



United States Department of Agriculture

Home Ranges and Resource Selection of Black Vultures in the Southeastern United States

Betsy A. Evans

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USDA-APHIS-WS-NWRC

Florida Field Station

**2022 Bird Strike Committee USA Meeting
July 2022**

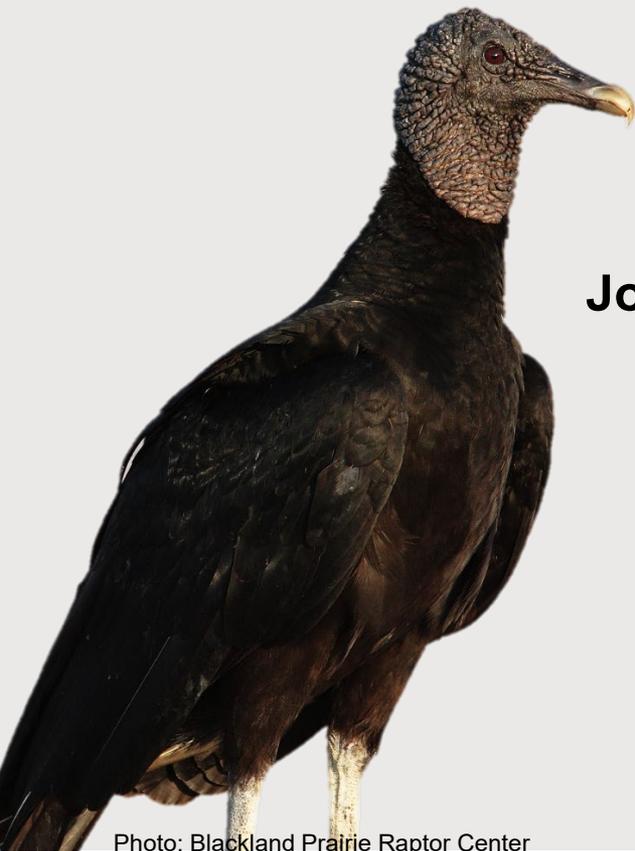


Photo: Blackland Prairie Raptor Center

Presentation Overview

- Status of Black Vultures in the US
- Human-vulture conflict in the US
- Black Vulture home ranges
- Black Vulture resource selection
- Questions



Photo: Blackland Prairie Raptor Center

Black Vulture abundance



The Cornell Lab  | Data provided by eBird



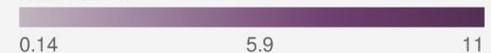
Black Vulture *Coragyps atratus*

Abundance

Relative abundance is depicted for each season along a color gradient from a light color indicating lower relative abundance to a dark color indicating a higher relative abundance. Relative abundance is the estimated number of individuals detected by an eBirder during a traveling count at the optimal time of day.

RELATIVE ABUNDANCE

Year-round



 Modeled area (0 abundance)
 No prediction

eBird data from 2005-2020. Estimated for 2019.
Fink, D., T. Auer, A. Johnston, M. Strimas-Mackey, O. Robinson, S. Ligocki, W. Hochachka, C. Wood, I. Davies, M. Iliff, L. Seitz. 2020. eBird Status and Trends, Data Version: 2019; Released: 2020. Cornell Lab of Ornithology, Ithaca, New York. <https://doi.org/10.2173/ebirdst.2019>

Black Vulture population estimates

The Journal of Wildlife Management 83(2):272-282; 2019; DOI: 10.1002/jwmg.21608



Research Article

Allowable Take of Black Vultures in the Eastern United States

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Photo: Francisco Dubón

Global abundance estimates for 9,700 bird species

Corey T. Callaghan^{a,b,1}, Shinichi Nakagawa^{b,2}, and William K. Cornwell^{a,b,2}

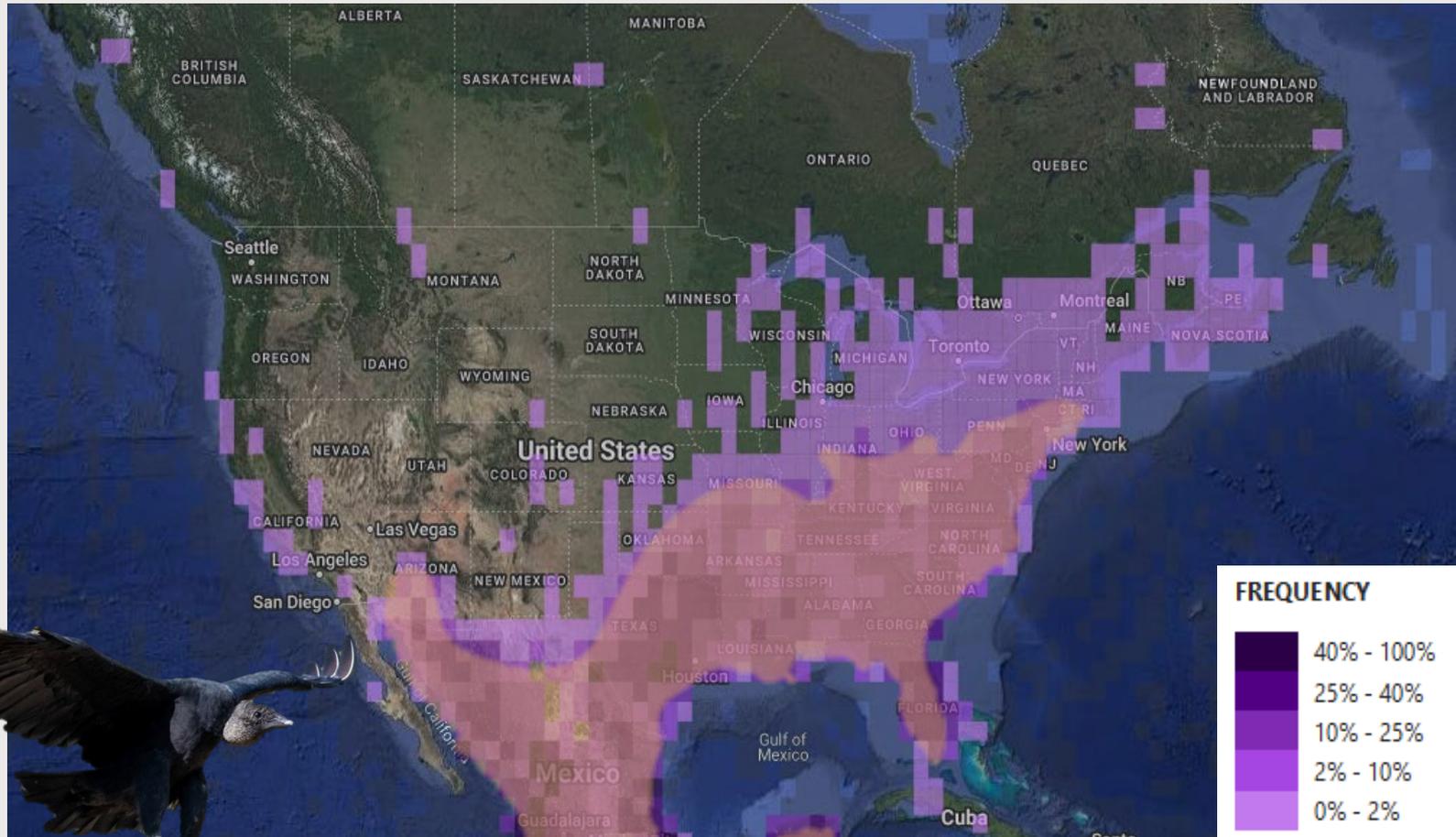
^aCentre for Ecosystem Science, School of Biological, Earth and Environmental Sciences, UNSW Sydney, Sydney, NSW 2052, Australia; and ^bEcology & Evolution Research Centre, School of Biological, Earth and Environmental Sciences, UNSW Sydney, Sydney, NSW 2052, Australia

