

Effects of diurnal bird use patterns on airport hazard assessments

Project Principal Investigators

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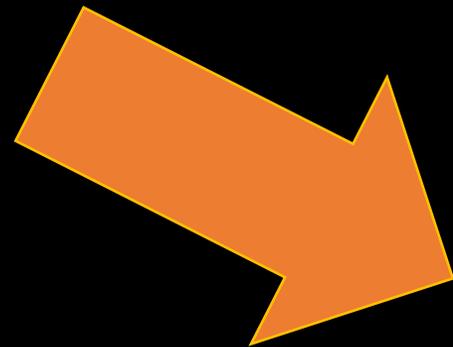
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How Wildlife Activity and Aircraft Collide

- Greater aircraft strikes with white-tailed deer (*Odocoileus virginianus*) during crepuscular periods (Miller et al. 2003, Biondi et al. 2011).
- Altitudes of black and turkey vultures increasing throughout the day (Avery et al. 2011).
- Greater helicopter wildlife strikes during the day (51.3%) than dusk (5%) or nighttime (43.7%), despite most flights occurring during the day (81.3%; Washburn et al. 2013).
- Nocturnal bird strikes contributing most to recorded strikes.

Diurnal Bird Activity and Alternative Land Covers

Morning



Mid-day

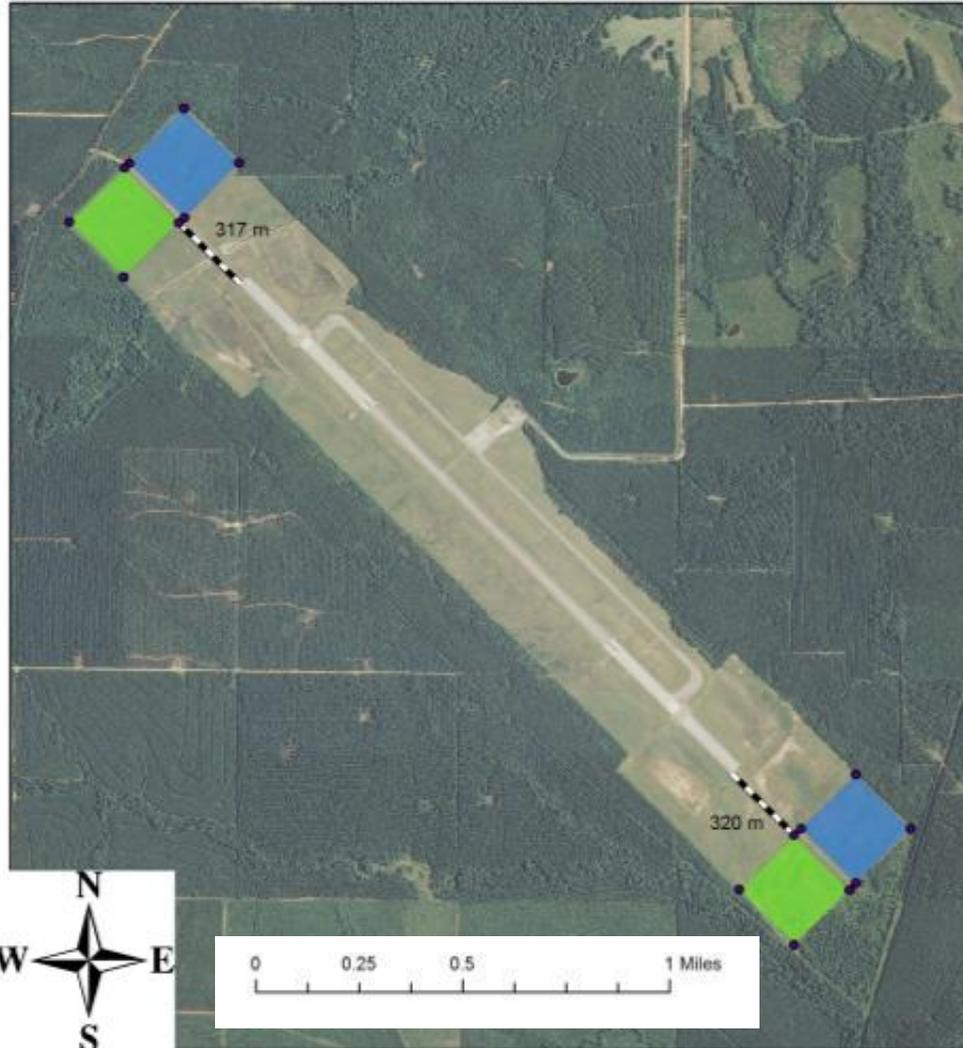


Evening



Switchgrass Demonstration Project

Columbus Air Force Base Auxillary Strip
Shuqualak, MS



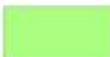
6 Installations

- 3 military airfields
- 3 civil airports

Paired design for each installation

- Switchgrass and control plot pairs
- Each plot is 8 ha
- 2 pairs per installation
- Multiple installations for spatial replication

Coverage

-  Control
-  Switchgrass

Switchgrass Establishment

Most sites planted in 2015 (DTW planted in 2016)

- Competition control (glyphosate)
- Seed-drill switchgrass at 9 lbs/acre PLS
- Follow-up competition control (2,4-D and other broadleaf control herbicides)



Switchgrass Failure

Extensive Competition in Southern Sites Severely Limited Switchgrass Establishment



Bird Sampling

Point Transects

Breeding Season (May-July)



Morning, Mid-day, Evening

Sawtooth Line Flush Transects

*Non-breeding Season
(August-April)*



Morning, Afternoon/Evening

Analysis Overview

-Investigated interactions of sampling period and switchgrass coverage on
Cumulative Hazard Score and Flock Size



