

Migratory connectivity of Rusty Blackbirds

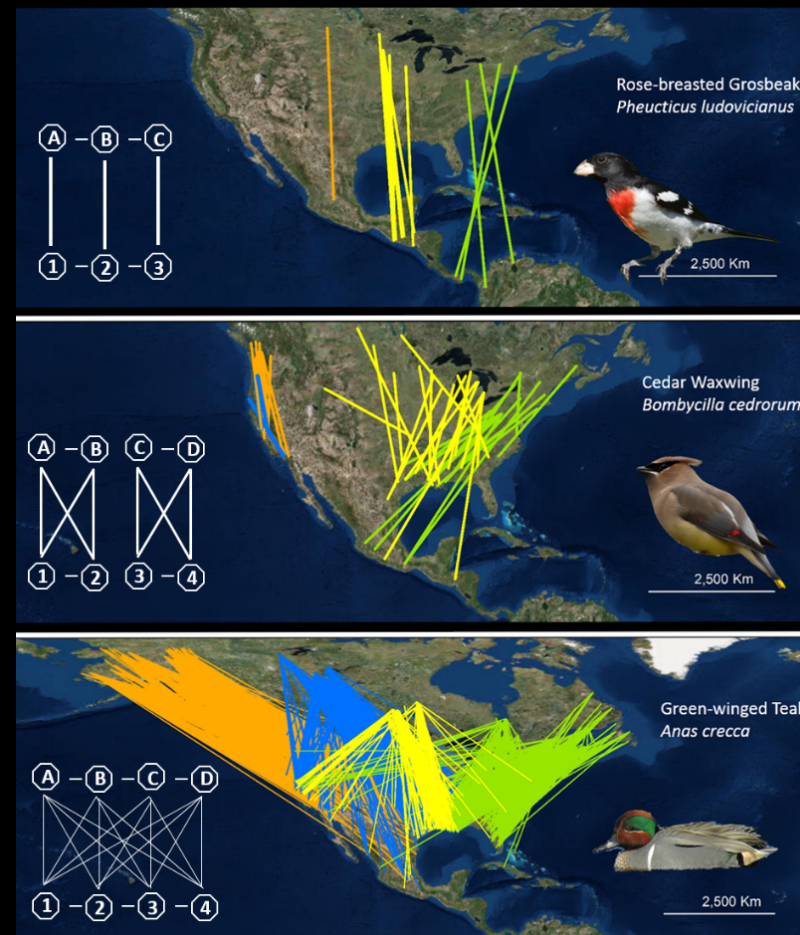


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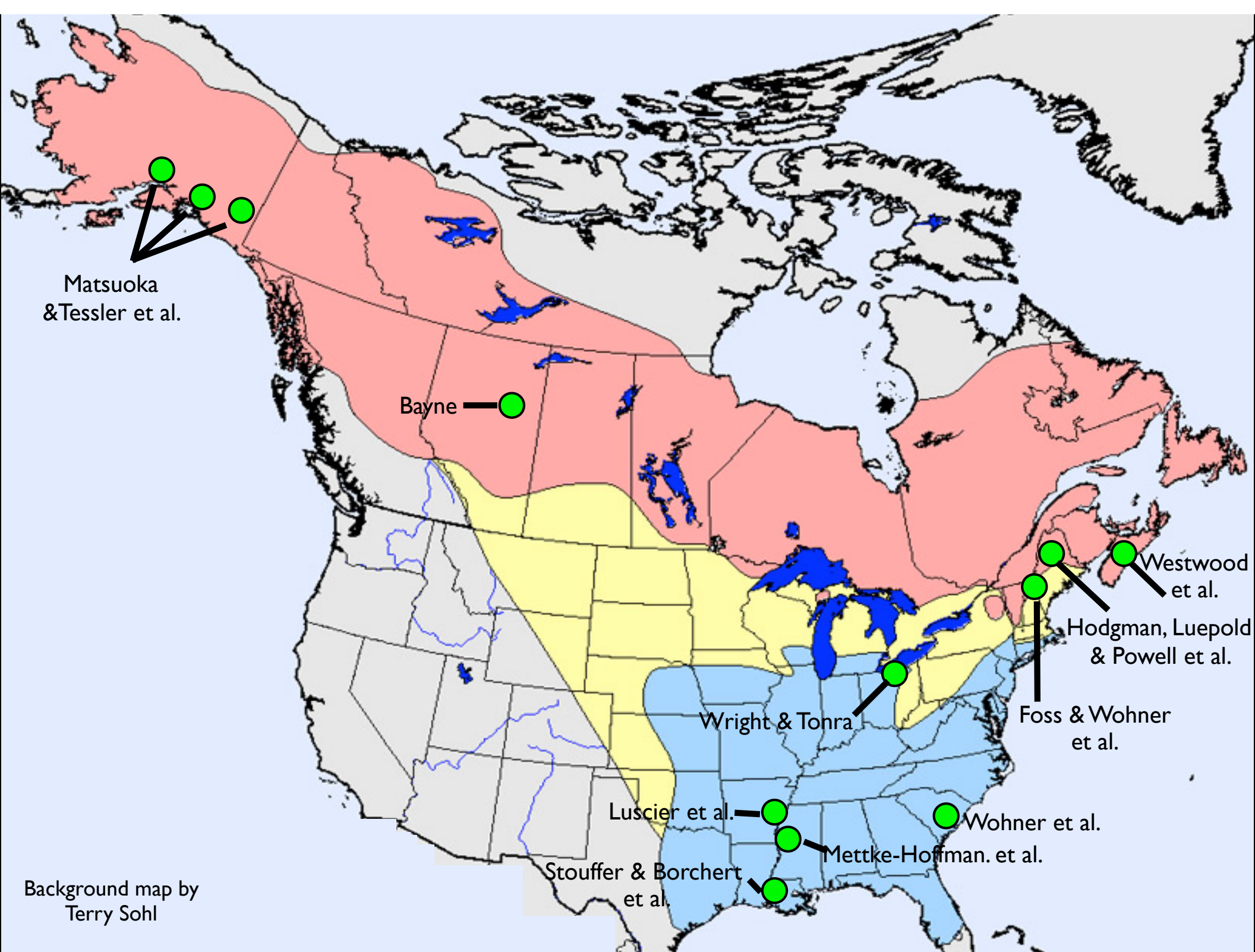
Jim Johnson, USFWS
Erin Bayne, University of Alberta
Pete Marra, SMBC

Migratory Connectivity

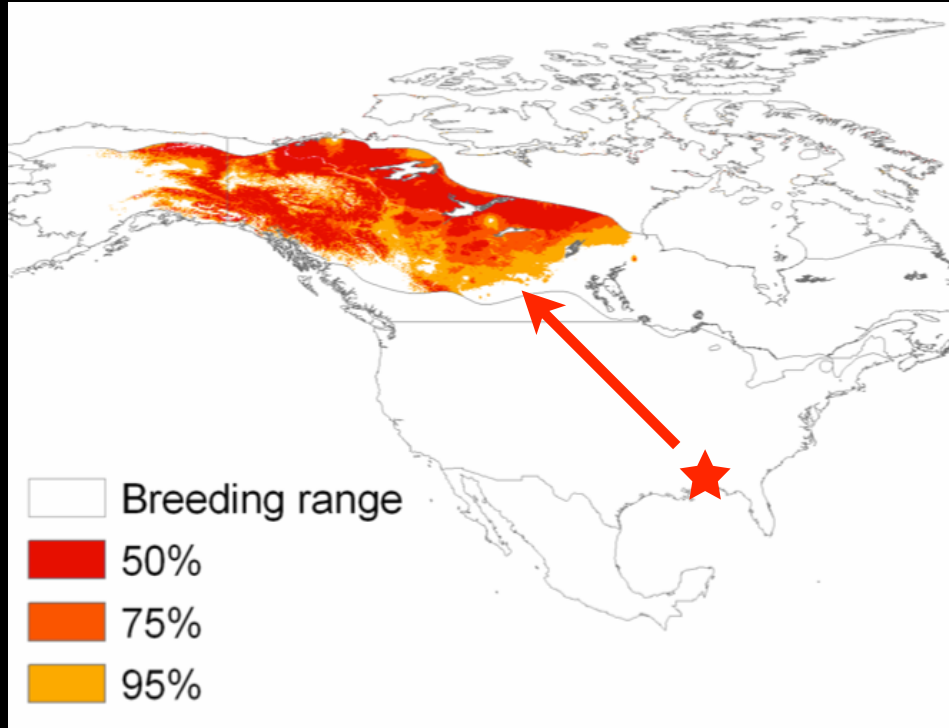
- Migratory connectivity is the spatial and temporal linkages of individuals between life cycle stages.
- The strength, or degree, of migratory connectivity is the extent to which individuals and populations remain together between phases of the annual cycle (ie, strong, weak, diffuse, ect).
- Migratory connectivity plays a key role in the evolution of species, limitation of populations, and effectiveness of conservation strategies



