



"The Inspection" by David Seidensticker

2012: SURVEYS ON AUDUBON PARTNER RANCHES



AUDUBON.ORG/RANCHING

2013: SURVEYS ON MDC, MPF, TNC & PRIVATE FARMS



2016 - 2021: NEST MONITORING AT TWO OF MDC'S PBG

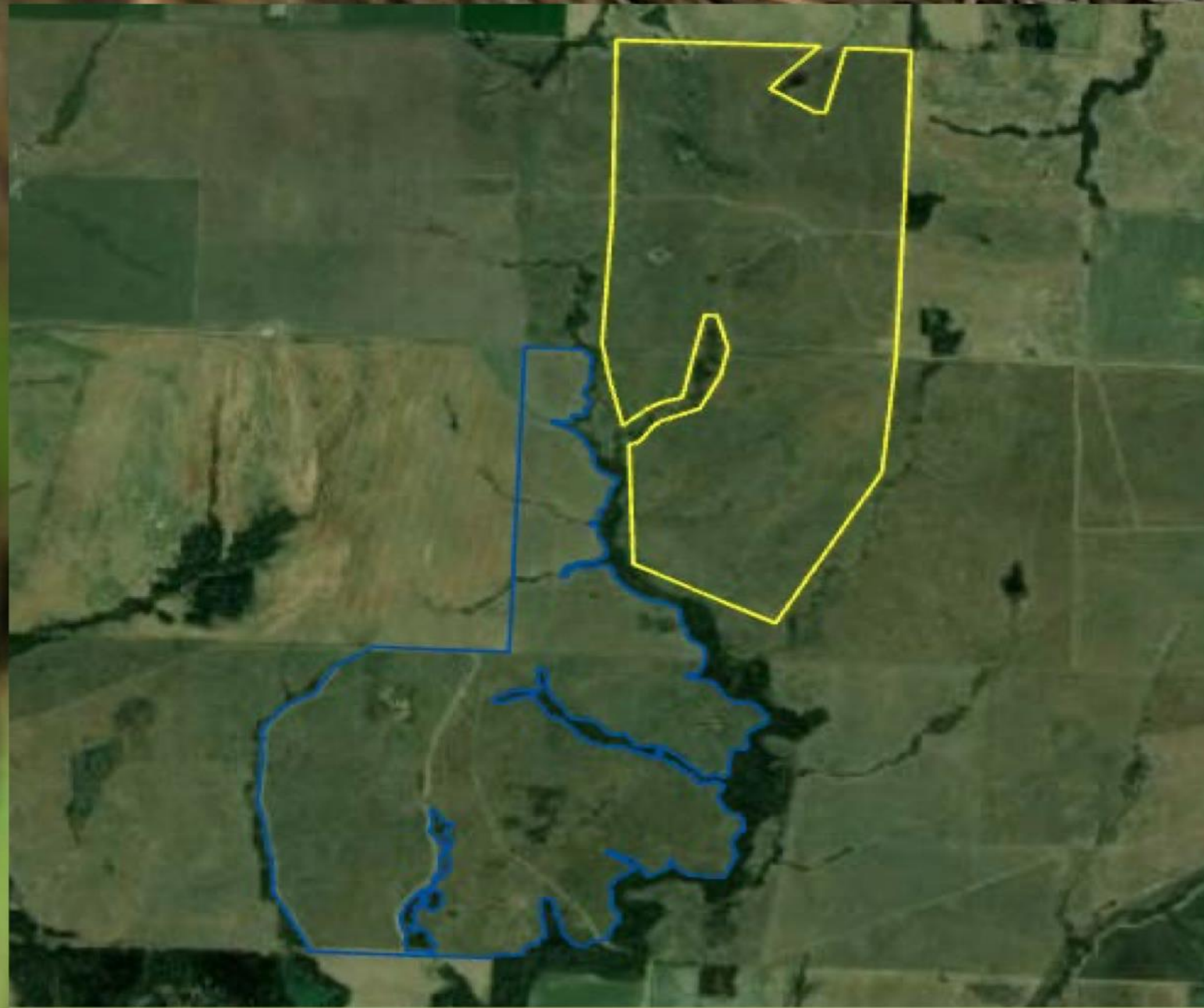


Figure 1. Taberville Prairie PBG study units: treatment (yellow) and control (blue).

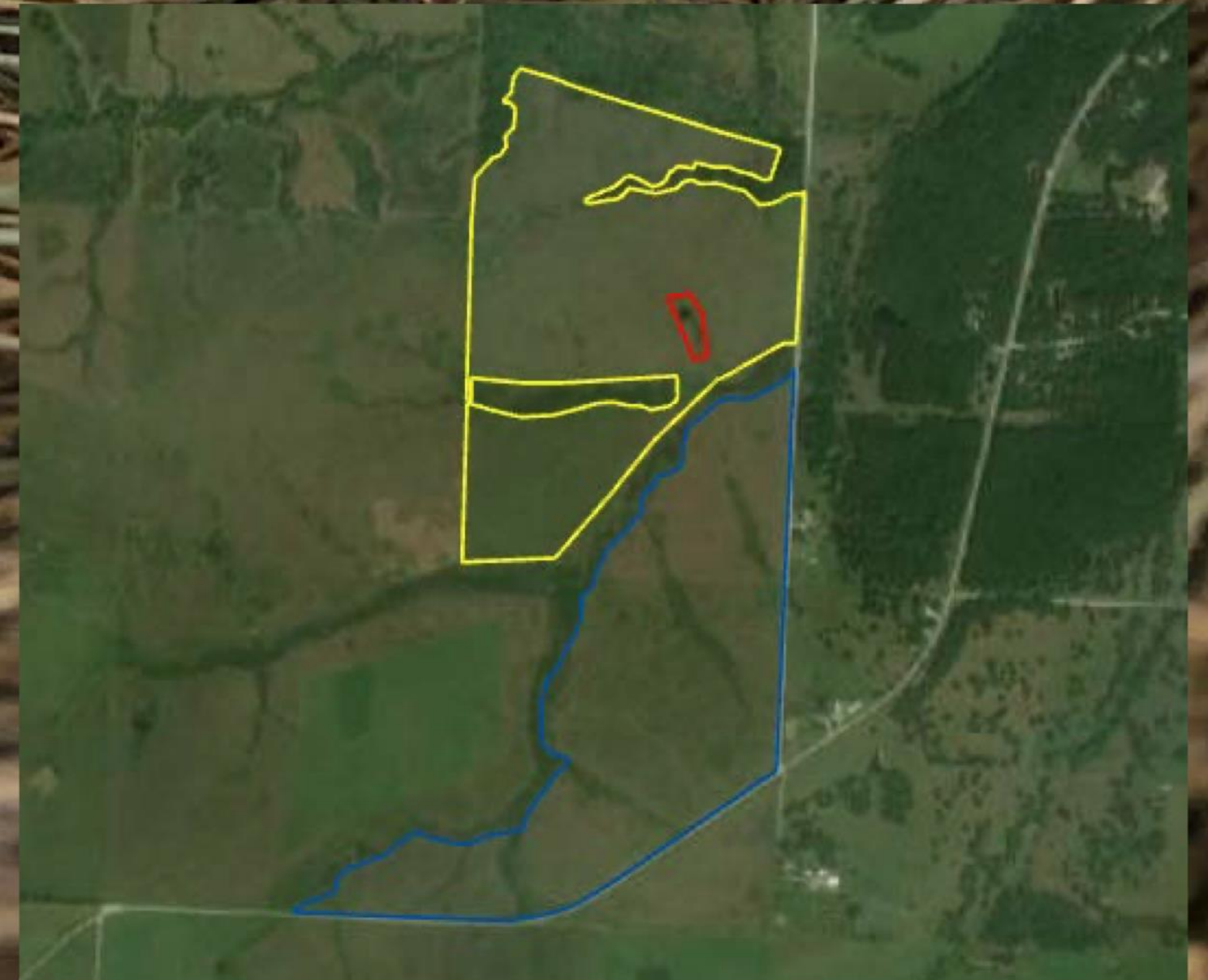


Figure 2. Wah'Kon-Tah Prairie and the PBG study units: treatment (yellow), control (blue), and internal riparian area excluded (red).



Bell's Vireo



Bobolink



Common Nighthawk



Dickcissel



Eastern Meadowlark



Field Sparrow



Grasshopper Sparrow



Greater Prairie-Chicken



Henslow's Sparrow



Loggerhead Shrike



Northern Bobwhite

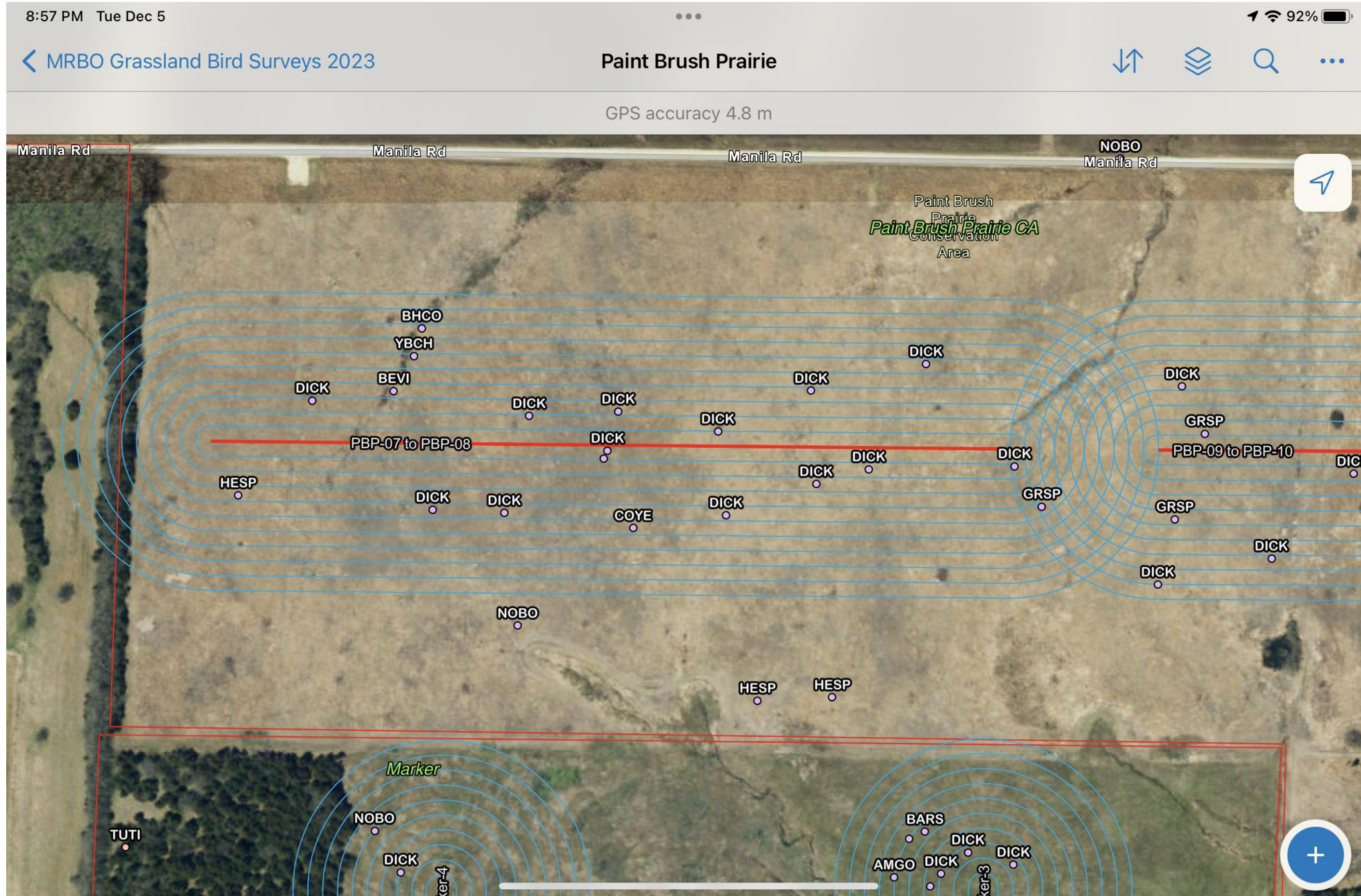


Sedge Wren



Upland Sandpiper

METHODS



Standard line-transect Distance sampling
but spatially explicit mapping on mobile devices