Edited by Simon Asher Levin, Princeton University, Princeton, NJ, and approved March 28, 2021 (received for review November 16, 2020)

~73,934,521 Black Vultures globally

State	Population estimate
FL	1,135,707(509,016-2,554,209)
GA	707,562(377,790-1,333,427)
LA	435,369(211,891-884,870)
MS	383,383(160,309-920,440)
TN	235,889(105,080-529,890)
AL	225,949(112,993-454,240)
AR	179,470(54,736-589,412)
SC	167,685(72,754-387,038)
NC	122,864(53,153-285,289)
KY	123,274(47,037-324,782)
VA	118,741(54,069-259,949)
MD	71,518(36,039-141,498)
NJ	29,616(10,015-86,622)
WV	23,923(6,705-85,898)
IN	17,128(3,791-77,311)
PA	13,408(5,120-35,004)
MO	7,177(1,371-36,867)
IL	5,717(1,621-20,112)
DE	5,198(1,552-17,404)
OH	4,637(1,083-19,841)

Black Vulture range expansion



Black Vulture range expansion

2022

NORTHEASTERN NATURALIST NOTES

29(1):N1-N5

First Breeding Record of the Black Vulture (*Coragyps atratus*) in Vermont

Cynthia M. Crowley¹, Kyle F. Tansley², and Neil J. Buckley^{3,*}

Abstract - We report the first breeding record of *Coragyps atratus* (Black Vulture) in Vermont. The birds nested in a dilapidated barn in downtown Burlington, and successfully reared a single chick despite the barn's partial demolition shortly after the chick hatched. This record represents the northernmost breeding record in the US for the species, whose US range has extended steadily northwards in the past century.

Black vultures are expanding their range in Southern Illinois

Les Winkler Jun 29, 2017 Updated Sep 30, 2018 0

Missouri's Rising Temperatures Draw Black Vulture Populations North



Xander Negozio



August 5, 2021



No Comment

New Brunswick

Black vulture, rarely spotted in Canada, rescued in New Brunswick



Bird is commonly found in southeastern U.S., South America



Alexandre Silberman · CBC News · Posted: Jan 02, 2022 6:00 PM AT | Last Updated: January 2

Nature: Black vultures, once uncommon in central Ohio, are easier to spy

Jim McCormac Special to The Columbus Dispatch

Published 6:16 a.m. ET Aug. 15, 2021 | Updated 11:08 a.m. ET Aug. 15, 2021



Wildlife Services

Protecting People ♦ Protecting Agriculture ♦ Protecting Wildlife

Black Vulture range expansion

RESEARCH ARTICLE | EARTH, ATMOSPHERIC, AND PLANETARY SCIENCES | OPEN ACCESS

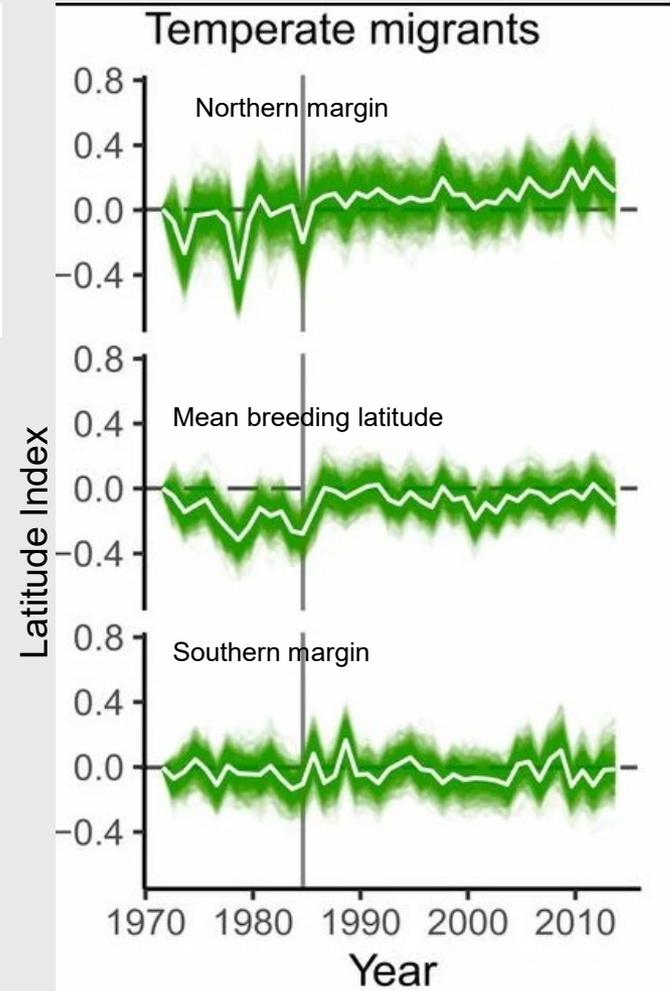


Migratory behavior and winter geography drive differential range shifts of eastern birds in response to recent climate change

