

Trumpeter Swans in the Nebraska Sandhills – Initial Insights



**H. M. Johnson and L. Reichart, University of Nebraska-Kearney
M. P. Vrtiska, Nebraska Game & Parks Commission**

Trumpeter Swan Research



- Telemetry project
- Recruitment and molt study
- Ancillary information







Study Objectives:

- ▶ **Determine the timing, frequency, extent and direction of post-breeding and winter movements.**
- ▶ **Examine fidelity to breeding, fall staging, and wintering sites for swans in Nebraska.**
- ▶ **Examine if other rivers and creeks inside or outside Nebraska are being used.**

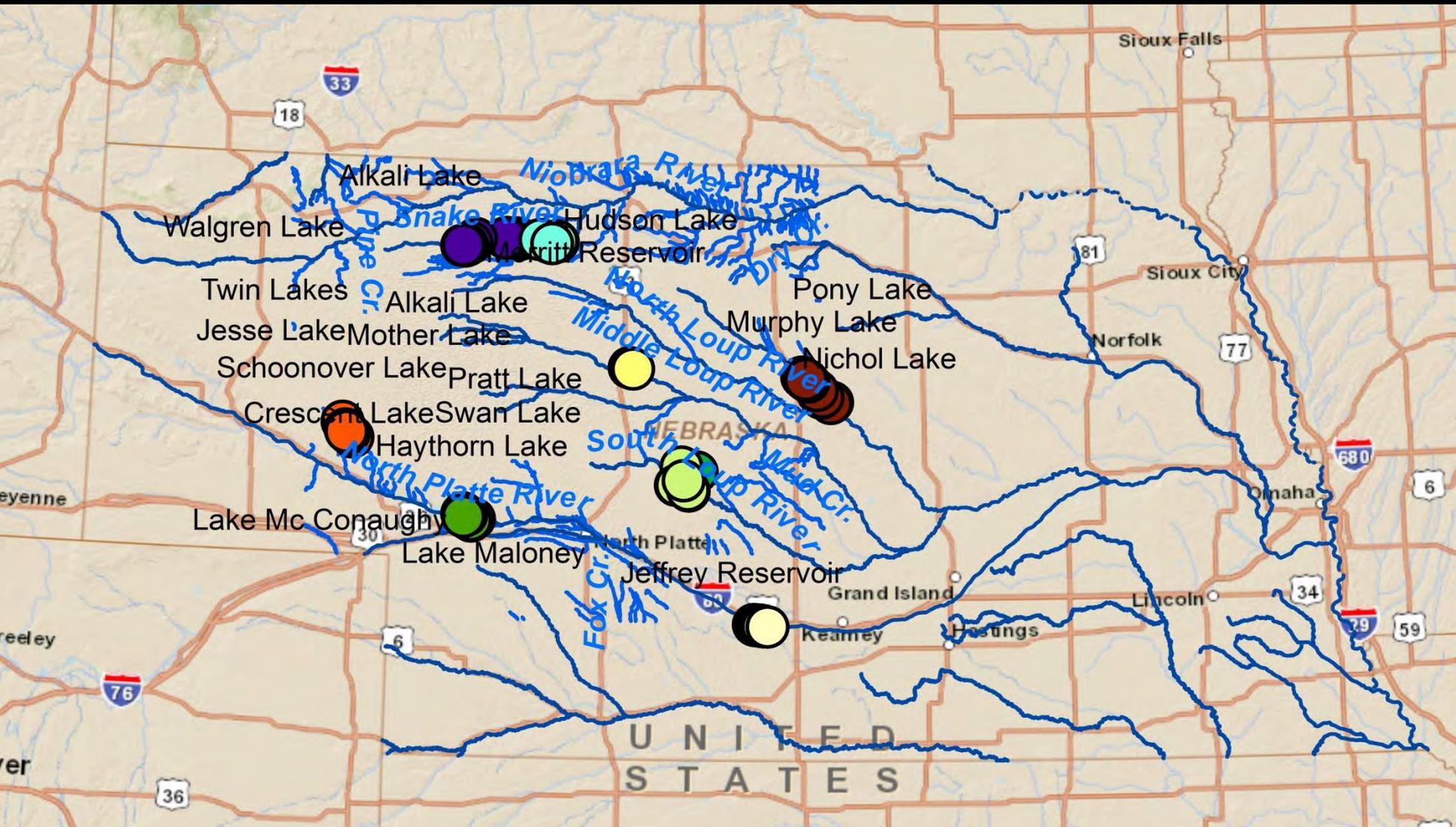


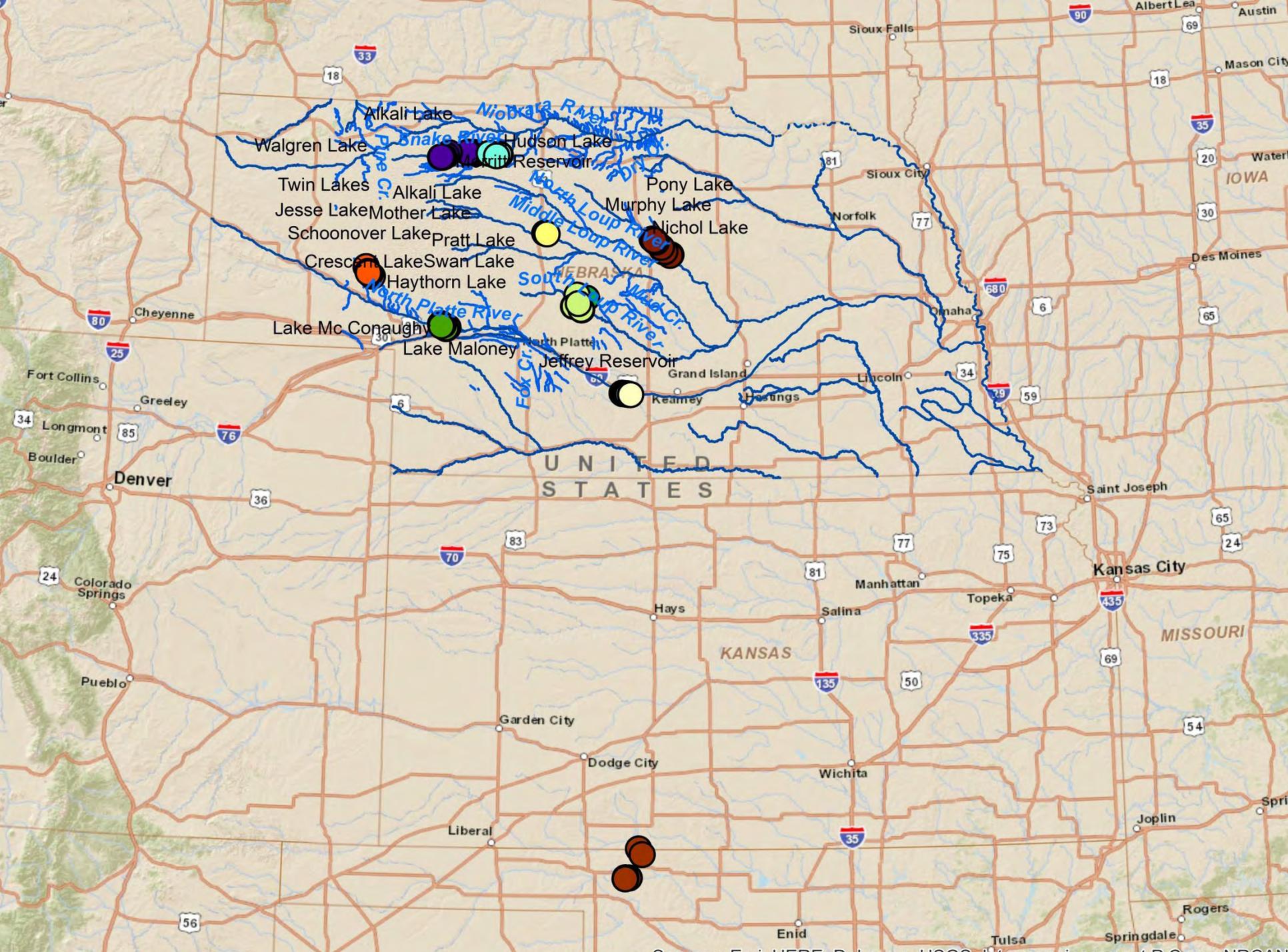




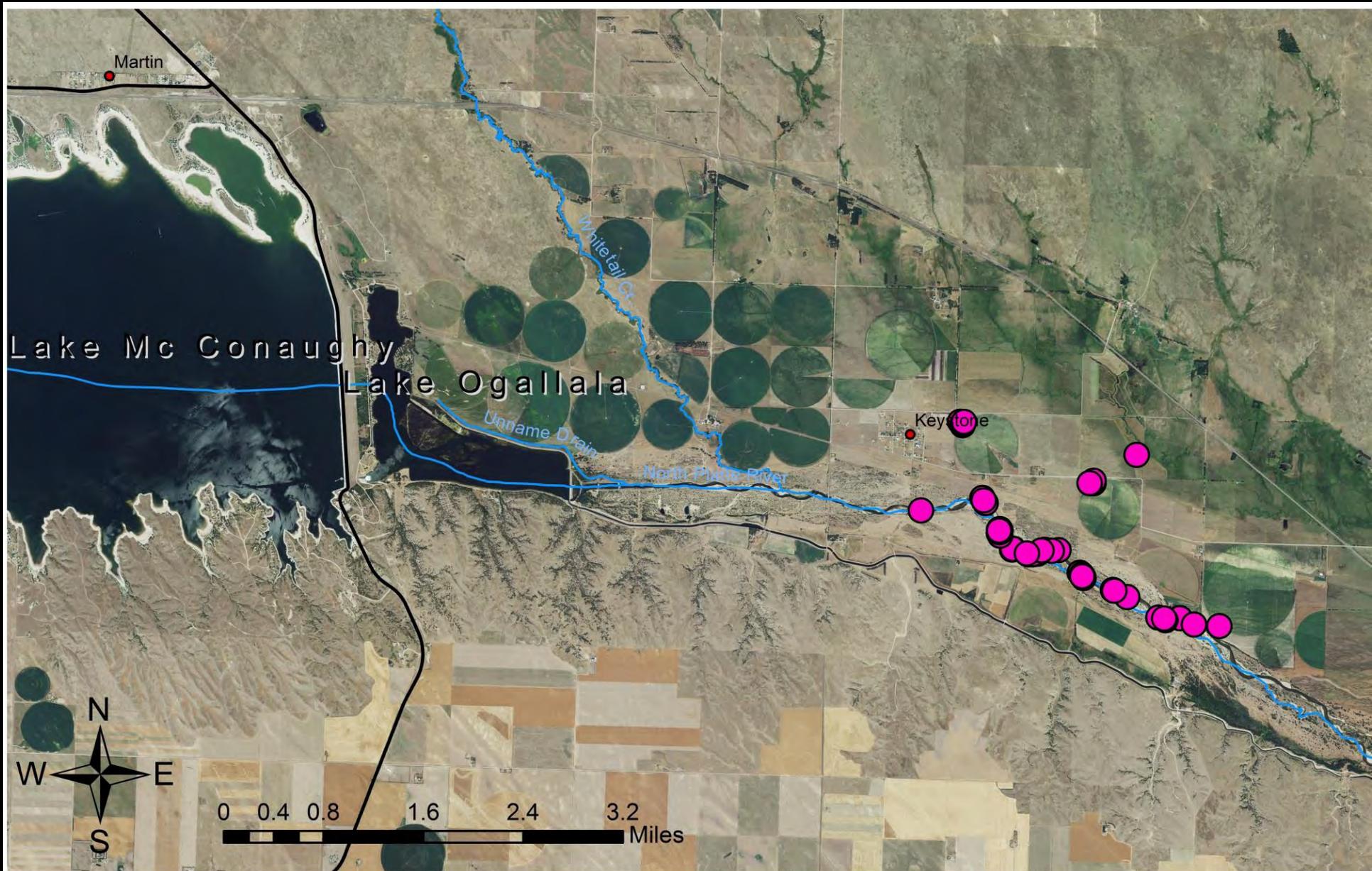
Study Progress:

