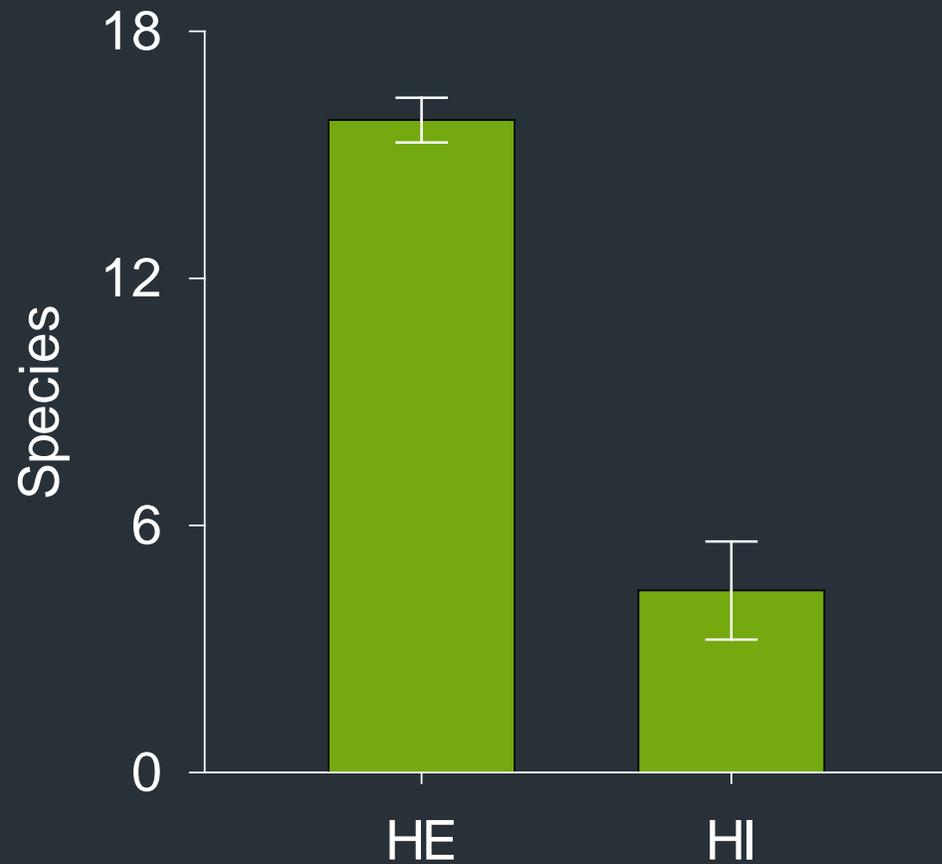


# Overall Species Richness

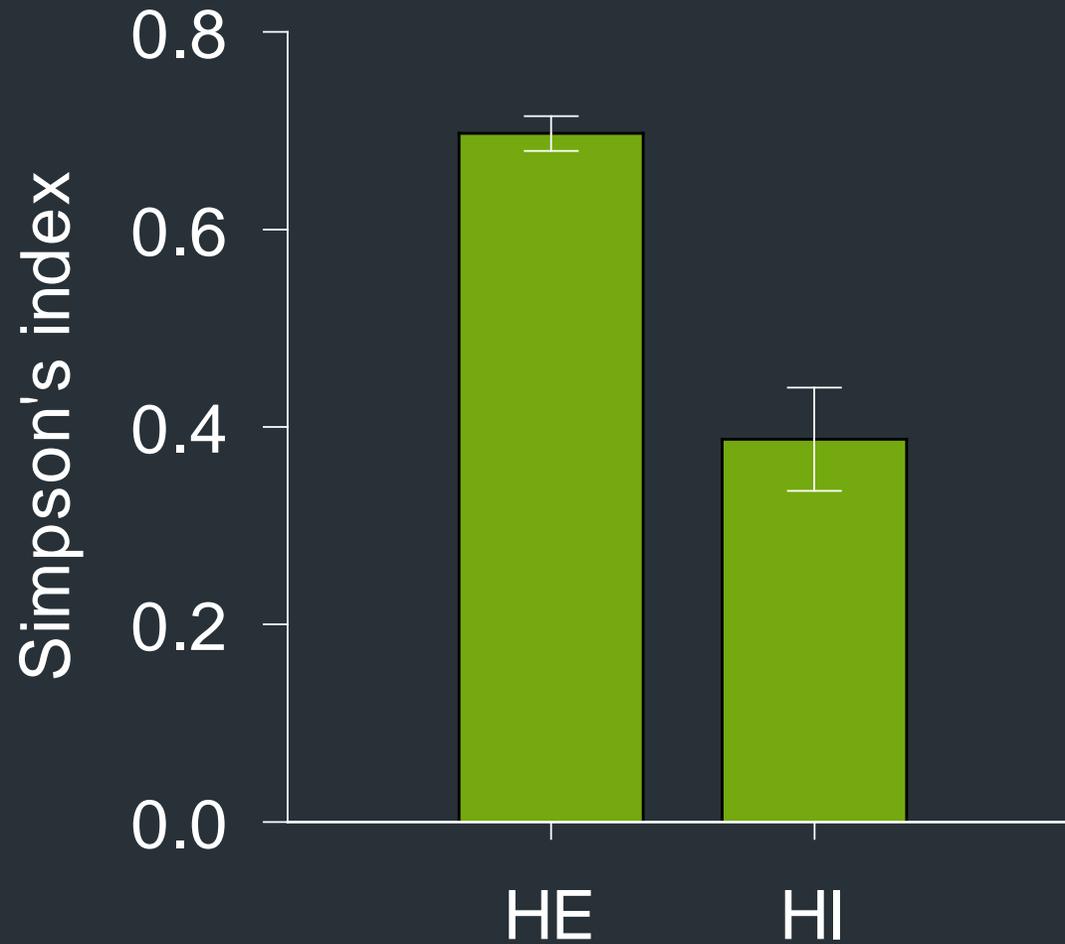


# Species Richness

Avian



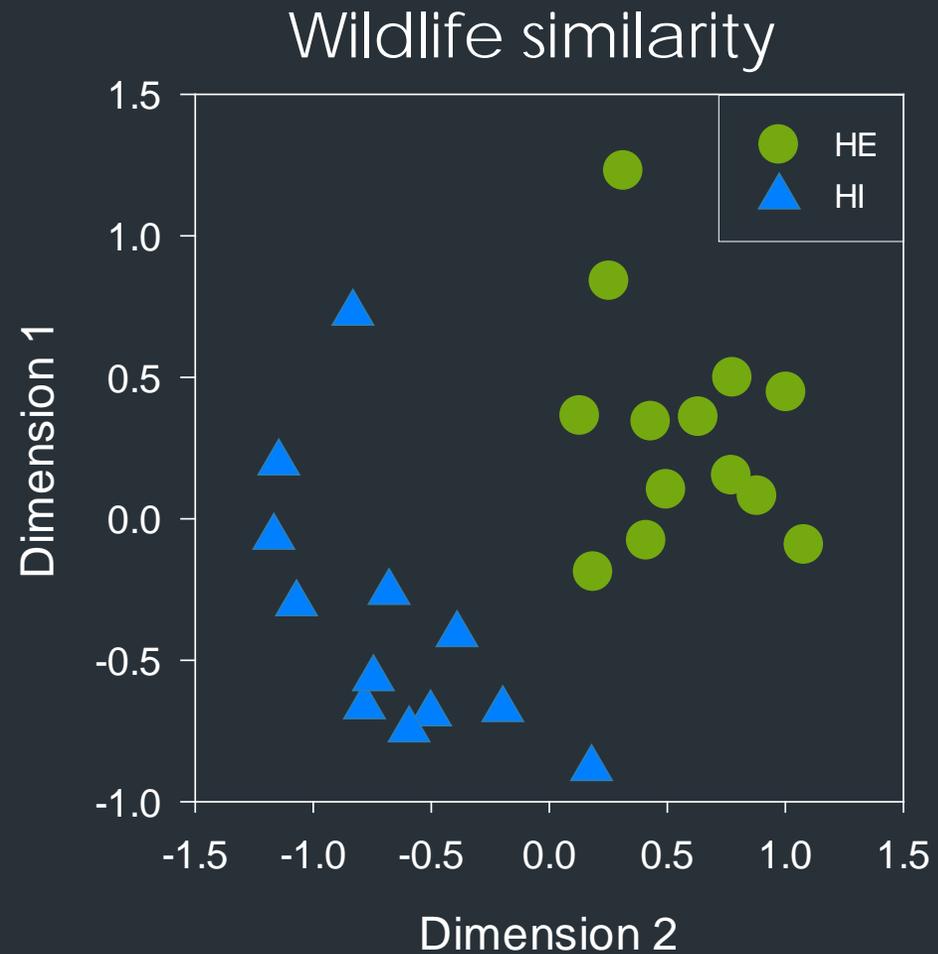
# Overall Species Diversity



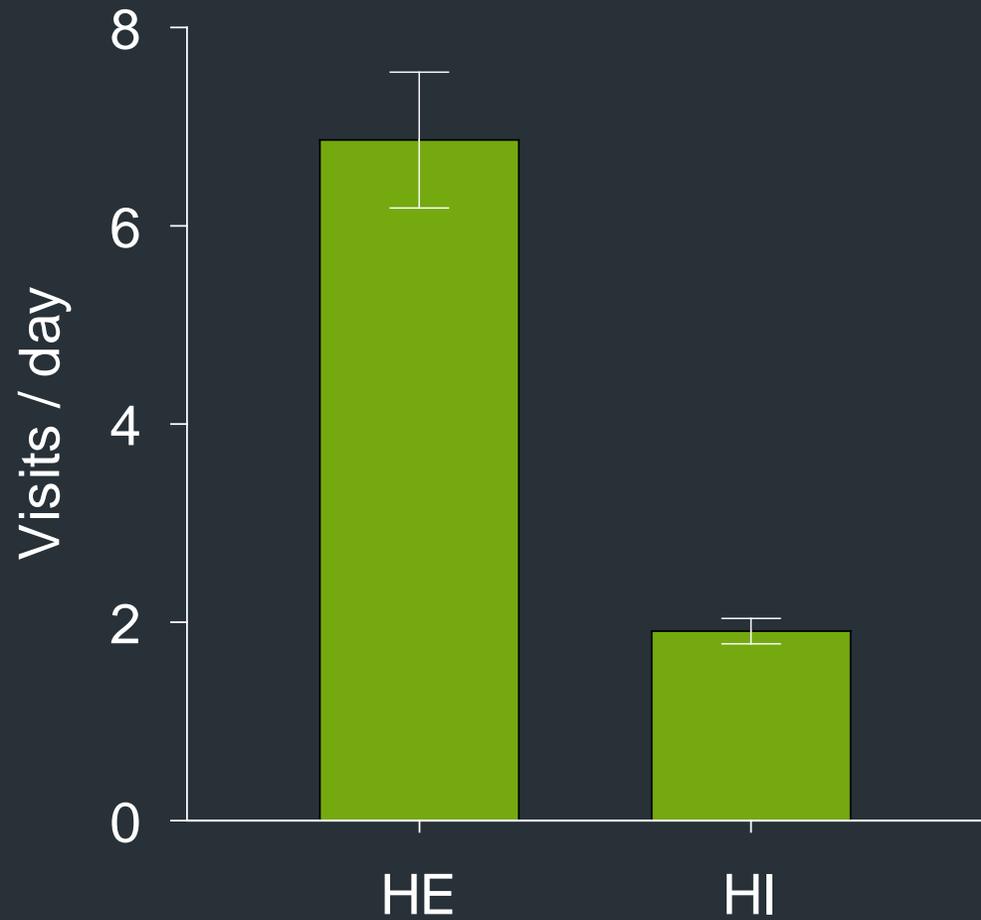