Clark S. Rushing  , J. Andrew Royle, David J. Ziolkowski Jr , and Keith L. Pardieck  [Authors Info & Affiliations](#)

May 26, 2020 | 117 (23) | <https://doi.org/10.1073/pnas.2000299117>

- Recent study found temperate migrants, including Black Vultures, have expanded their ranges northward in mean breeding latitude and northern leading range margins



Black Vulture population increase and range expansion

- Range expansion is poorly understood, but
 - Humans have provided vultures with predictable and easily accessible food sources
 - Human-altered landscapes have provided vultures with thermals, obstruction currents, and abundant perch sites



Increase in human-vulture conflicts



Photo: ENP

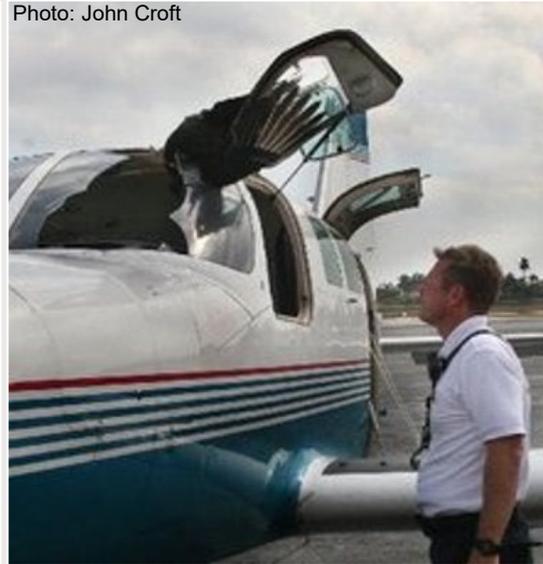


Photo: John Croft



Photo: Tower Engineering Professionals



Photo: John Seewer



Photo: ENP

Increase in human-vulture conflicts

Black vultures wreak havoc on Kentucky livestock

BY BRANDON ROBERTS | KENTUCKY
PUBLISHED 11:24 AM ET JUN. 08, 2021

LEXINGTON, Ky. — Black vultures are a severe problem for livestock owners in Kentucky.

Federally Protected Black Vultures May Be 'Eating Cows Alive' in the Midwest

Farmers are seeking permits to cull any raptors harming their livestock, but experts say reports of vicious attacks are exaggerated

NEWS

Vomiting Black Vultures Take Over Couple's Florida Vacation Home: 'Smells Like a Thousand Rotting Corpses'

BY ILMA HASAN ON 8/18/19 AT 4:58 PM EDT

Menace from the sky: Black vultures attacking calves across Missouri

Published: Nov. 23, 2018 at 11:59 AM EST

Black Vulture Attacks on Animals May Be Increasing

But some bird experts say reports of increasing predation by black vultures in the Midwest may be overblown.

Plague of vultures forces tiny North Carolina town to take drastic steps: a cannon

BY MARK PRICE

UPDATED DECEMBER 18, 2020 3:18 PM



Photo: Francisco Dubón

Aircraft collision risks

Lufthansa passenger plane makes emergency landing after a massive VULTURE smashes into its nose at 5,000ft

- Lufthansa A320 smashed into the huge bird as it was nearing Palma
- Pictures show huge dent in plane's nose caused by the force of the impact
- Captain was unable to avoid collision but no one was hurt in the incident

By [HARRIET MALLINSON FOR MAILONLINE](#)

PUBLISHED: 07:14 EDT, 16 September 2016 | **UPDATED:** 09:13 EDT, 16 September 2016