Switchgrass Coverage

Cumulative Hazard Score = Relative Abundance * Relative Hazard Score

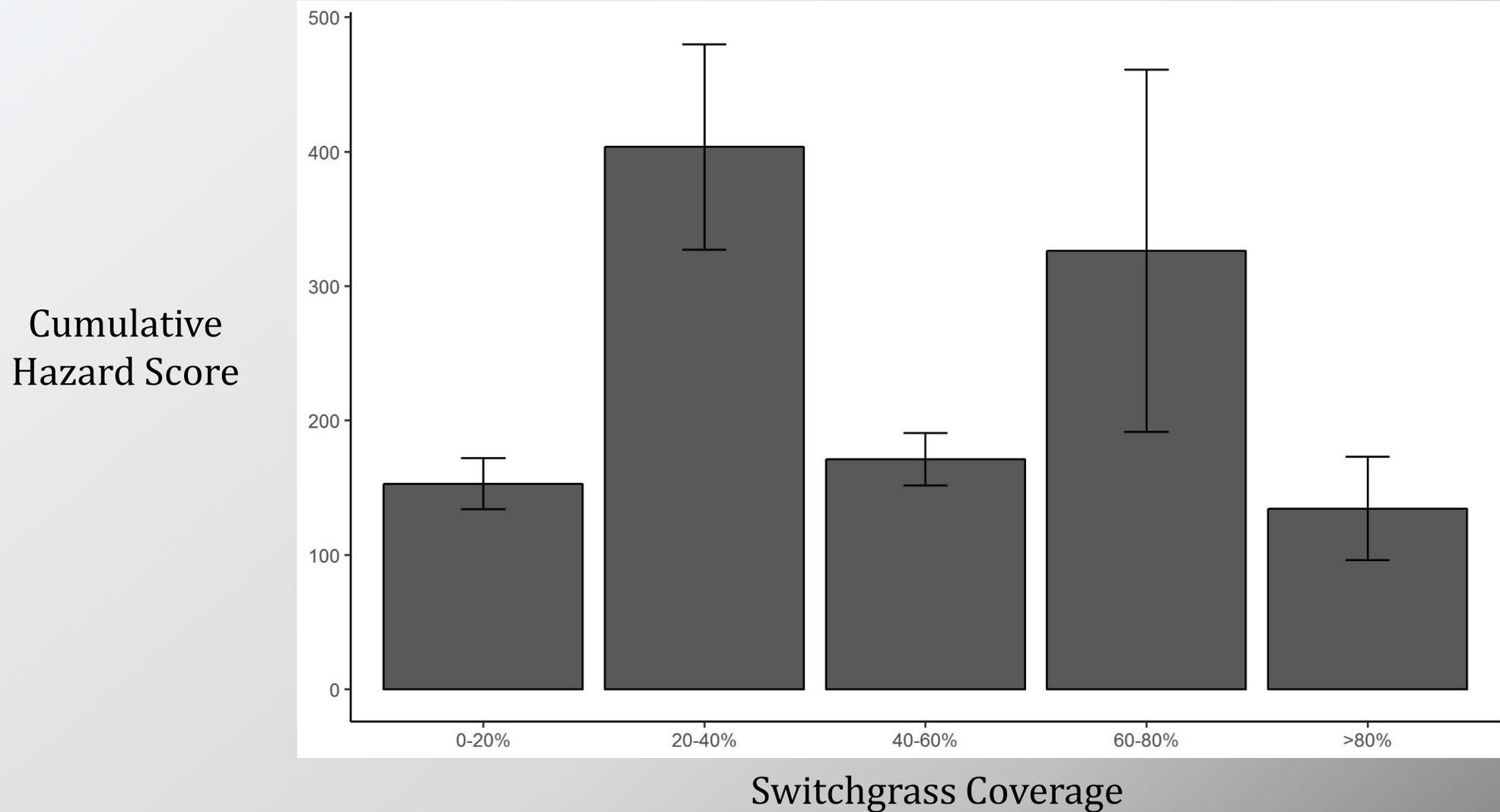
