

Motus Wildlife Tracking System: A Vehicle for Informing Flight Safety

Mike Jungen

Fish and Wildlife Biologist

U.S. Fish & Wildlife Service

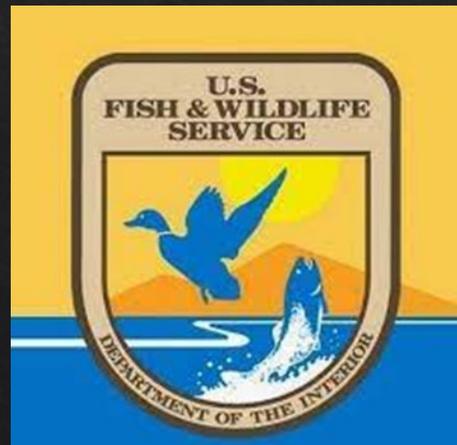
McConnell Air Force Base, Kansas

Galen Truan

Wildlife Biologist

USDA Wildlife Services

McConnell Air Force Base, Kansas



Outline

- ◇ What is Motus
- ◇ DoD Relevance
- ◇ Flight Safety Application
- ◇ Example Data
- ◇ Vision going forward



Motus Wildlife Tracking System

- ◆ International Automated Radio-telemetry Network
- ◆ Main Purpose – Full life cycle monitoring of birds
 - ◆ Identify areas of high conservation value for species of interest.
- ◆ Only limited by infrastructure.



<https://partnersinflight.org/the-motus-wildlife-tracking-system-working-collaboratively-to-cover-more-ground/>



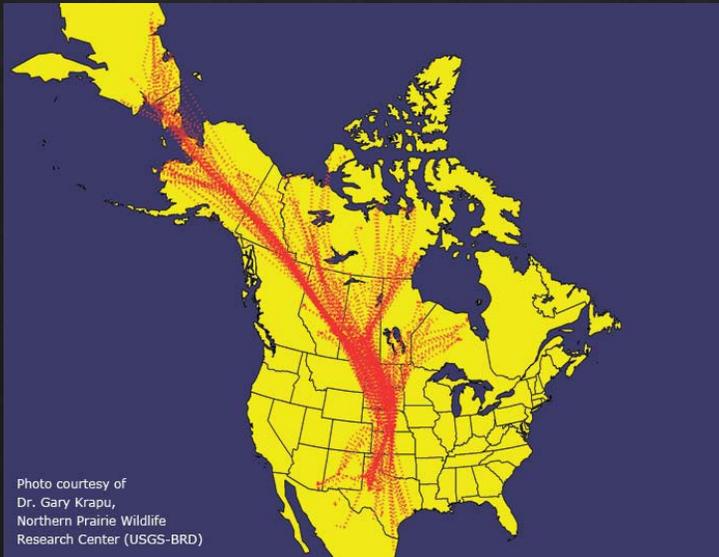
Source: www.motus.org ; current as of 6-5-2022



<https://motus.org/get-involved/>

Integrated Natural Resource Management

- ◇ Sikes Act – INRMP Programming – Species Monitoring
- ◇ Passive Sampling
- ◇ Targeted Species Research
- ◇ Habitat Use/Localized Use
 - ◇ Scaling capabilities using nodes.



CTT Node –
celltracktech.com



A Tool for Flight Safety

- ◇ Deconstruct migration assumptions
- ◇ Data can inform flight schedules
- ◇ Can investigate species of flight safety concern
- ◇ Investigate efficacy of mitigation measures
 - ◇ Raptor translocation, goose round-ups: are they coming back?
- ◇ Examine Airfield use