# Species Diversity



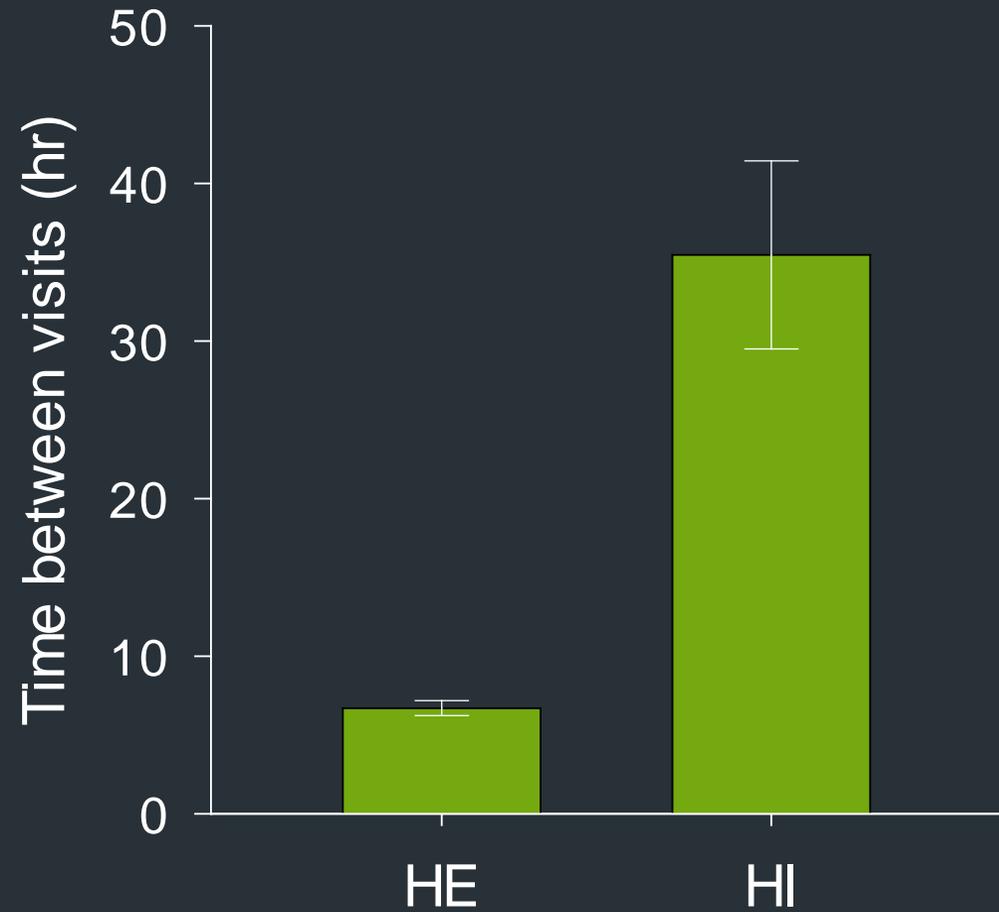
# Community Differences



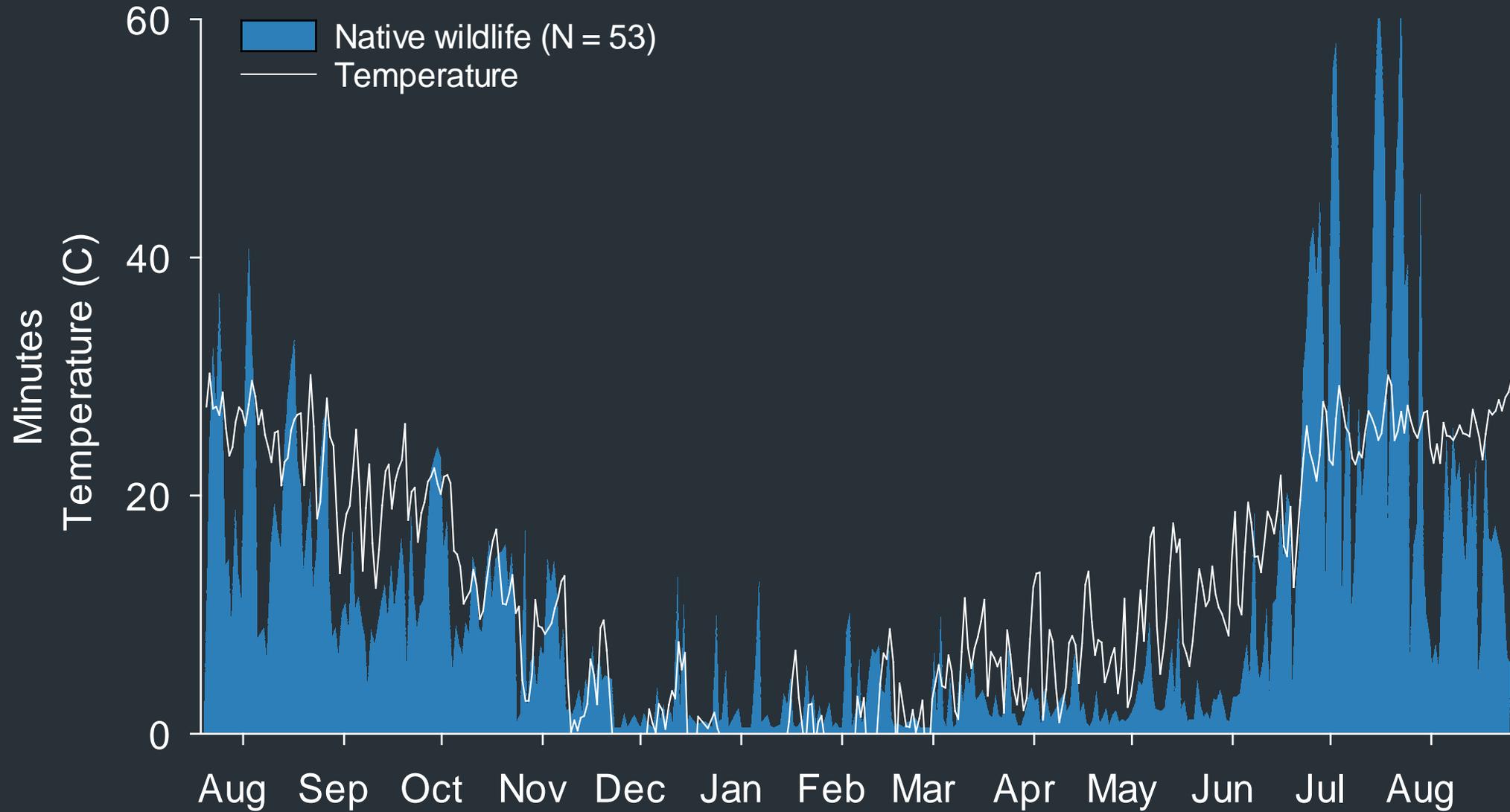
# Wildlife Visitation



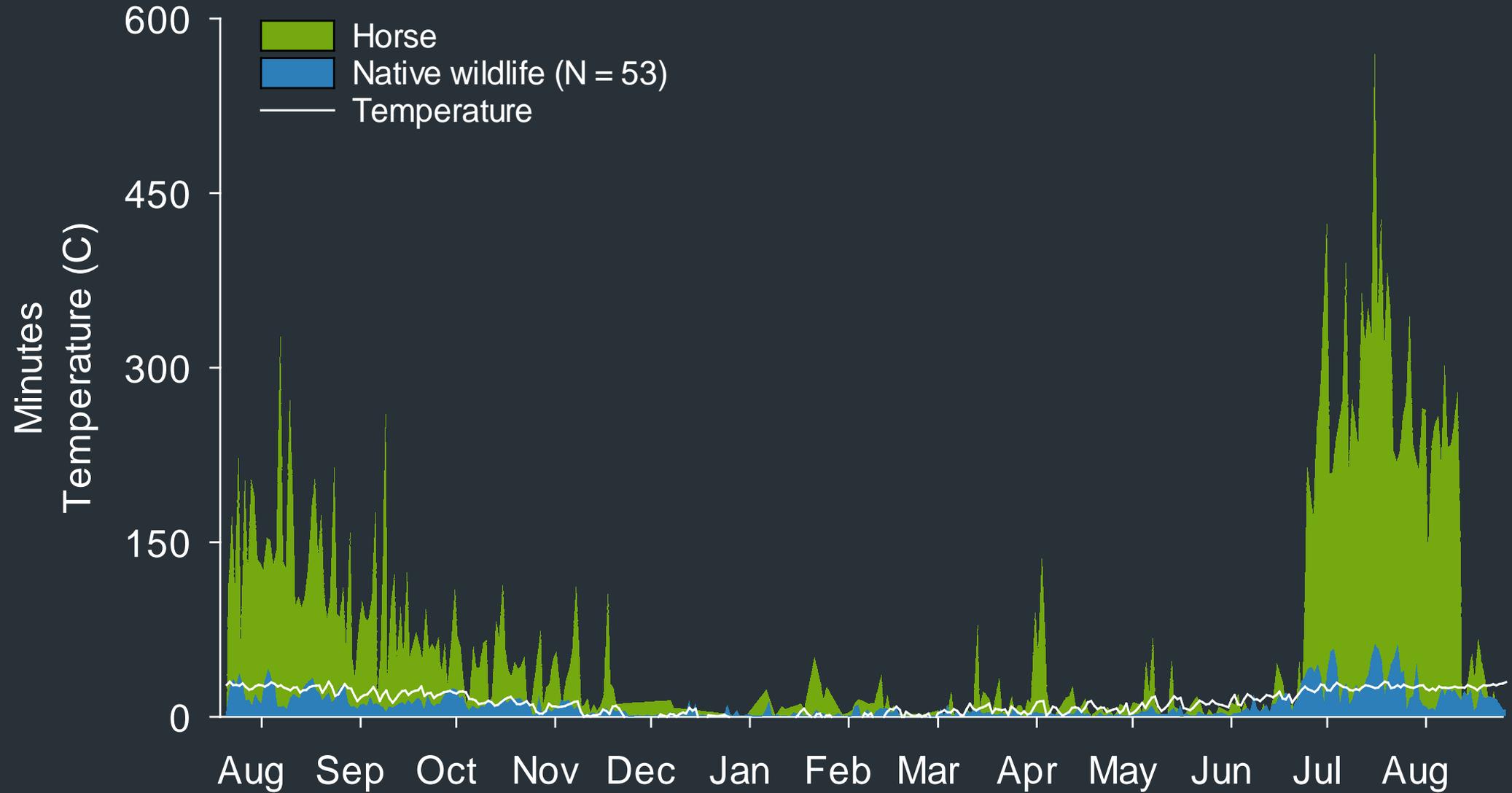
# Wildlife Visitation



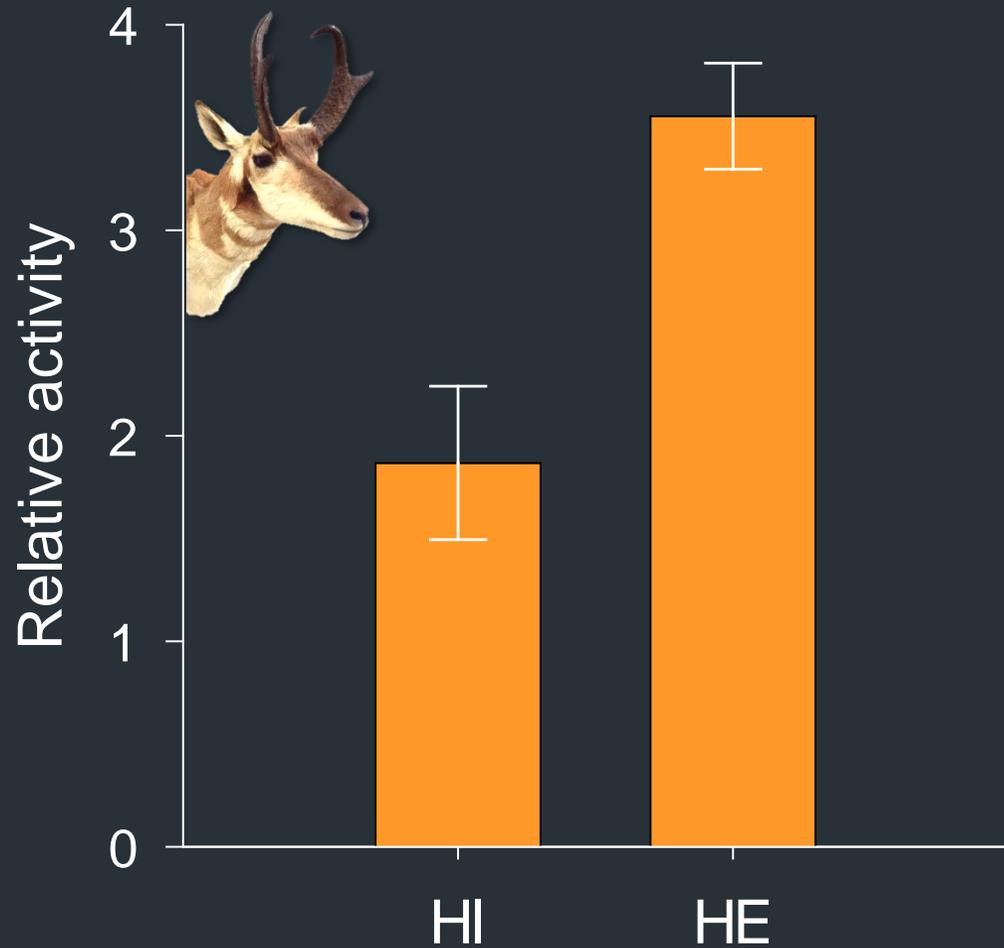