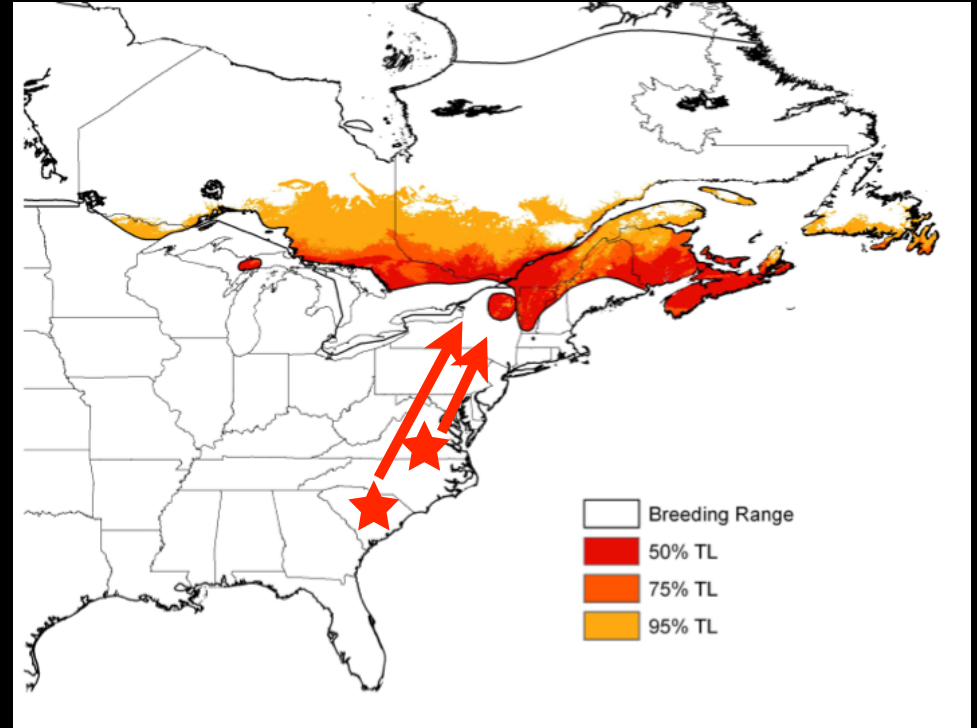
Cohen et al in review. Quantitative metric for the strength of migratory connectivity, R package MigConnectivity



RUBL connectivity w/ Isotopes



Mississippi samples (n = 255)

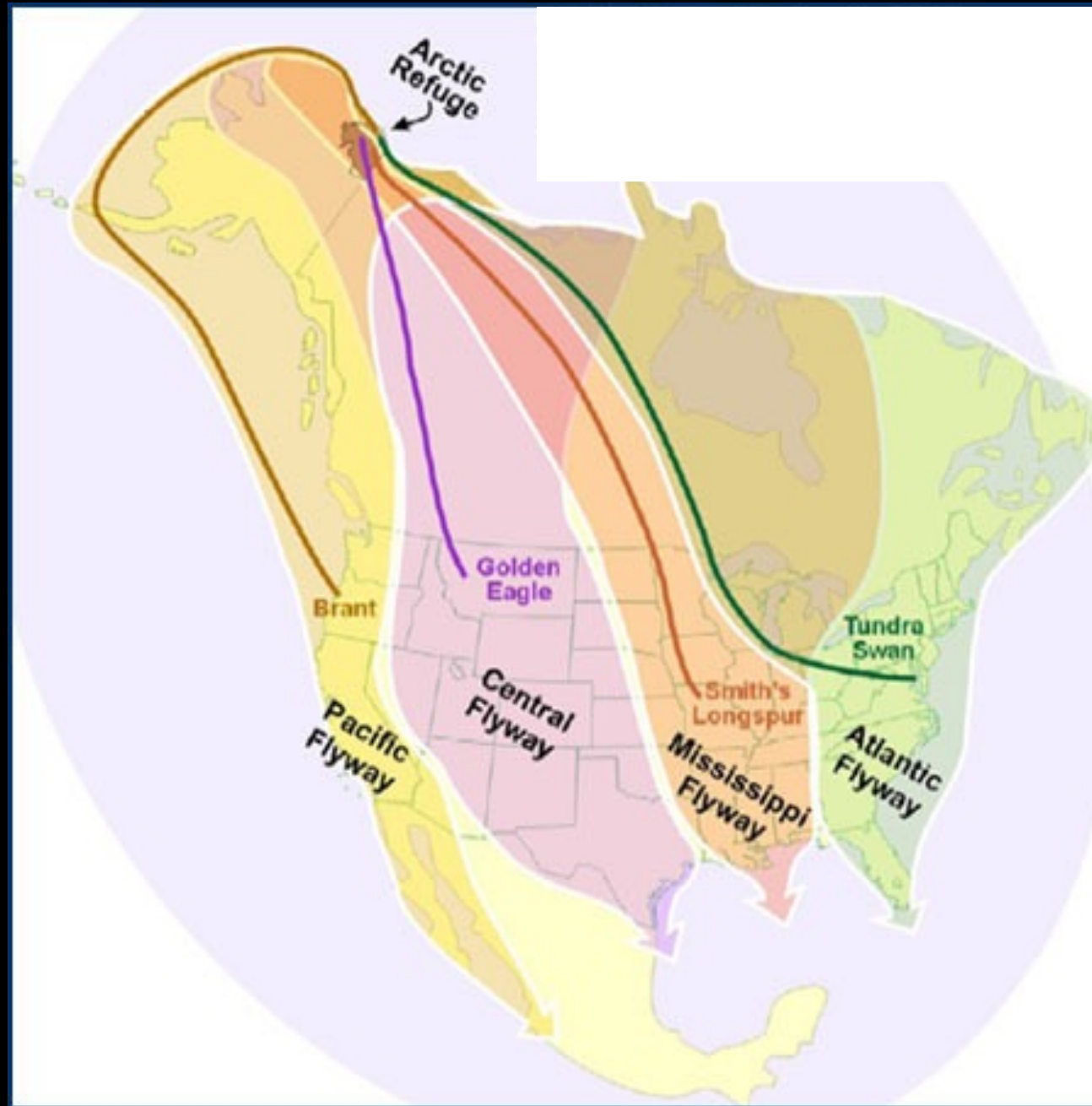


South Carolina & Virginia samples (n = 281)

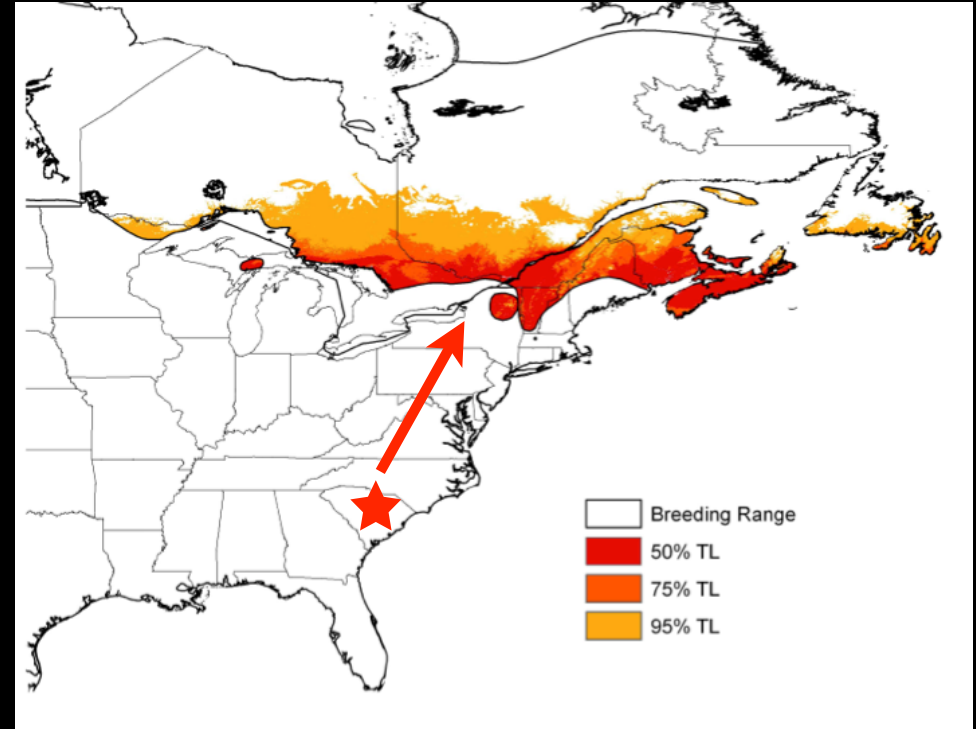
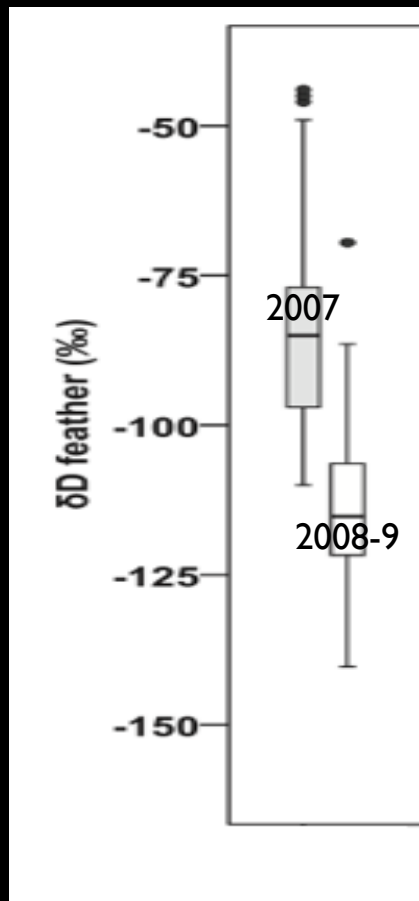
Sample collection 2005-2009