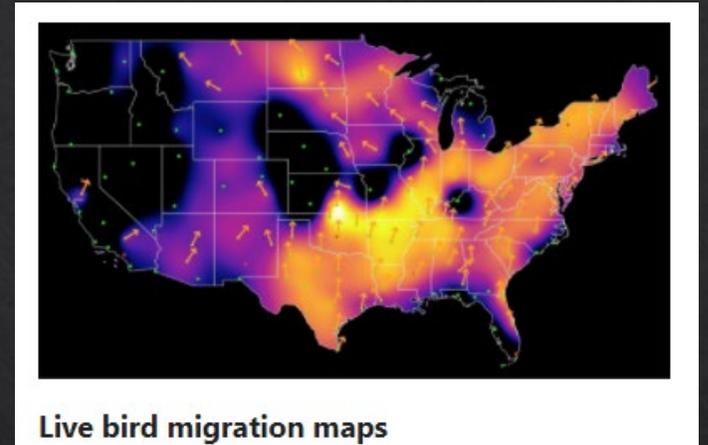


Photo Credit: Matt Couchman – USDA WS



Project Interests

- ◇ Raptor Translocations
- ◇ Collaborations with other AFBs in Central Flyway
- ◇ Wichita Canada Geese



<https://www.airforce.com/lifestyle/locations>

TRANSACTIONS OF THE KANSAS
ACADEMY OF SCIENCE

Vol. 107, no. 1/2
p. 77-82 (2004)

Recent trends in the winter population of Canada geese (*Branta canadensis*) in Wichita, Kansas: 1998-2003

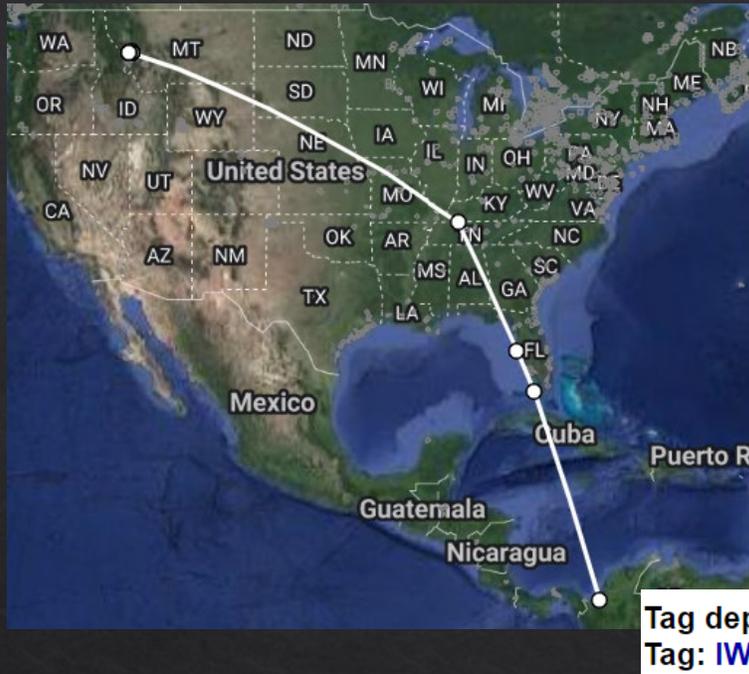
ALAN D. MACCARONE¹ AND CHARLES H. COPE²

1. Biology Department, Friends University, 2100 University, Wichita, KS 67213 (alanm@friends.edu). Author for correspondence.
2. Kansas Department of Wildlife & Parks, Great Plains Nature Center, 6232 E. 29th Street N, Wichita, KS 67220 (charlesc@wp.state.ks.us)



Photo Credit: Matt Couchman – USDA WS

Example Data



Tag deployment: Common Nighthawk (ID# 35043)
Tag: IWC birds#241.1:30.7 M.55106



Tag deployment: Turkey Vulture (ID# 23093)
Tag: IWC birds#7:11.3 M.34333



Tag deployment detections

Tag deployment: **American Kestrel (ID# 33721)**
Tag: **AMKE MN#2D190761:5 M.51348**

List of receiver deployments and dates having detections of this tag deployment.