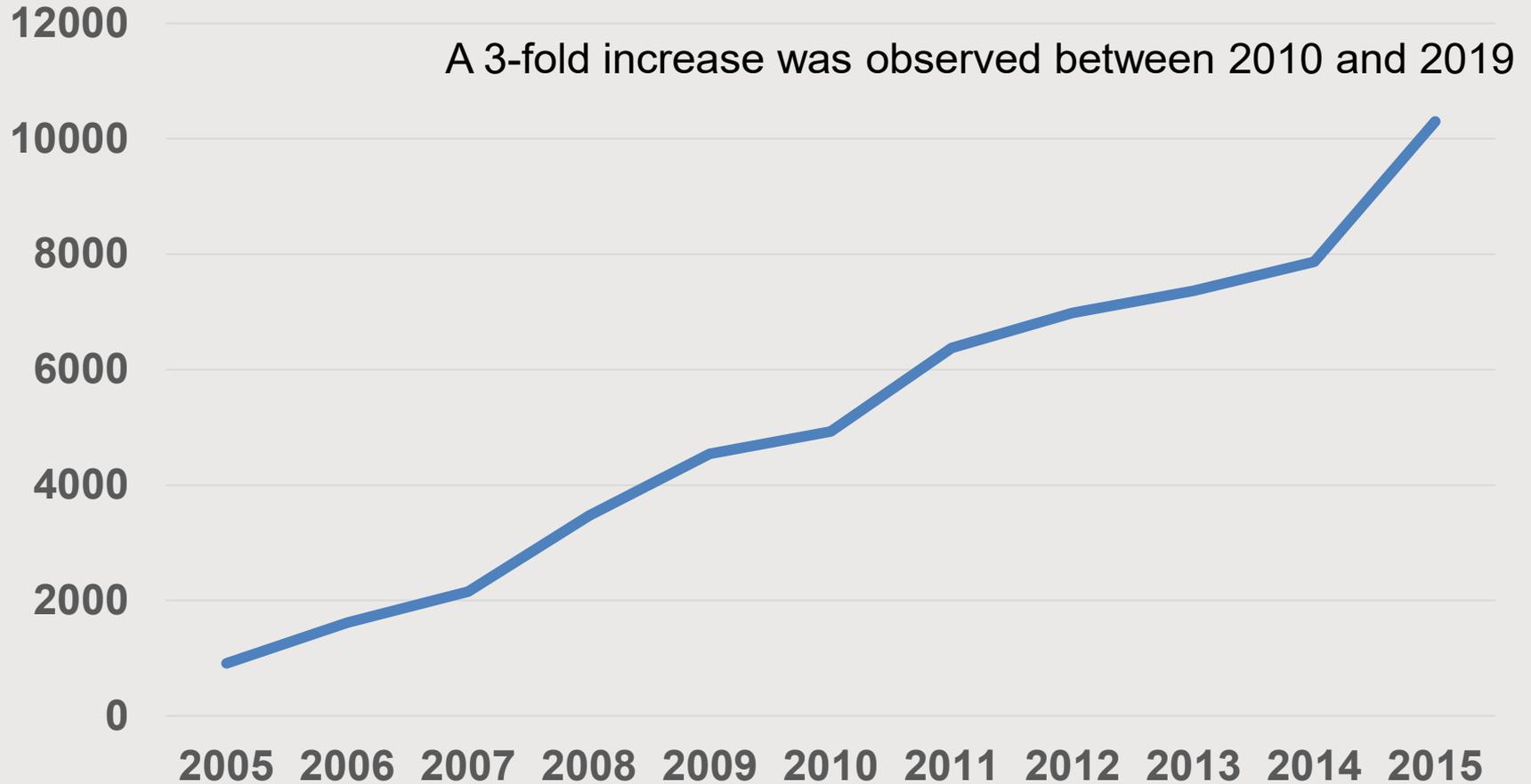


PLANE HITS VULTURE IN FLIGHT AND BIRD GETS STUCK IN JET'S NOSE

Abhishek Pratap | October 29, 2021 | News | Comments Off | 90 Views



Requests for USDA WS assistance with Black Vultures

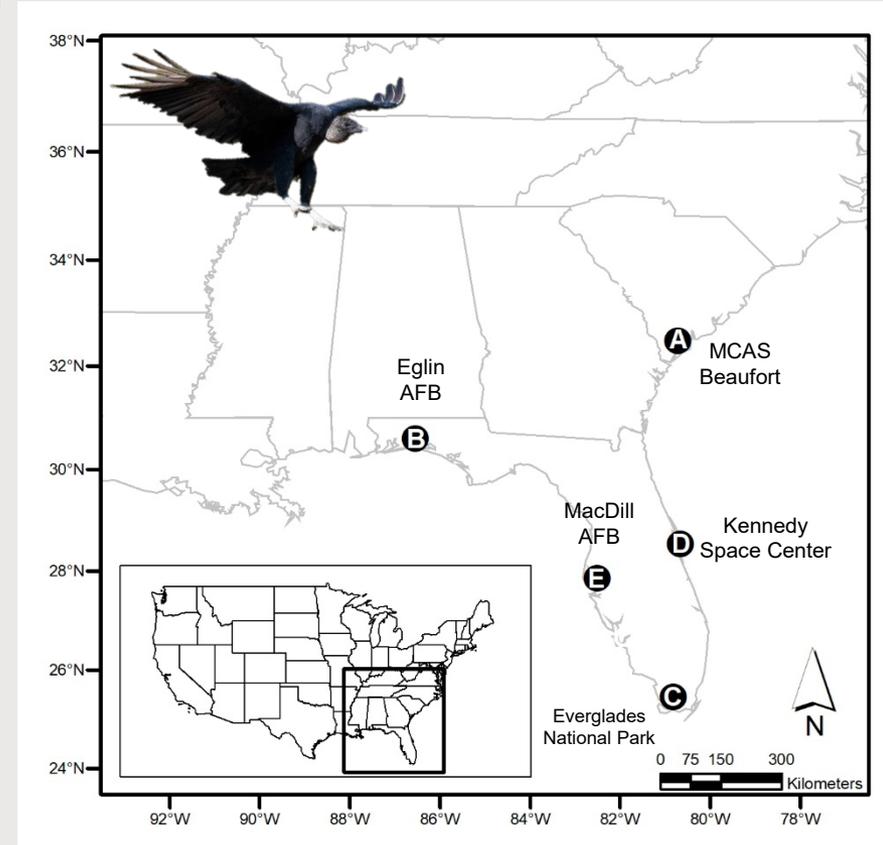


Space use patterns

- Home range and resource selection of Black Vultures in the southeastern United States

- Objectives:

- Quantify home range size
- Create resource selection functions to identify key landscape factors influencing Black Vulture roost and diurnal space use



Space use patterns

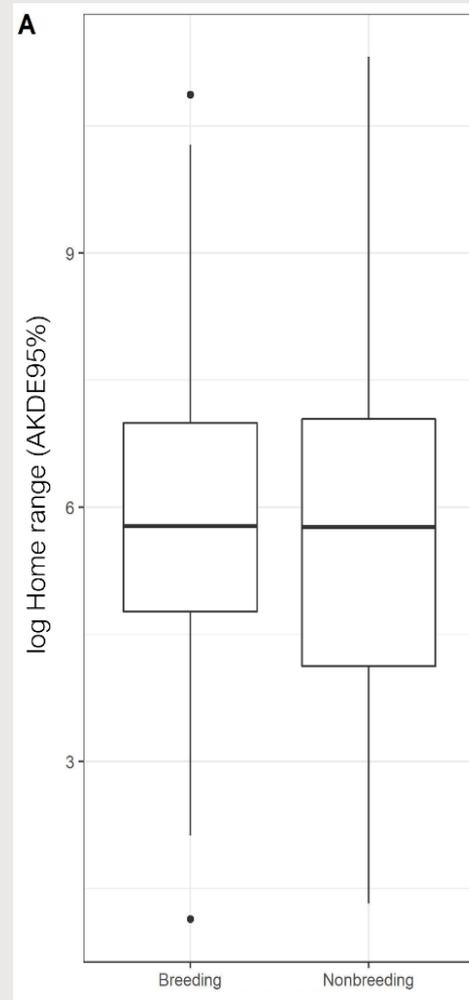
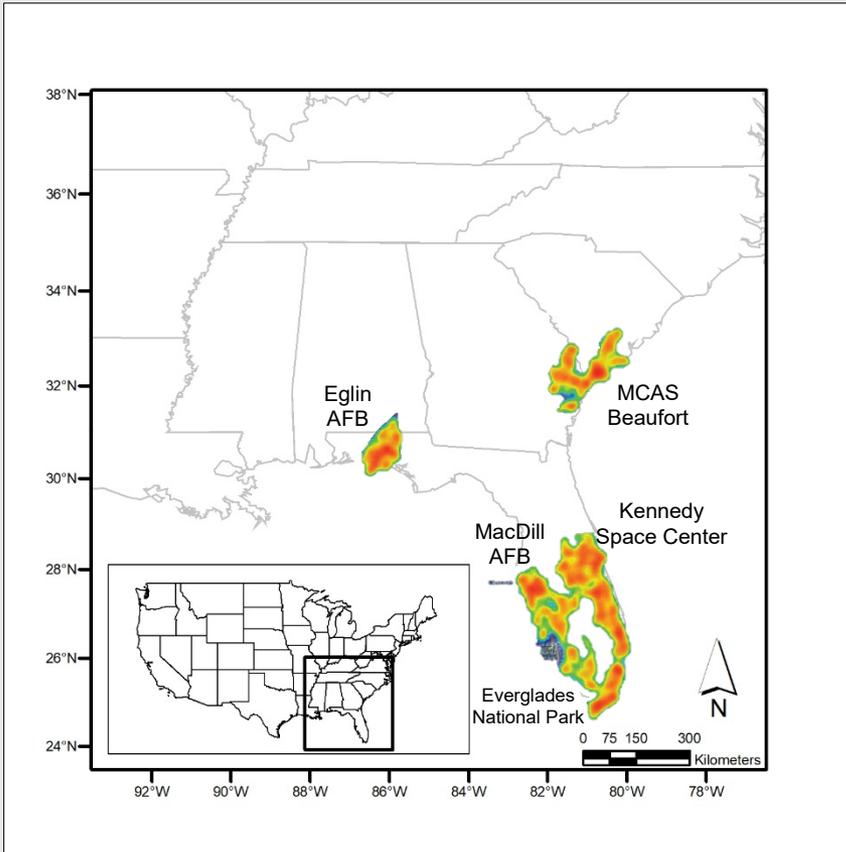