Flock Size



Linear
Mixed Models
AIC Model Selection

Cumulative Hazard Score Response

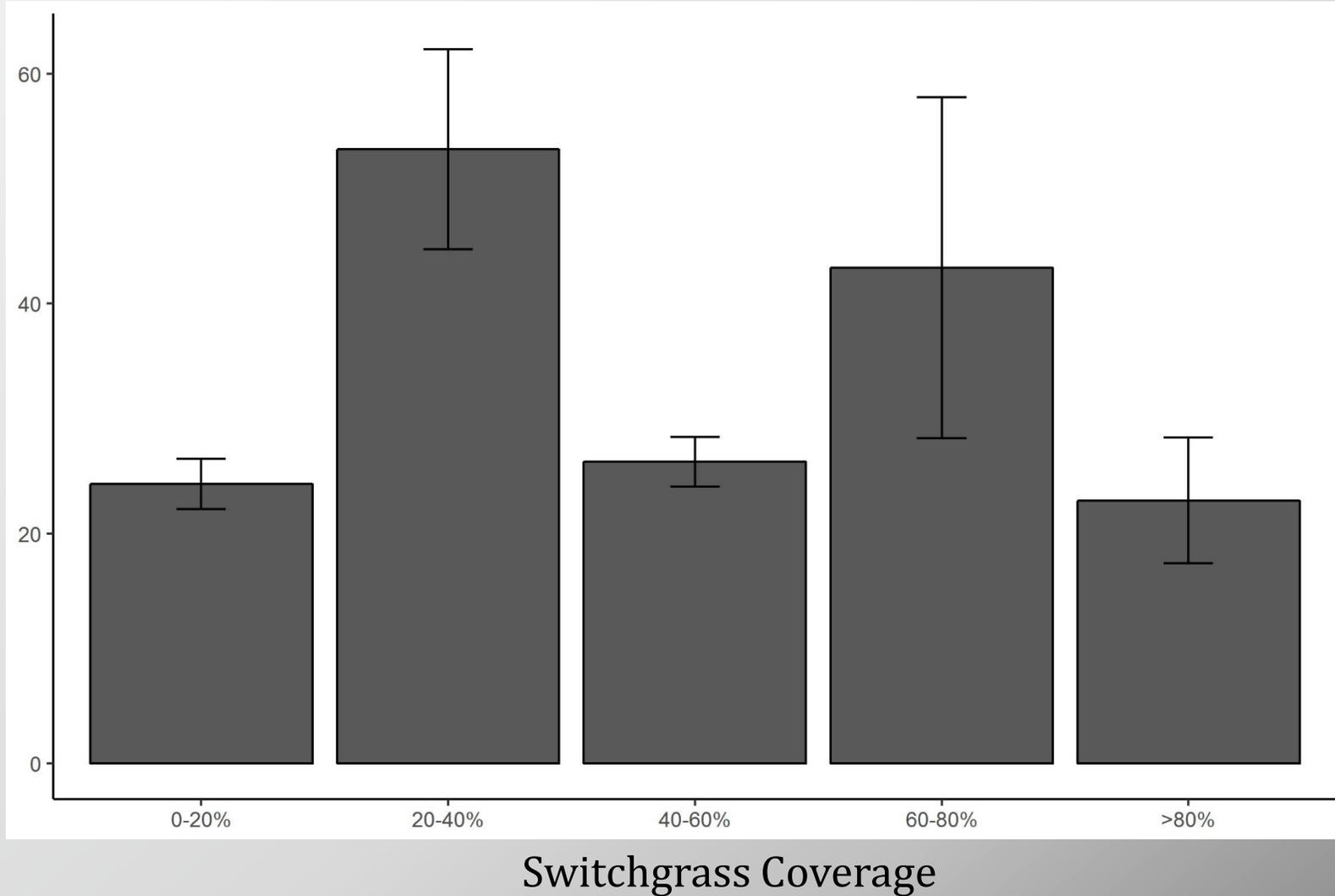