- ▶ **3 transmitters deployed in 2014, 12 in 2015, and 12 (13) in 2016.**
- ▶ **3 females with cygnets in 2014, 3 females/cygnets, 6 females/no cygnets, and 3 males in 2015, and 10 females/cygnets and 2 females/no cygnets in 2016.**
- ▶ **27 total swans collared, 38 banded.**

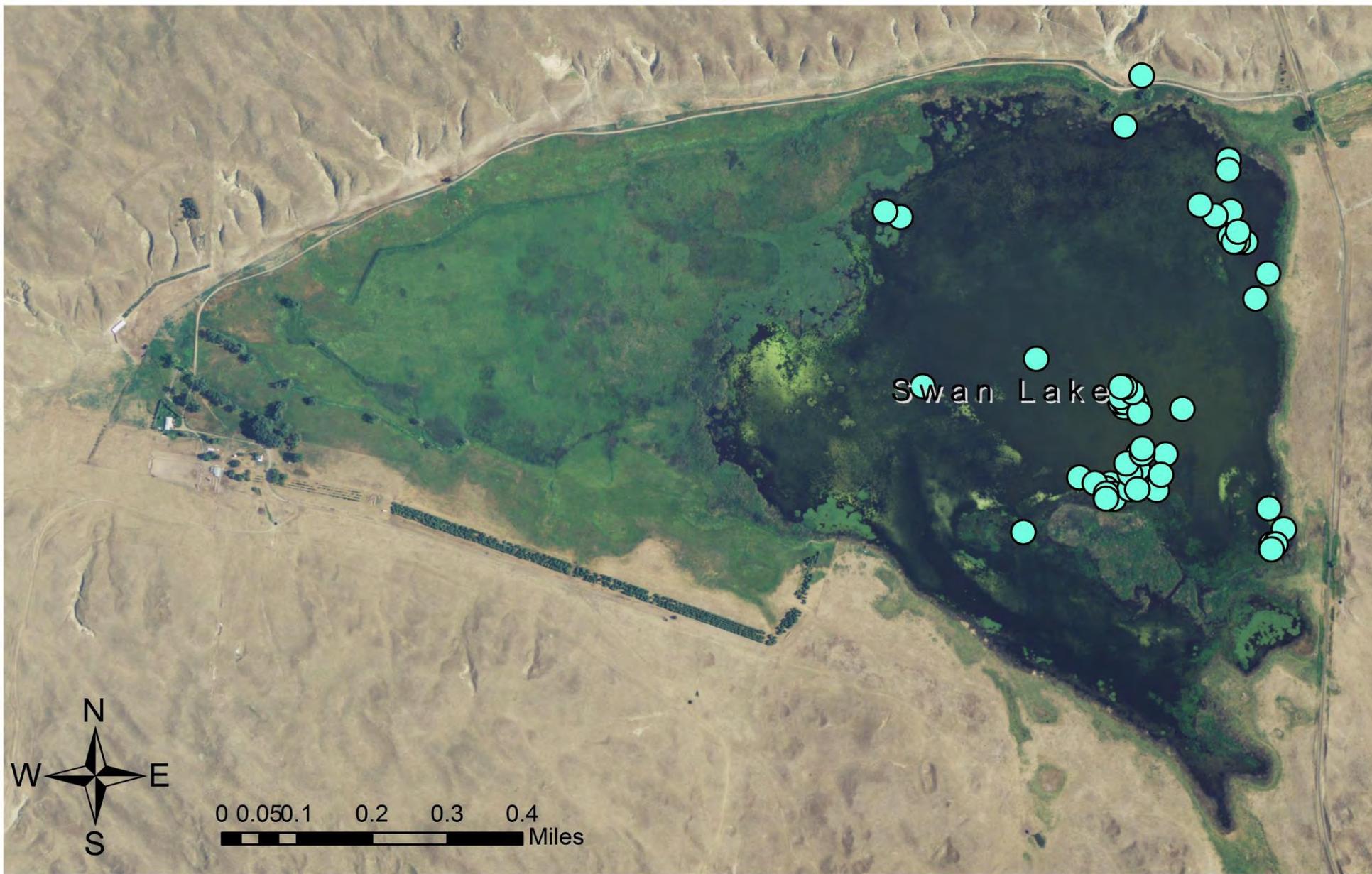




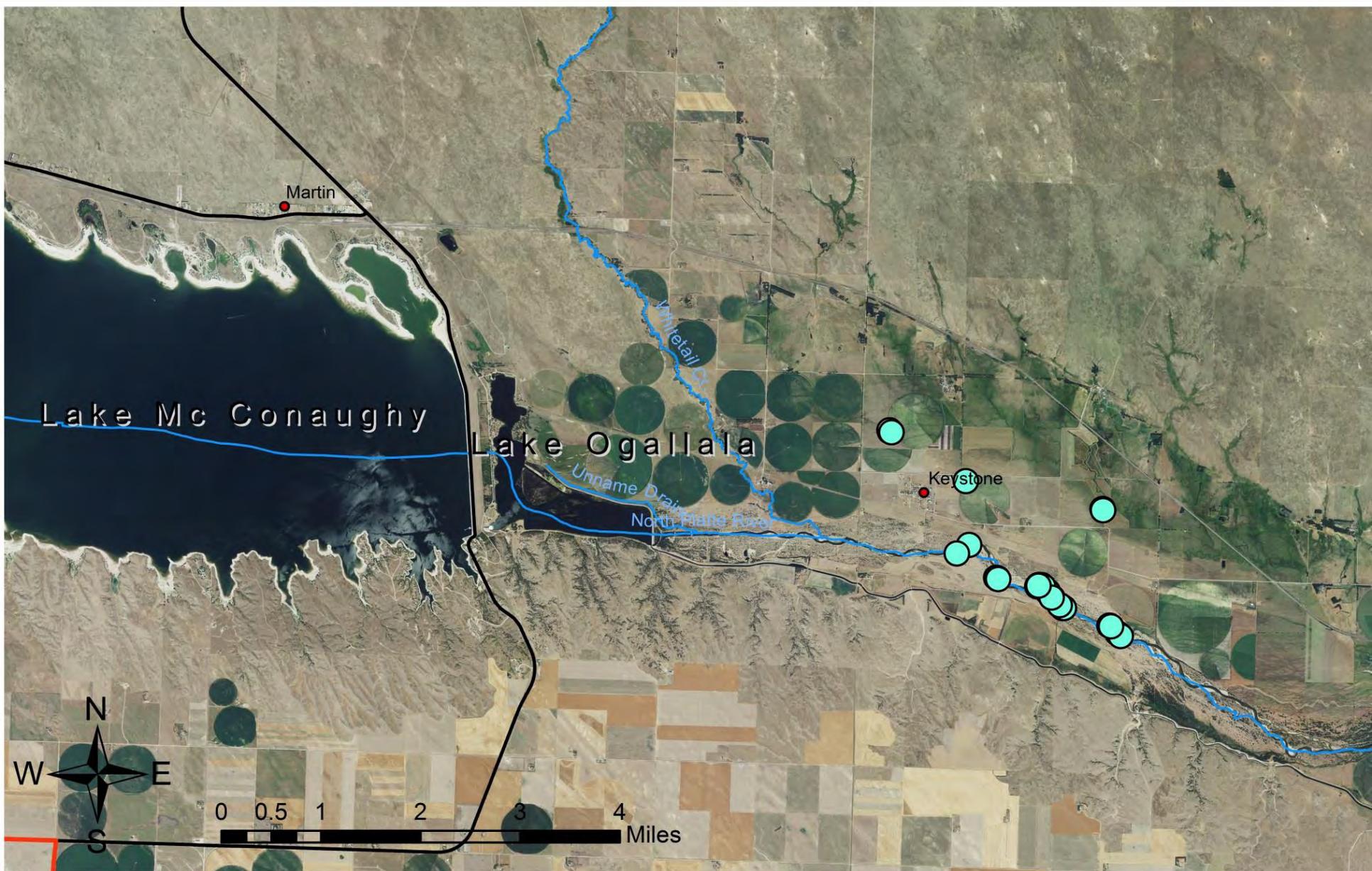
November 2014



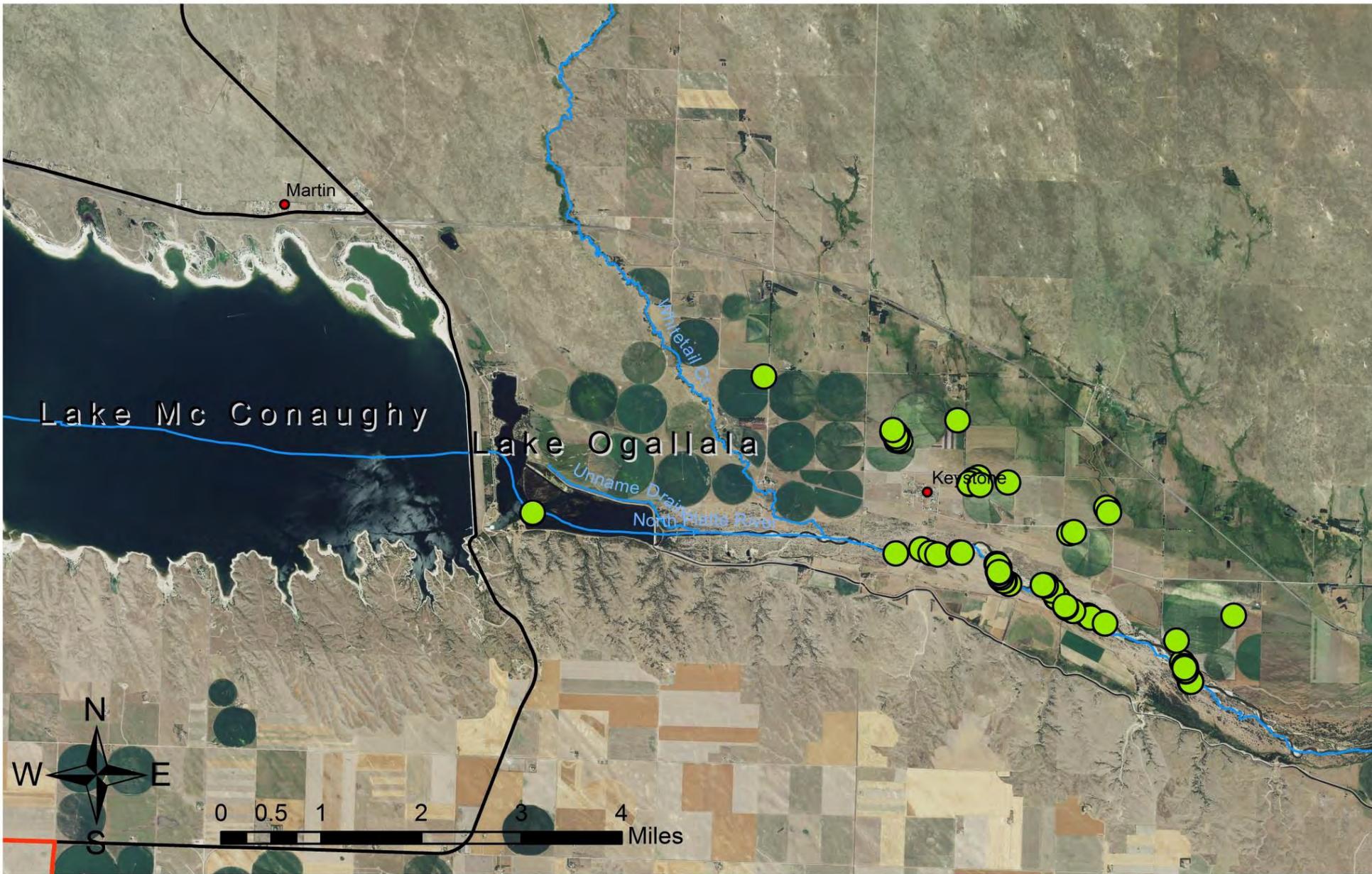
December 2014



