Habitat Selection of Greater Prairie-Chicken Broods in a Heterogeneous Grassland

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Habitat Selection

Habitat-use influenced by scale and time

Hierarchal process: Subunits within larger habitat units

Trade-offs between multiple resource needs

- Food
- Predator Avoidance
- Thermal Conditions (Both Hot and Cold)

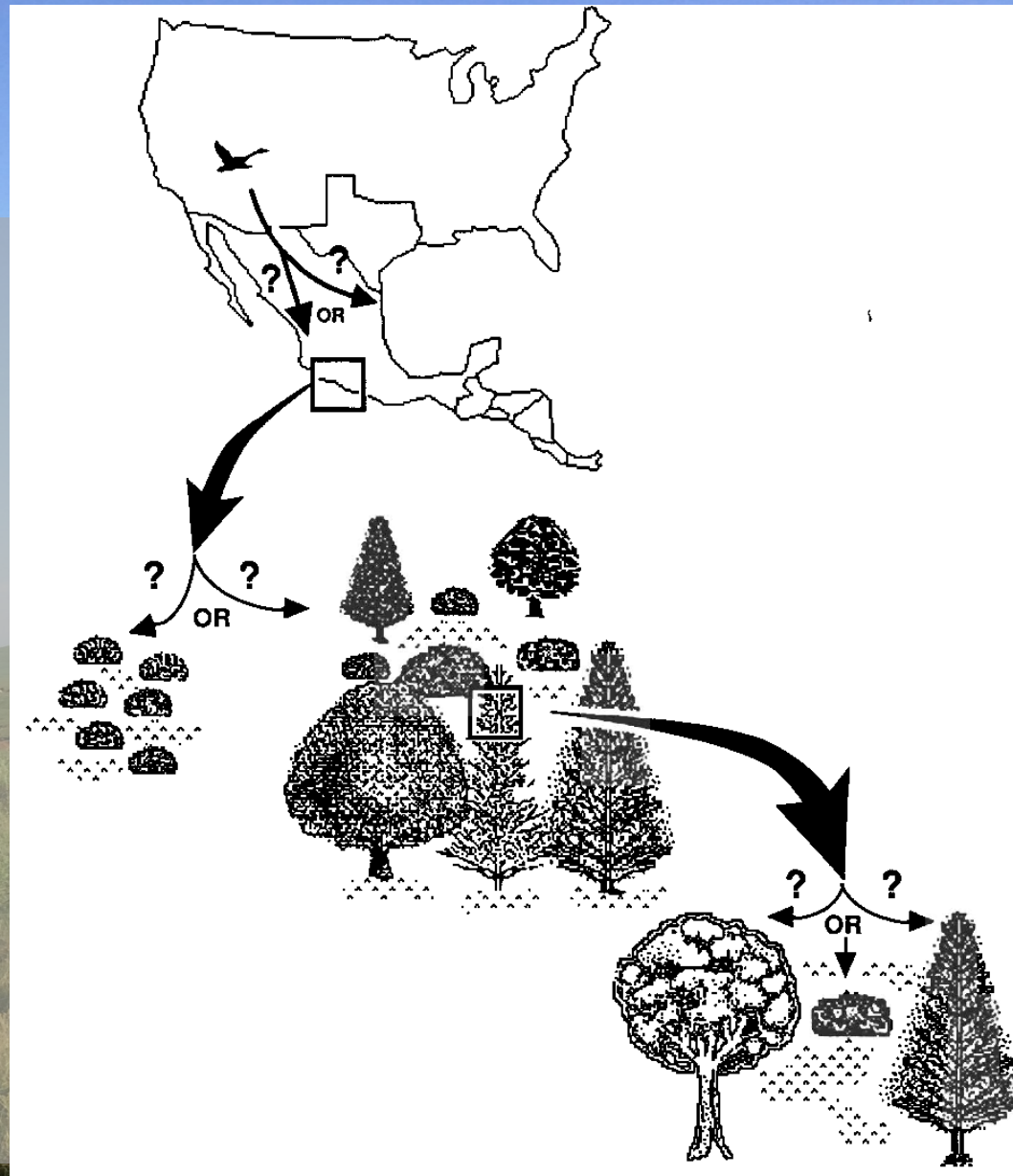


FIGURE 5. Hierarchical decision-making process of habitat selection by migratory birds (from Hutto, 1985).

Greater Prairie-Chicken Broods (*Tympanuchus cupido*, GRPC)

High energy demands due to rapid growth

Sensitive to weather

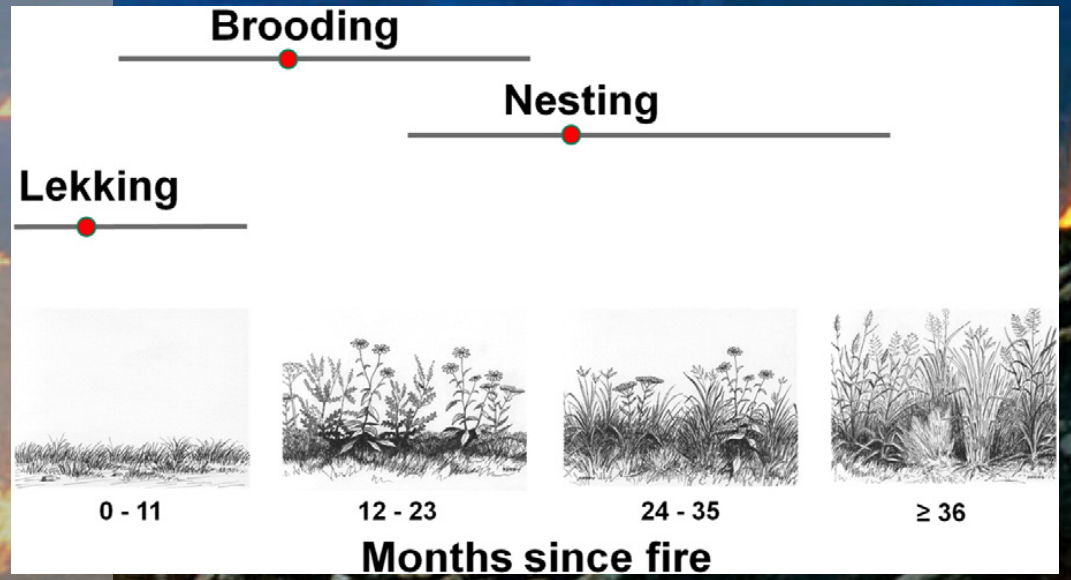
Low mobility

Grassland Heterogeneity

Fire and grazing drives vegetation structure

Management that emphasizes heterogeneity becoming more common

Different patches used by GRPC through life-cycle



Objectives

Evaluate GRPC brood habitat selection and response to heterogeneity

What factors are important for determining habitat use?

- Vegetation Structure
- Thermal Environment
- Food resources (Invertebrate Biomass and Abundance)

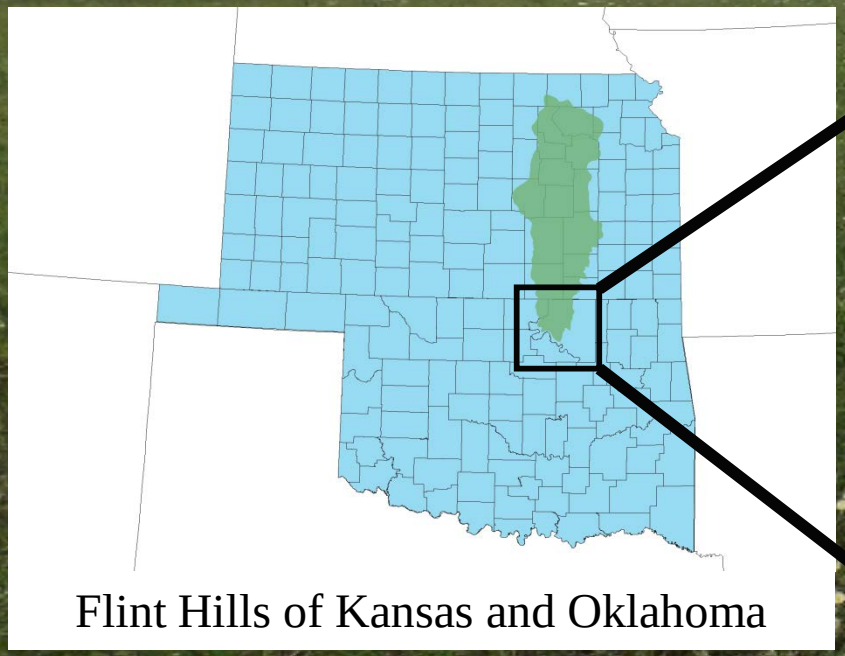
Do broods use different patches for different parts of daily cycle?