- Transmitters placed on 32 Black Vultures at 5 locations

- Eglin, Beaufort, MacDill
 - Understand vulture movements around bases
- Kennedy Space Center
 - Understand vulture movements in relation to spacecraft
- Everglades National Park
 - Understand vulture movements in relation to property damage



Home ranges

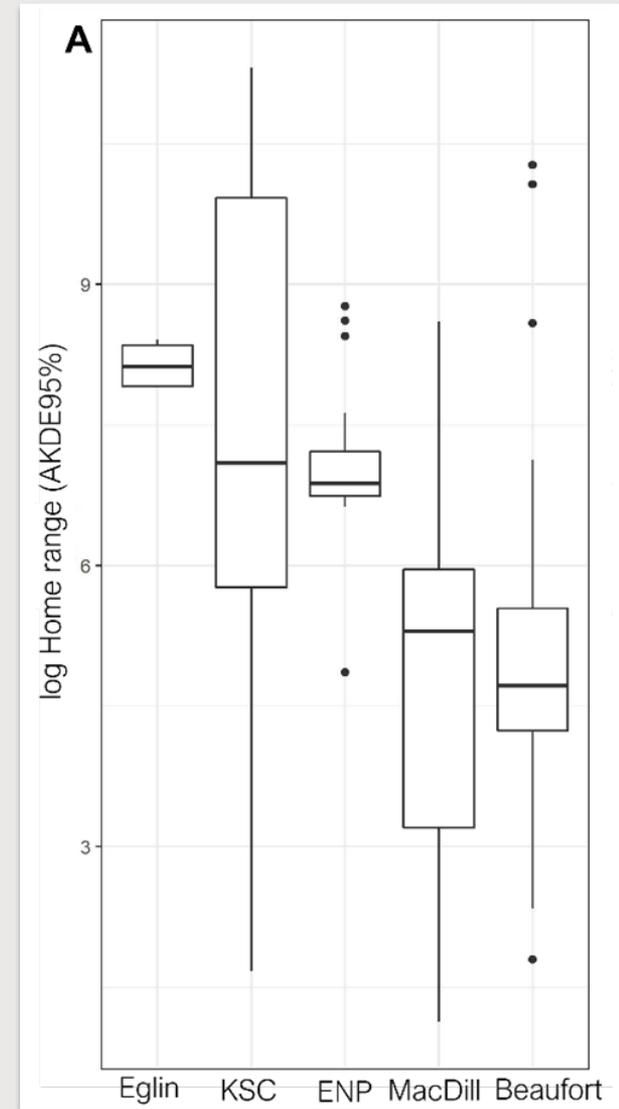
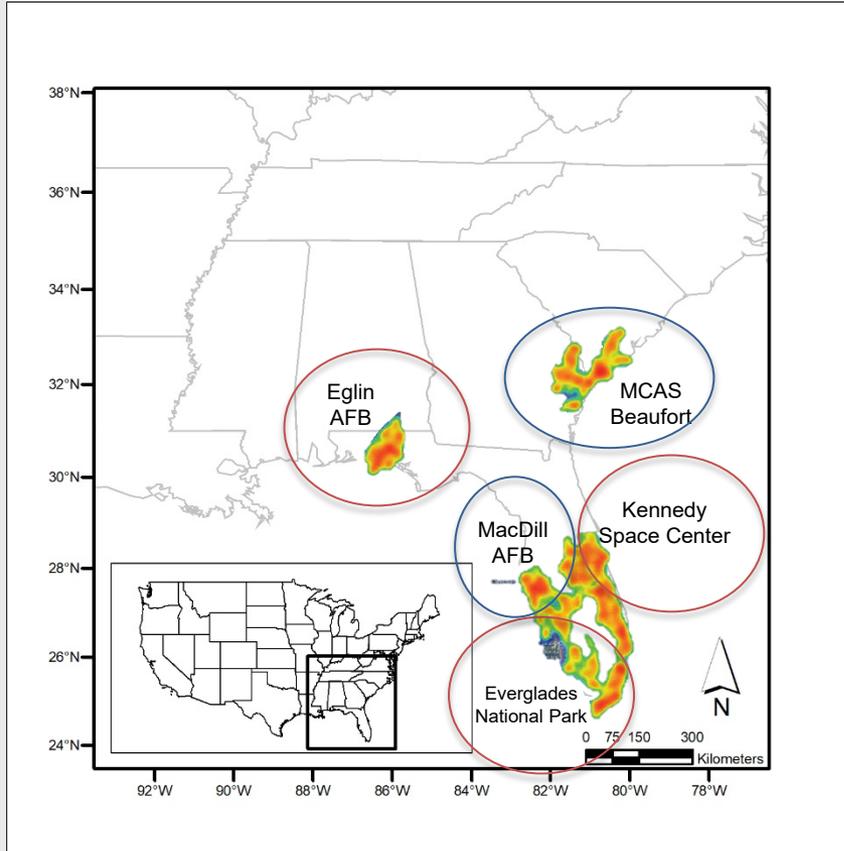


No significant difference in home range size between breeding and nonbreeding seasons ($p=0.28$)