Traditional nest-searching and monitoring
Taberville & Wah'Kon-Tah prairies

RESULTS: DENSITY, BIRD FRIENDLINESS INDEX, MAPS, NEST

SU



Species	Treatment				Control			
	Sample Size	% Daily Survival	% Full Cycle Survival	SE	Sample Size	% Daily Survival	% Full Cycle Survival	SE
Bell's Vireo	63	94.8	24.8	0.0083	93	96.2	36.7	0.0053
Dickcissel	153	92.2	18.2	0.0076	134	92.5	19.6	0.0076
Eastern Meadowlark	21	94.2	22.5	0.0163	8	94.7	25.6	0.0255
Field Sparrow	83	91.7	19.4	0.0106	48	90.5	15.1	0.0148
Henslow's Sparrow	26	91.9	18.6	0.0177	11	92.3	20.1	0.0279
Target Species Combined	354	92.9	20.4	0.0046	295	93.9	24.8	0.0043



NESTS @ TABERVILLE AND WAH'KON-TAH PBG SITES

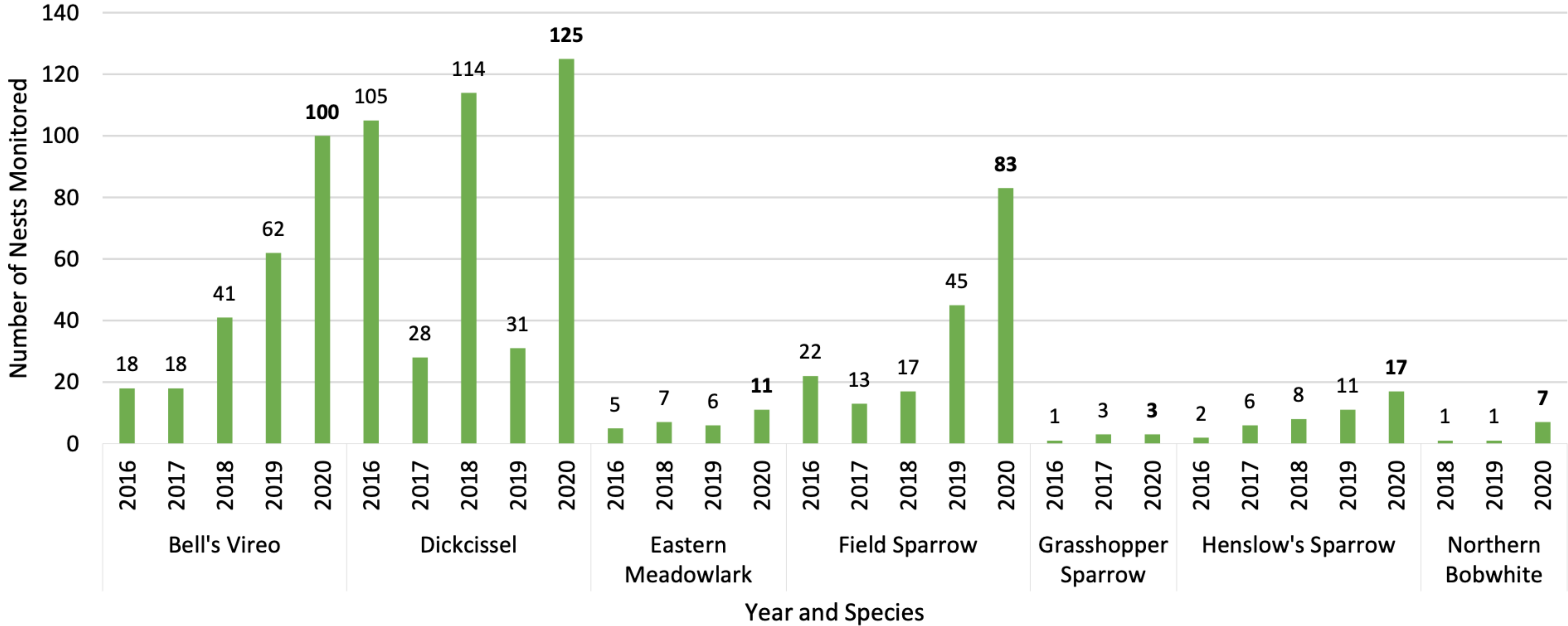


Figure 3. Number of target species' nests monitored by species and year.

WAH'KON-TAH TREATMENT AND CONTROL UNITS



July 2019



June 2019



TRANSECT SURVEYS ON PBG AREAS

	All Years Grazed Sites					All Years Ungrazed Sites				
	n	D	D-LCL	D-UCL	CV	n	D	D-LCL	D-UCL	CV
Diamond Grove	1029	1.30	1.16	1.46	0.06	1213	1.32	1.18	1.47	0.05
Hi-Lonesome	948	1.37	1.05	1.79	0.13	1259	1.18	1.01	1.39	0.08
Providence / Kickapoo	1205	1.29	1.10	1.53	0.08	612	1.07	0.89	1.29	0.09
Taberville	918	1.41	1.19	1.68	0.09	752	1.28	1.13	1.45	0.06
Wah'Kon-Tah	769	1.06	0.91	1.24	0.08	830	1.26	1.04	1.52	0.09
All Properties	4869	6.44	5.86	7.09	0.05	4666	6.11	5.68	6.57	0.04
	indicates treatment unit where density was higher, but not significantly									
	indicates treatment unit where density was significantly higher.									



TRANSECT SURVEYS ACROSS MISSOURI



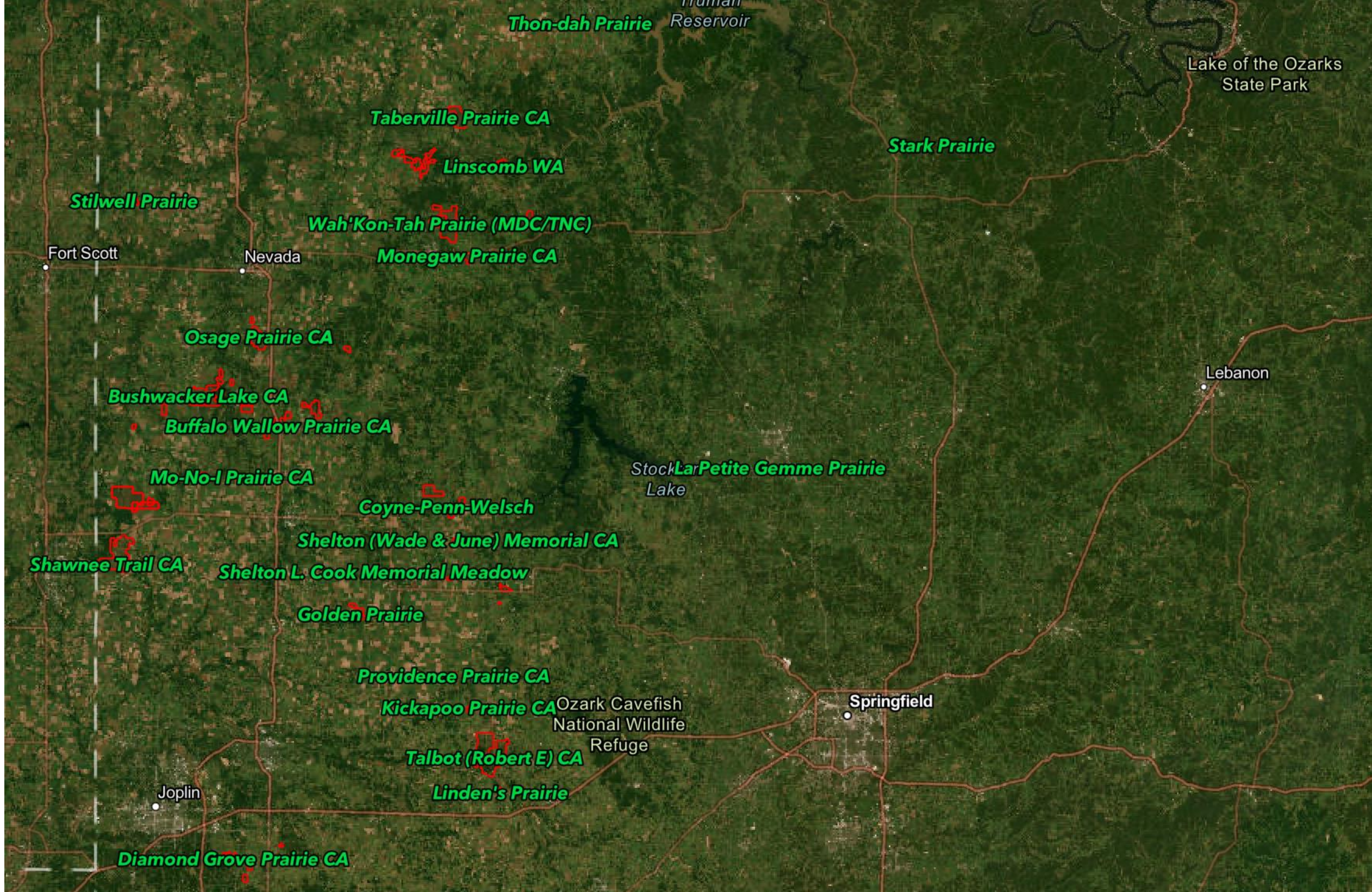
Photo: Bill Blackledge

$n = 92$



Photo: Andy Reago & Chrissy McClaren

$N = 11,155$
 $n = 43,564$



Thon-dah Prairie Reservoir

Lake of the Ozarks State Park

Taberville Prairie CA

Stark Prairie

Linscomb WA

Stilwell Prairie

Wah'Kon-Tah Prairie (MDC/TNC)

