Prescribed burning effects on nesting by Eastern Bluebirds (*Sialia sialis*) in a restored Ozark border landscape

Joseph Smith
Leighton Reid, Ph.D

CCSD Center for Conservation and Sustainable Development

Missouri Botanical Garden

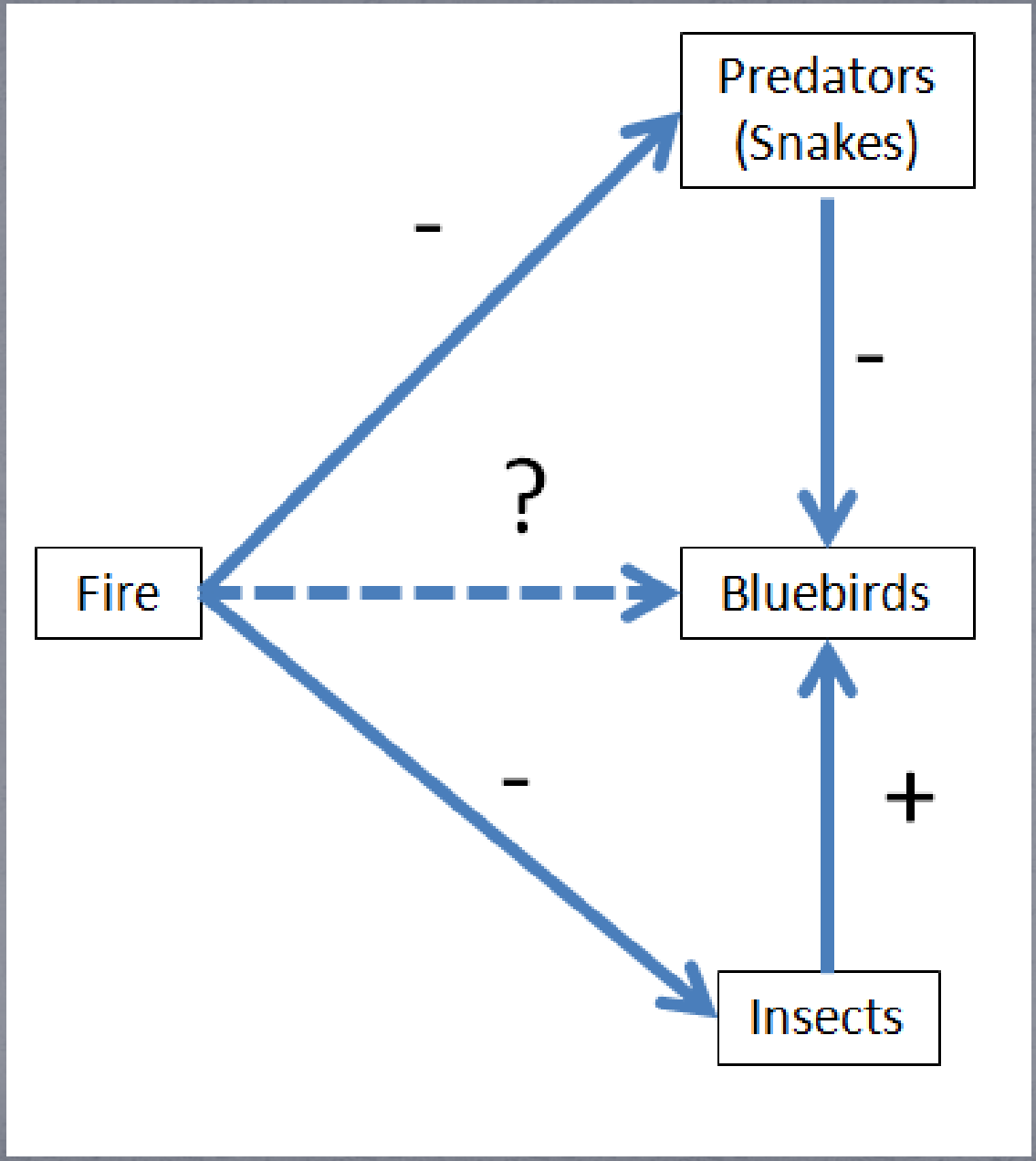
LAKE SUPERIOR STATE UNIVERSITY

Introduction

Photo provided by US Fish and Wildlife Service

About Eastern Bluebirds (*Sialia sialis*)

Photo: Wikimedia Commons


Predators
(Snakes)
-
-
?
Fire
Bluebirds
-
+
Insects

Shaw Nature Reserve (SNR)