$4,425.53 \pm 2,384.8 \text{ km}^2$

$4,869.01 \pm 3,181.2 \text{ km}^2$

Home ranges

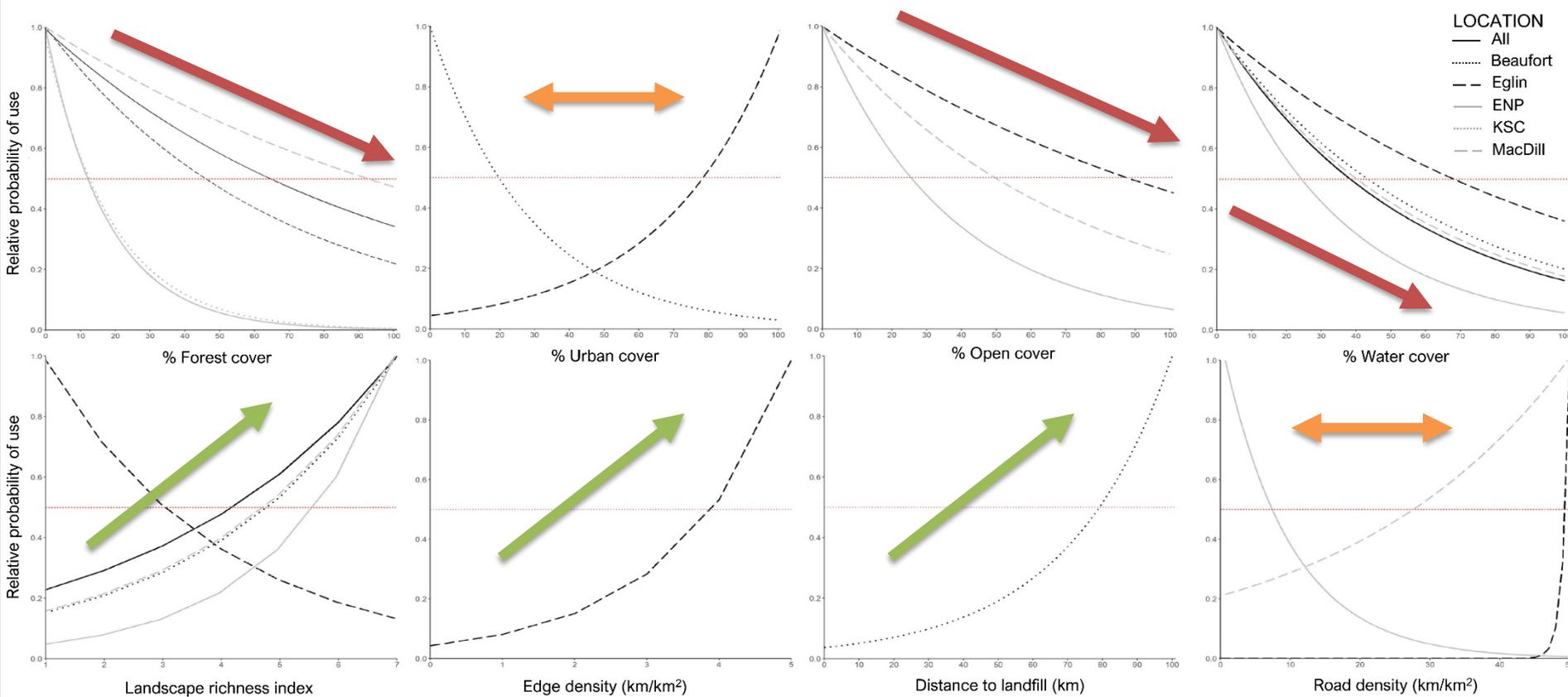


Resource selection

- Examined both roost and diurnal resource selection during breeding and nonbreeding seasons
 - Examined probability of vulture use across landscape and anthropogenic features