Hobson et al. 2010, Condor



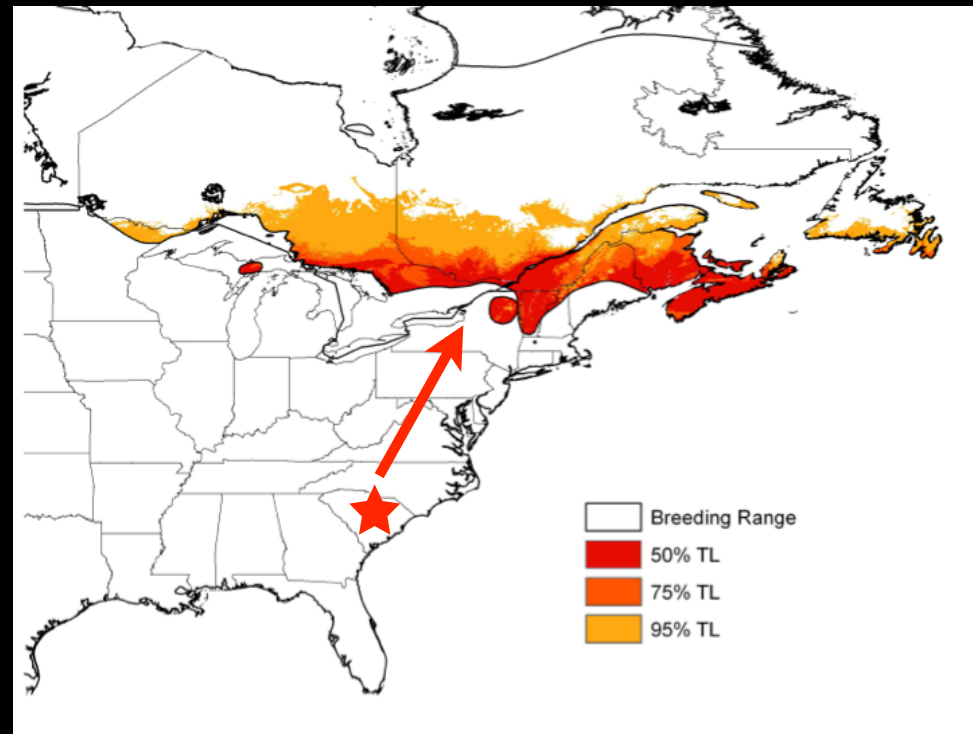
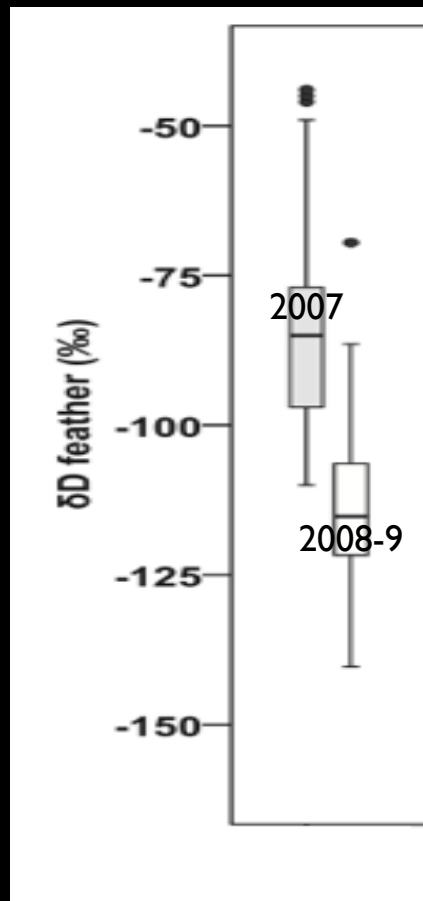


Little winter fidelity!

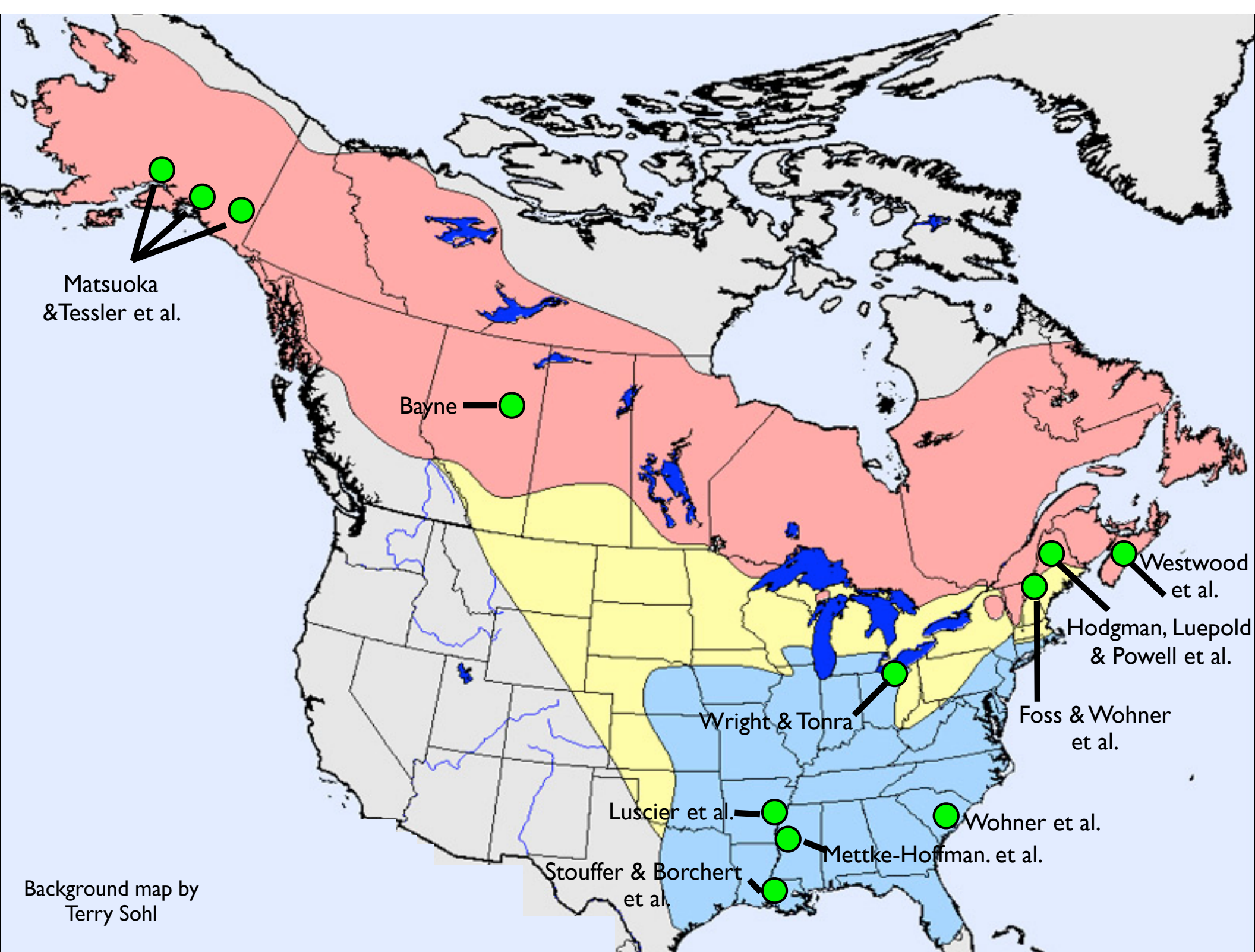


South Carolina samples

Missing piece: Spatiotemporal variability in migratory connectivity



South Carolina samples



More with isotopes?

- Can we match breeding grounds feathers to wintering grounds?!
- Mettke-Hoffman et al. 2010 found a pre-alternate cheek molt in winter
- But this molt *continues through spring migration* (Ohio; Wright and Tonra unpublished)
- So this angle is a DEAD END



More with isotopes - Ohio etc.

- Wright and Tonra have feathers from RUBL migrating in fall (n=55) and spring (n=56) near Lake Erie
- Combining efforts with other banding stations that catch RUBL (e.g. Black Swamp OH, Powdermill, PA)
- Use isotopes besides H to improve accuracy of geographical assignments (sulfur to biangulate?)
- Hobson may help with RUBL “feather base map”.
- Q: Are the great lakes a funnel point for RUBL coming from east AND west?

Light Level Geolocators

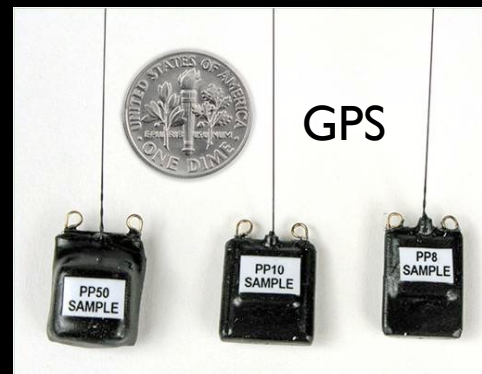
- 17 deployed in 2009, 3 recovered in 2010
- 2.0g tag + harness; 5-mm teflon ribbon
- mean 3.4% of body weight
- Birds were “beat up” when they returned





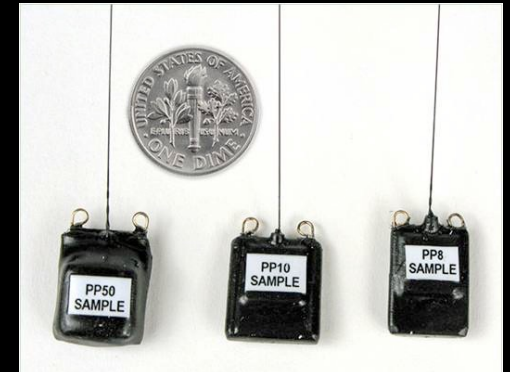
Smithsonian Migratory Bird Center's Migratory Connectivity Project