Fort Scott

Nevada

Monegaw Prairie CA

Osage Prairie CA

Bushwacker Lake CA

Buffalo Wallow Prairie CA

Lebanon

Mo-No-I Prairie CA

Stock Lake

La Petite Gemme Prairie

Coyne-Penn-Welsch

Shelton (Wade & June) Memorial CA

Shawnee Trail CA

Shelton L. Cook Memorial Meadow

Golden Prairie

Providence Prairie CA

Kickapoo Prairie CA

Ozark Cavefish National Wildlife Refuge

Springfield

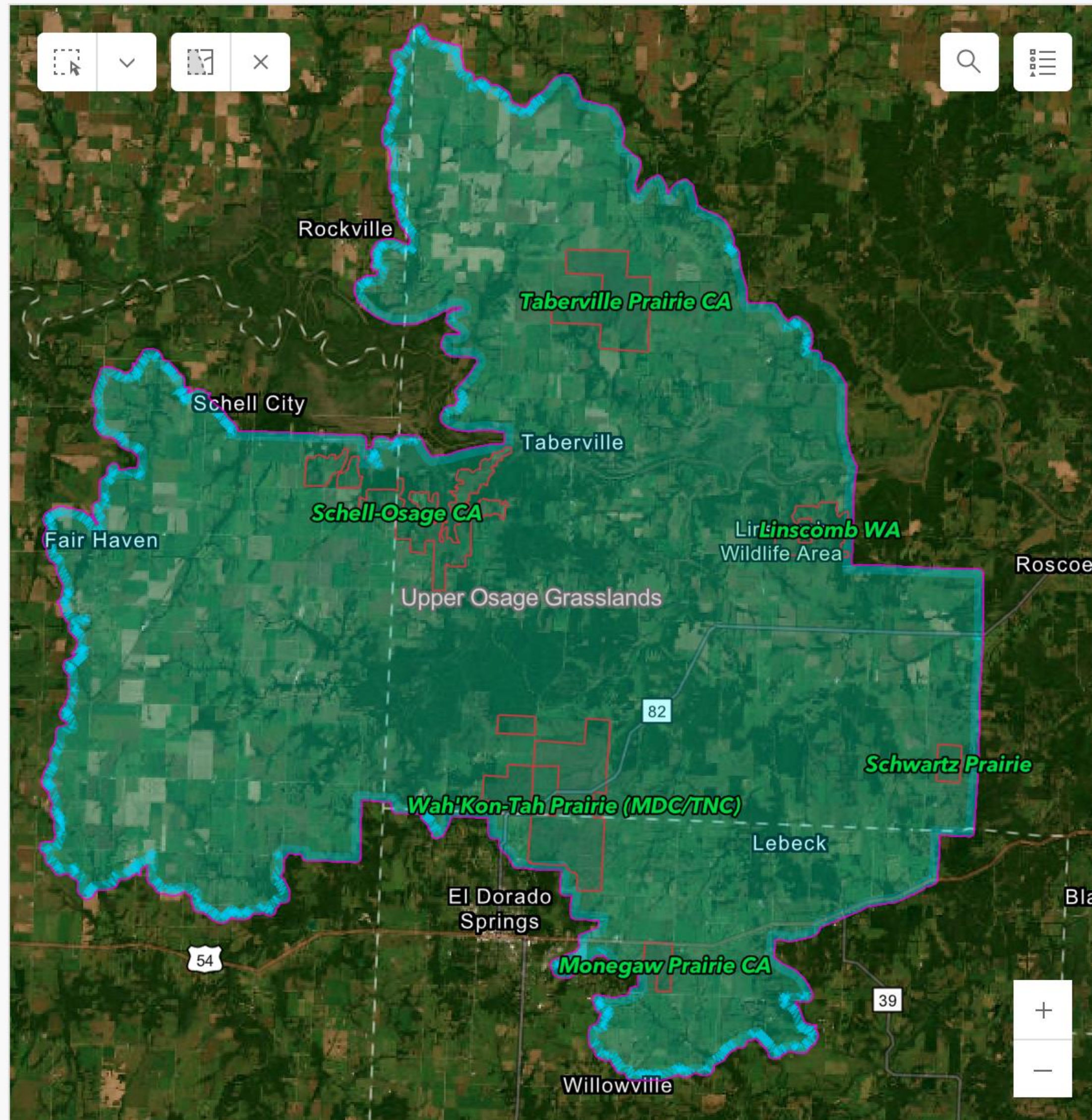
Talbot (Robert E) CA

Joplin

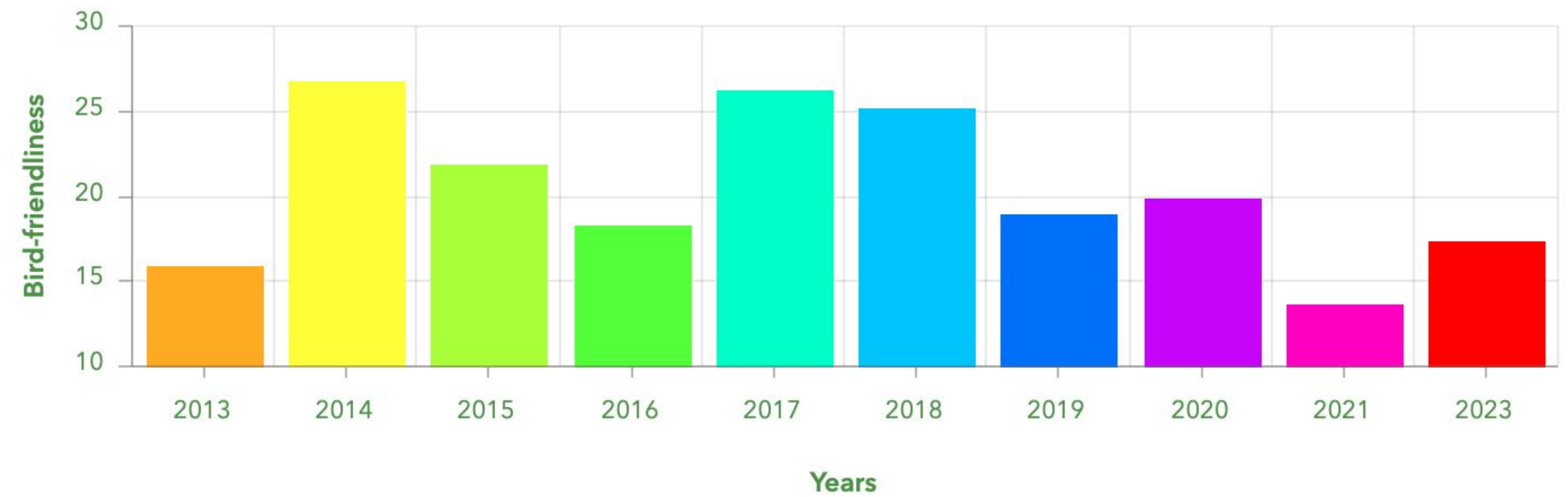
Linden's Prairie

Diamond Grove Prairie CA

GRASSLAND GUILD - UPPER OSAGE GRASSLANDS PRIORITY

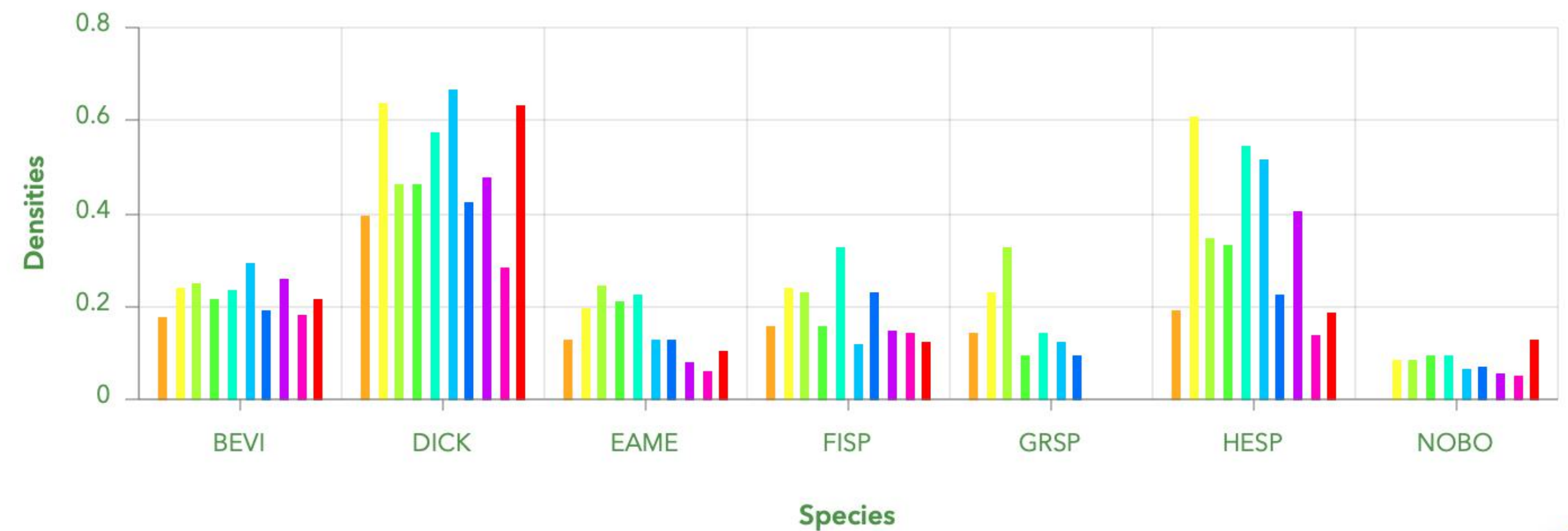


Bird-friendliness Scores by Year Since 2012: Best used for site-level, year-to-year comparisons.