Study Site: Osage County, Oklahoma

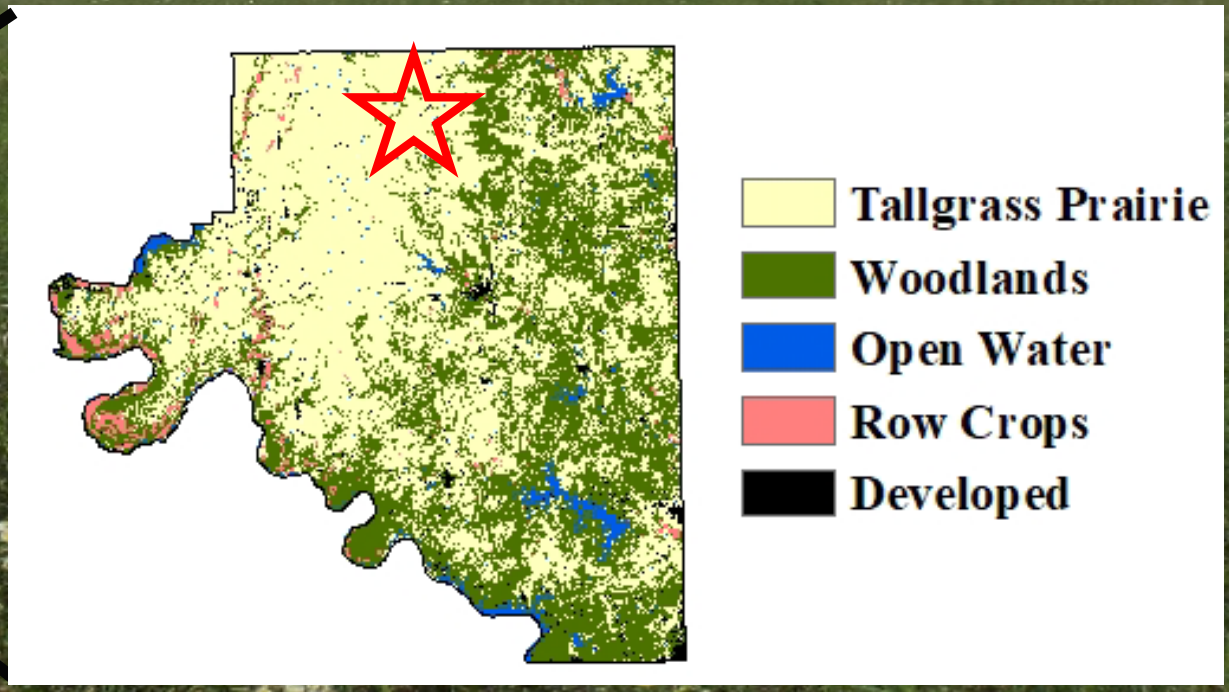
Study Site:

Private Cattle Ranches

The Nature Conservancy's Tallgrass Prairie Preserve



Flint Hills of Kansas and Oklahoma



Methods: Capture and Transmitters

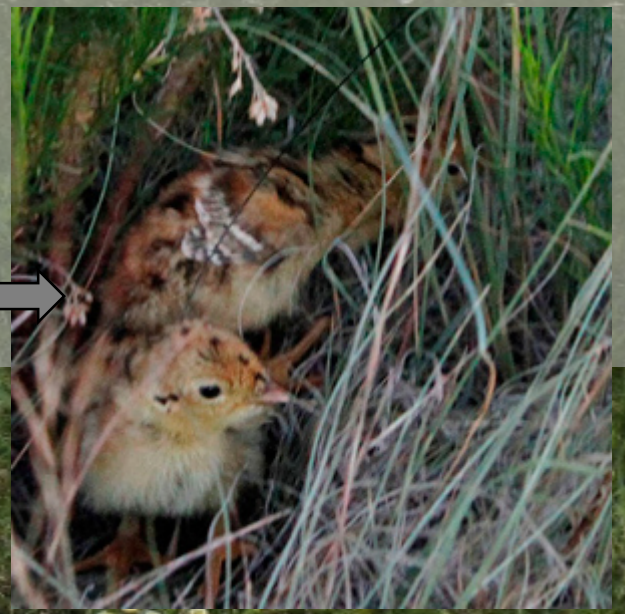
Female GRPC captured using walk in funnel traps on leks

- 22 gram Argos/PPT GPS transmitters (Microwave Telemetry Inc, Columbia, MD, USA)
  - 15 locations per day
  - Transmitter error ± 18-20 meters

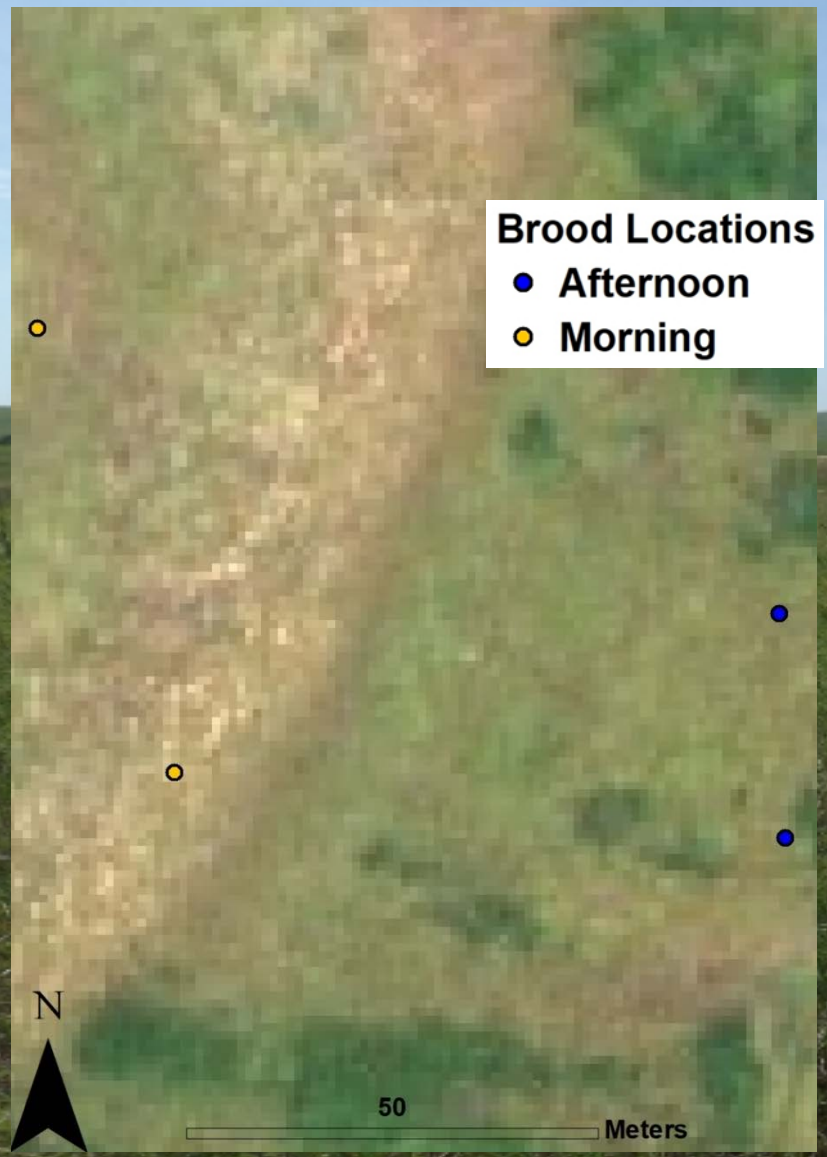
Nest and Brood Monitoring

Monitor nests remotely via Satellite GPS

Conducted weekly brood flushes to monitor survival



Sampling Design



Randomly select 4 GPS Locations

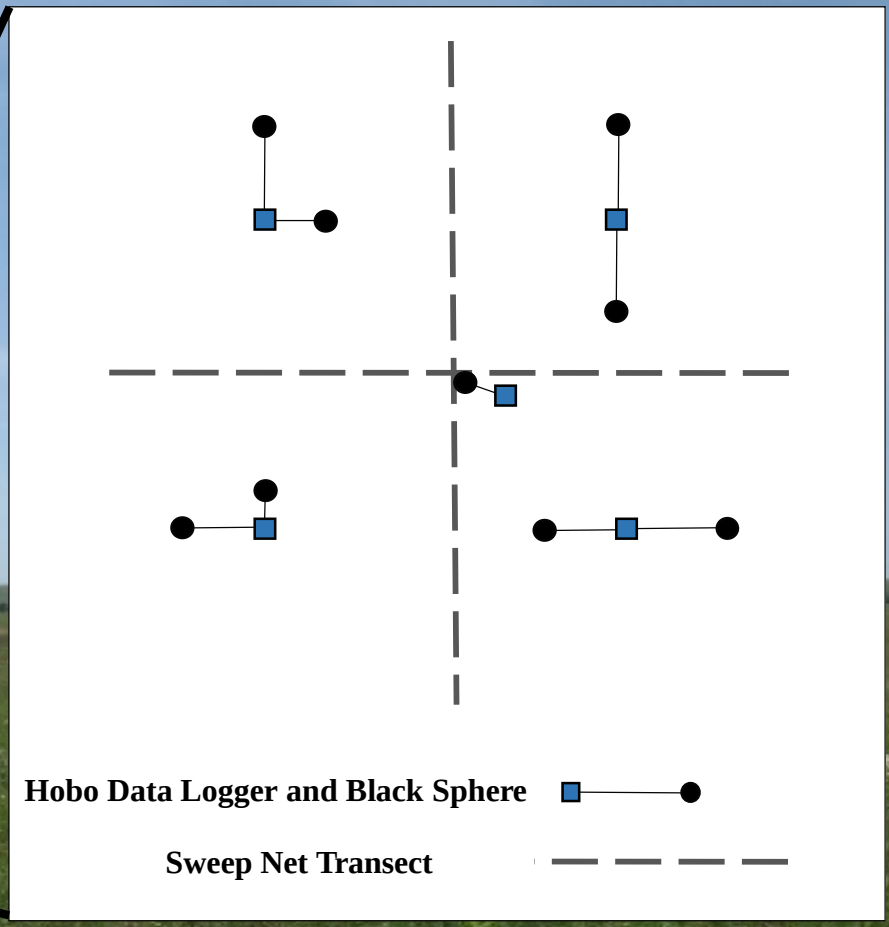
2 Morning feeding locations (7:00-10:00)
2 Afternoon loafing locations (13:00-16:00)