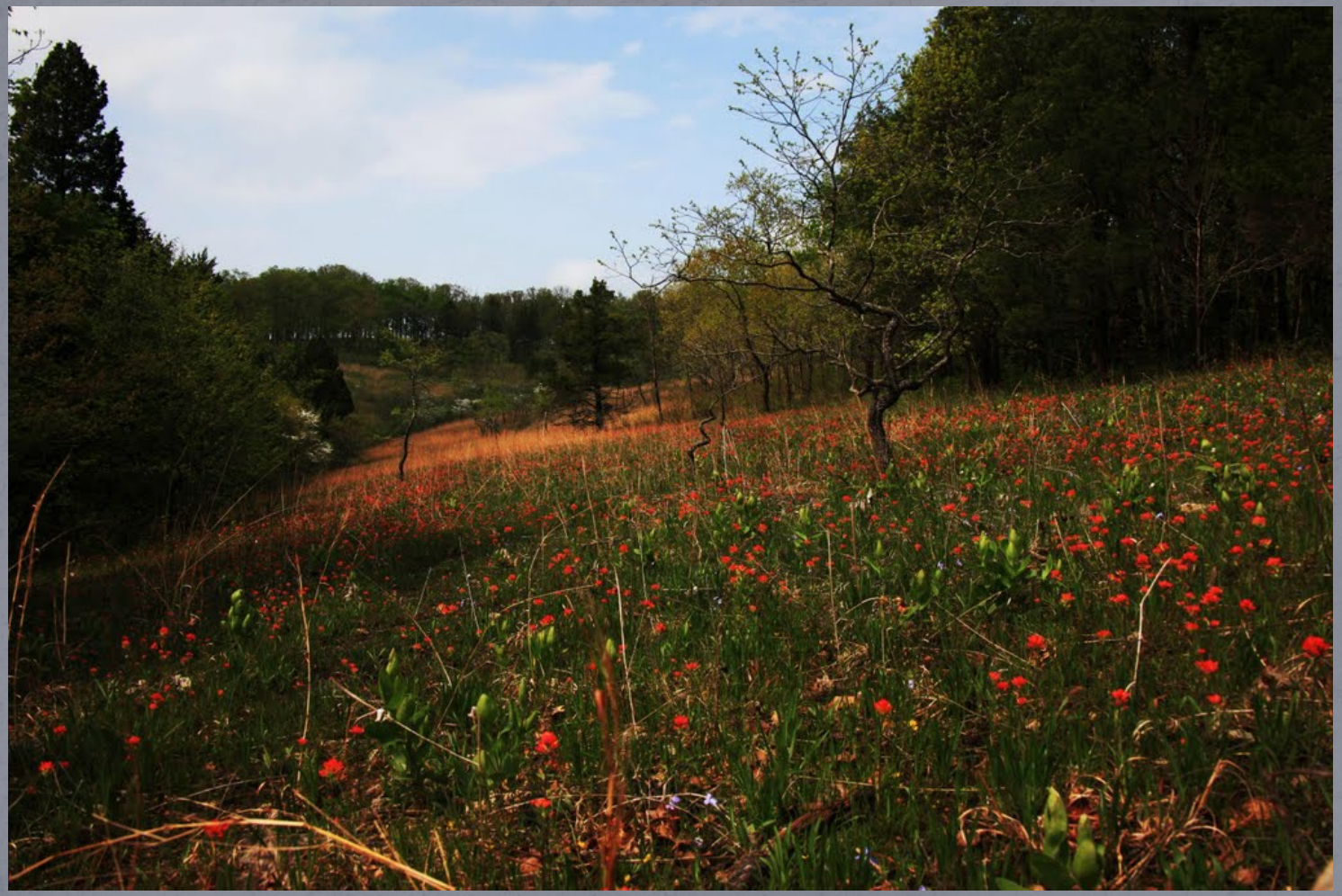
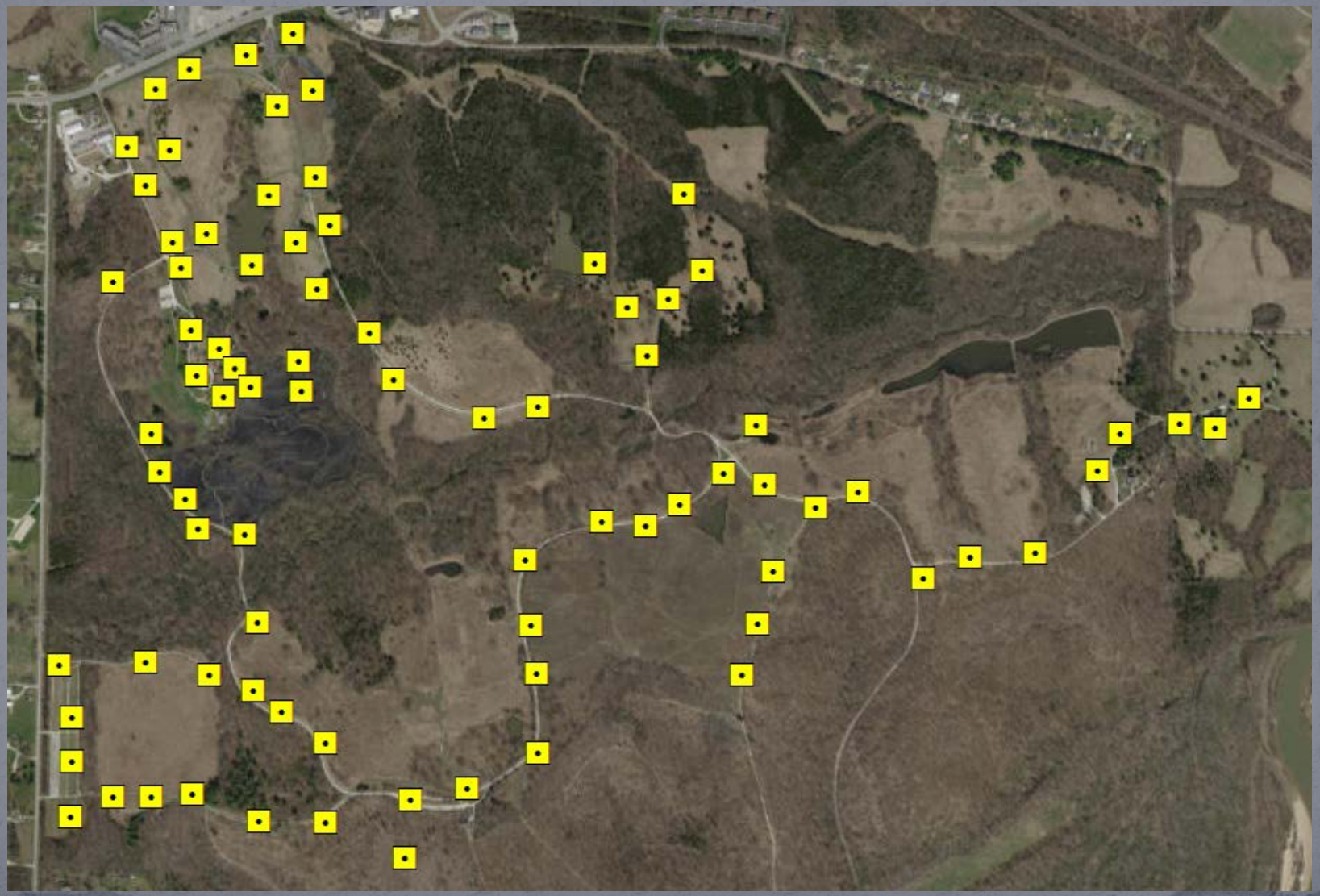