Point Transect



Flock Size Response

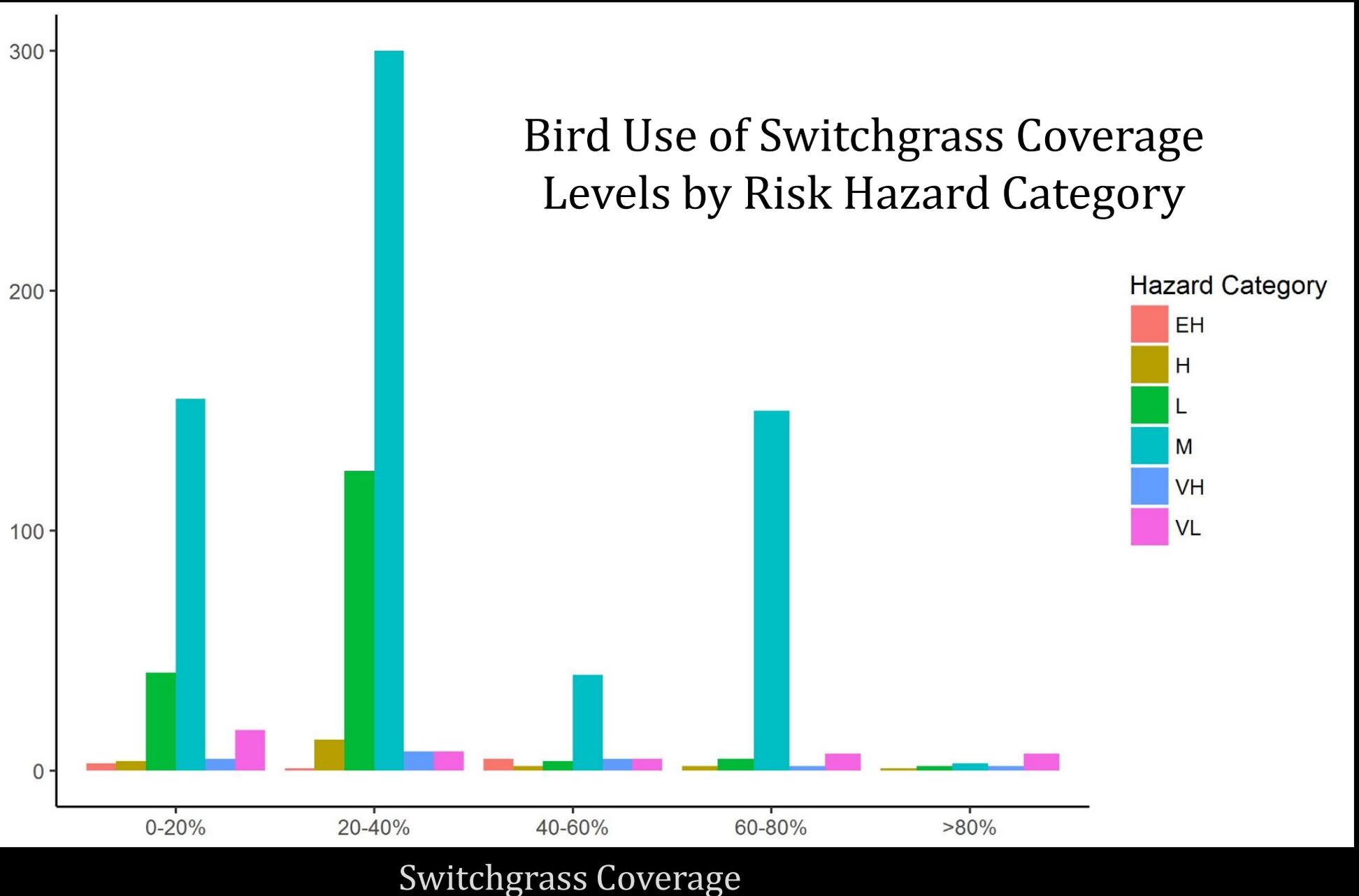
Point Transects

Average
Flock Size