Thermal (Black Spheres Tbs with Hobo Data Loggers)

Vegetation
- Percent Cover
- Vegetation Height
- Visual Obstruction (VOR)
- Litter Depth

Sweep net Transects

Sampling Design



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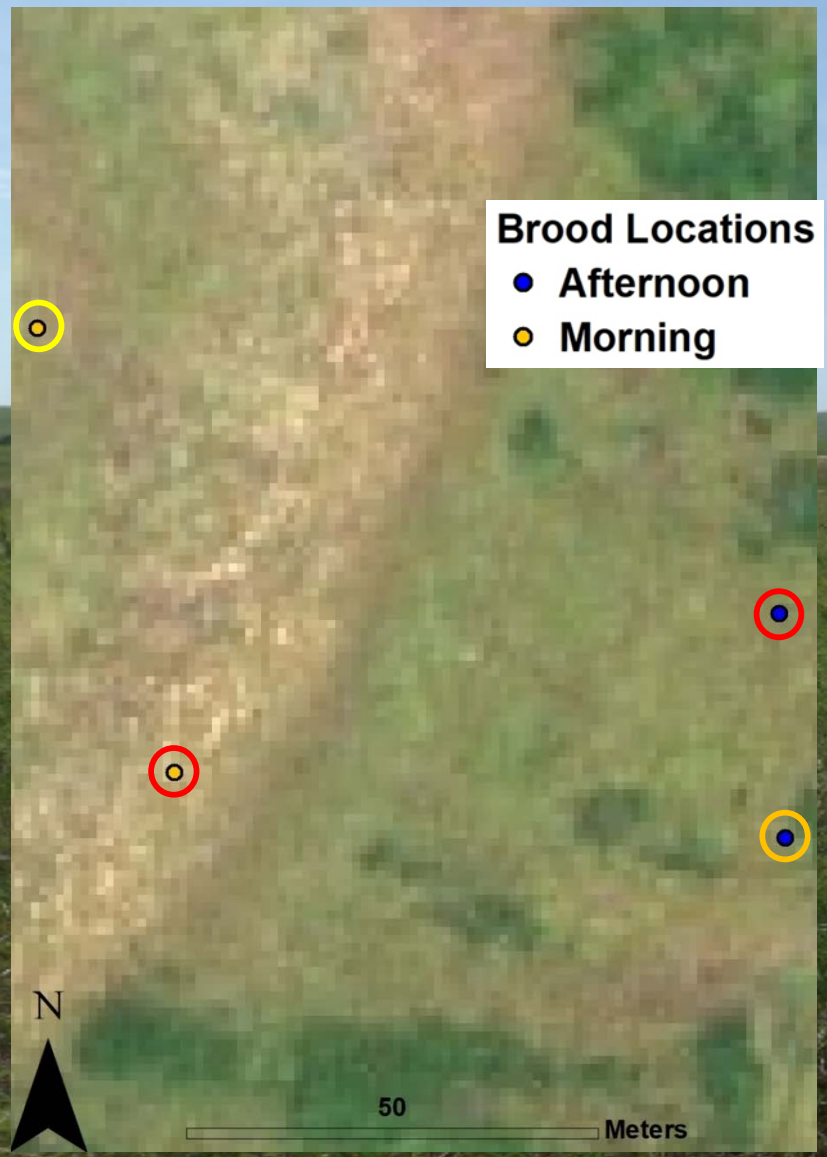


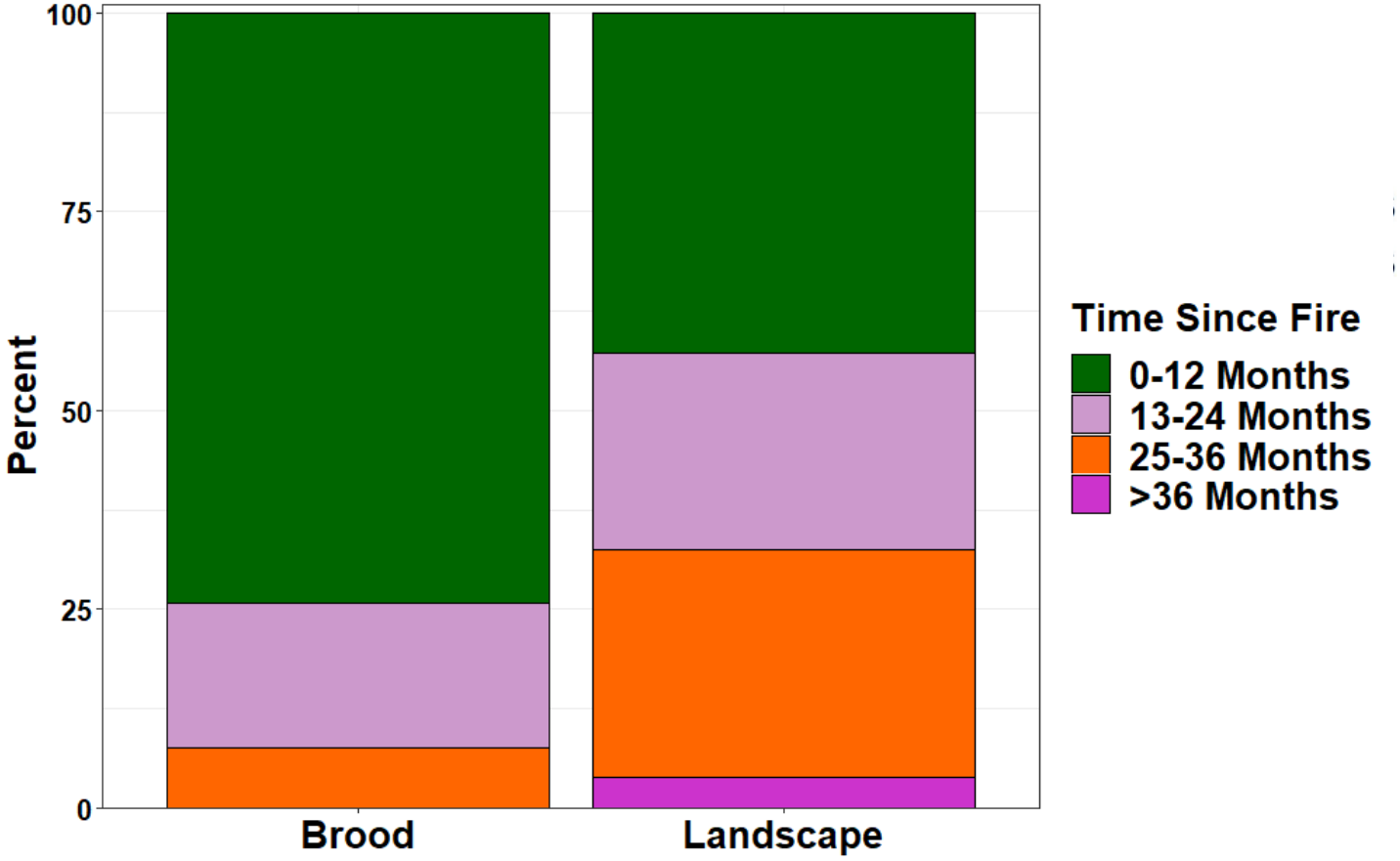
Locations Randomly Assigned Sample Period