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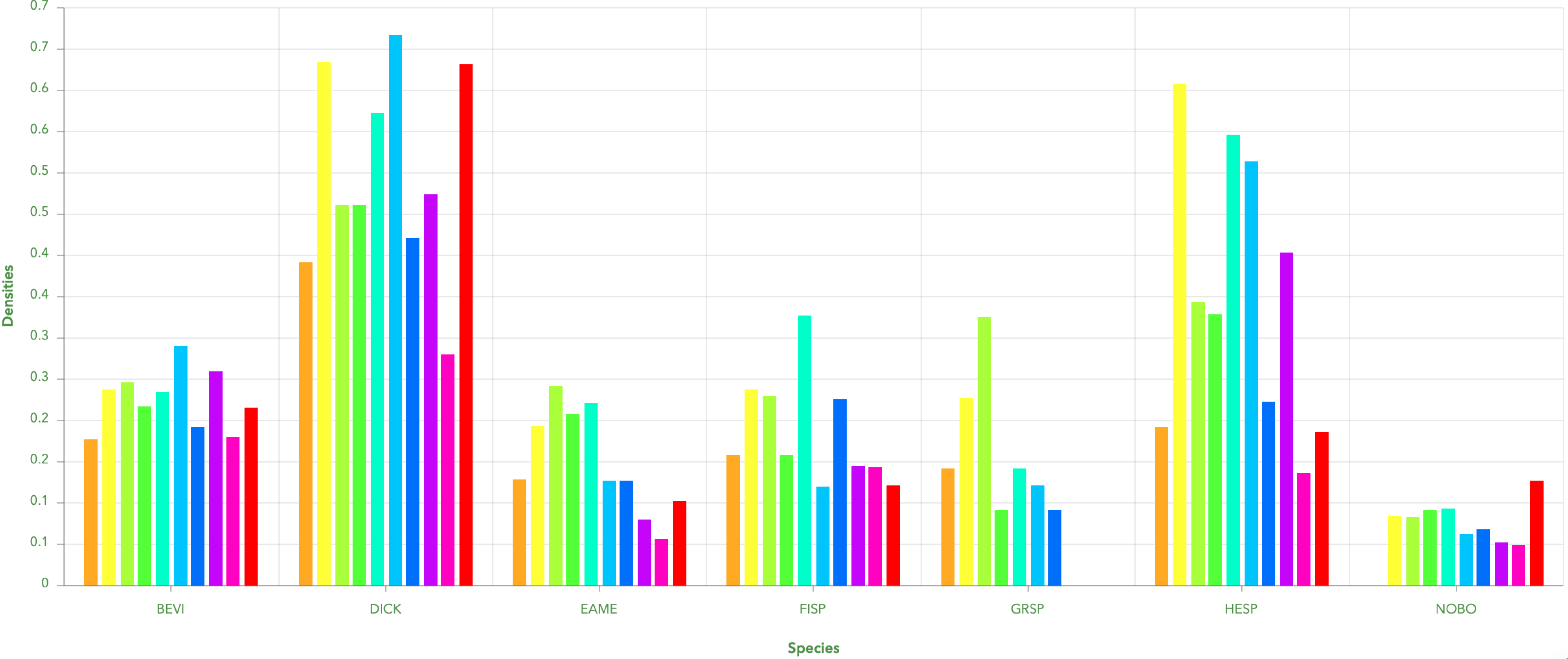
Grassland-obligate Species Densities: Densities are averages when more than one site is selected.



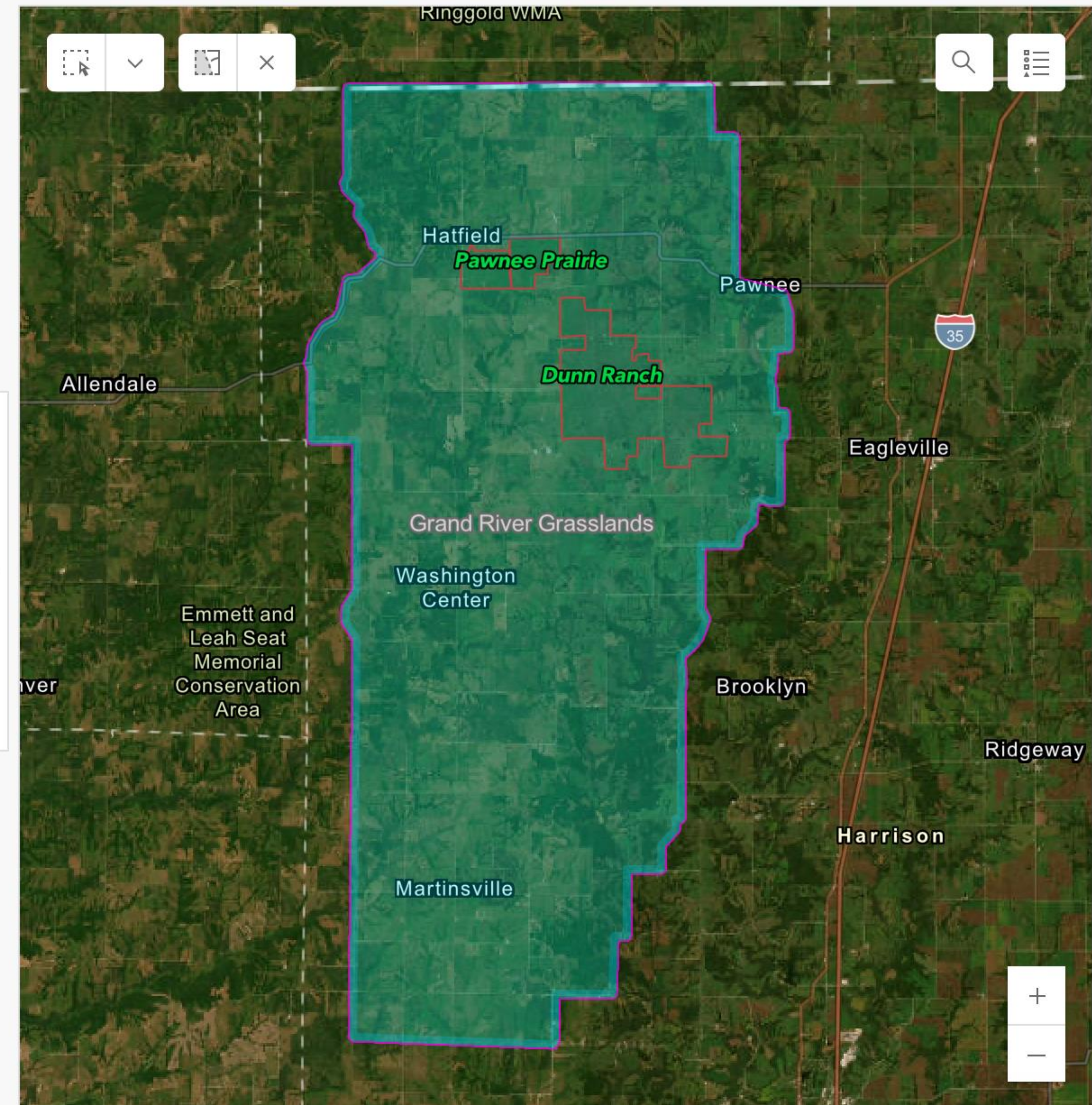
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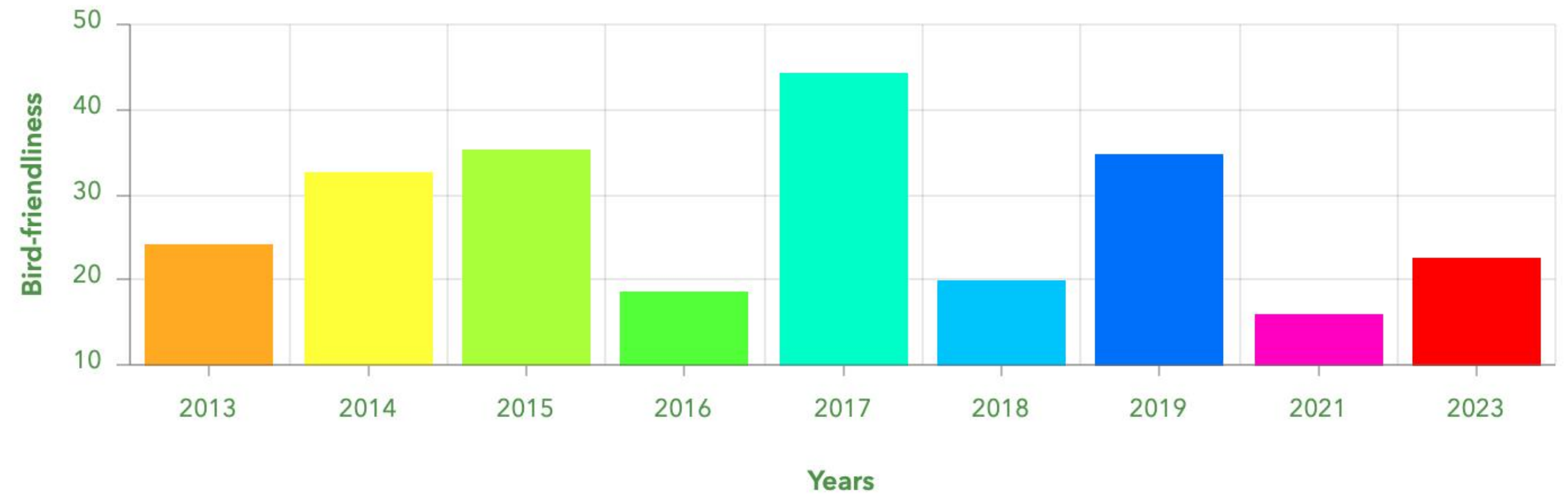
GRASSLAND GUILD - WAH'KON-TAH



GRASSLAND GUILD - GRAND RIVER GRASSLANDS PRIORITY

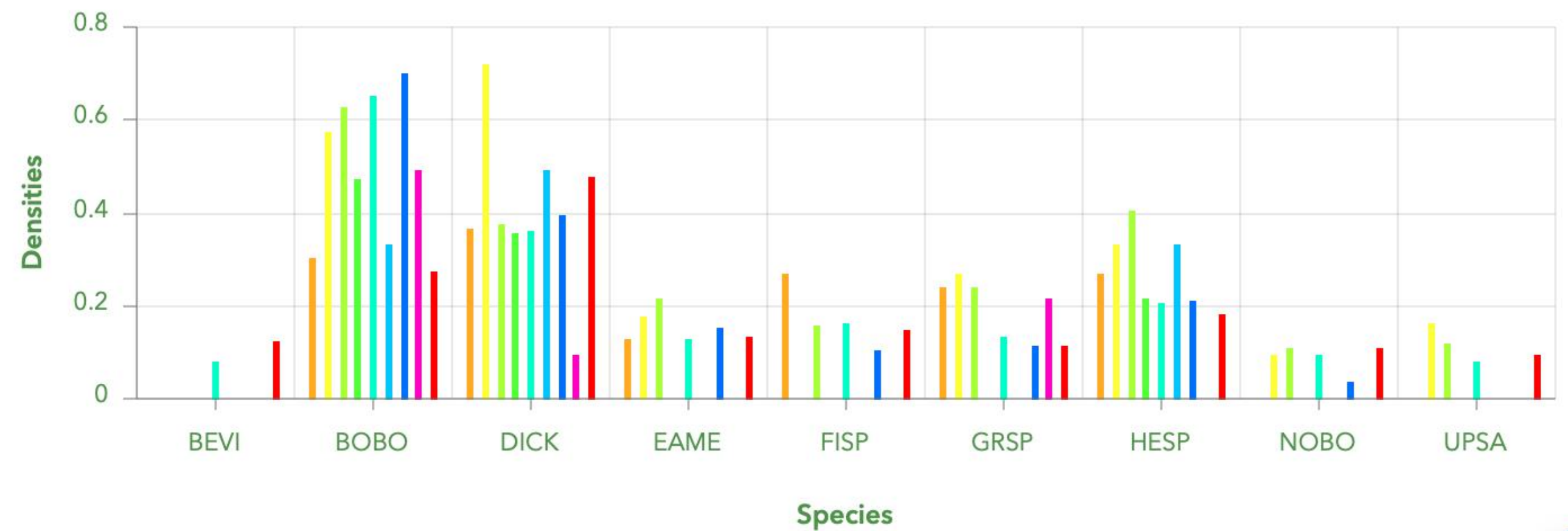


Bird-friendliness Scores by Year Since 2012: Best used for site-level, year-to-year comparisons.