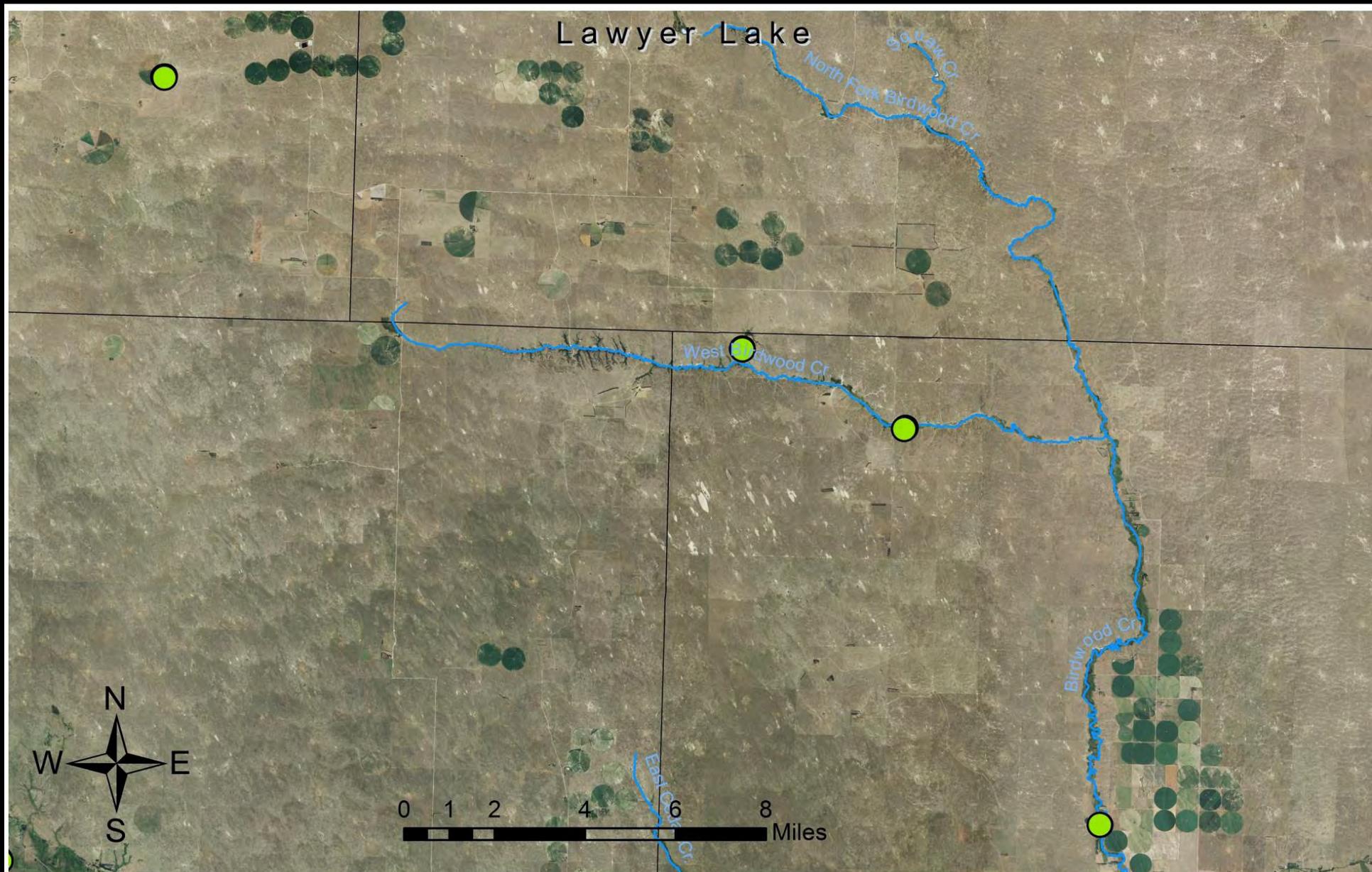
December 2014



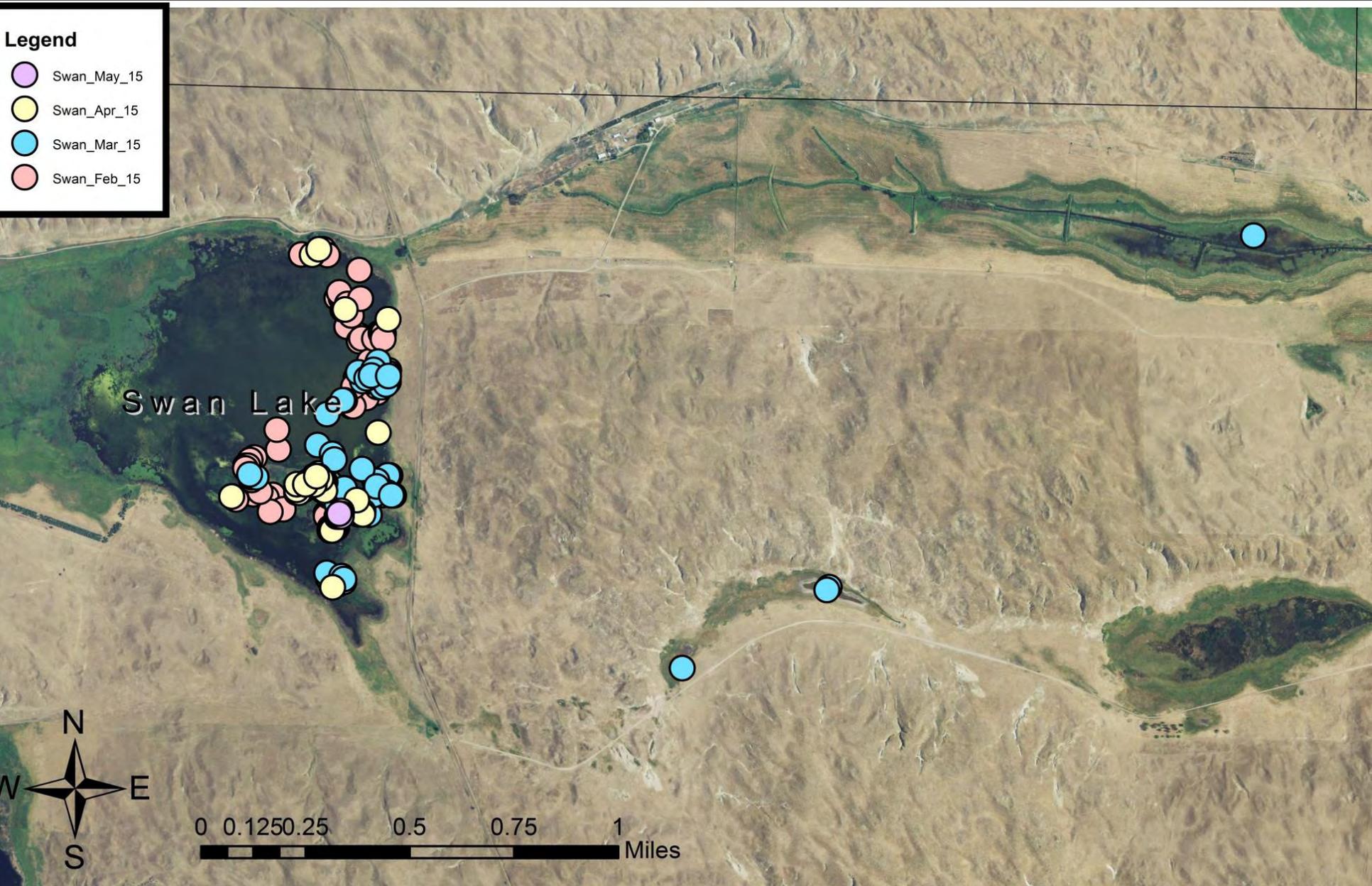
January 2015



January 2015



February, March, April, and May 2015



Study Progress:

- ▶ **6 swans died, causes unknown.**
- ▶ **Do not appear to be related to capture.**





Study Progress:

- ▶ 3 transmitters deployed in 2014, 12 in 2015, and 12 (13) in 2016.
- ▶ 3 females with cygnets in 2014, 3 females/cygnets, **6 females/no cygnets, and 3 males in 2015**, and 10 females/cygnets and 2 females/no cygnets in 2016.
- ▶ 28 total swans collared, 38 banded.

Trumpeter Swan Recruitment in Nebraska



Historic breeding range of Trumpeter Swans in North America

Fur and Feather Trade Industry



Use of Swan Skins and Feathers



<https://s-media-cache-ak0.pinimg.com/736x/b7/37/2e/b7372e3de1bb92d0bd1b63f211a38d0c.jpg>



<http://www.tjbookarts.com/wp-content/uploads/2007/05/funfest-05.jpg>



http://www.rspb.org.uk/community/cfs-file.ashx/__key/communityserver-blogs-components-weblogfiles/00-00-01-88-34/7360.111113-Feather-in-cap.jpg

Reintroduction to the Sandhills 1960-1962

- 57 trumpeter swans were reintroduced to the Sandhills at Lacreek NWR, SD from 1960-1962 from Red Rock Lakes NWR, MT.
- By May, 1963, predation, winter mortality, and transportation mortality reduced the introduced flock to 36 swans.