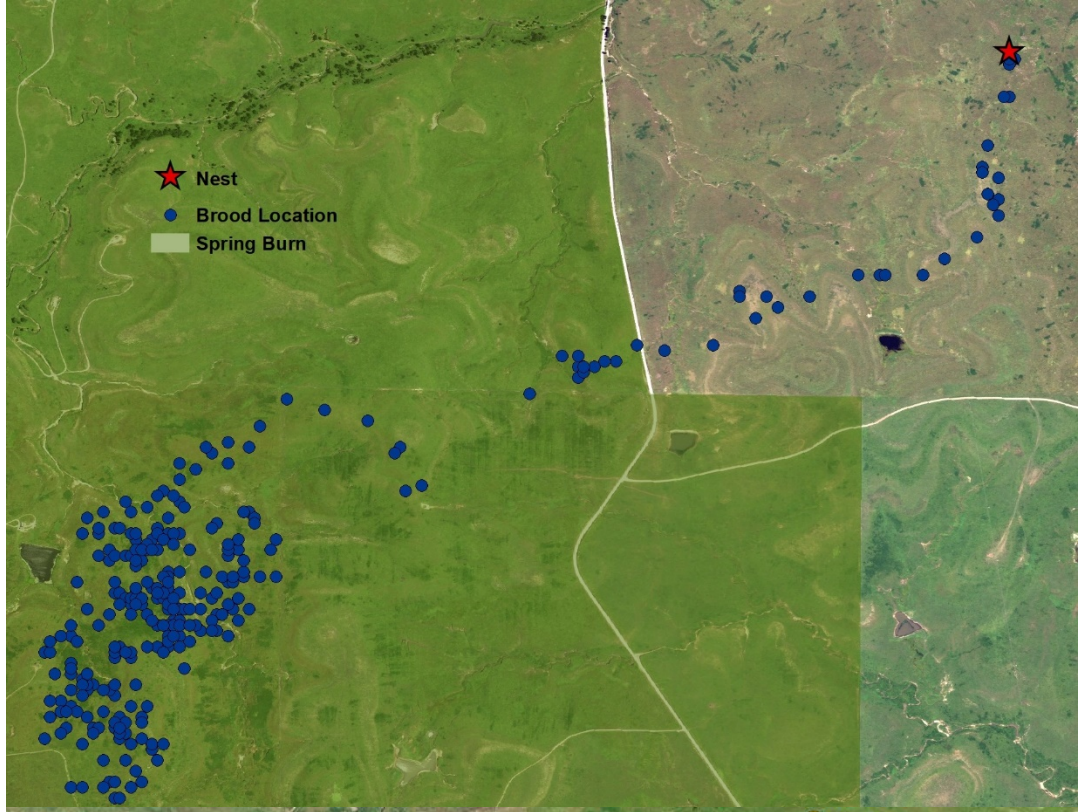
Sample Times

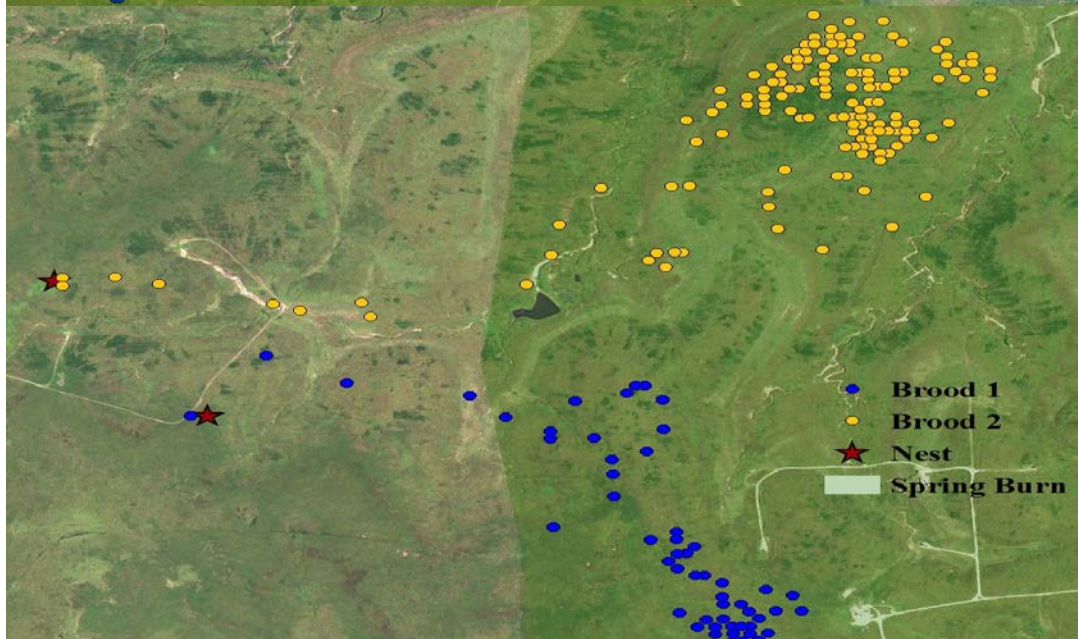
Afternoon (12:30-17:00)

Morning (6:30-10:30)