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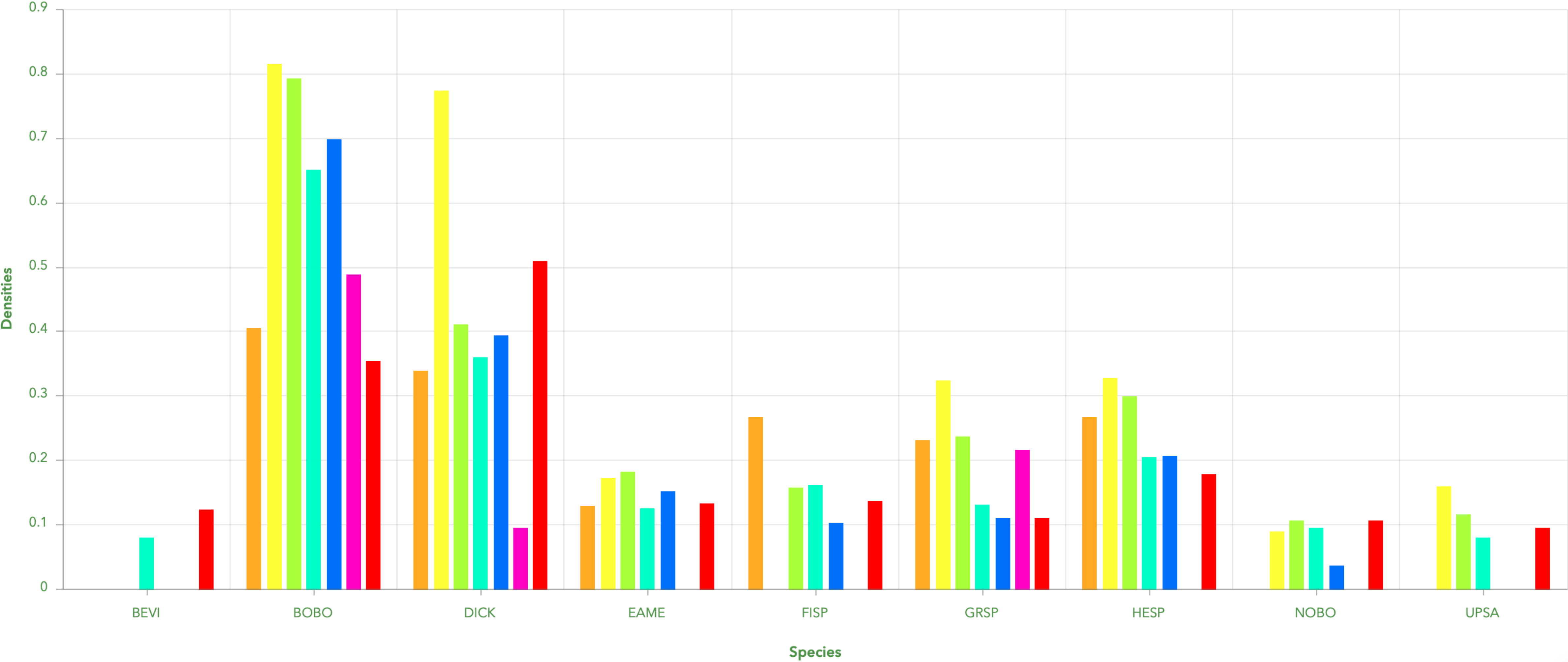
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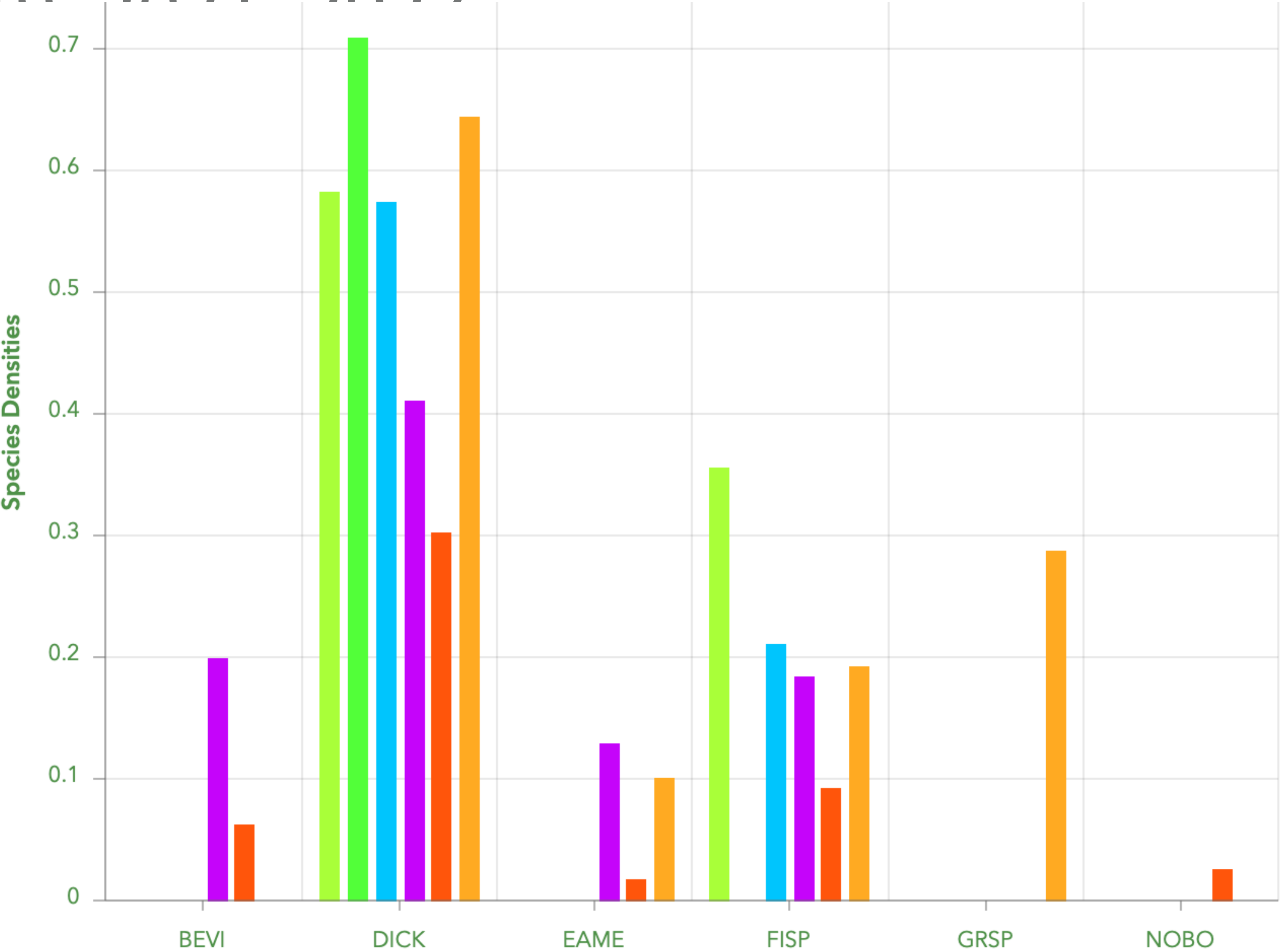
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DUNN RANCH



DAVE HAUBEIN'S HICKMAN-OSAGE FARM: 2014, 2015, 2017, 2018, 2021, 2022



Bird-friendliness Scores on Public, Missouri Prairie Foundation, and The Nature Conservancy Lands

Combined grassland-obligate species densities, conservation concern values, and diversity metrics.



Caveat...

We're surveying the best of the best.

- State agency land
- Conservation non-profit holdings
- Conservation-minded producers' working lands