Number
Of Birds

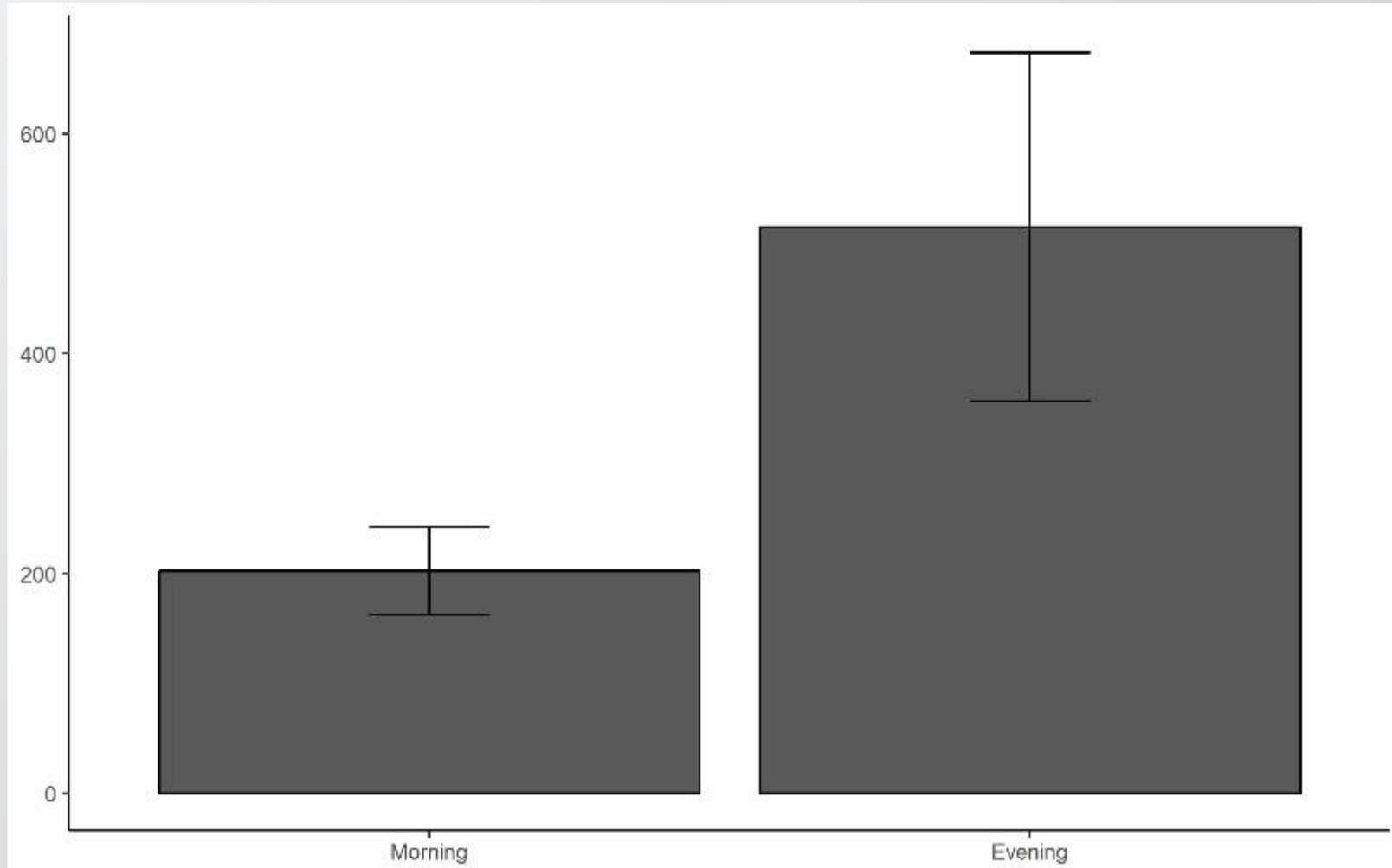
Bird Use of Switchgrass Coverage Levels by Risk Hazard Category