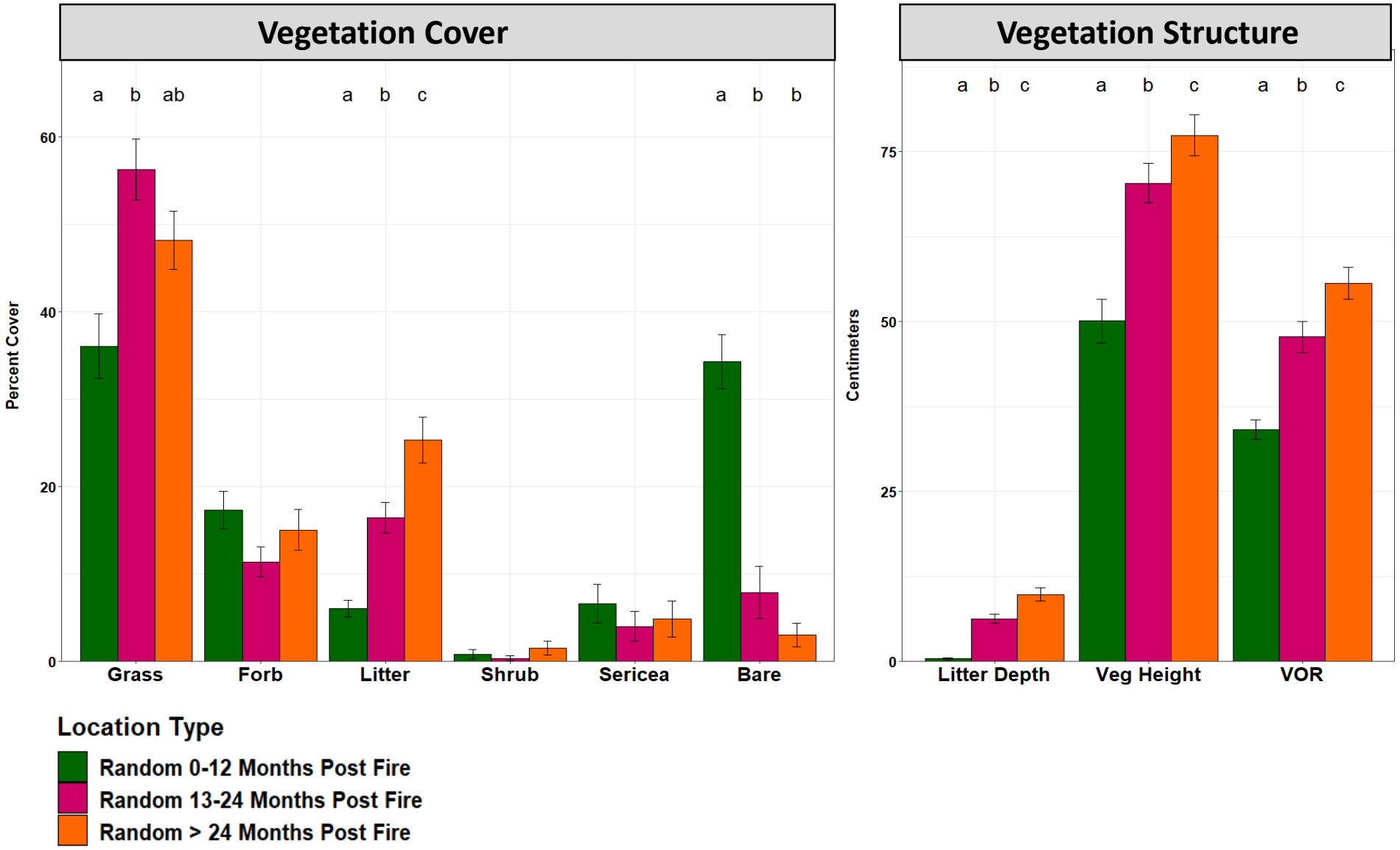
Patch Level Selection



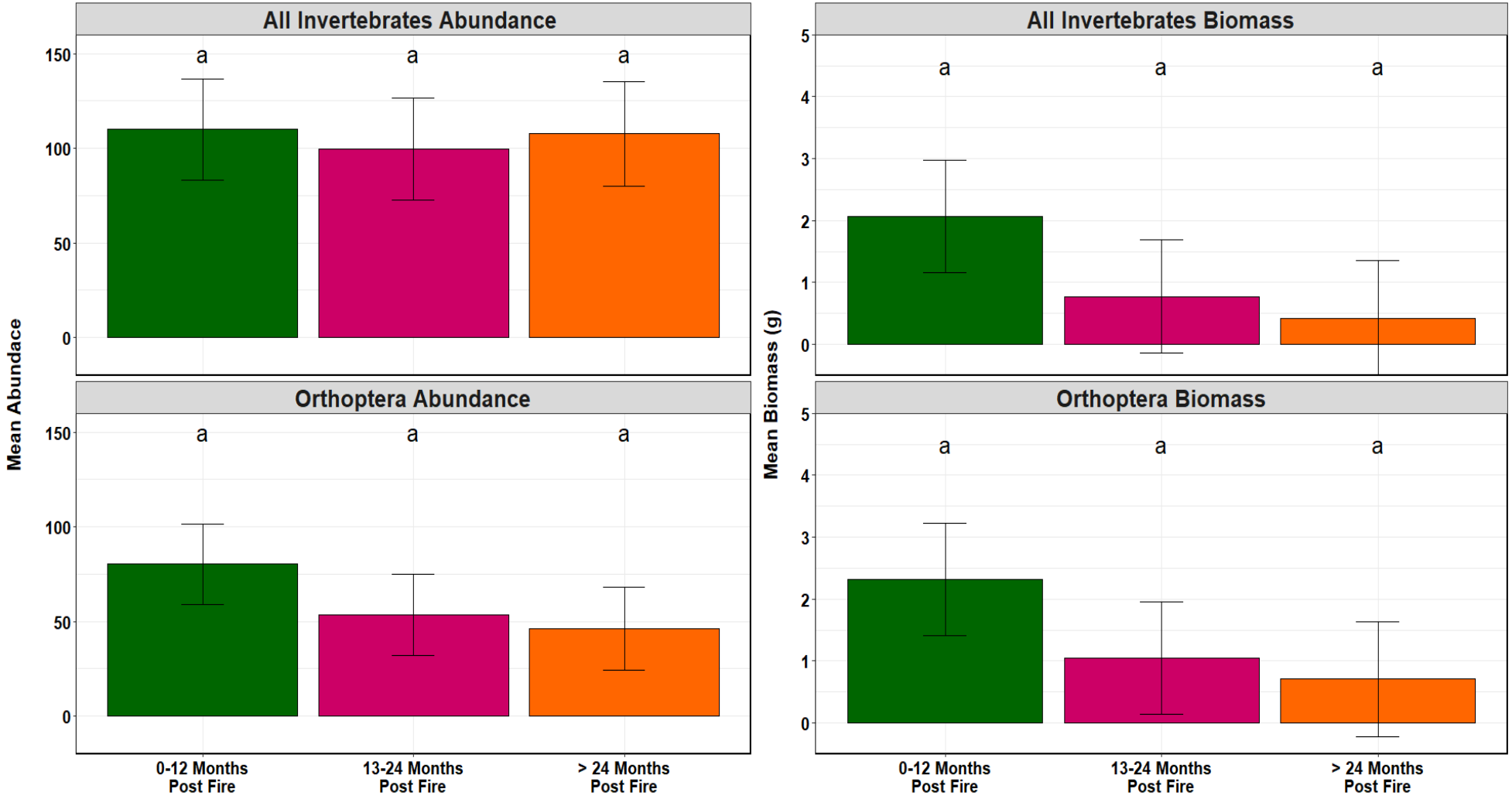




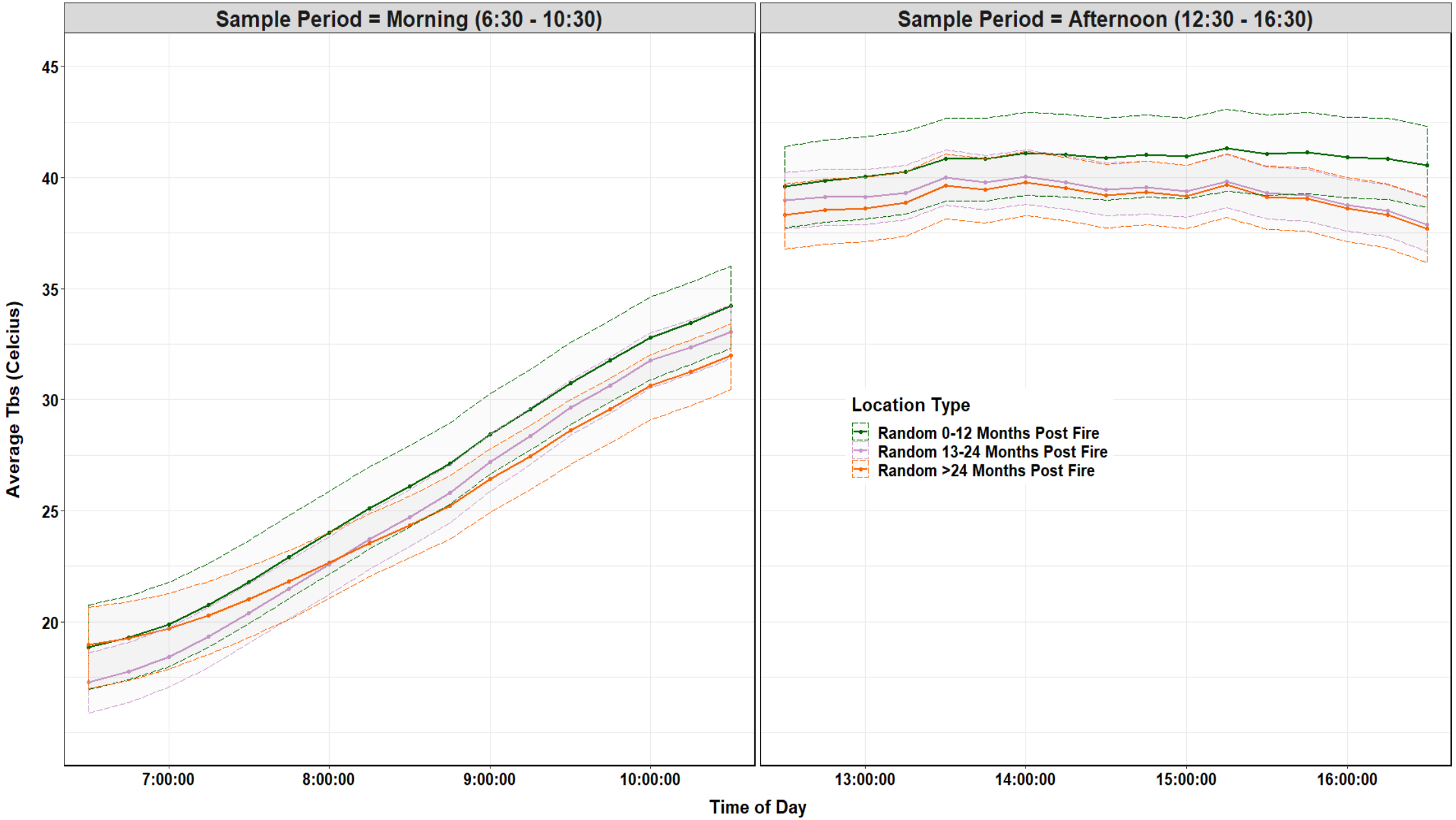
Patch Level Vegetation Characteristics



Patch Level Invertebrates