Diurnal selection - Breeding

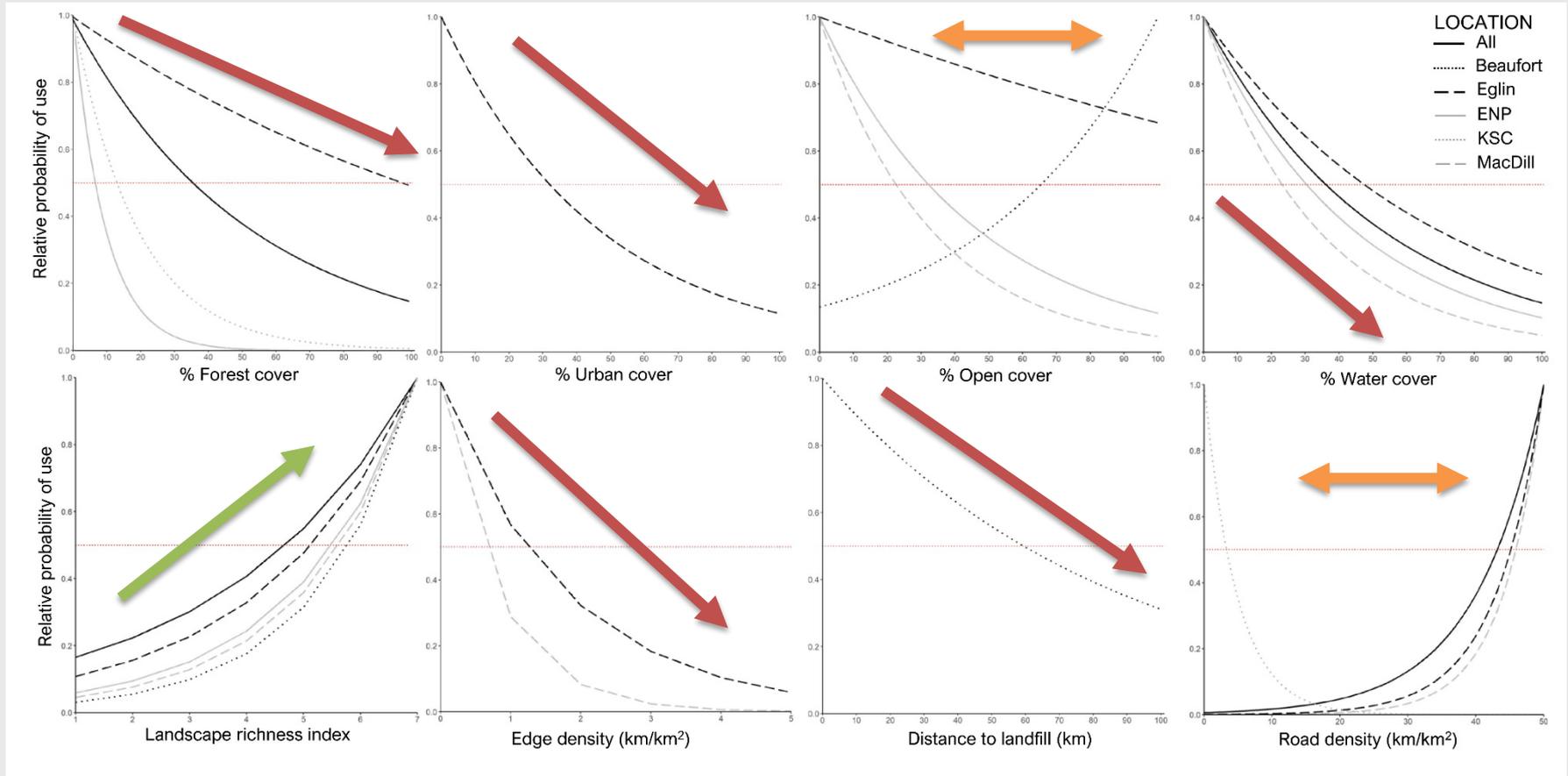


▲ Probability of vulture use increased with landscape richness, edge density, distance to landfill

▼ Probability of vulture use decreased with % forest cover, open cover, and water cover

↔ Probability of vulture use was variable based on location for road density and % urban cover

Diurnal selection - Nonbreeding

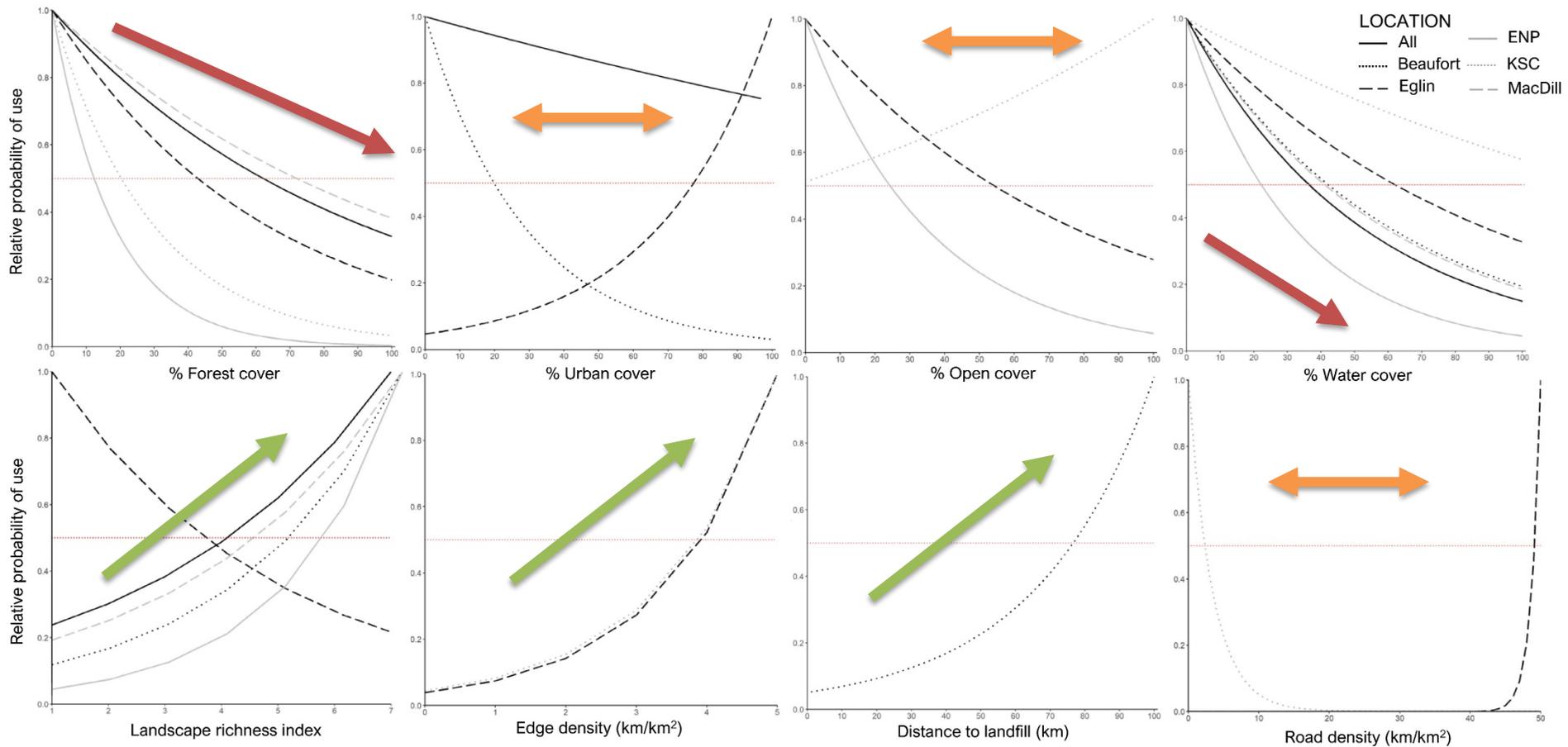


↑ Probability of vulture use increased with landscape richness

↓ Probability of vulture use decreased with % forest cover, urban cover, water cover, edge density & distance to landfill

↔ Probability of vulture use was variable based on location for road density and % open cover