- Rusty Blackbird: a focal species
 - Archival GPS tags (“GPS pinpoints”)
 - 50+ high-res fixes



Archival GPS tags

- 2015 deployments (all Pinpoint 50s - 2.0g)
 - About 25 locations per bird
 - 8 deployed in north eastern Alberta
 - 2 recovered
 - 8 deployed in Anchorage, AK
 - 2 recovered
 - 4 deployed in NH
 - 0 recovered (poor year for NH)
- 2016 deployments
 - 6 NEW swiftX GPS tags (50 locs., 1g) deployed in AK



AK RUBL

Sept 4

Sept 19

May 7

Apr 25

Oct 4

Oct 14- Nov 3

Apr 13

Nov 8- Nov 18

Mar 21 - Apr 10

Mar 13

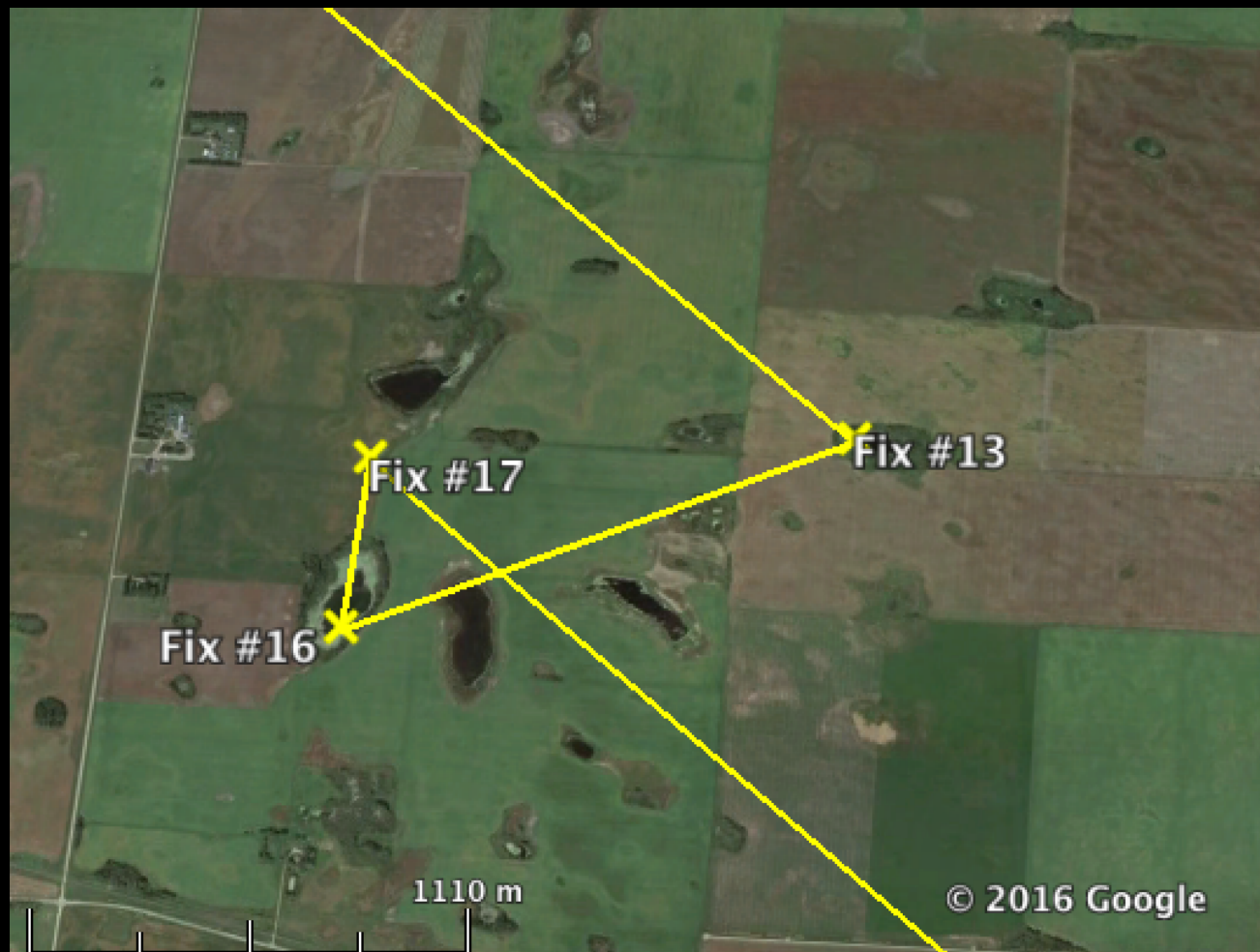
Nov 23

Dec 8 - Feb 26

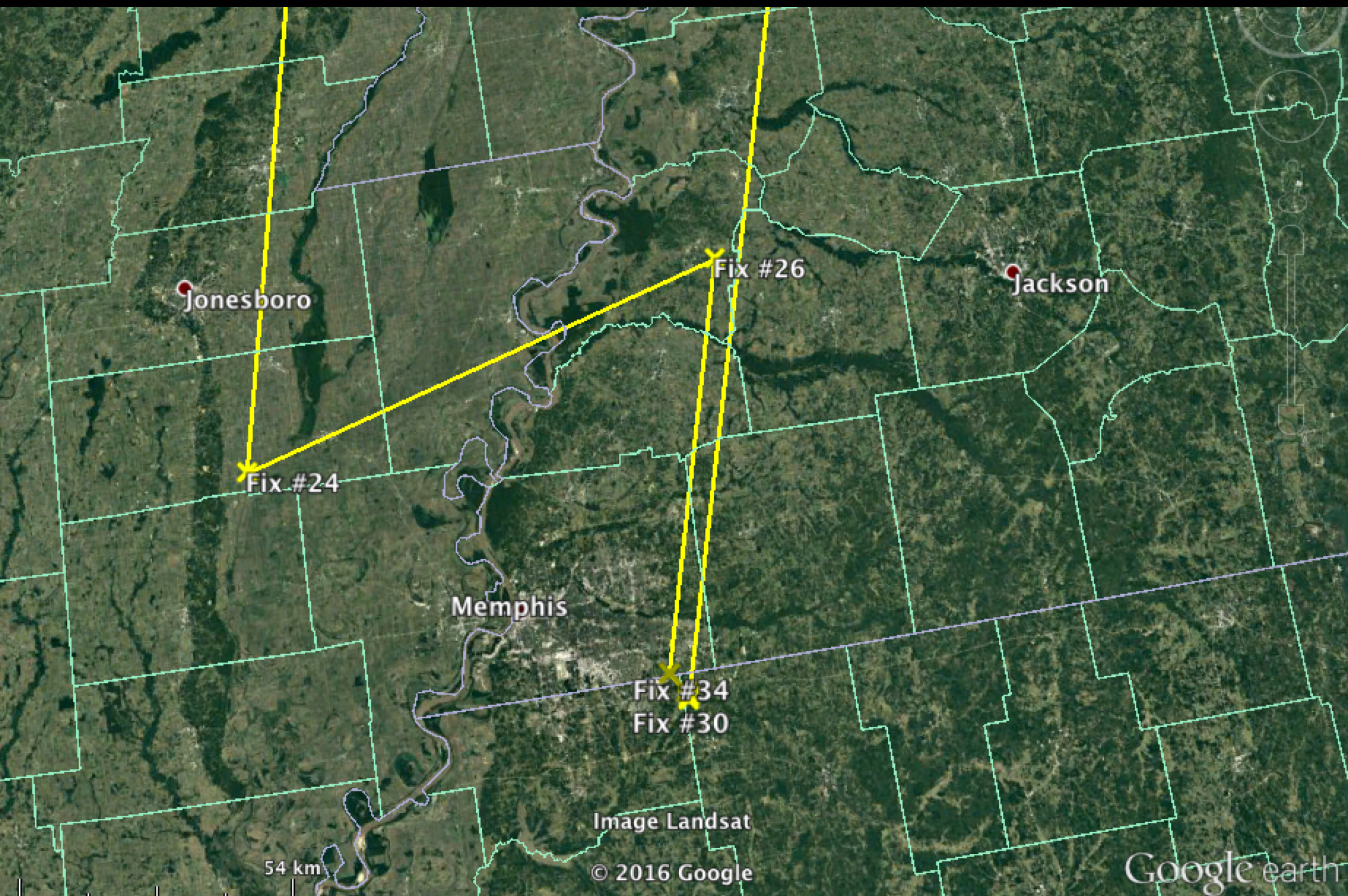
US Dept of State Geographer
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat
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Google earth