Patch Level Thermal



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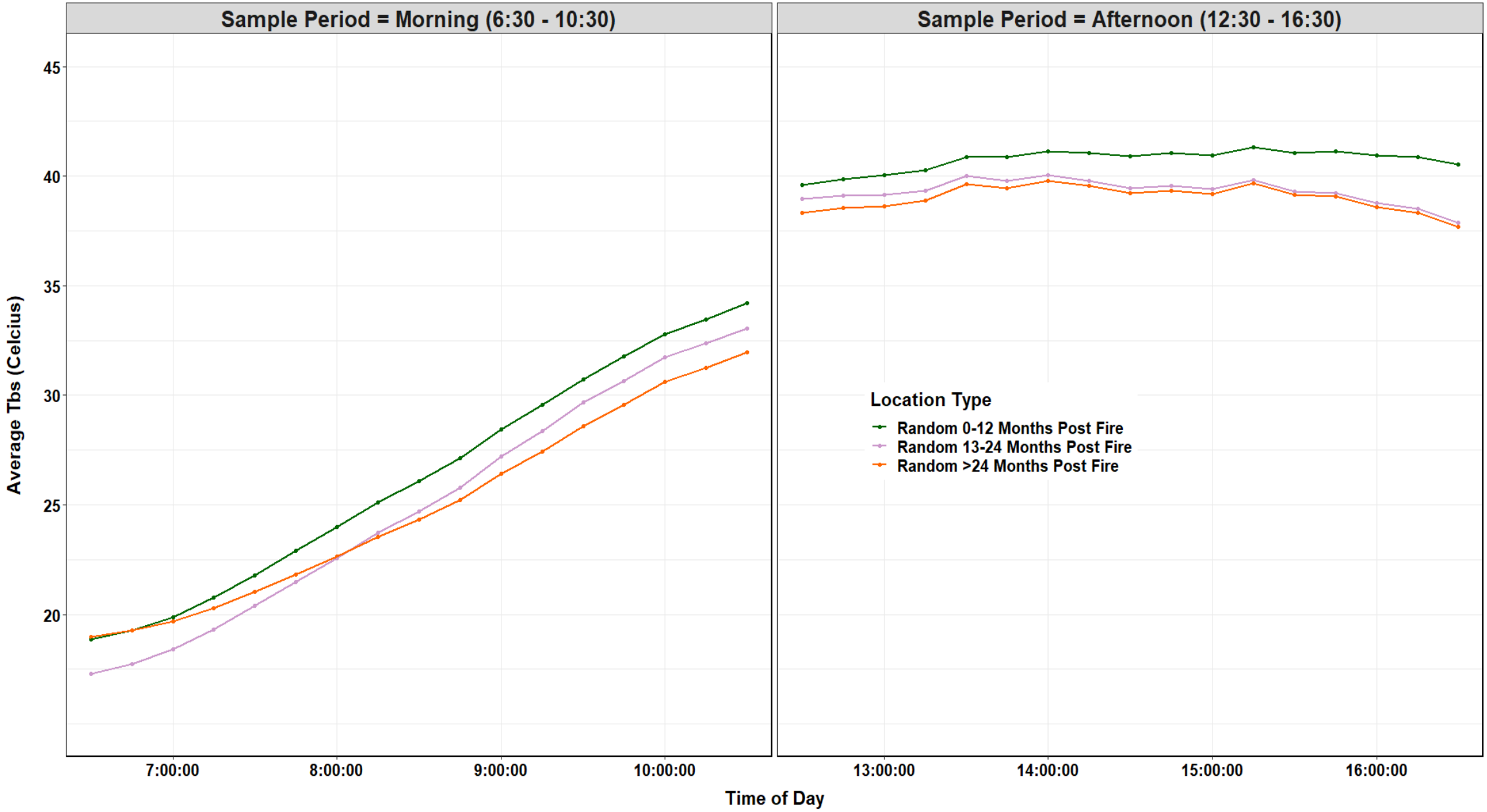
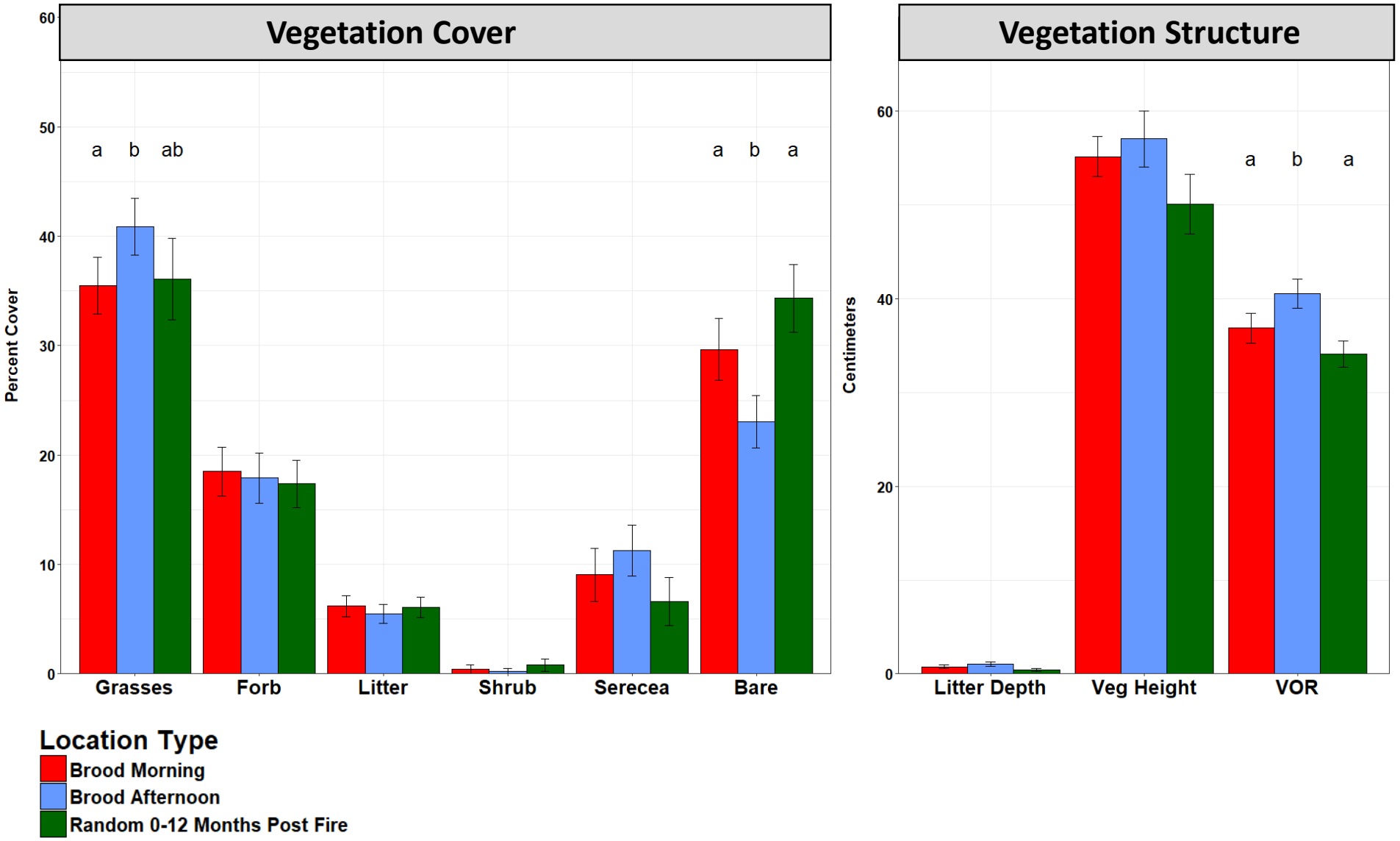
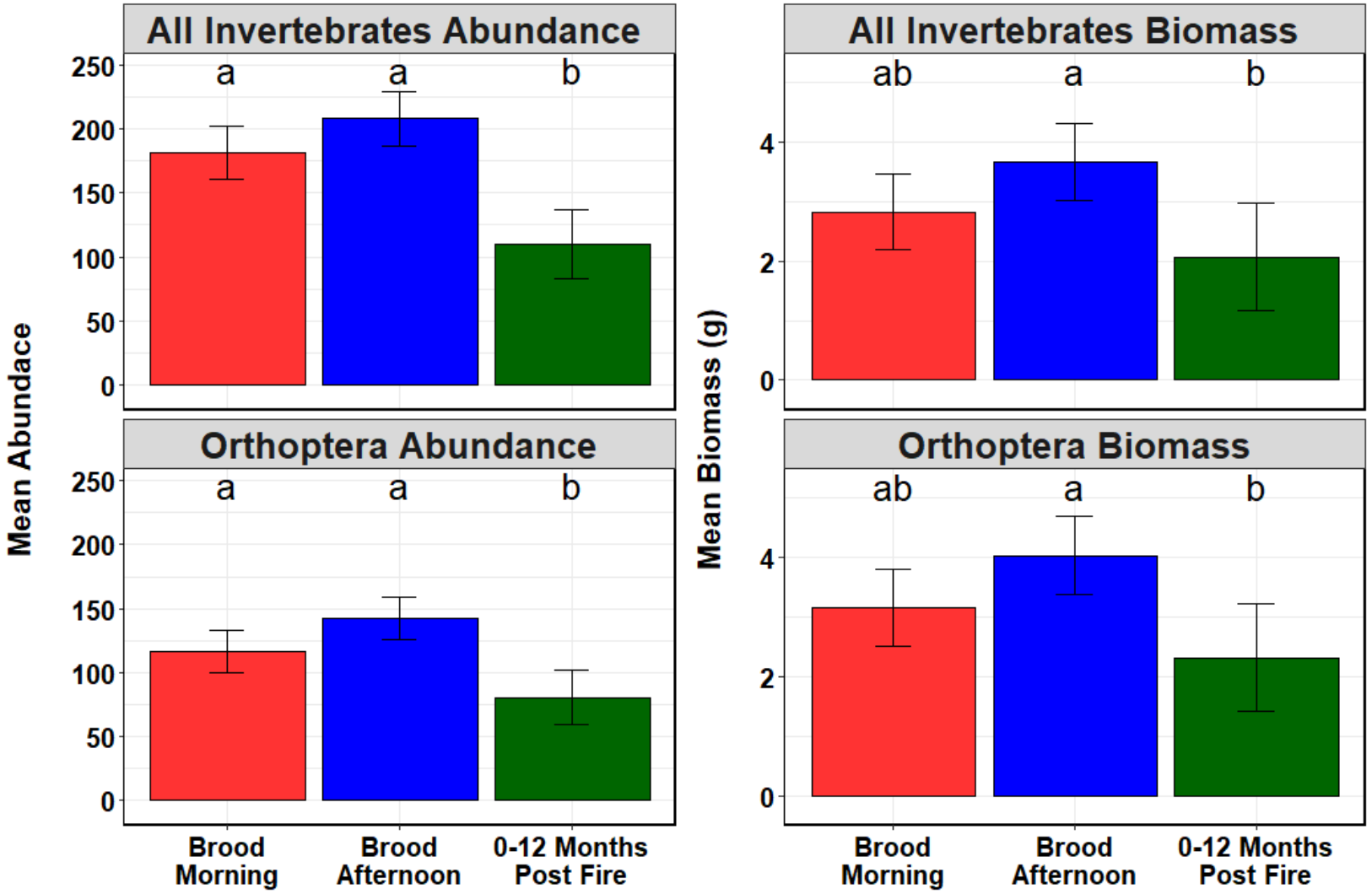