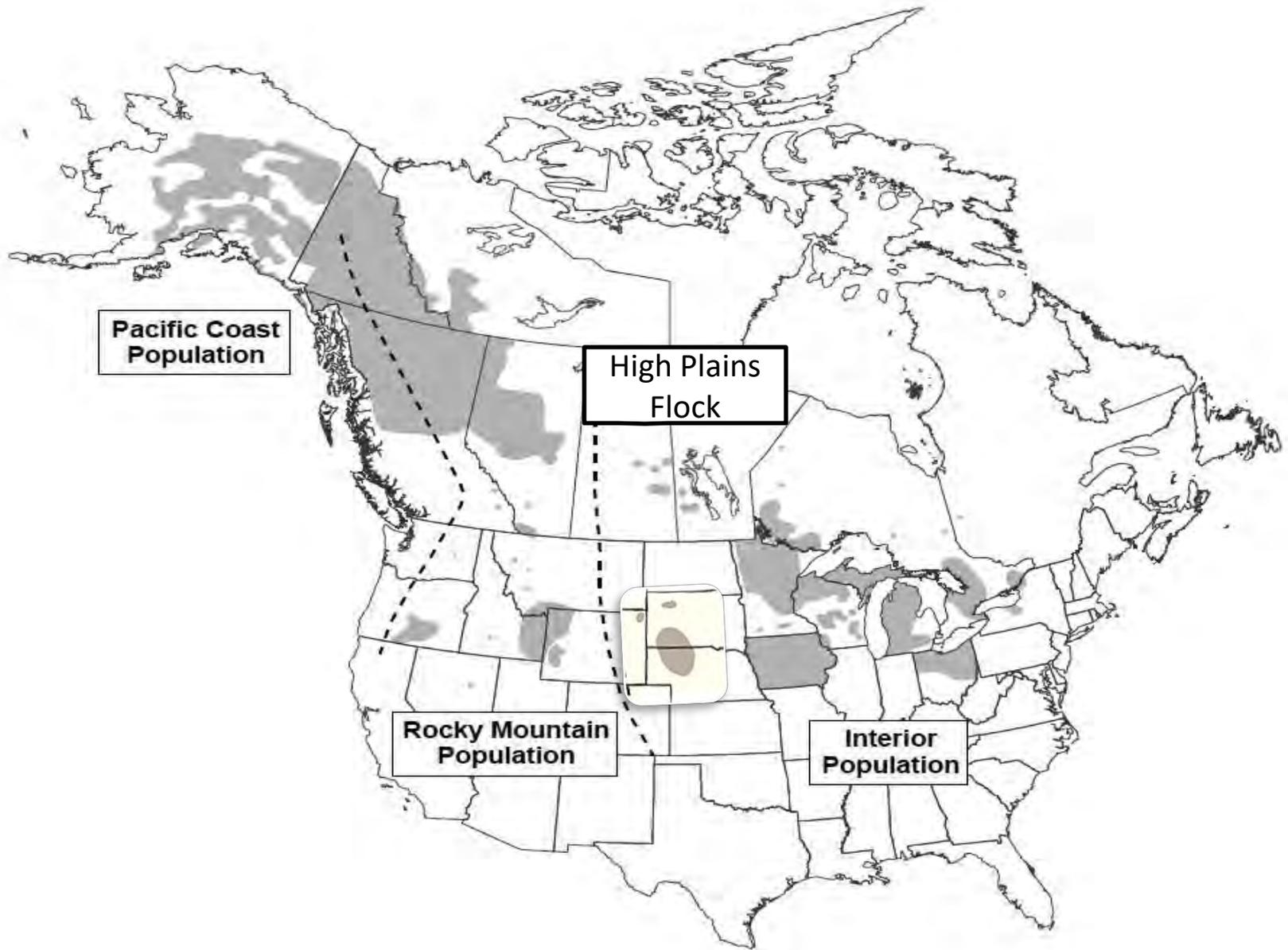


Breeding Success!

- 1963 - First successful breeding season with 2 broods of 2 cygnets each, surviving to fledging.
- 1964 - Cody, NE had the first successful breeding pair in Nebraska, fledging 4 cygnets.