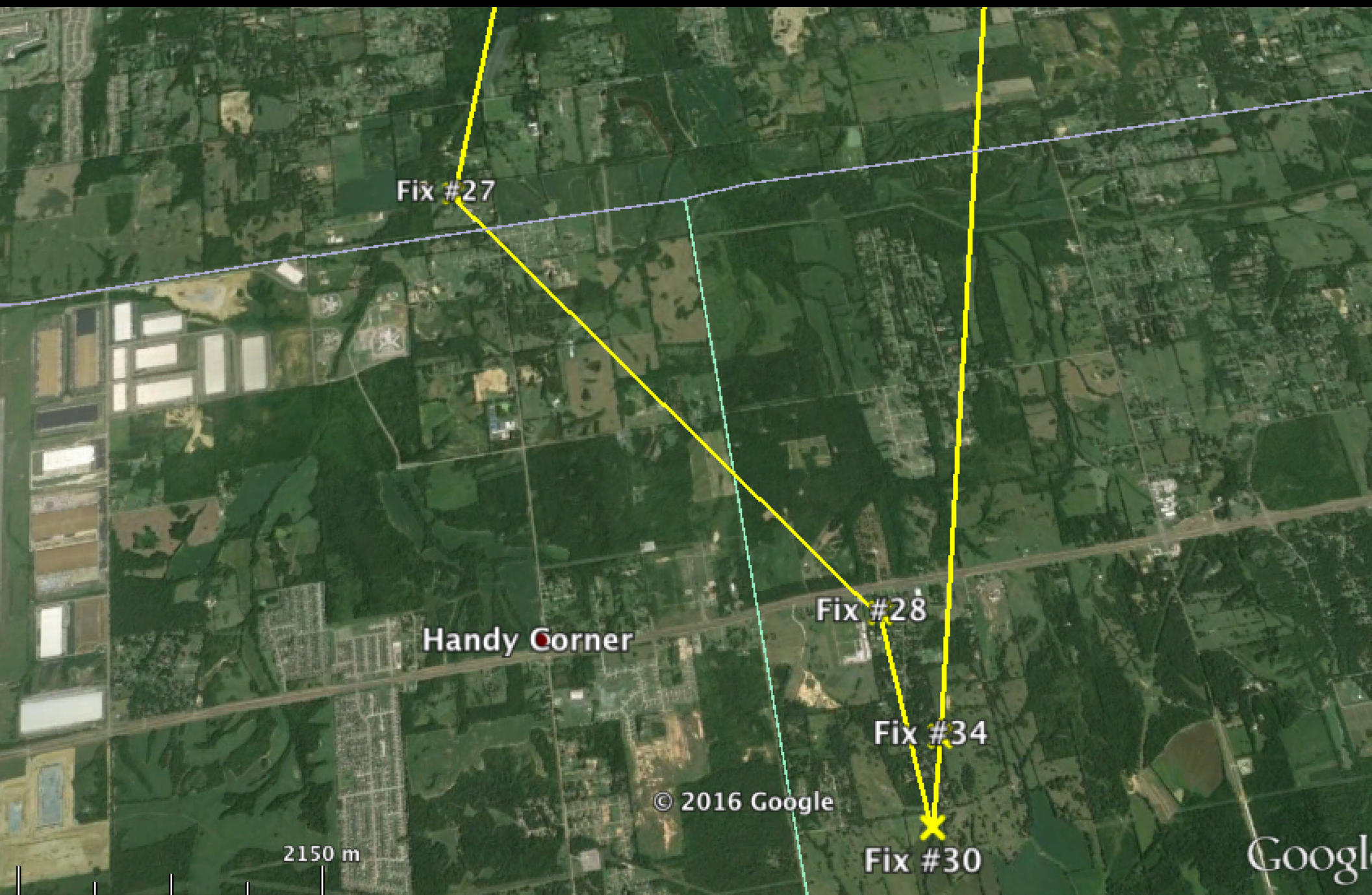
Nov 8- Nov 18

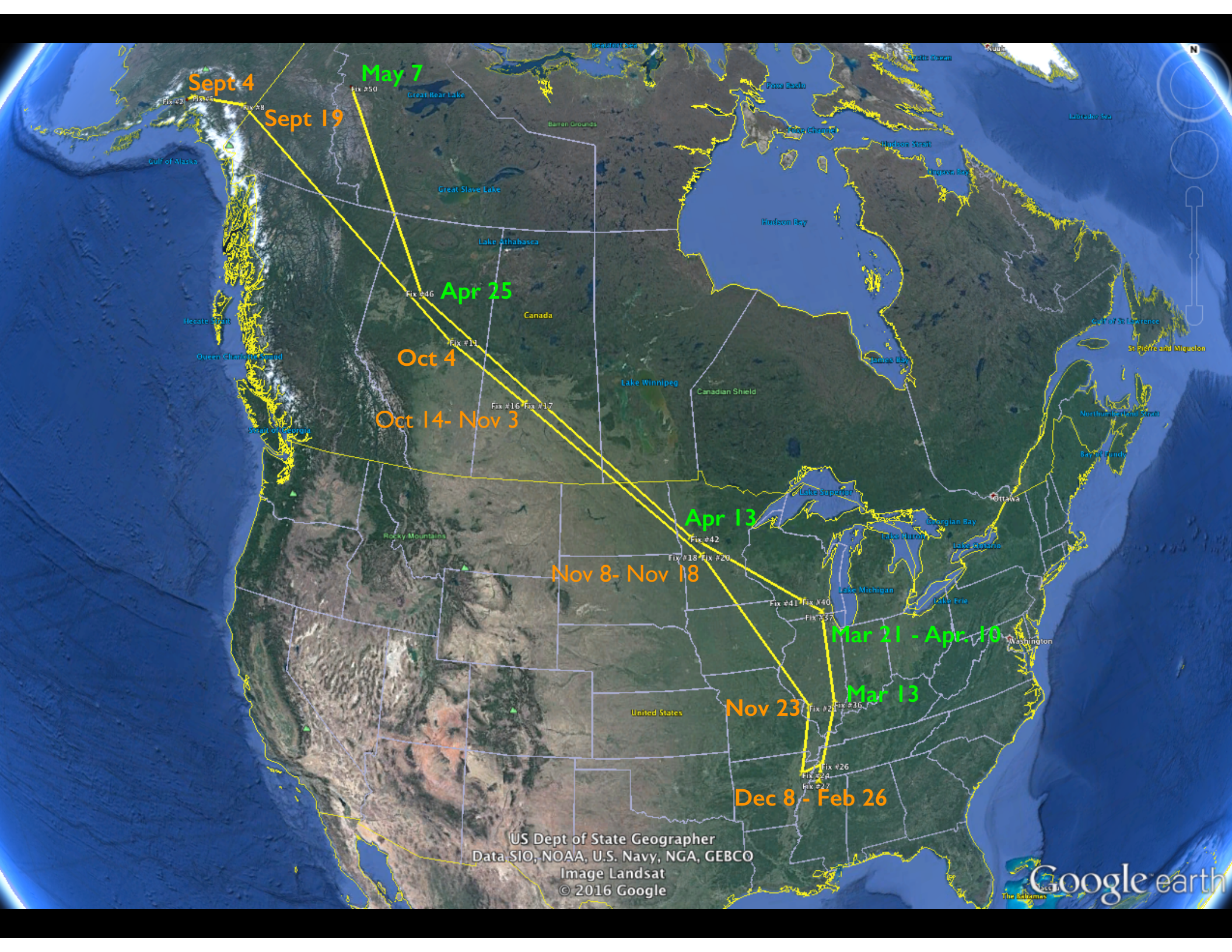


Dec 8 - Feb 26



Jan 9 - Feb 26





Sept 4

Sept 19

May 7

Apr 25

Oct 4

Oct 14- Nov 3

Apr 13

Nov 8- Nov 18

Mar 21 - Apr 10

Mar 13

Nov 23

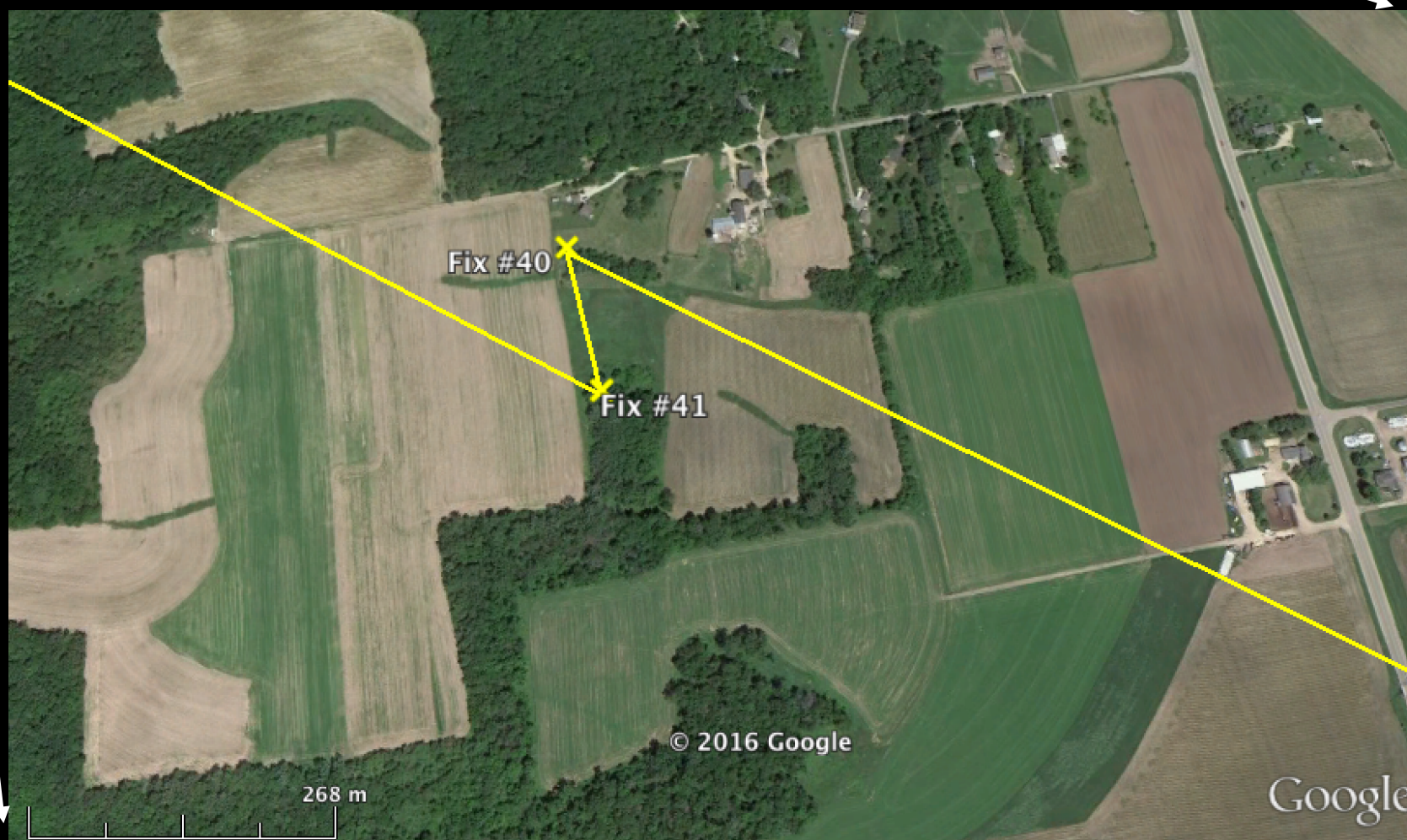
Dec 8 - Feb 26

US Dept of State Geographer
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat
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Google earth