Roost selection - Breeding

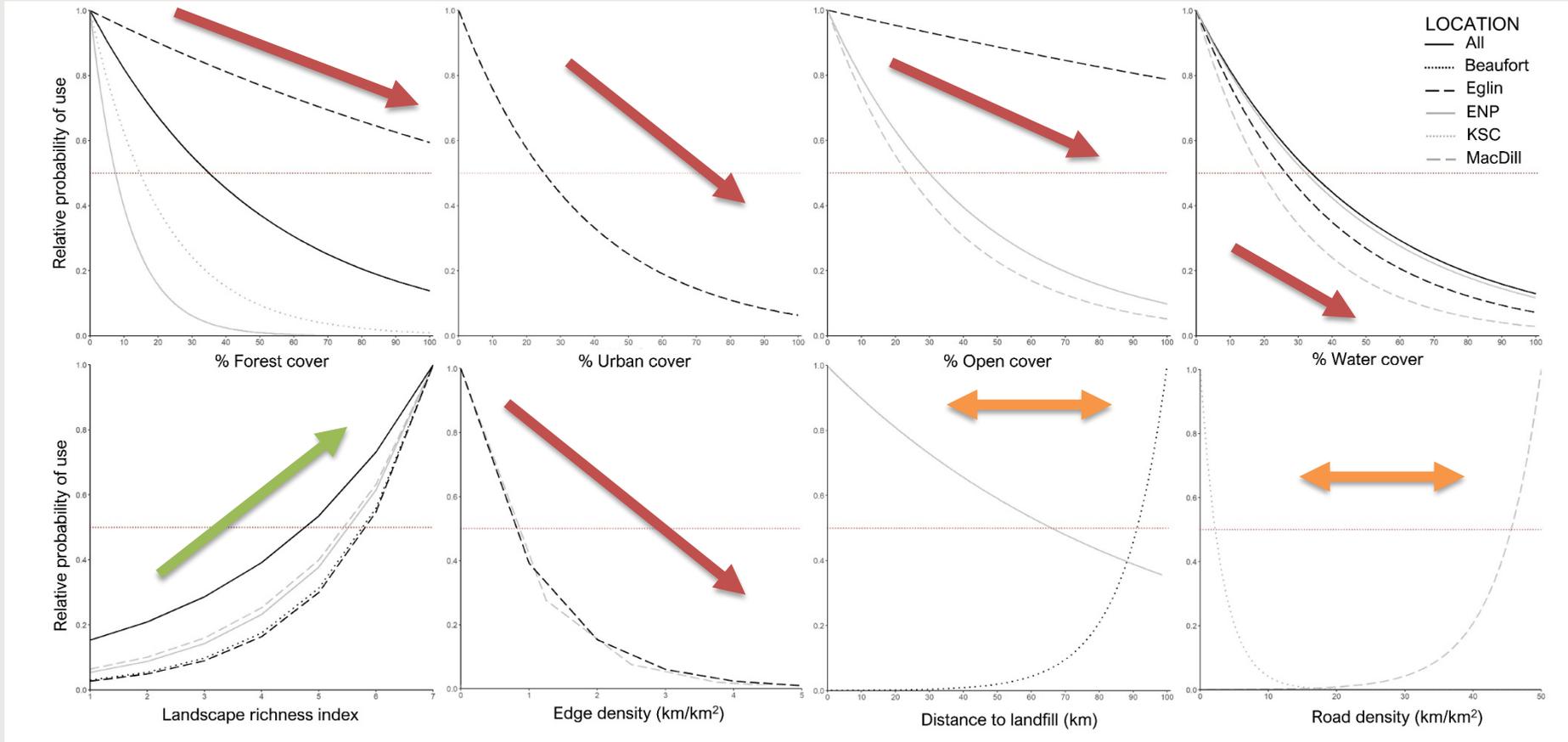


↑ Probability of vulture use increased with landscape richness, edge density, distance to landfill

↓ Probability of vulture use decreased with % forest cover & water cover

↔ Probability of vulture use was variable based on location for road density, % open cover, urban cover

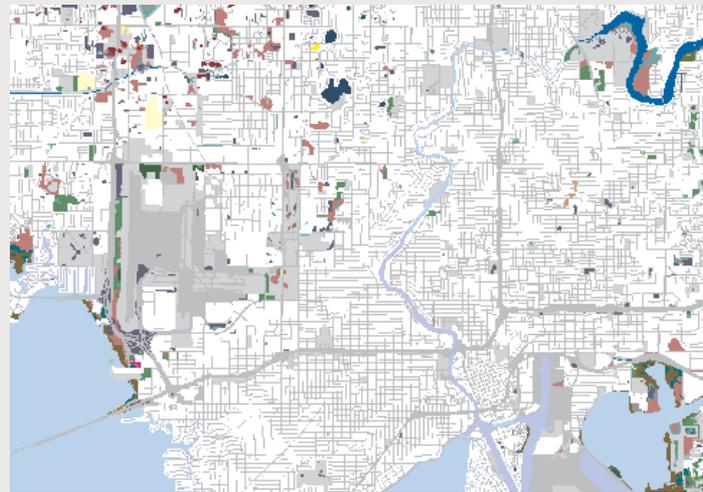
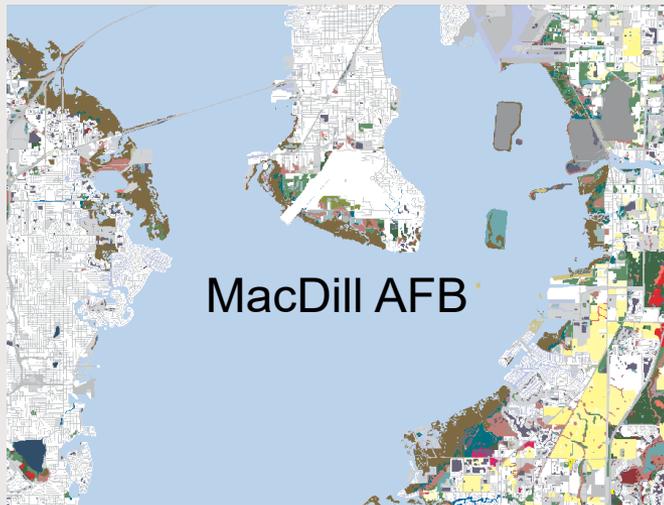
Roost selection - Nonbreeding



-  Probability of vulture use increased with landscape richness
-  Probability of vulture use decreased with % forest cover, urban cover, open cover, water cover, edge density
-  Probability of vulture use was variable based on location for road density & distance to landfill

Vulture home ranges and resource selection

- Limited variability across season and region for home range sizes and resource selection
- Overall vulture preference for increased landscape richness rather than one landscape cover type
- Response to anthropogenic features varied by location



Management implications

- A better understanding of which landscape cover types and anthropogenic features are avoided or preferred by vultures can better inform decisions on the location of new airfields
 - Can also provide information on how modifying landscapes surrounding airfields may reduce vulture use of the area
- Caution should be exercised when taking management actions based on inferences from telemetry studies conducted in other areas
 - Site specific studies recommended to inform management
- Future research will focus on the creation of step selection functions for vultures that utilize airfields



Photo: Francisco Dubón

Questions?



Photo: Francisco Dubón

Warning
Vultures May Cause
Damage to Vehicles

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