Grassland bird density on Missouri public and private lands 2013 - 2023

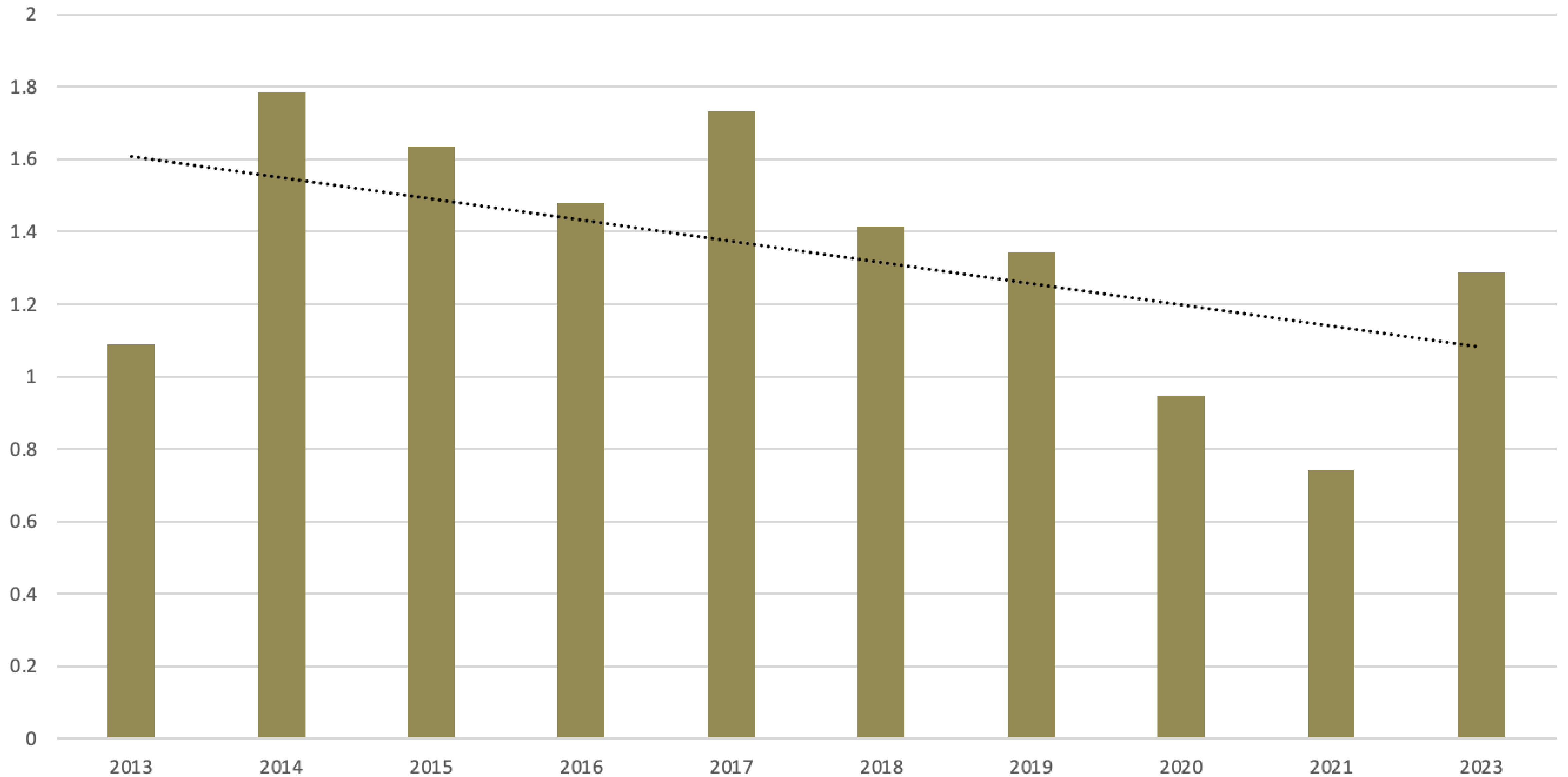




Photo: Russell Kinerson

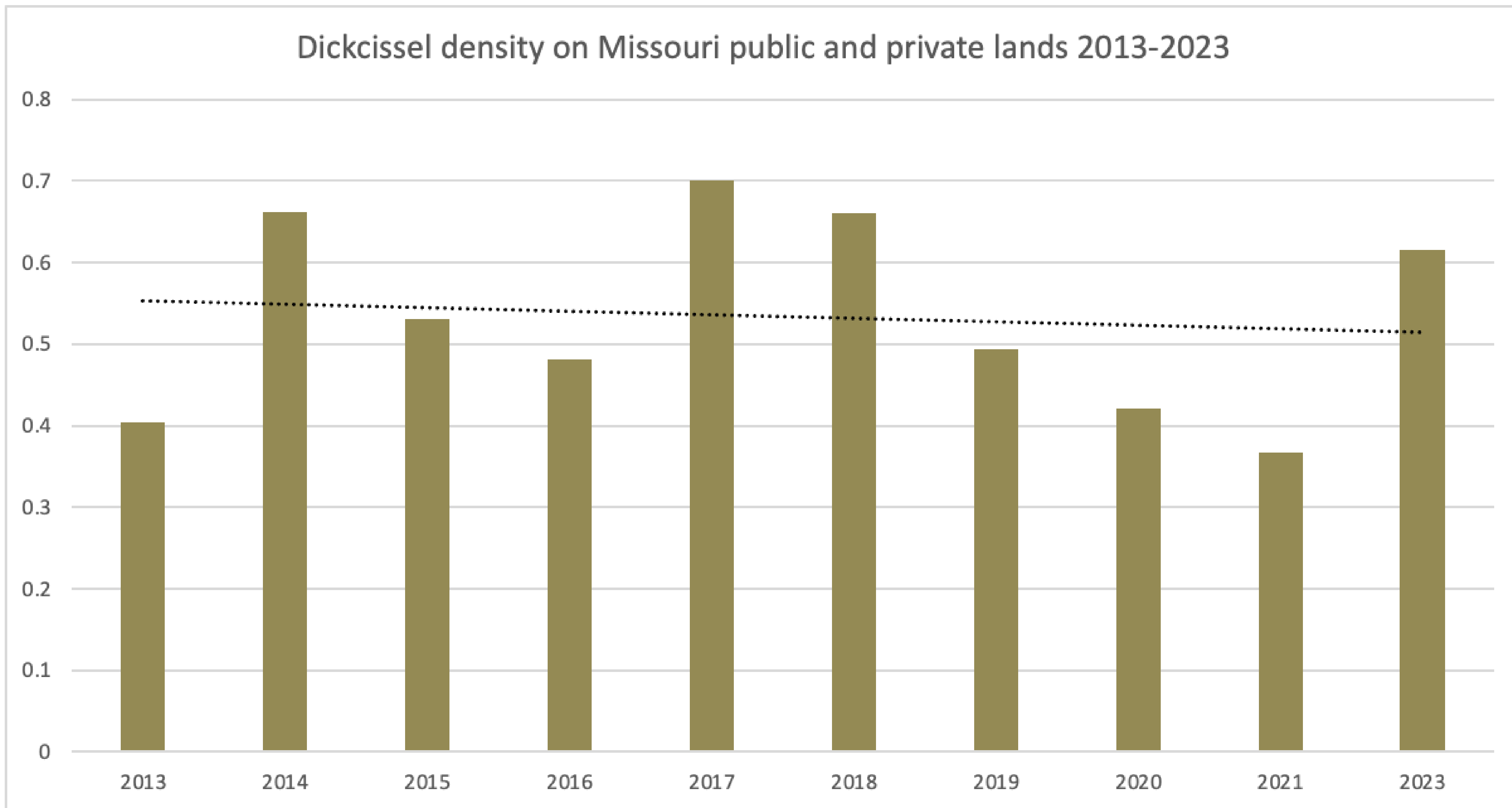




Photo: Mark Ramsey

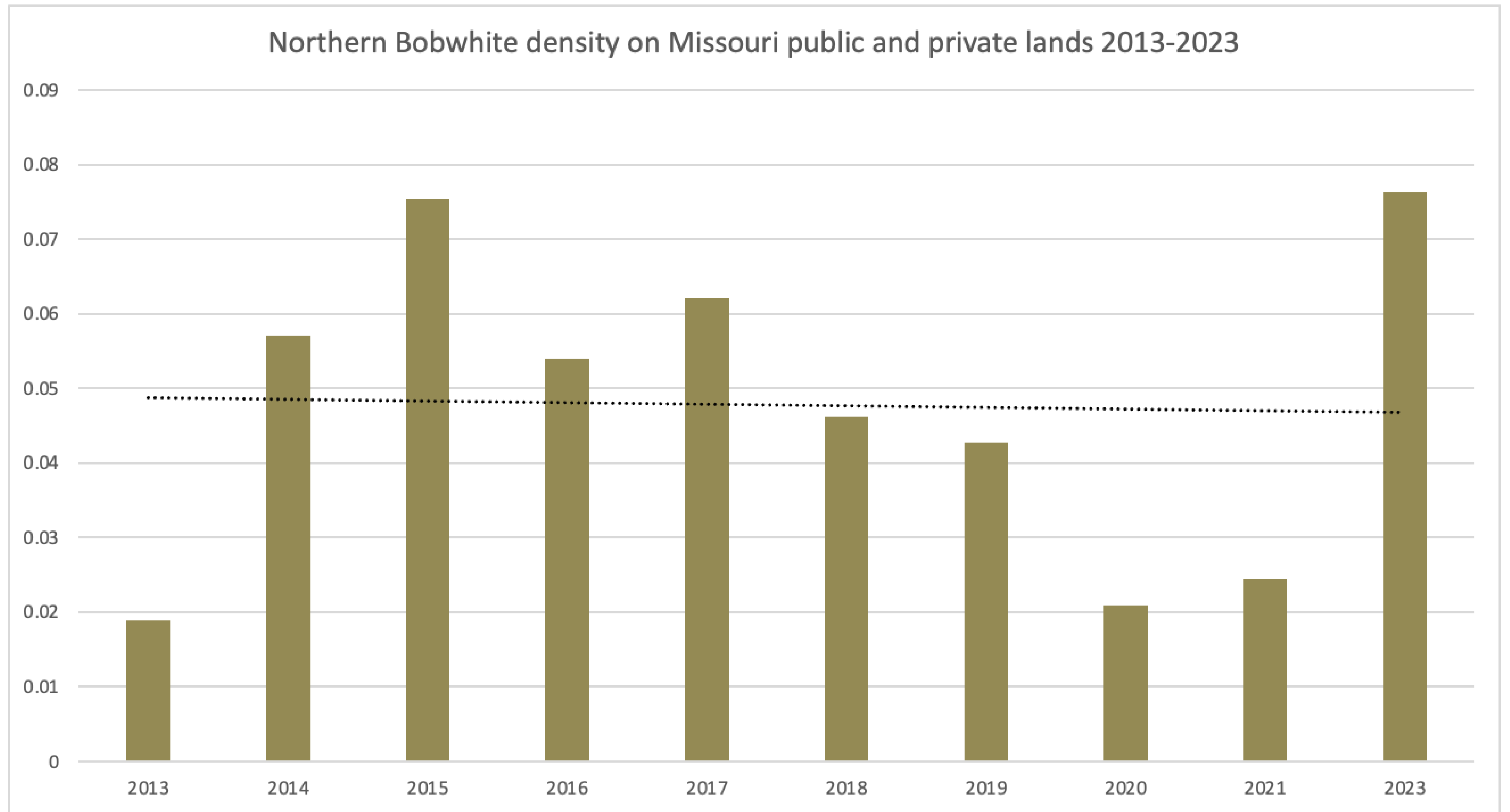




Photo: Linda Williams