Apr 7-10



Alberta Fen

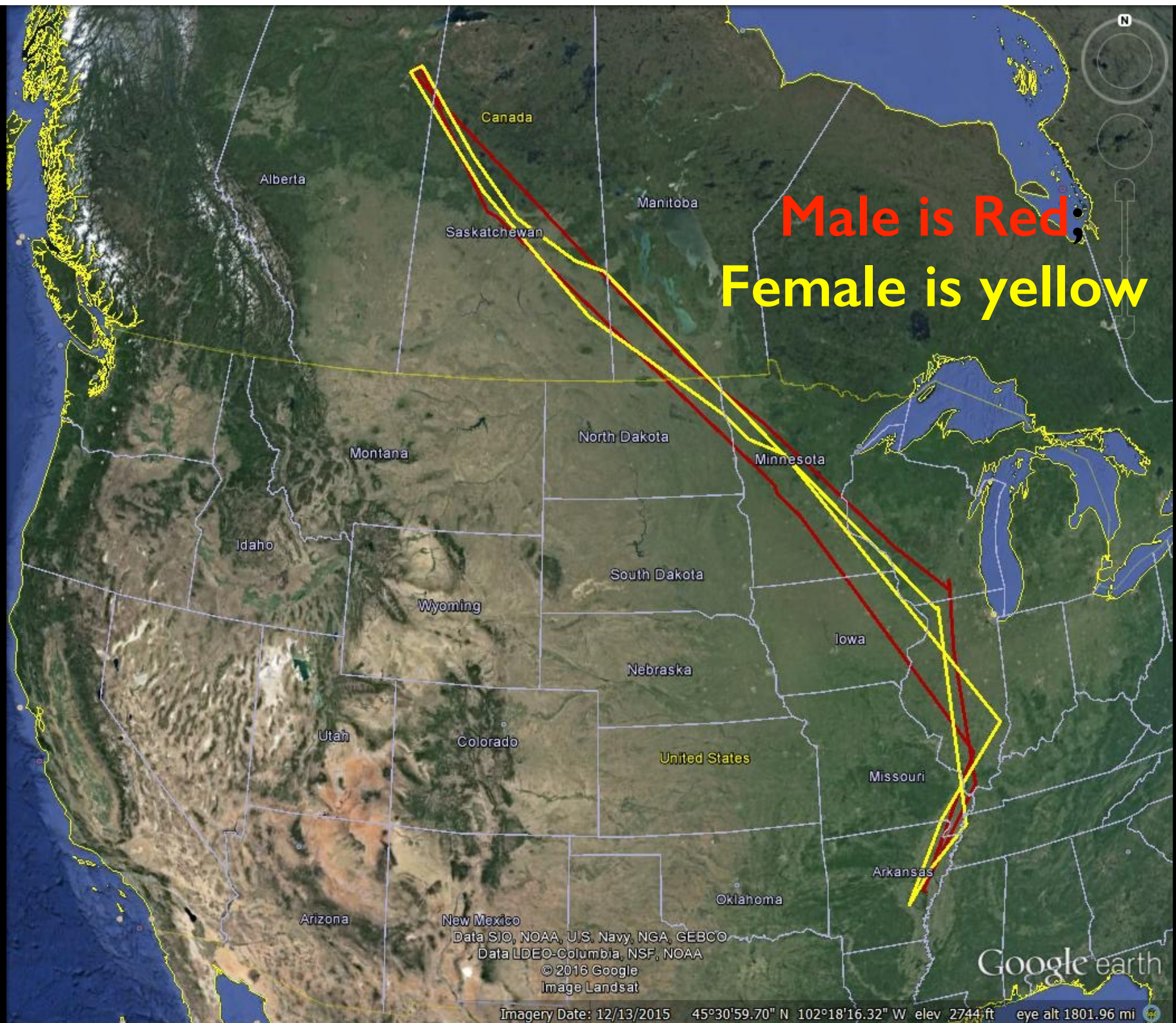








Male is Red;
Female is yellow





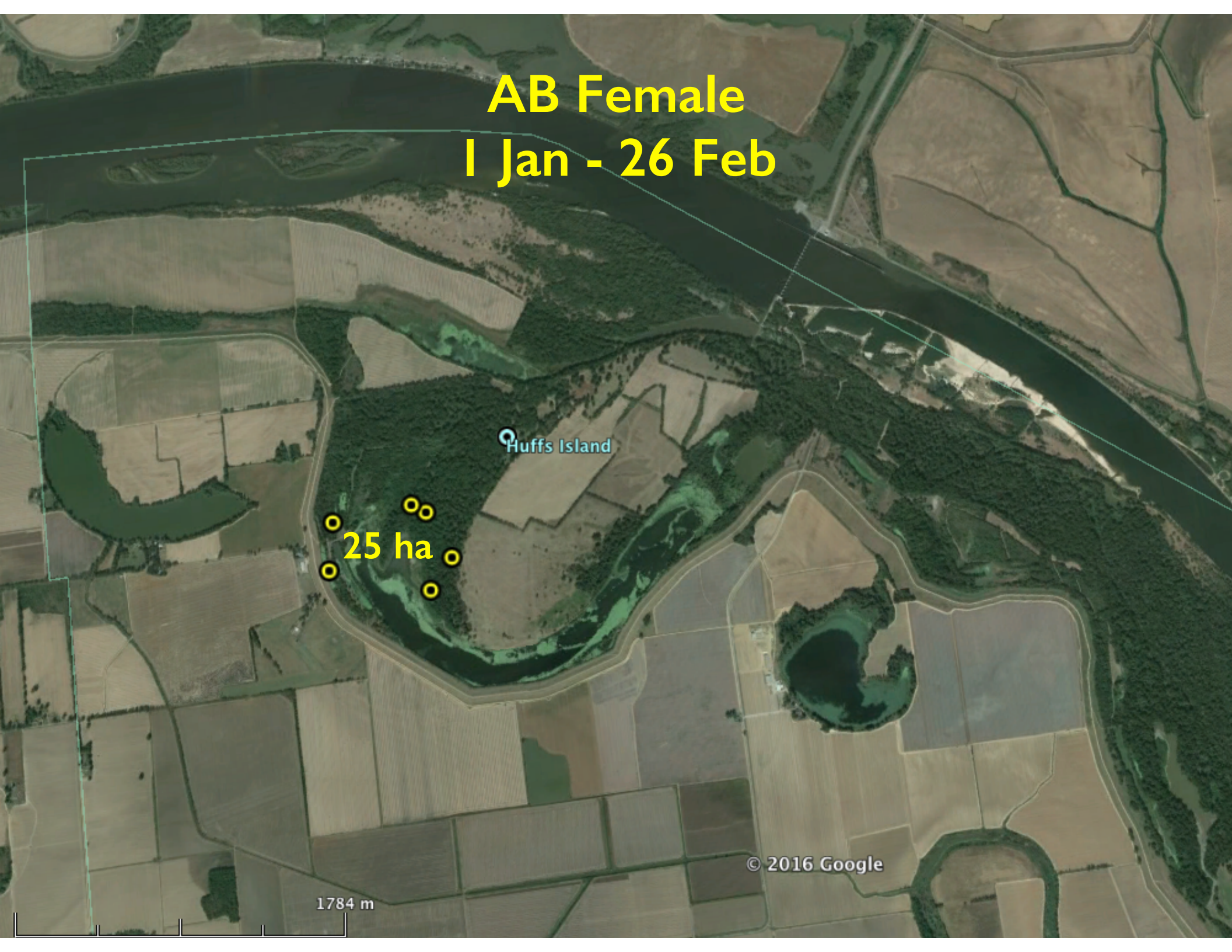
AB Female
1 Jan - 26 Feb

Huffs Island

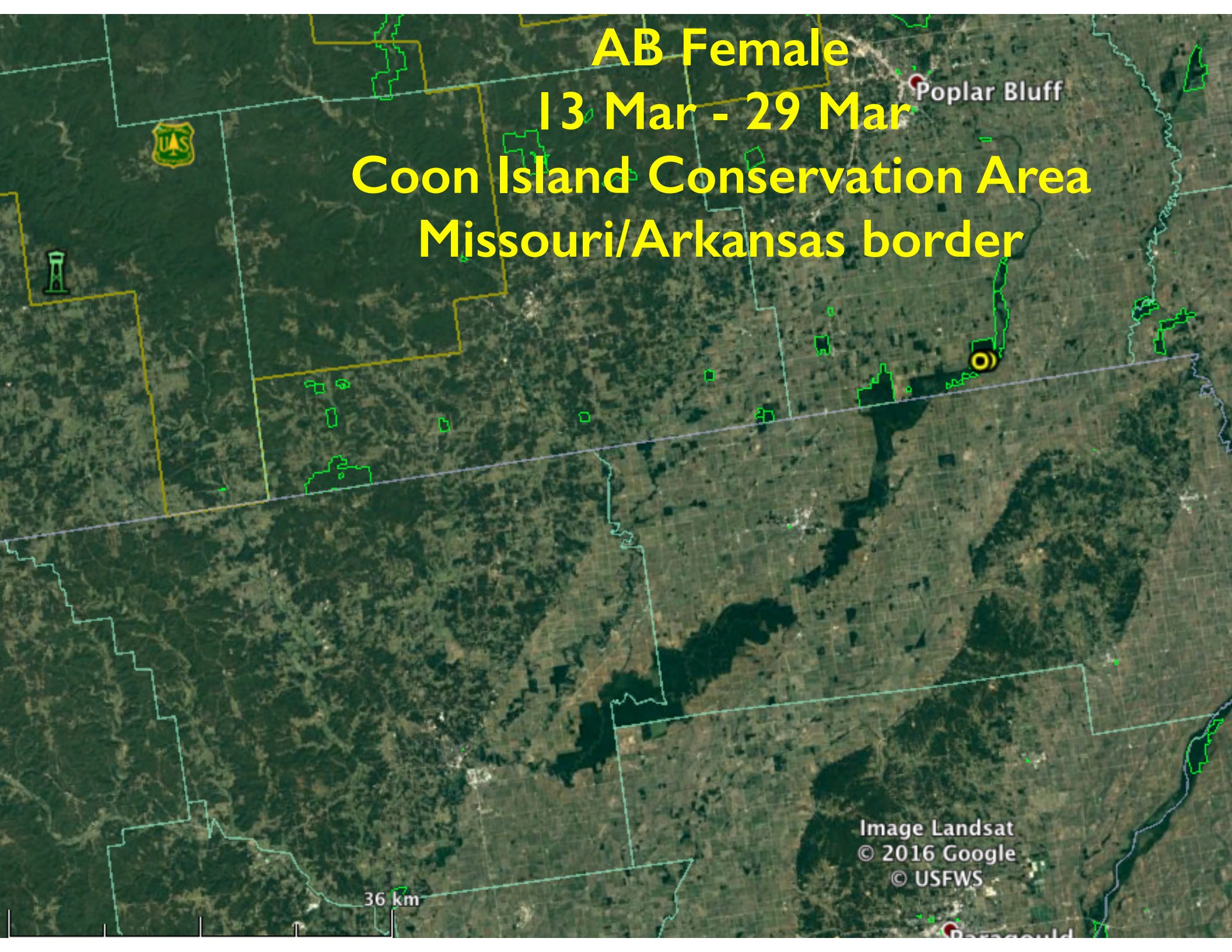
25 ha

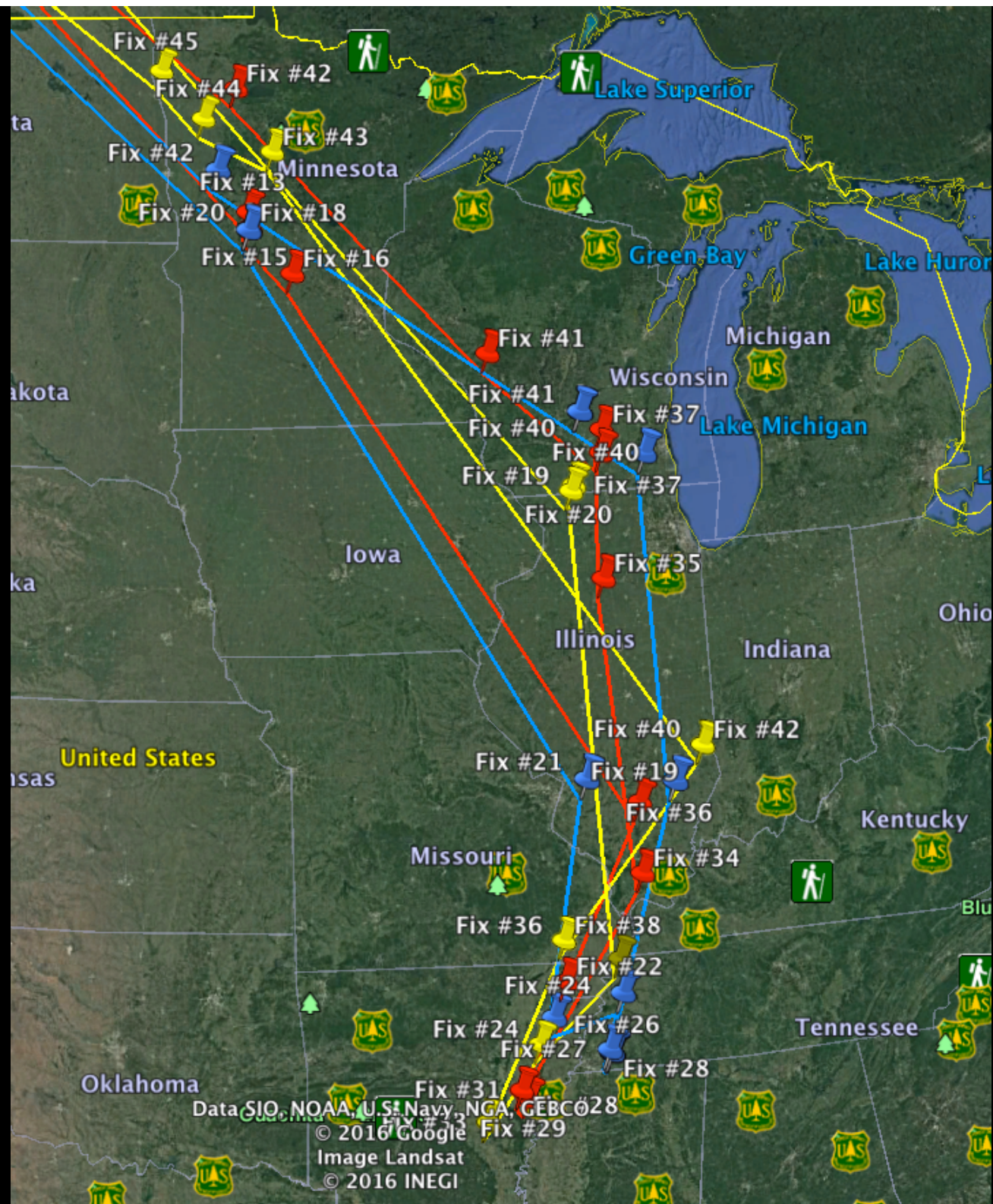
© 2016 Google

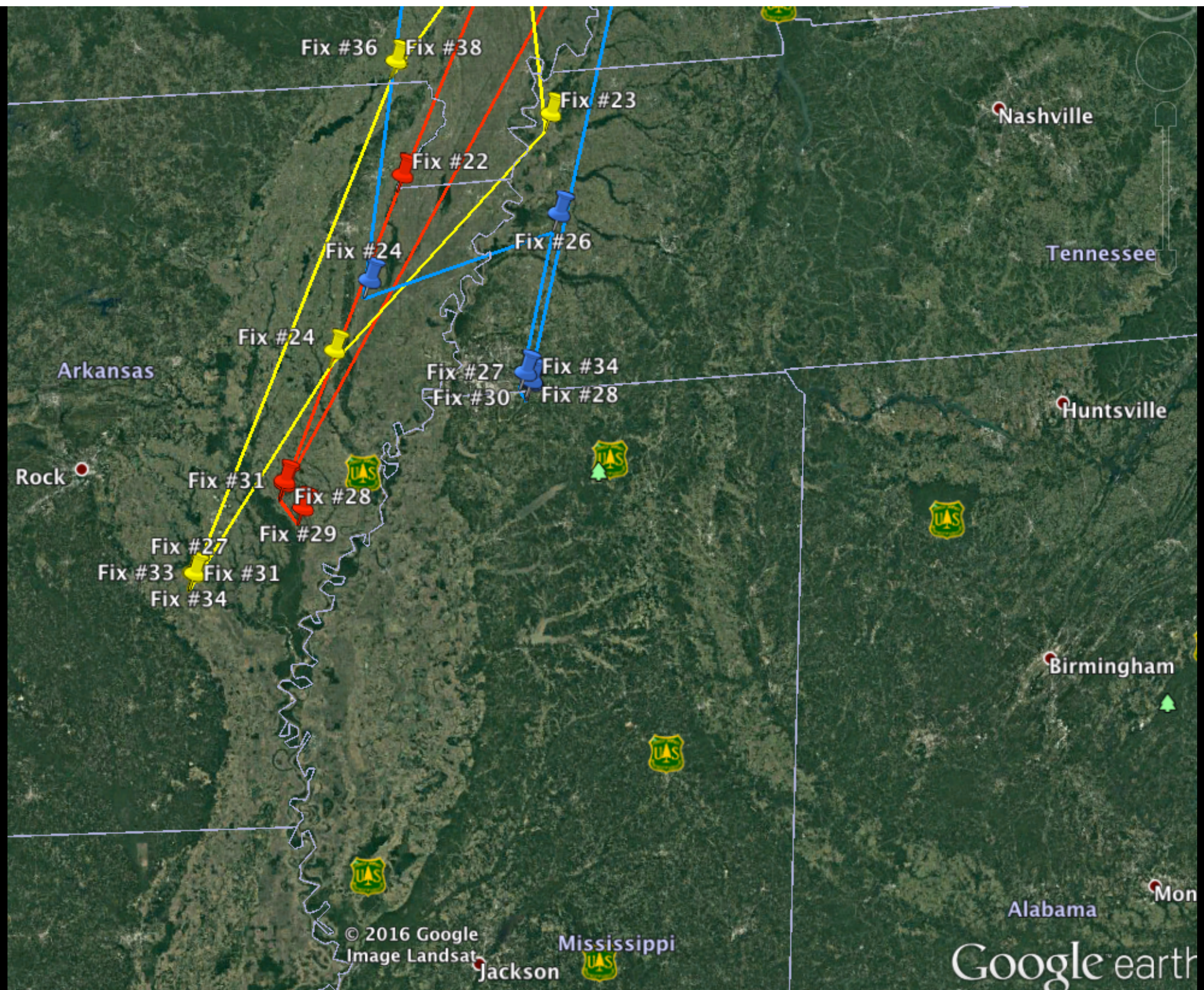
1784 m

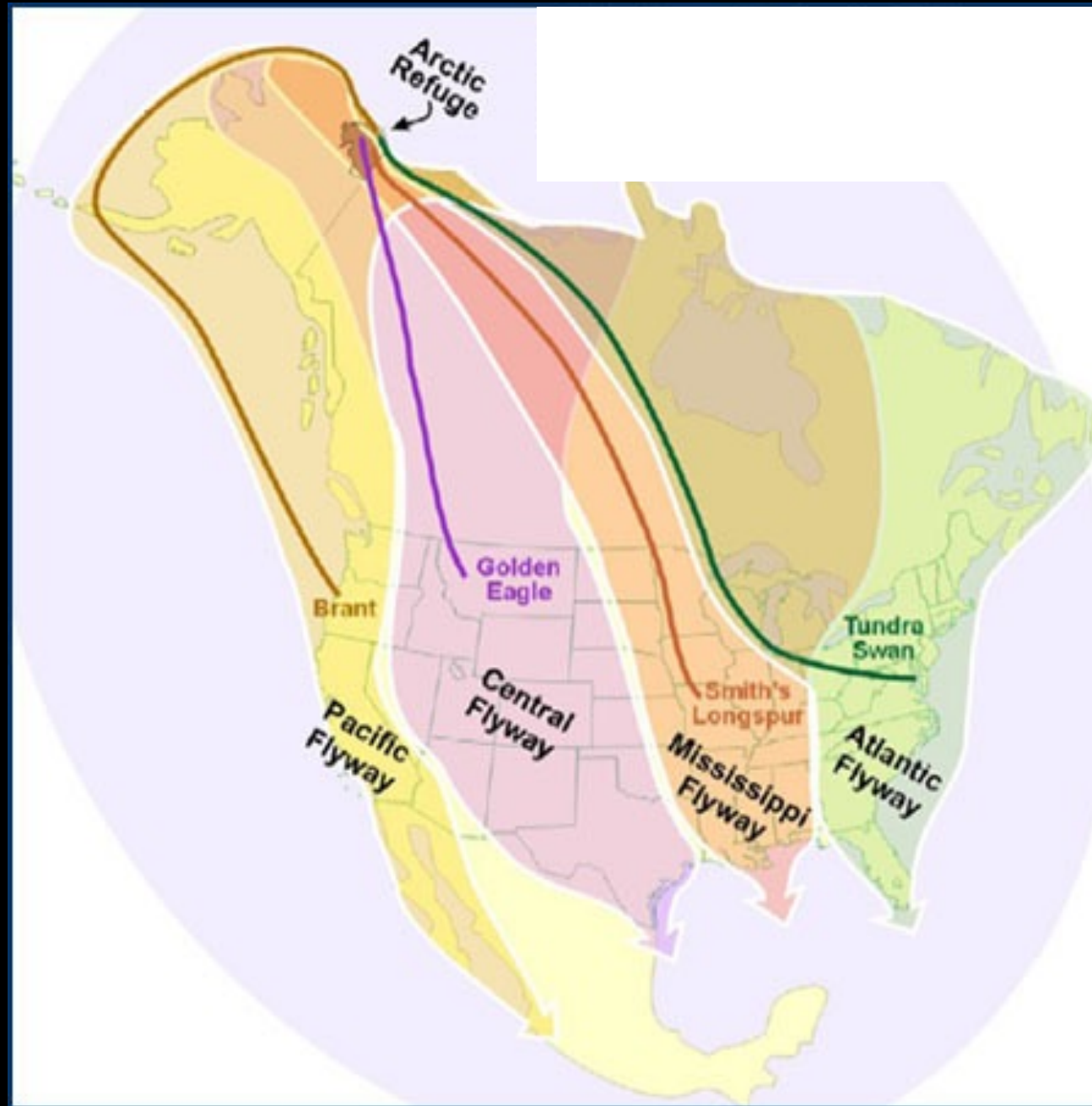


AB Female
13 Mar - 29 Mar