# Annual Use of Water



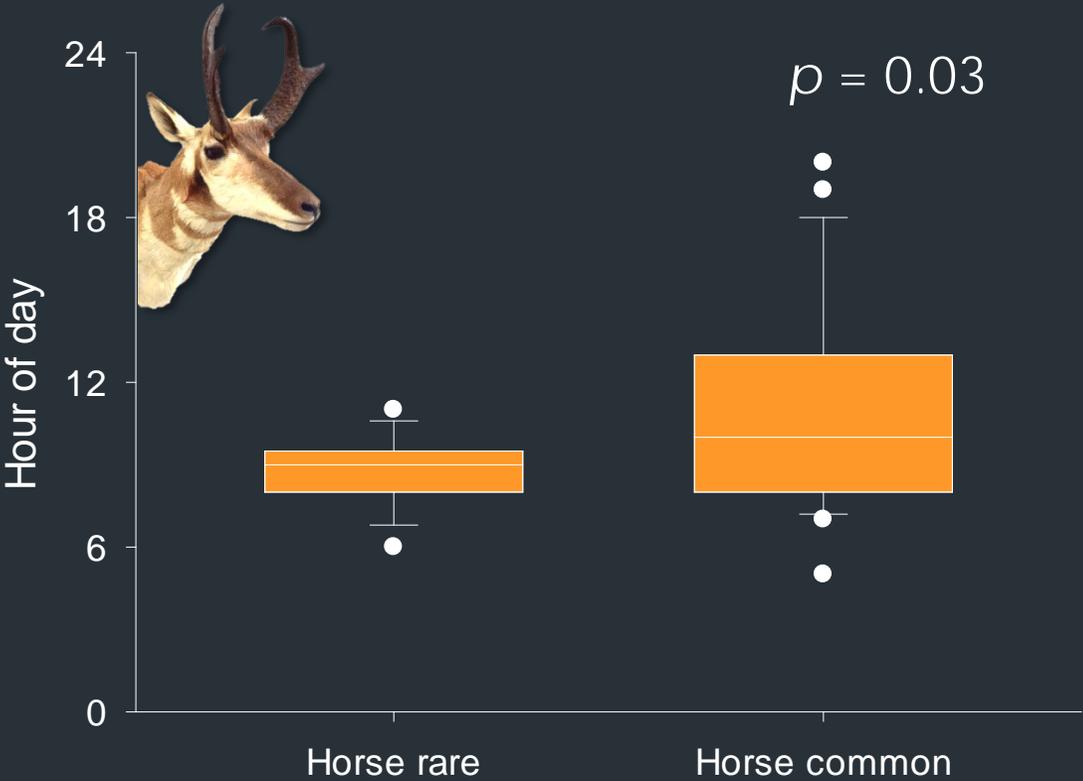
# Annual Use of Water



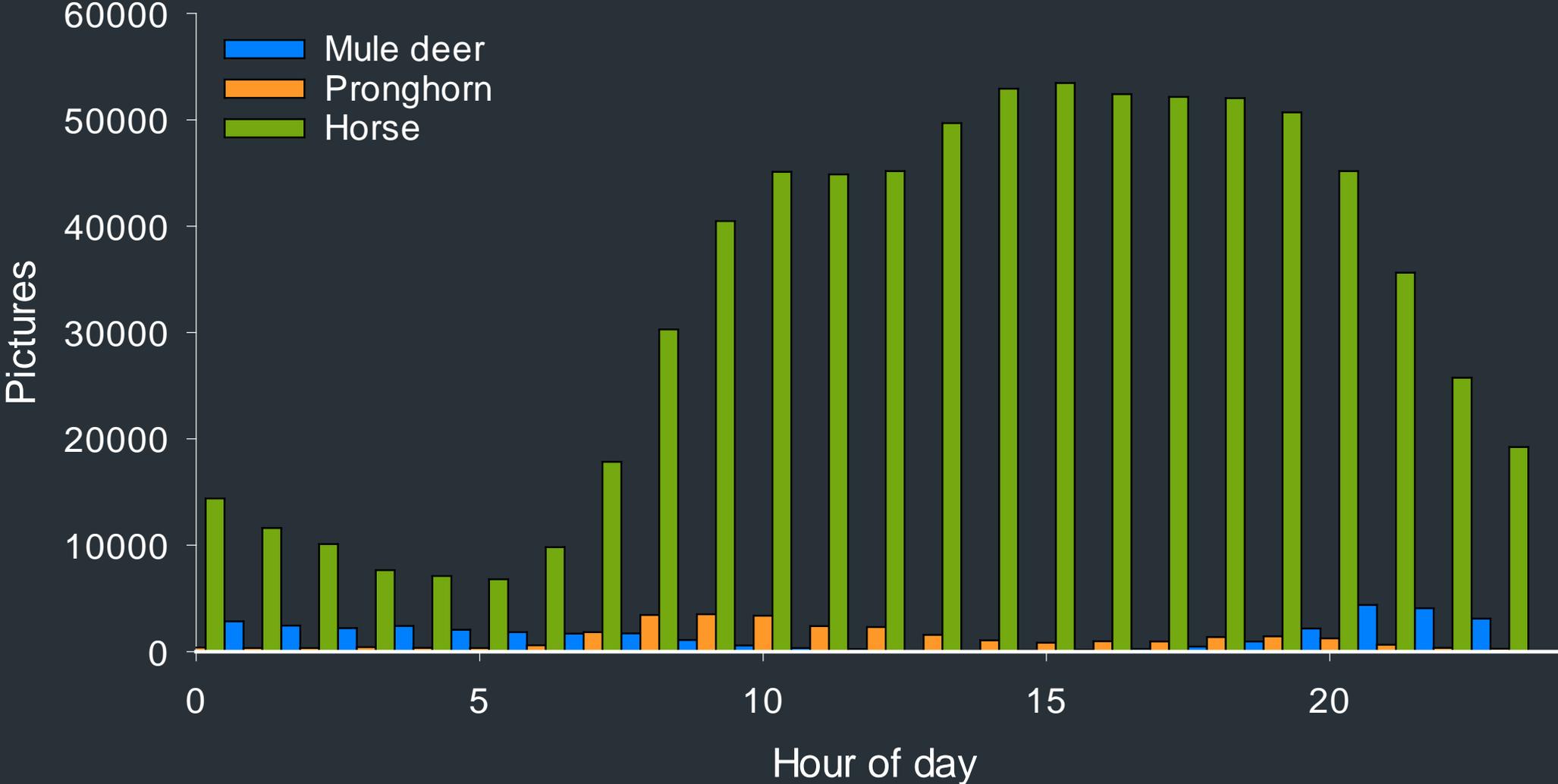
# Spatial Use of Water



# Temporal Use of Water



# Daily Use of Water



# Conclusions

- ▶ Fewer native species used water sources where horses were present:
  - ▶ ↓ Richness
  - ▶ ↓ Diversity
  - ▶ ↓ Temporal activity
- ▶ ***Water fountain effect***



## Long-Term Aridity Changes in the Western United States

Edward R. Cook,<sup>1\*</sup> Connie A. Woodhouse,<sup>2</sup> C. Mark Eakin,<sup>2</sup>  
David M. Meko,<sup>3</sup> David W. Stahle<sup>4</sup>

## Model Projections of an Imminent Transition to a More Arid Climate in Southwestern North America

Yuchanan Kushnir,<sup>1</sup> Jian Lu,<sup>4</sup>  
Antje Leetmaa,<sup>2</sup> Ngar-Cheung Lau,<sup>2,3</sup>

## Future dryness in the southwest US and the hydrology of the early 21st century drought

Daniel R. Cayan<sup>a,b,1</sup>, Tapash Das<sup>a</sup>,

## Water, climate change, and sustainability in the southwest

## A 1,200-year perspective of 21st century drought in southwestern North America

Connie A. Woodhouse<sup>a,b,1</sup>, David

## Unprecedented 21st century drought risk in the American Southwest and Central Plains

Benjamin I. Cook,<sup>1,2\*</sup> Toby R. Ault,<sup>3</sup> Jason E. Smerdon<sup>2</sup>

drier

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# Conclusions

- ▶ Our results indicate that horses displace native wildlife from water sources
- ▶ Evidence that horses negatively influence native wildlife



**The End**