Show detections in: [a table](#) | [a timeline](#) | [a map](#)

Filter:

100

Detection date	Receiver deployment	Latitude	Longitude
2021-06-05	AHATS	45.09°	-93.17°
2021-06-08	AHATS	45.09°	-93.17°
2021-06-09	AHATS	45.09°	-93.17°

2021-07-09	AHATS	45.09°	-93.17°
2021-07-10	AHATS	45.09°	-93.17°
2021-07-11	AHATS	45.09°	-93.17°
2021-07-12	AHATS	45.09°	-93.17°
2021-07-13	AHATS	45.09°	-93.17°
2021-07-14	AHATS	45.09°	-93.17°
2021-07-15	AHATS	45.09°	-93.17°
2021-07-16	AHATS	45.09°	-93.17°
2021-07-17	AHATS	45.09°	-93.17°
2021-07-18	AHATS	45.09°	-93.17°
2021-07-19	AHATS	45.09°	-93.17°
2021-07-20	AHATS	45.09°	-93.17°
2021-07-21	AHATS	45.09°	-93.17°
2021-07-22	AHATS	45.09°	-93.17°
2021-07-23	AHATS	45.09°	-93.17°
2021-07-24	AHATS	45.09°	-93.17°
2021-10-03	MDC PURDIN	39.94°	-93.11°
2021-10-04	MDC COLLEGEMOUND	39.62°	-92.56°
2021-10-04	MDC JENKINS	36.82°	-93.73°
2022-06-20	Longwood Gardens	39.87°	-75.69°
Detection date	Receiver deployment	Latitude	Longitude

List of receiver deployments and dates having detections of this tag deployment.

Show detections in: [a table](#) | [a timeline](#) | [a map](#)

Filter:

100

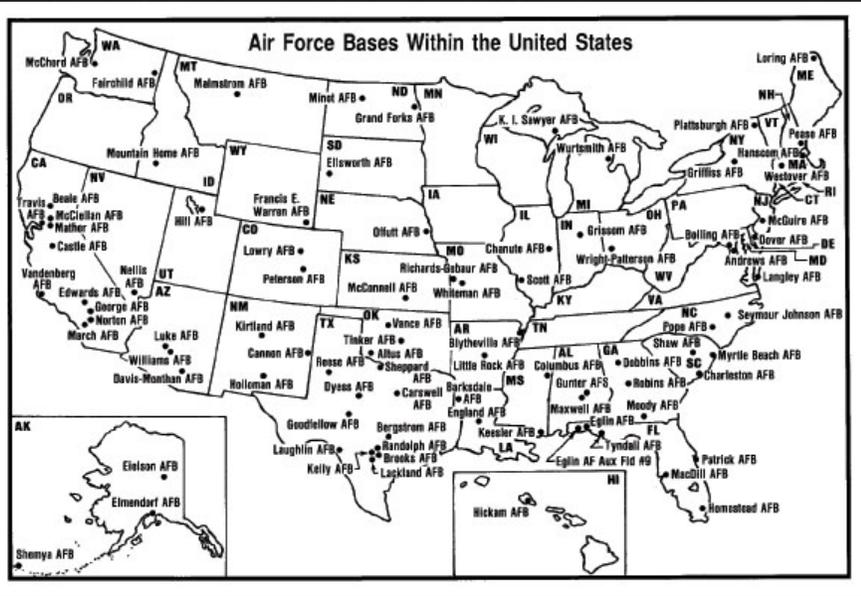
Detection date	Receiver deployment	Latitude	Longitude
2019-06-09	Miller Ridge2-MPG-MT	46.76°	-113.97°
2019-07-19	Lee Metcalf National Wildlife Refuge-MT	46.56°	-114.07°
2019-07-20	Lee Metcalf National Wildlife Refuge-MT	46.56°	-114.07°
2019-07-21	Lee Metcalf National Wildlife Refuge-MT	46.56°	-114.07°
2019-07-24	Lee Metcalf National Wildlife Refuge-MT	46.56°	-114.07°
2019-07-26	Lee Metcalf National Wildlife Refuge-MT	46.56°	-114.07°
2020-09-30	Mackay Island NWR, NC	36.53°	-75.99°
2021-10-24	Mackay Island NWR, NC	36.53°	-75.99°