Coon Island Conservation Area
Missouri/Arkansas border











Conclusions



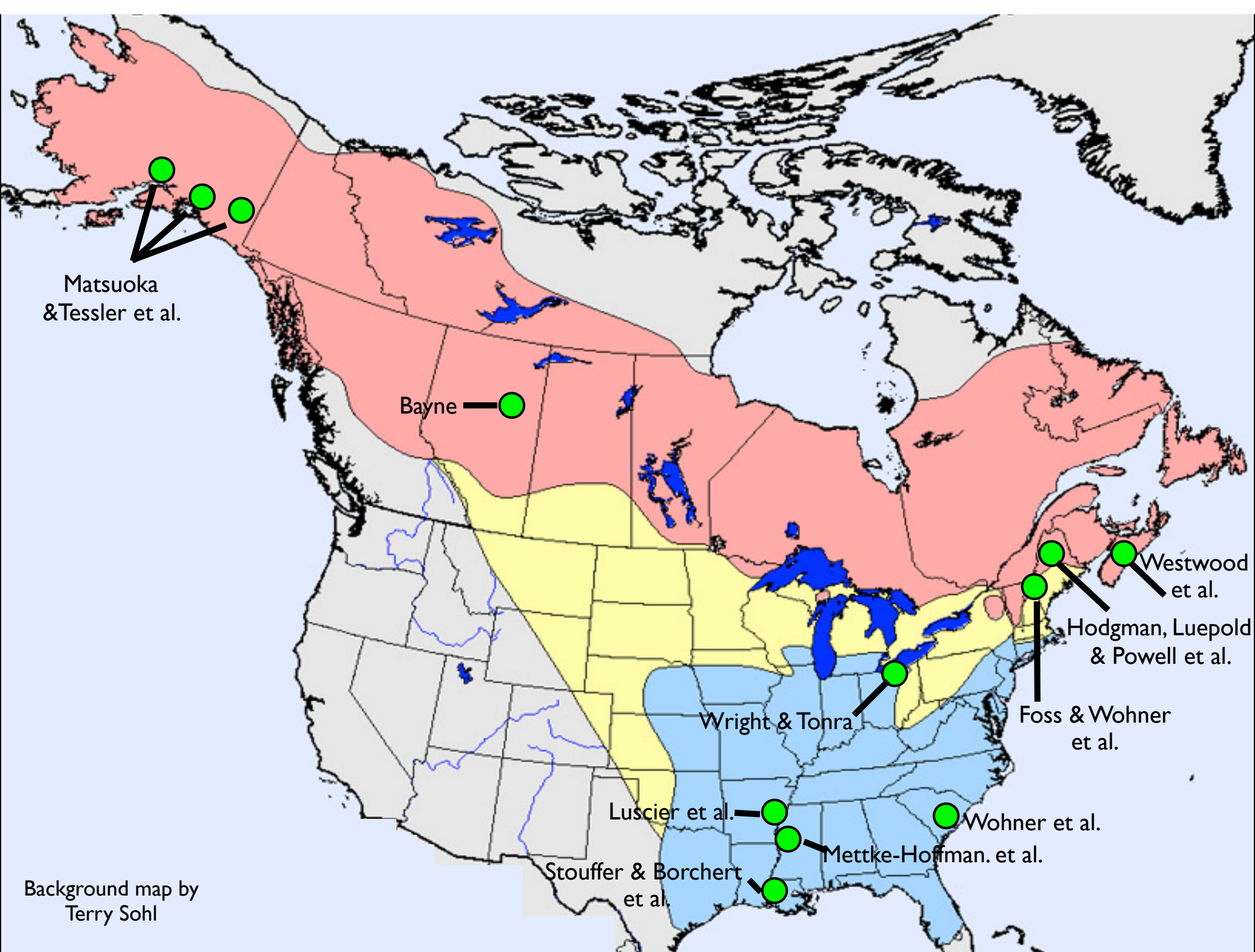
- Long Fall stopover (5 weeks?)
- Long Spring stopover (3 weeks+?)
- Remarkably matching paths by AB birds
- East/west migratory split
- Greater MS River drainage appears critical

What's next



photo: Ted Swem

- Combine data sources for more comprehensive migration map?
- 2017 fieldwork
 - Deploy swiftX tags in Alberta, Anchorage & NH (and Maine?)
- 2018 fieldwork
 - Recover tags (& deploy more?)
- 2019 fieldwork- GPS-Argos pinpoints?
- Need more breeding locations! Esp. in the east & in central Canada
- Need price of gas to go up or to raise more funds to pay for tags and fieldwork



Thank You!



Acknowledgements

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