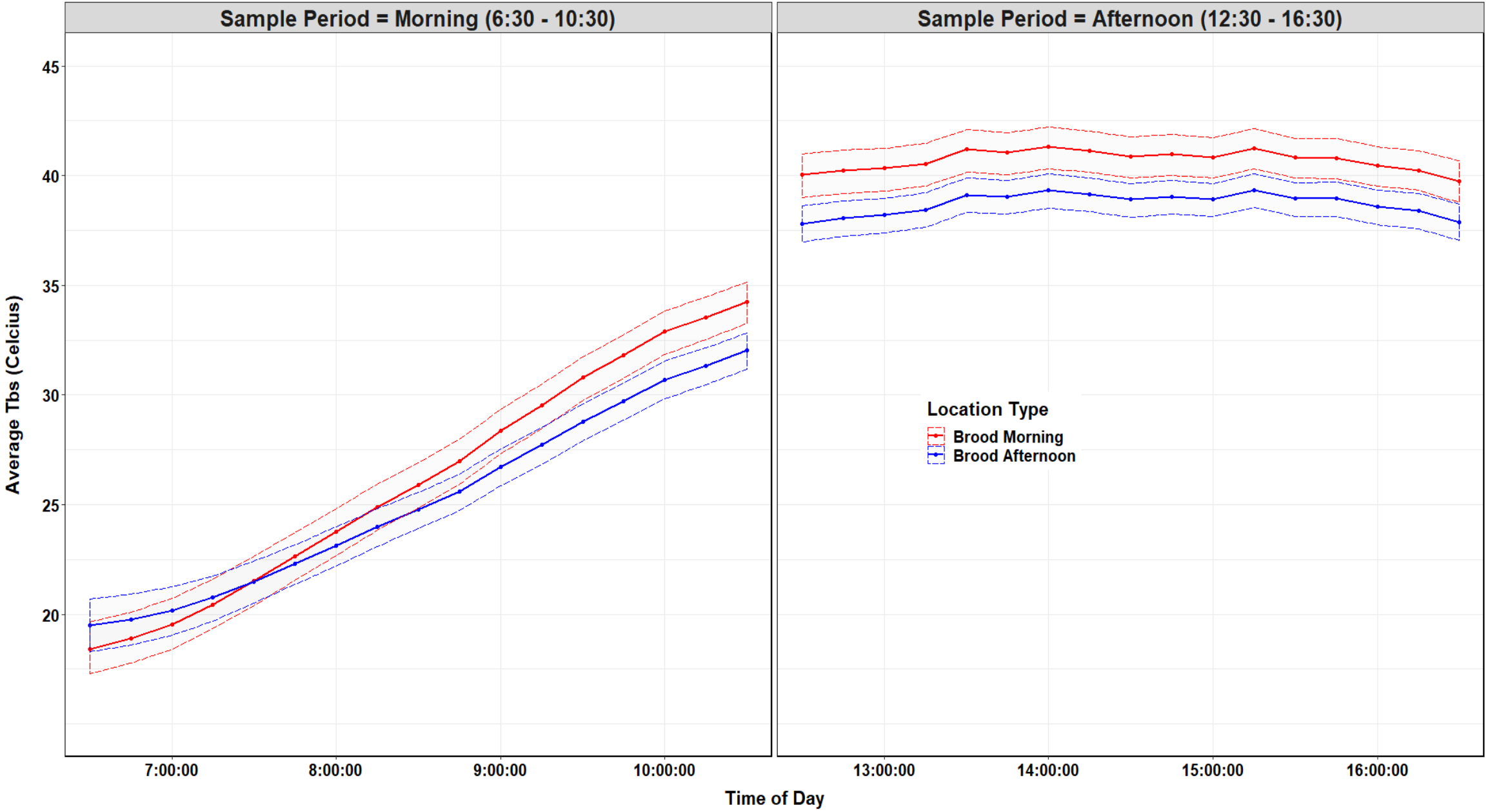
Brood Locations Vegetation Characteristics



Brood Location Invertebrates



Brood Location Thermal



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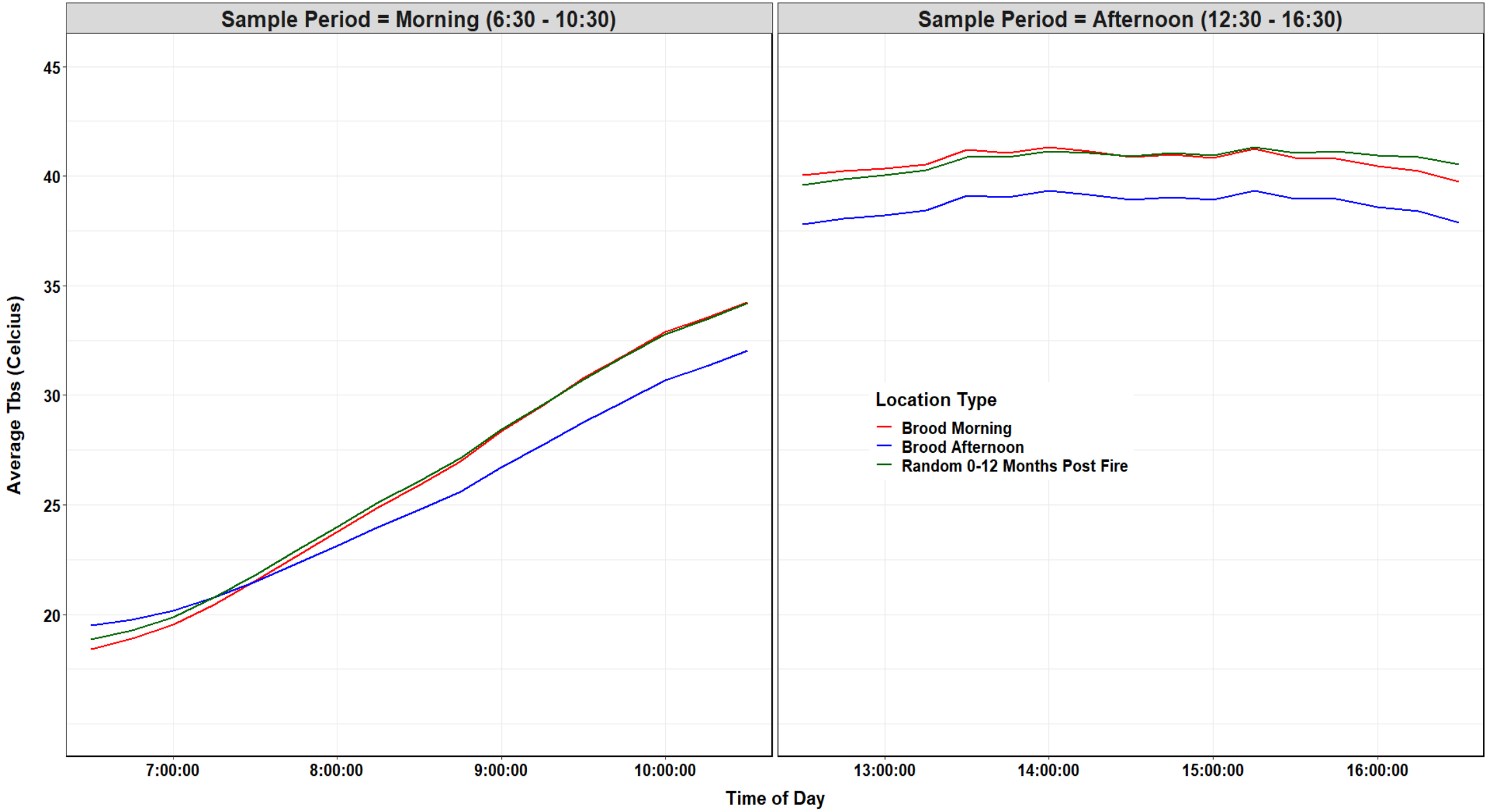