Vision and Future

- ◇ Motus as a tool for research and data collection
- ◇ Motus as a self-perpetuating force for informing flight safety
- ◇ Motus installed across Air Force, DoD, and airports
- ◇ Motus as a tool to serve DoD needs while promoting science and conservation



mccconnell.af.mil



<http://themilitarystandard.com/afb/index.php>



AVIAN CONSERVATION
& ECOLOGY

VOLUME 12, ISSUE 1, ARTICLE 8

Taylor, P. D., T. L. Crewe, S. A. Mackenzie, D. Lepage, Y. Aubry, Z. Crysler, G. Finney, C. M. Francis, C. G. Guglielmo, D. J. Hamilton, R. L. Holberton, P. H. Loring, G. W. Mitchell, D. Norris, J. Paquet, R. A. Ronconi, J. Smetzer, P. A. Smith, L. J. Welch, and B. K. Woodworth. 2017. The Motus Wildlife Tracking System: a collaborative research network to enhance the understanding of wildlife movement. *Avian Conservation and Ecology* 12(1):8. <https://doi.org/10.5751/ACE-00953-120108>
Copyright © 2017 by the author(s). Published here under license by the Resilience Alliance.

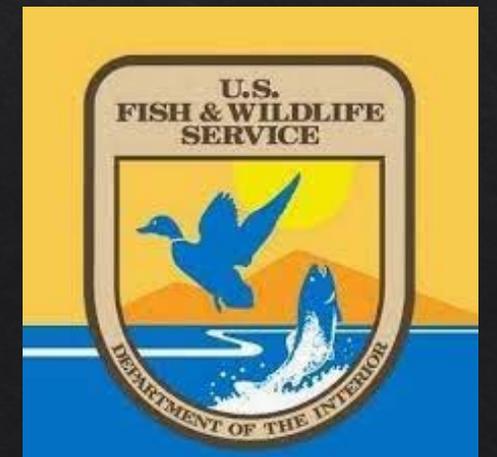
Methodology

The Motus Wildlife Tracking System: a collaborative research network to enhance the understanding of wildlife movement

Philip D. Taylor^{1,2}, Tara L. Crewe^{2,3}, Stuart A. Mackenzie², Denis Lepage², Yves Aubry⁴, Zoe Crysler^{1,2}, George Finney², Charles M. Francis⁵, Christopher G. Guglielmo⁶, Diana J. Hamilton⁷, Rebecca L. Holberton⁸, Pamela H. Loring^{9,10}, Greg W. Mitchell¹¹, D. Ryan Norris¹², Julie Paquet¹³, Robert A. Ronconi^{1,14}, Jennifer R. Smetzer⁹, Paul A. Smith¹¹, Linda J. Welch¹⁵ and Bradley K. Woodworth^{1,12}

Acknowledgments

- ◆ **Matt Couchman** – Biologist, USDA WS, BASH, McConnell AFB
- ◆ **Dave Pettus** – Natural Resources Manager, AMC 22nd Air Refueling Wing, Civil Engineering Squadron, McConnell AFB
- ◆ **Capt Nate Siemens** – Flight Commander, AMC 22nd Air Refueling Wing, Flight Safety, McConnell AFB
- ◆ **Matt Webb** – The Bird Conservancy of the Rockies
- ◆ **Sarah Kendrick** – U.S. Fish & Wildlife Service
- ◆ **SSgt Tatyana Howard** – AMC 22nd Air Refueling Wing, Communication Squadron, McConnell AFB
- ◆ **SMSgt Josh Newlin** – 184th Wing Kansas Air National Guard, 134th Air Control Squadron, McConnell AFB



United States
Department of
Agriculture



Questions?

◆ Mike Jungen – USFWS

michael_jungen@fws.gov; michael.jungen@us.af.mil; (316) 293-7990

◆ Galen Truan – USDA WS

galen.j.truan@usda.gov; galen.truan@us.af.mil; (620) 314-1018