Cumulative Hazard Score Response

Line Transect

Cumulative
Hazard Score

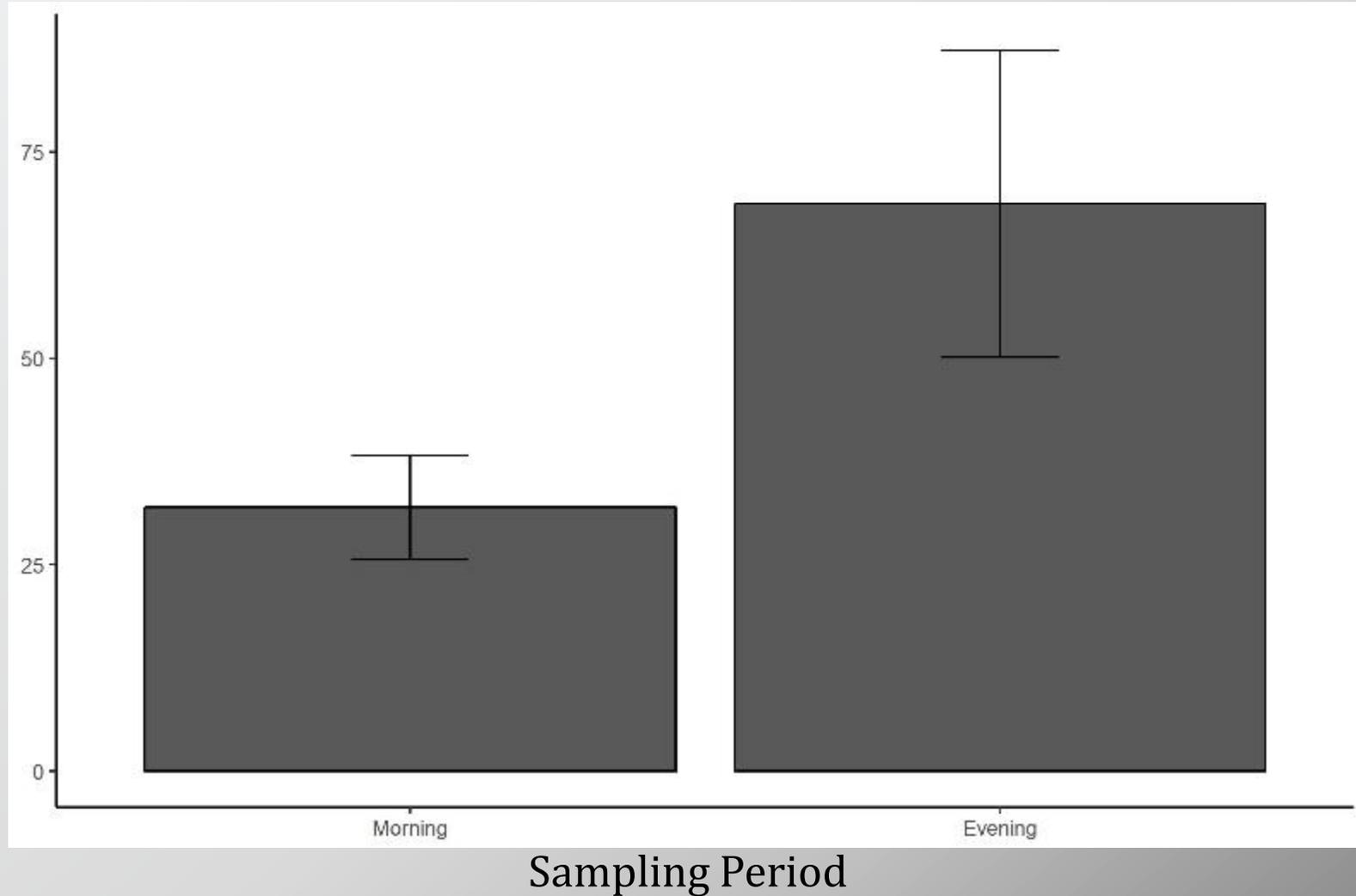


Sampling Period

Flock Size Response

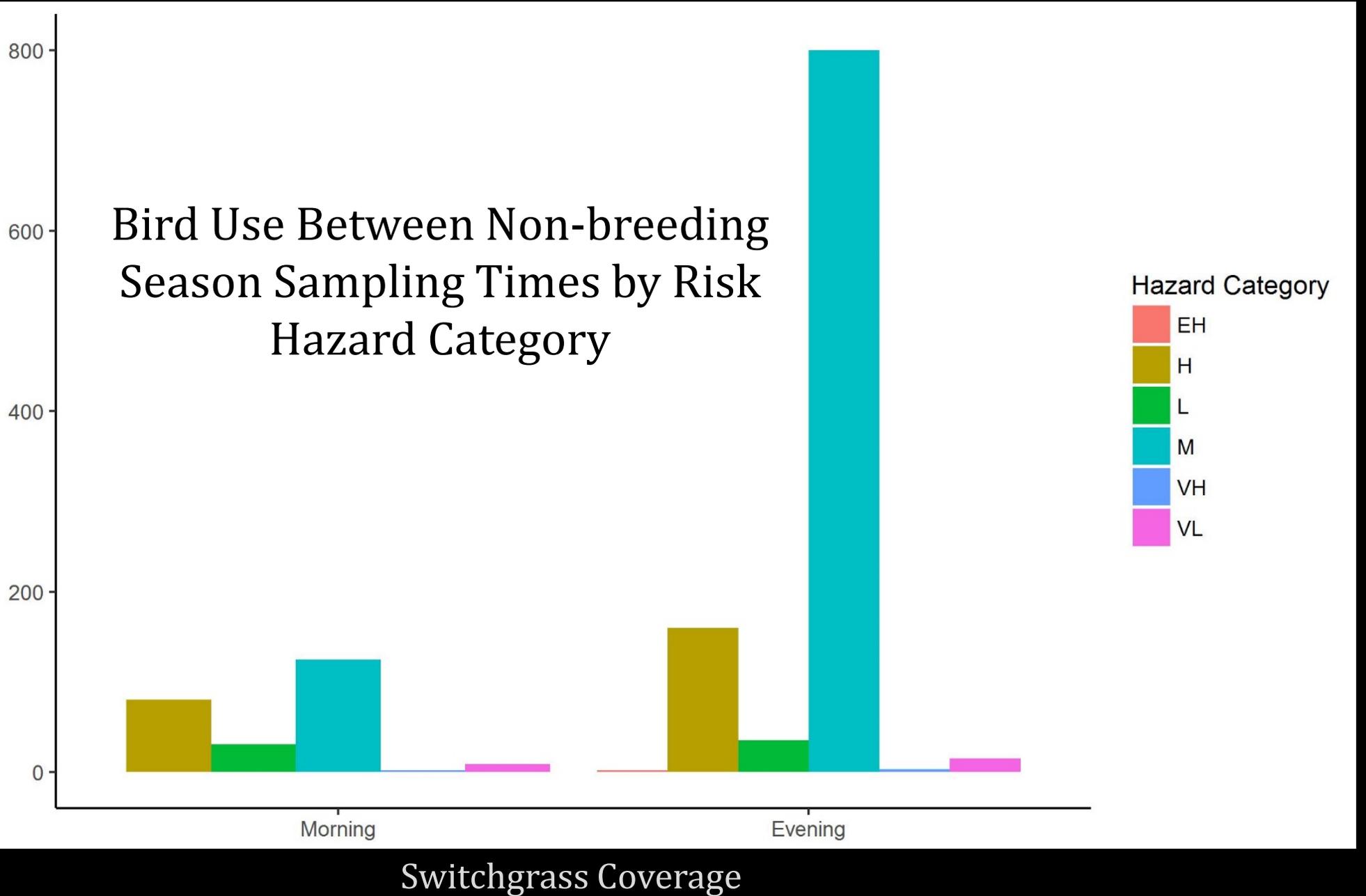