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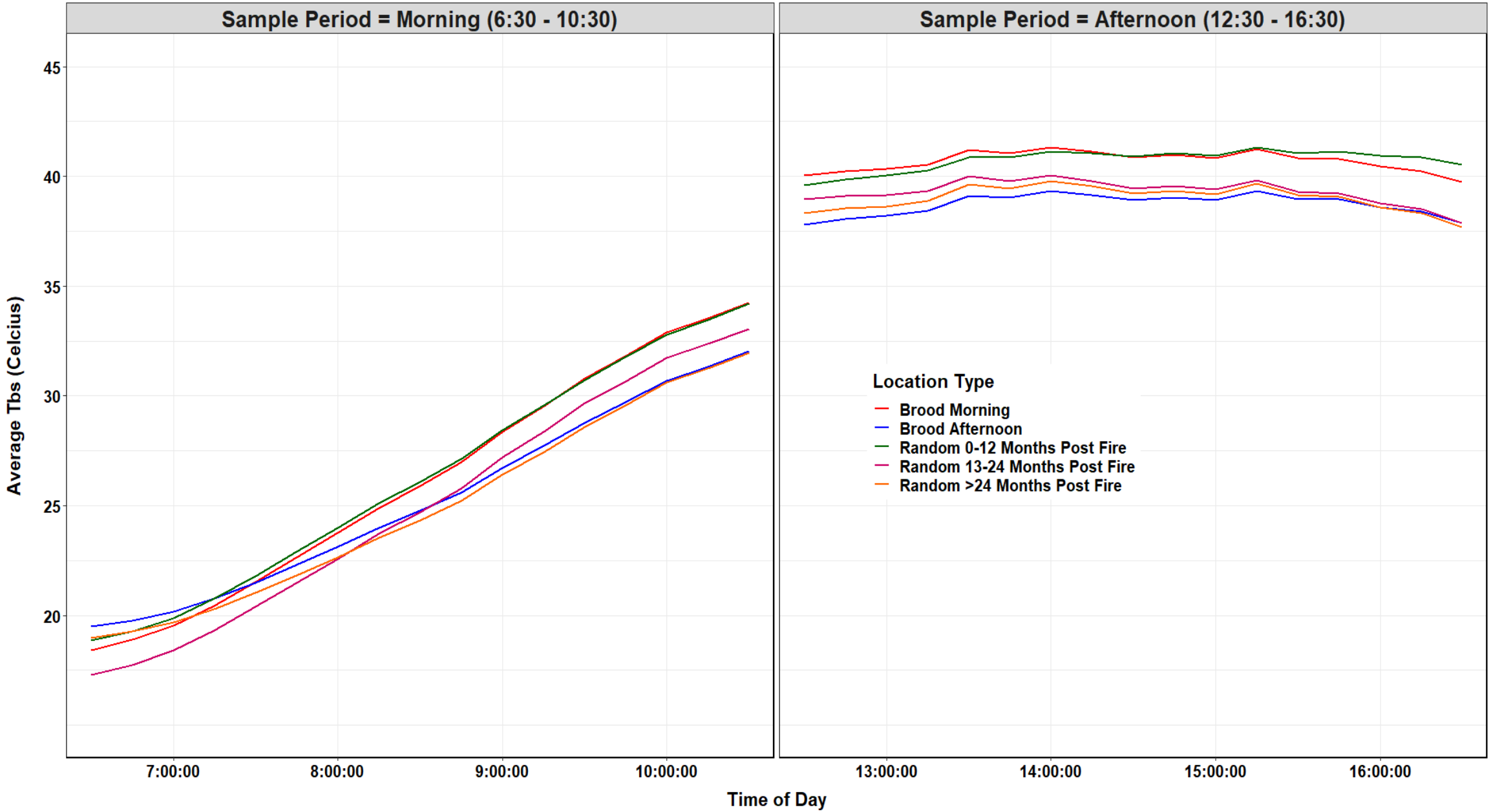
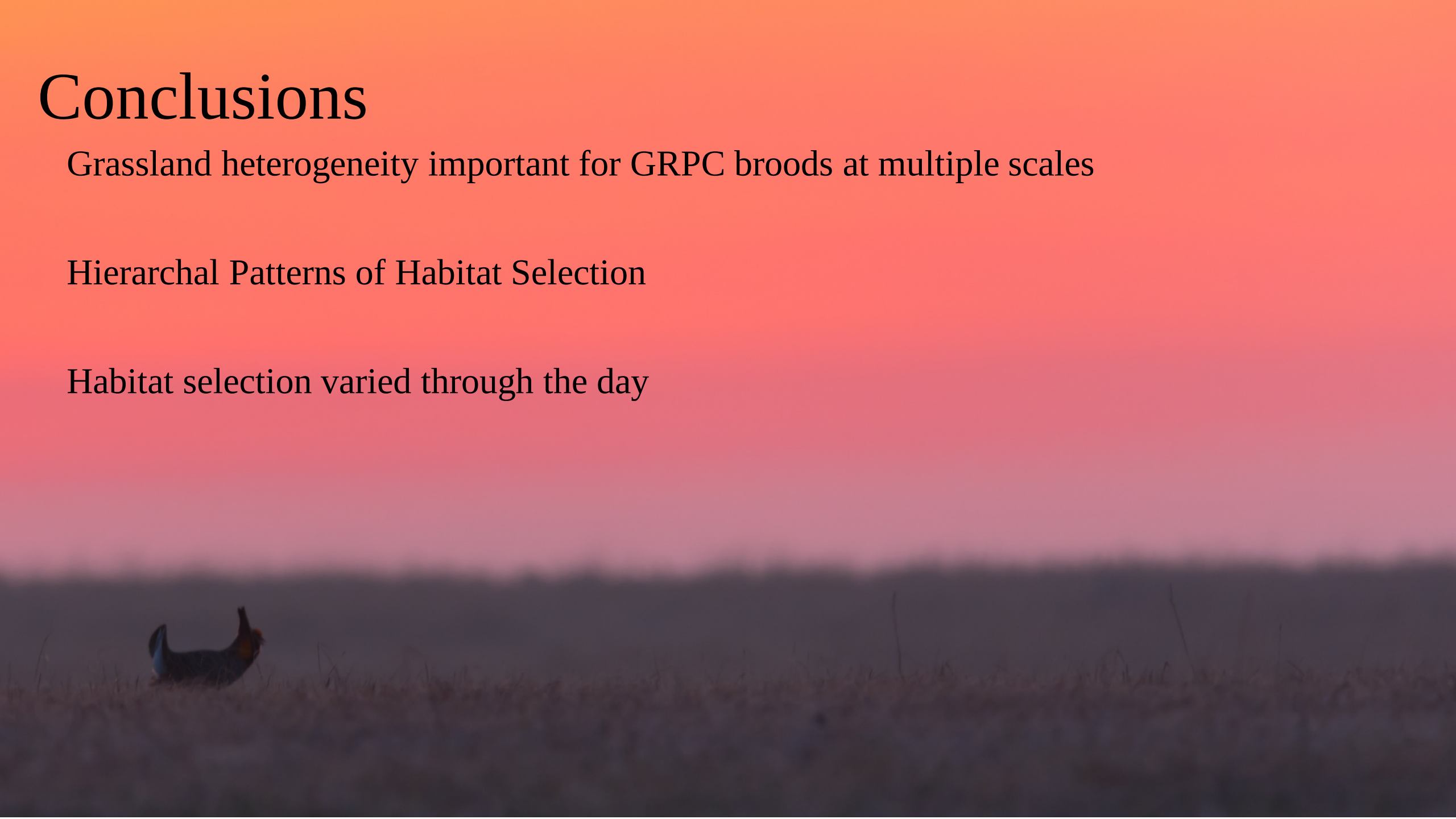


Conclusions

Grassland heterogeneity important for GRPC broods at multiple scales

Hierarchal Patterns of Habitat Selection

Habitat selection varied through the day



Acknowledgements

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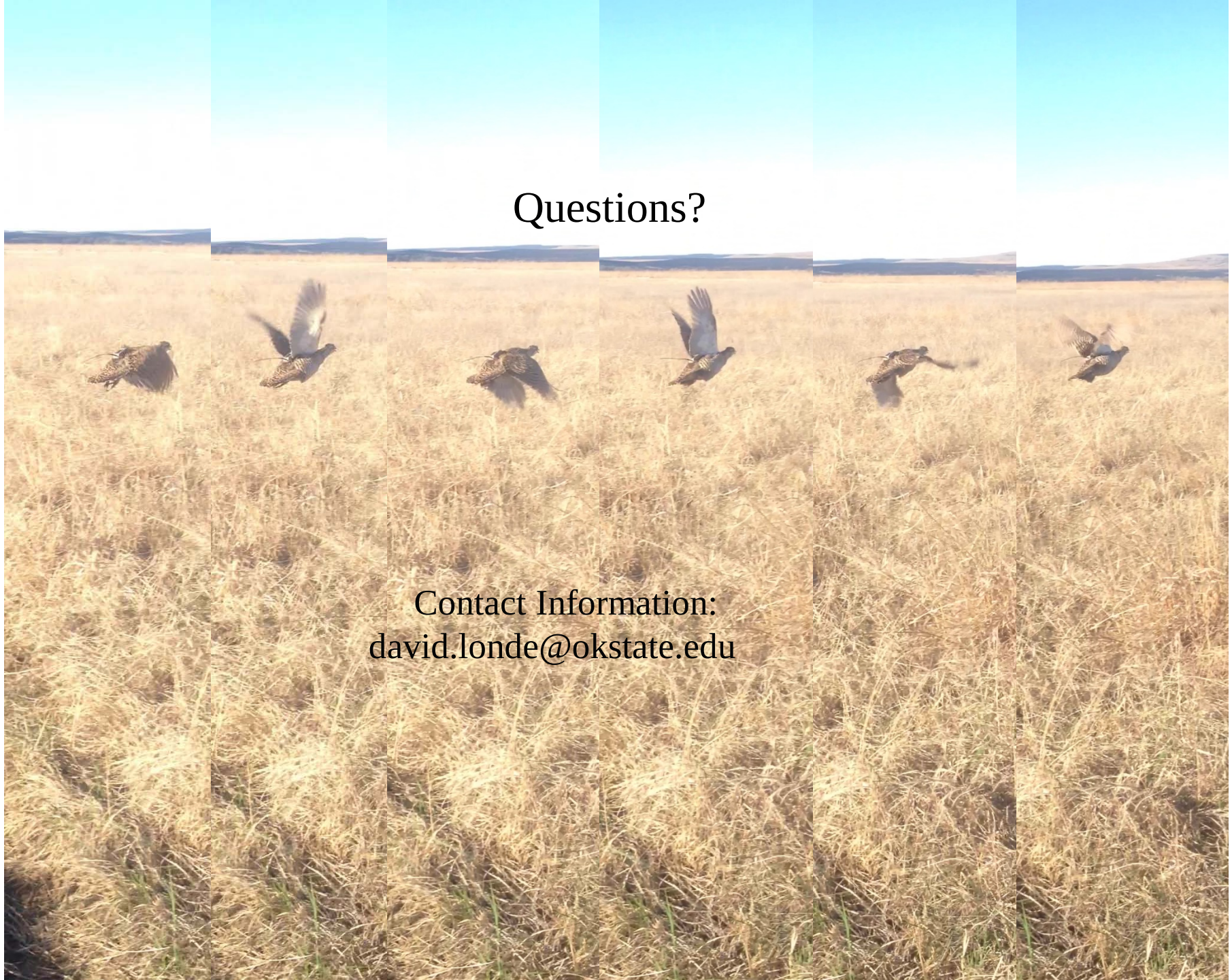
Questions?



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