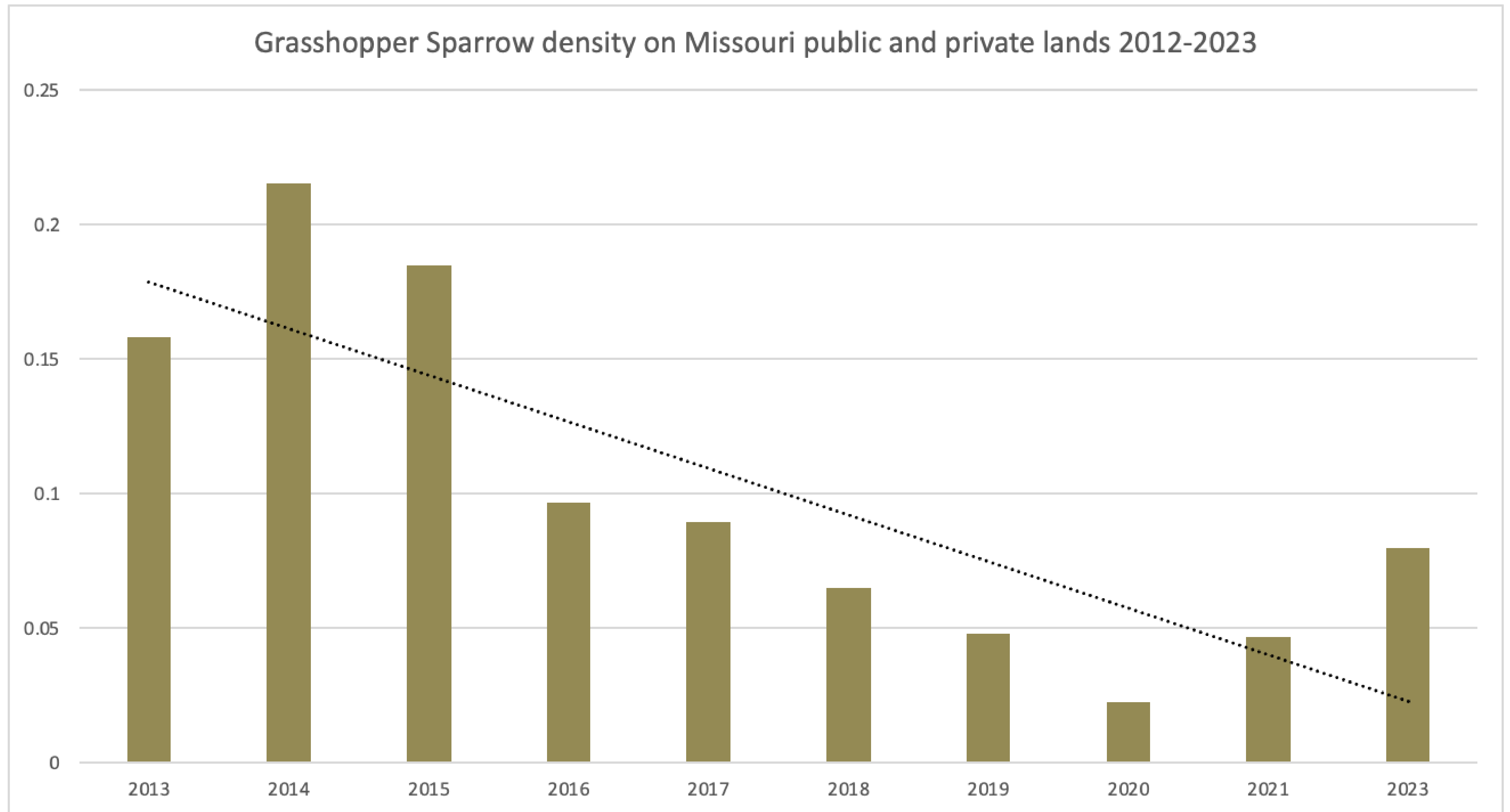




Photo: Linda Williams

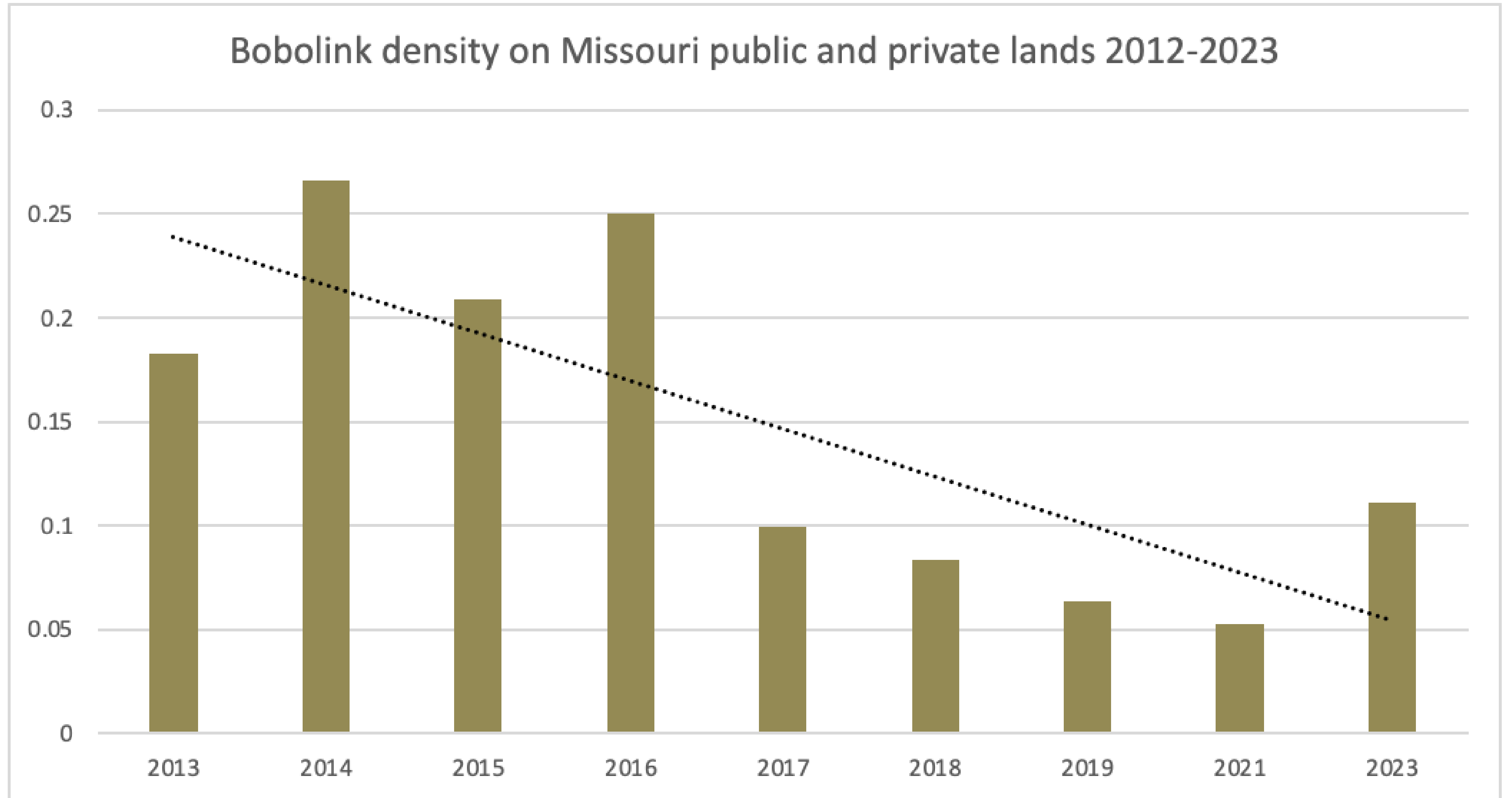




Photo: Andy Reago & Chrissy McClaren

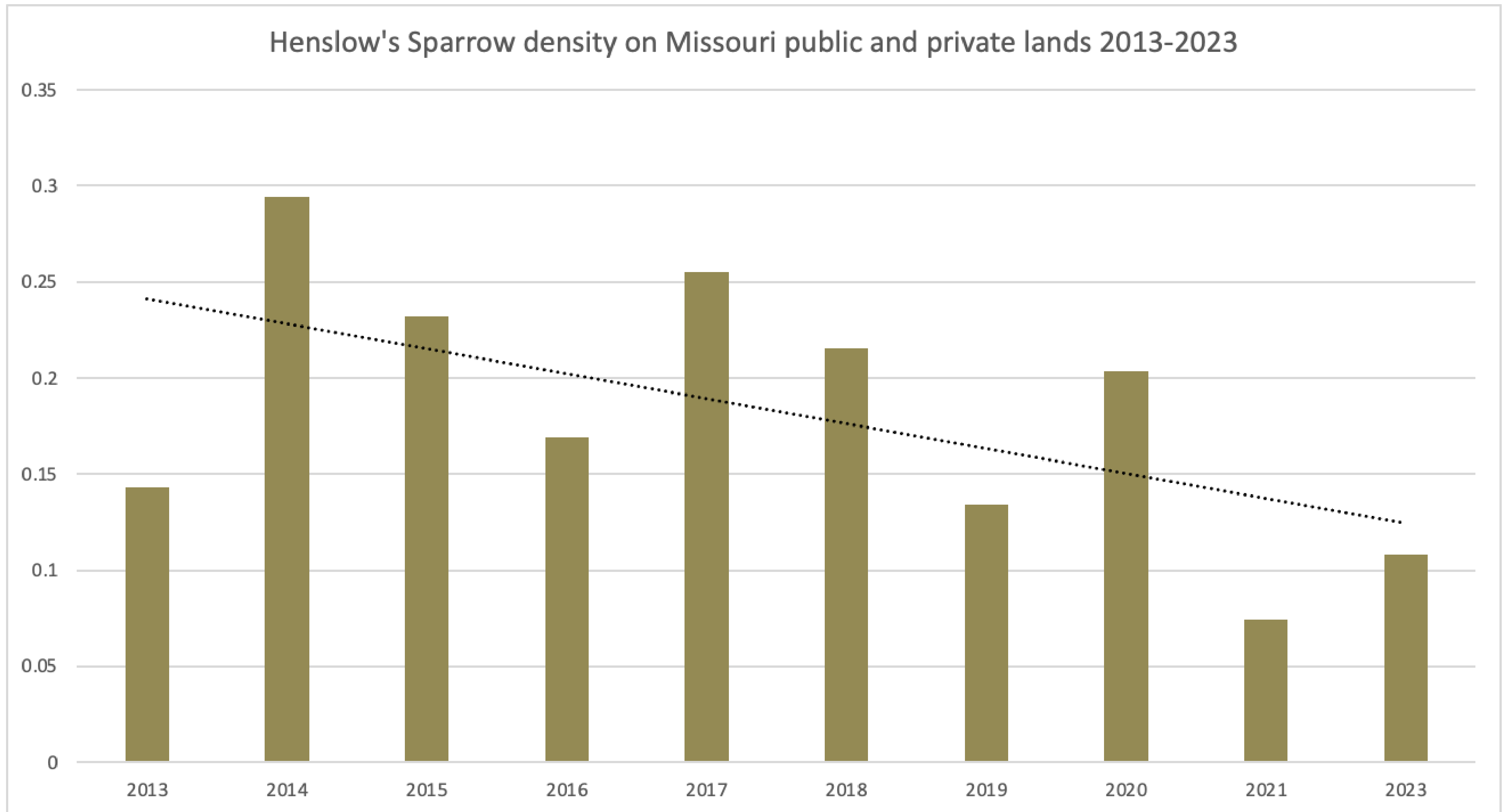
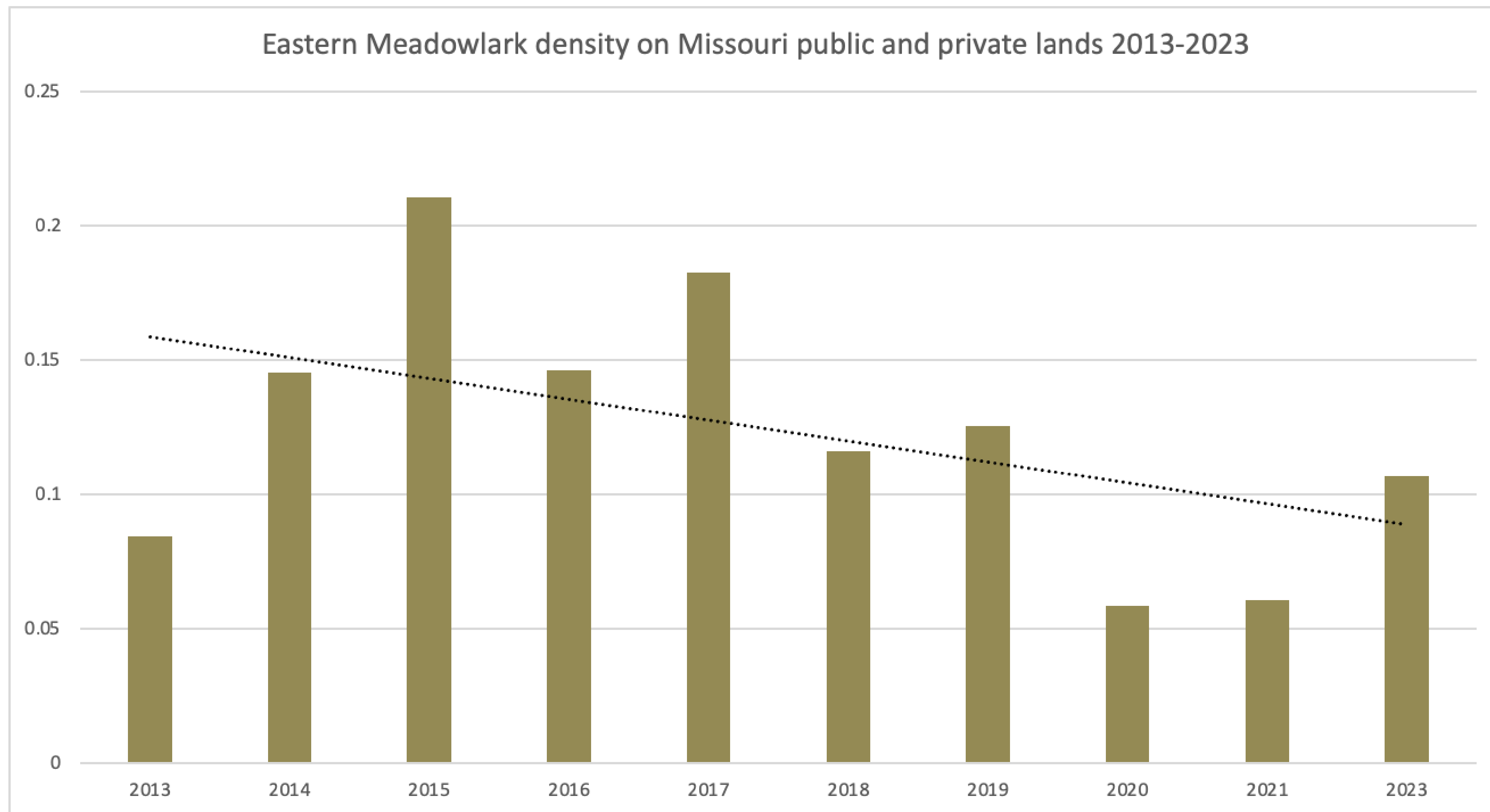
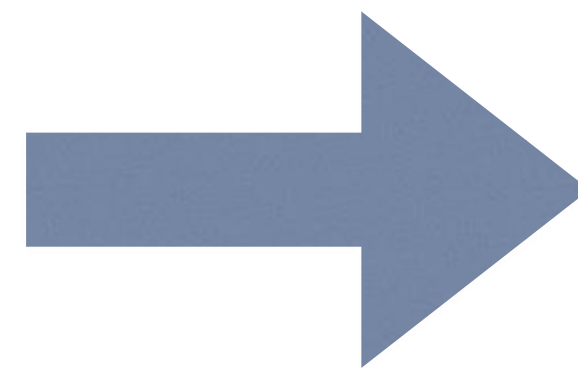