Photo by Zhi Lu

Bluebird Trail



SNR Nest Box

Materials and Methods

Monitoring

Lynn Buchanan (back), with the assistance of Jill (front) and Yvonne (right), check a nest box at Shaw Nature Reserve.
Photo courtesy of Lynn Buchanan

Data Analysis

- Logistic Exposure Model (Shaffer, 2004)
  - Generalized linear model

Results

Species	Average Nest Success (%) (SE)
Eastern Bluebird	90.8 (0.5)
House Wren	92.1 (0.1)
Tree Swallow	92.1 (0.1)

Photo by Ken Thomas

Photo by Brian Gatwicke

Photo by Andy Reago

Species	Average Nest Success (%) (SE)	Average Snake Predation Rate (%) (SE)
Eastern Bluebird	90.8 (0.5)	4.6 (0.3)
House Wren	92.1 (0.1)	4.0 (0.3)
Tree Swallow	92.1 (0.1)	4.8 (0.4)

Photo by Ken Thomas

Photo by Brian Gatwicke

Photo by Andy Reago

Species	Average Nest Success (%) (SE)	Average Snake Predation Rate (%) (SE)	Effect of Fire
Eastern Bluebird	90.8 (0.5)	4.6 (0.3)	No
House Wren	92.1 (0.1)	4.0 (0.3)	No
Tree Swallow	92.1 (0.1)	4.8 (0.4)	No

Photo by Ken Thomas

Photo by Brian Gatwicke

Photo by Andy Reago

Species	Average Nest Success (%) (SE)	Average Snake Predation Rate (%) (SE)	Effect of Fire	Annual Trend
Eastern Bluebird	90.8 (0.5)	4.6 (0.3)	No	No
House Wren	92.1 (0.1)	4.0 (0.3)	No	No
Tree Swallow	92.1 (0.1)	4.8 (0.4)	No	No

Photo by Ken Thomas

Photo by Brian Gatwicke

Photo by Andy Reago

Discussion

- Nests are surviving at high rates in burned and mowed units
- Some nest characteristics could not be analyzed in this study
- Future work

Photo by Dan Pancamo

Photo by
Rodney
Campbell

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https://www.flickr.com/photos/74418101@N02/33844504980

References

Ecological Restoration & Habitat Management (n.d.). In *Missouri Botanical Garden*. Retrieved June 13, 2017, from http://www.missouribotanicalgarden.org/visit/family-of-attractions/shaw-nature-reserve/conservation-at-shaw-nature-reserve/habitat-restoration.aspx

Ford, P. L., & McPherson, G. R. (1996). Ecology of fire in shortgrass prairie of the southern Great Plains. *United States Department of Agriculture Forest Service General Technical Report RM*, 20-39.

McCarty, K. (2004). Fire Management For Missouri Savannas and Woodlands. Retrieved June 19, 2017.

Pausas, J. G., & Keeley, J. E. (2009). A burning story: the role of fire in the history of life. *BioScience*, *59*(7), 593-601.

Shaffer, T. L. (2004). A unified approach to analyzing nest success. *The Auk*, *121*(2), 526-540.