Line Transects

Flock Size



Number
Of Birds

Bird Use Between Non-breeding Season Sampling Times by Risk Hazard Category

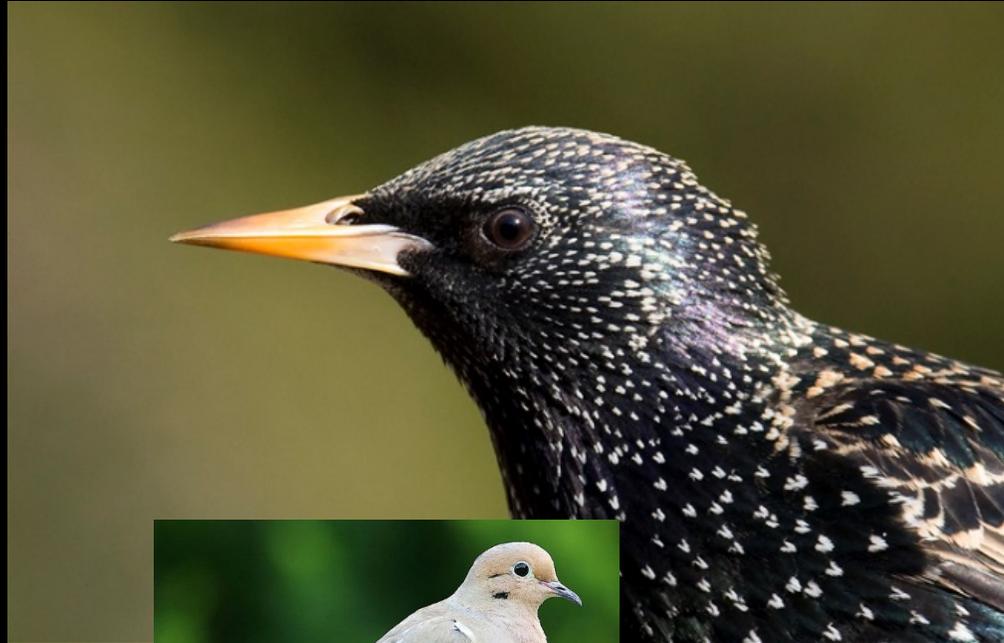


Medium Hazard Level Species

Point Transects
Breeding Season



Line Transects
Non-breeding Season





Special Thanks

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Questions

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