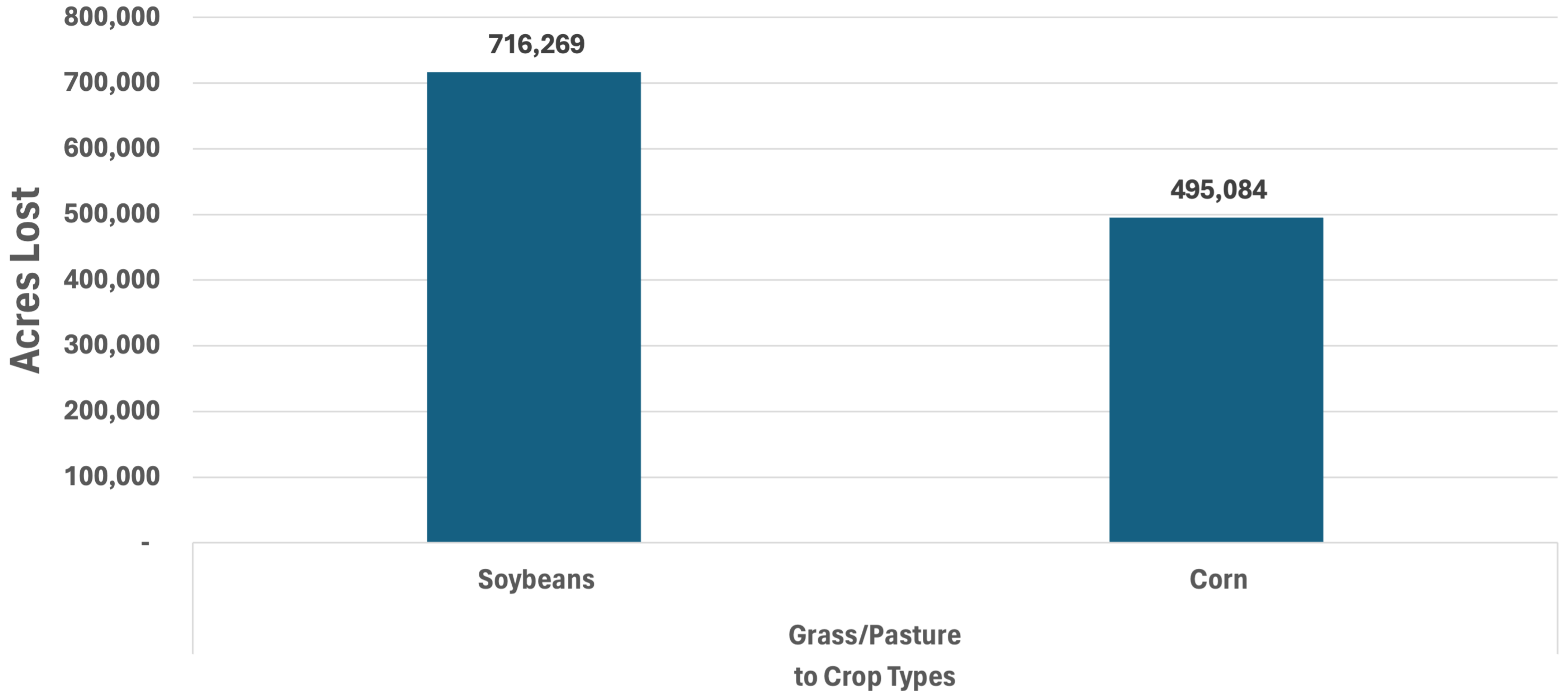
Photo: Erik Ost





+ lawns & built environment

Grass / Pasture Lost to Corn and Soy in Missouri from 2012 to 2023





NEONICS



Neonicotinoid insecticides:
Failing to come to grips with a
predictable environmental disaster

American Bird Conservancy, June 2023



Article | Published: 10 August 2020

Neonicotinoids and decline in bird biodiversity in the United States

[Yijia Li](#), [Ruiqing Miao](#) & [Madhu Khanna](#)

[Nature Sustainability](#) **3**, 1027–1035 (2020) | [Cite this article](#)

5310 Accesses | **71** Citations | **962** Altmetric | [Metrics](#)

Abstract

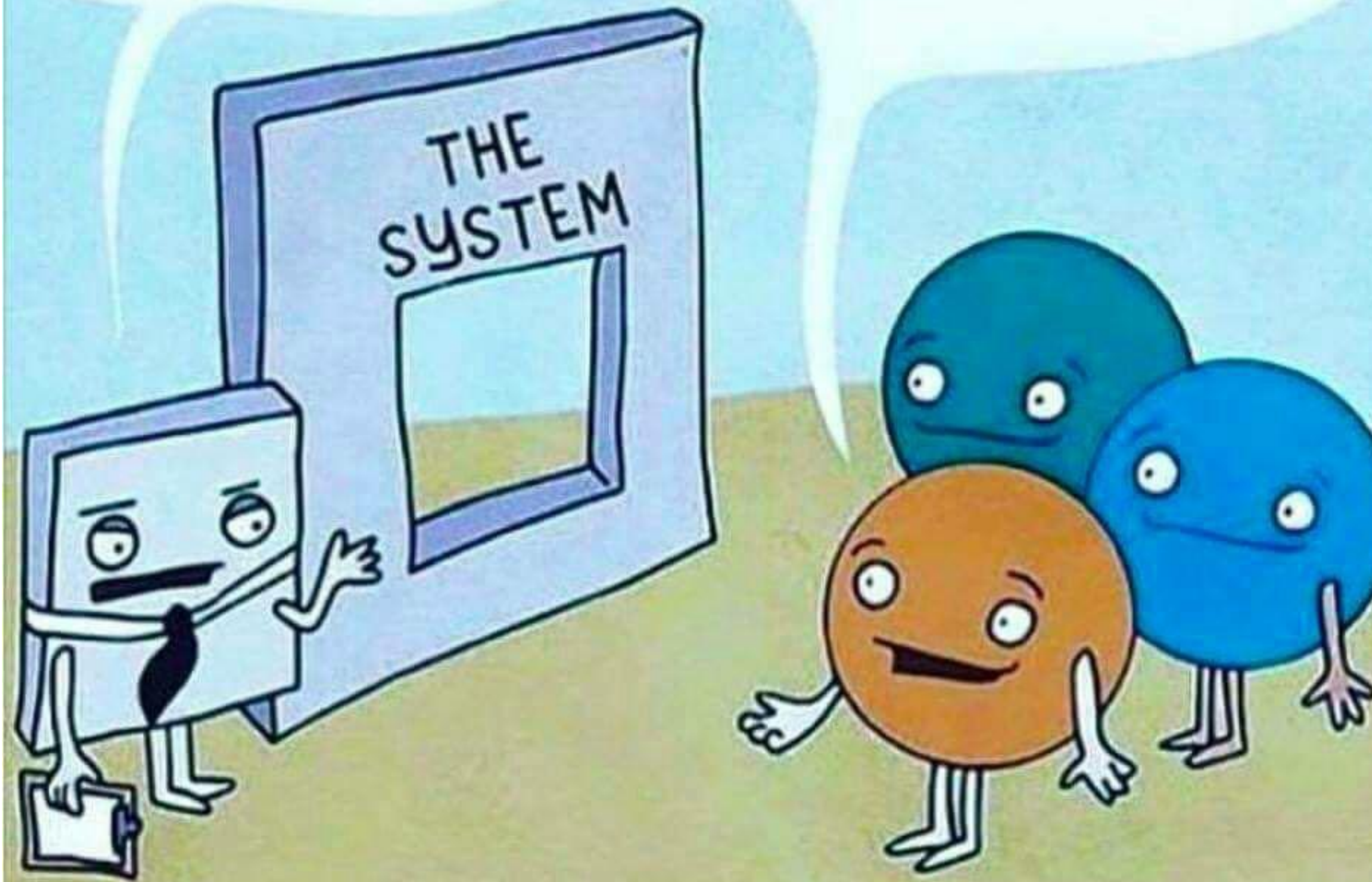
Neonicotinoid insecticides are being widely used and have raised concerns about negative impacts on non-target organisms. However, there has been no large-scale, generalizable study on their impact on biodiversity of avian species in the United States. Here we show, using a rich dataset on breeding birds and pesticide use in the United States, that the increase in neonicotinoid use led to statistically significant reductions in bird biodiversity between 2008 and 2014 relative to a counterfactual without neonicotinoid use, particularly for grassland and insectivorous birds, with average annual rates of reduction of 4% and 3%, respectively. The corresponding rates are even higher (12% and 5%, respectively) when the dynamic effects of bird population declines on future population growth are considered. The effects of neonicotinoids on non-grassland and non-insectivorous birds are also statistically significant but smaller, with an average annual rate of reduction of 2% over this period.

OTHER CAUSES OF DIRECT MORTALITY



You're going to have to change to fit into the system.

Or how about you change the system so we can all fit?





MANY THANKS

- Max Alleger, MDC
- Justin Pepper, Bobolink Foundation
- Chris Wilson, Audubon
- Carol Davit, Missouri Prairie Foundation
- Kent Wamsley, TNC
- Sarah Kendrick, USFWS
- Erik Ost, WEST Inc
- Kristen Heath-Acre, MDC
- Frank Loncarich, MDC
- Joe Coy, MDC
- Area managers
- Private landowners
- Field technicians