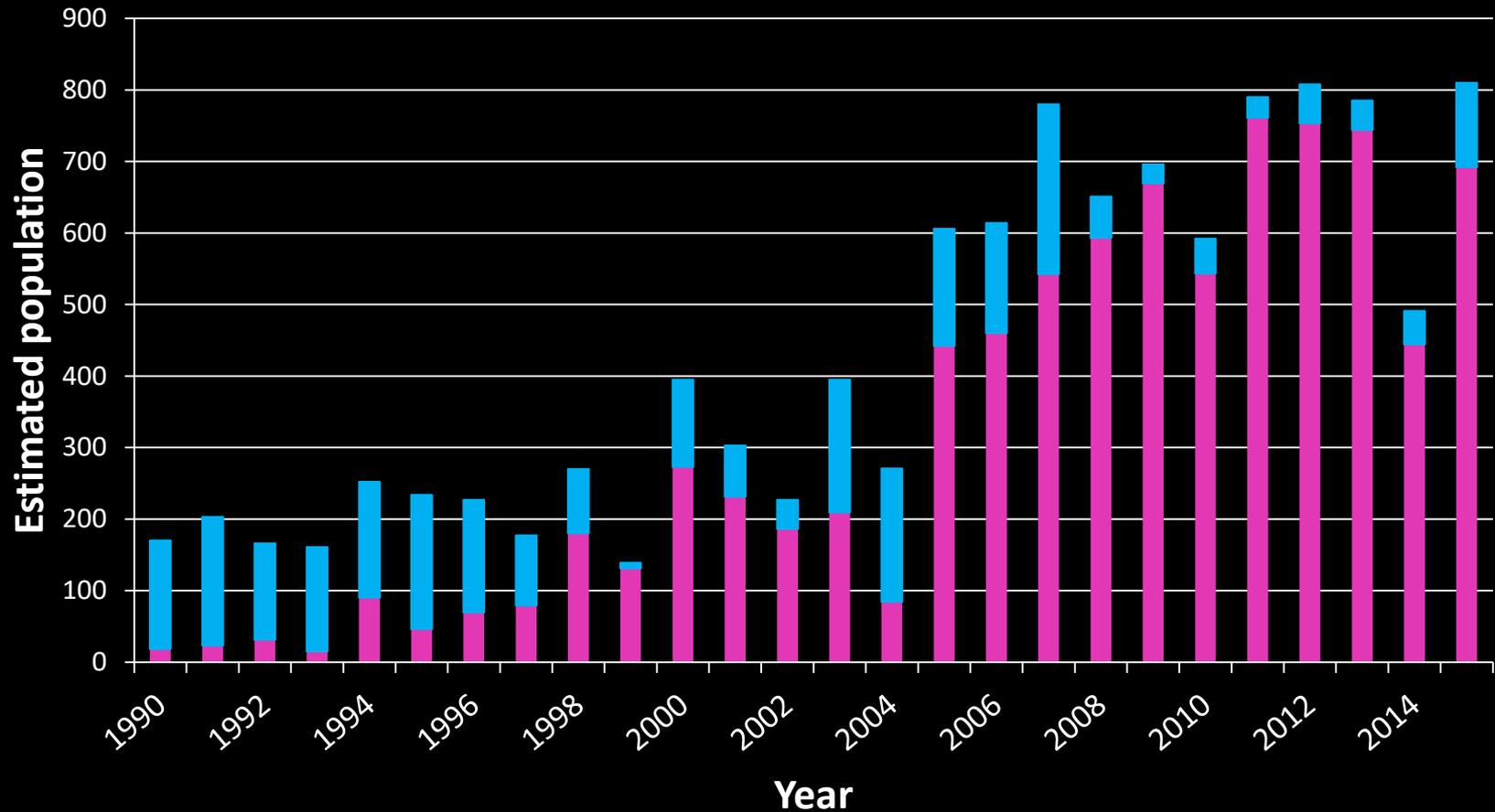


Photos provided by Lacreek National Wildlife Refuge.

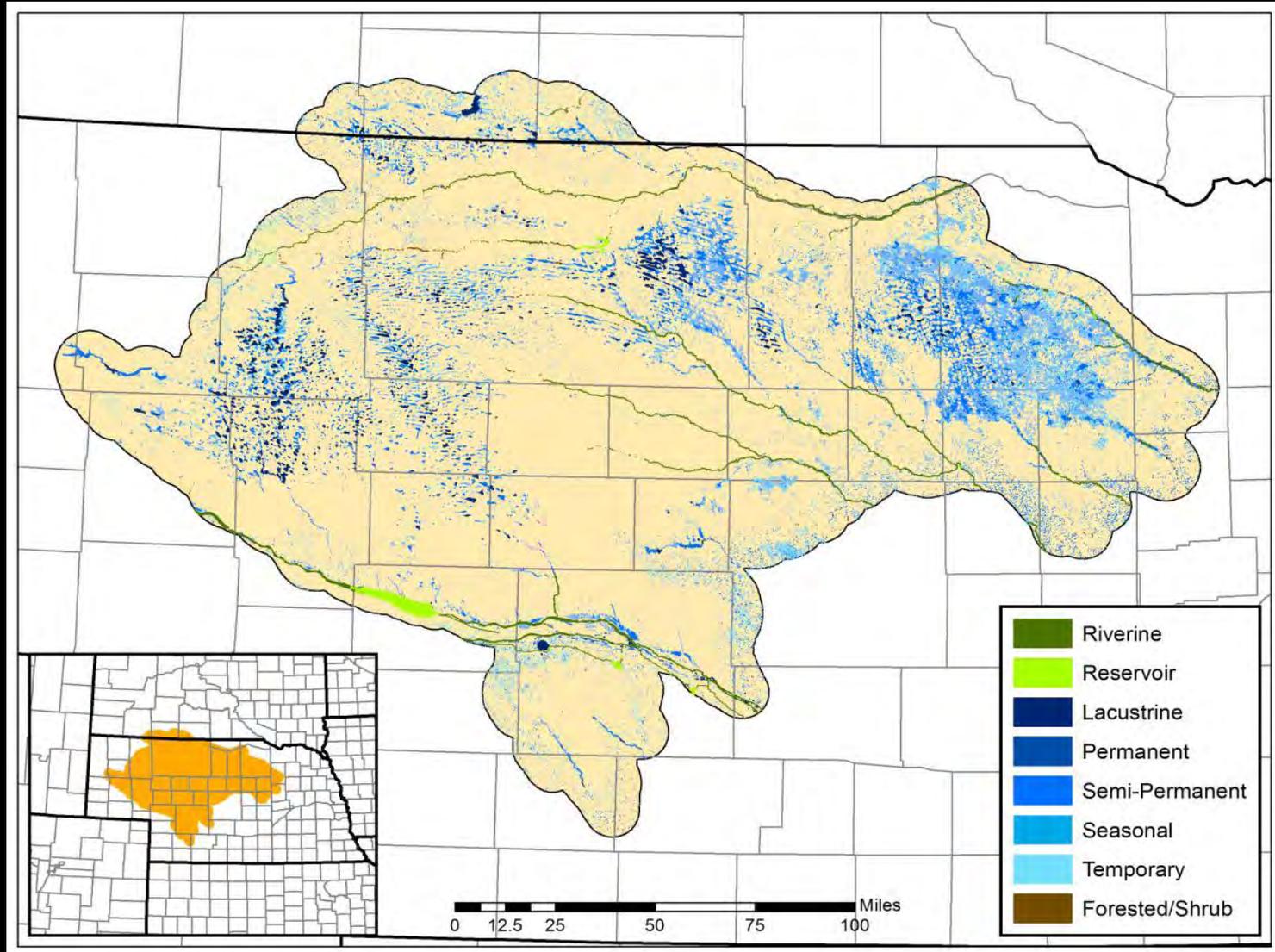


Mid-Winter Survey Population Estimates in the Central Flyway

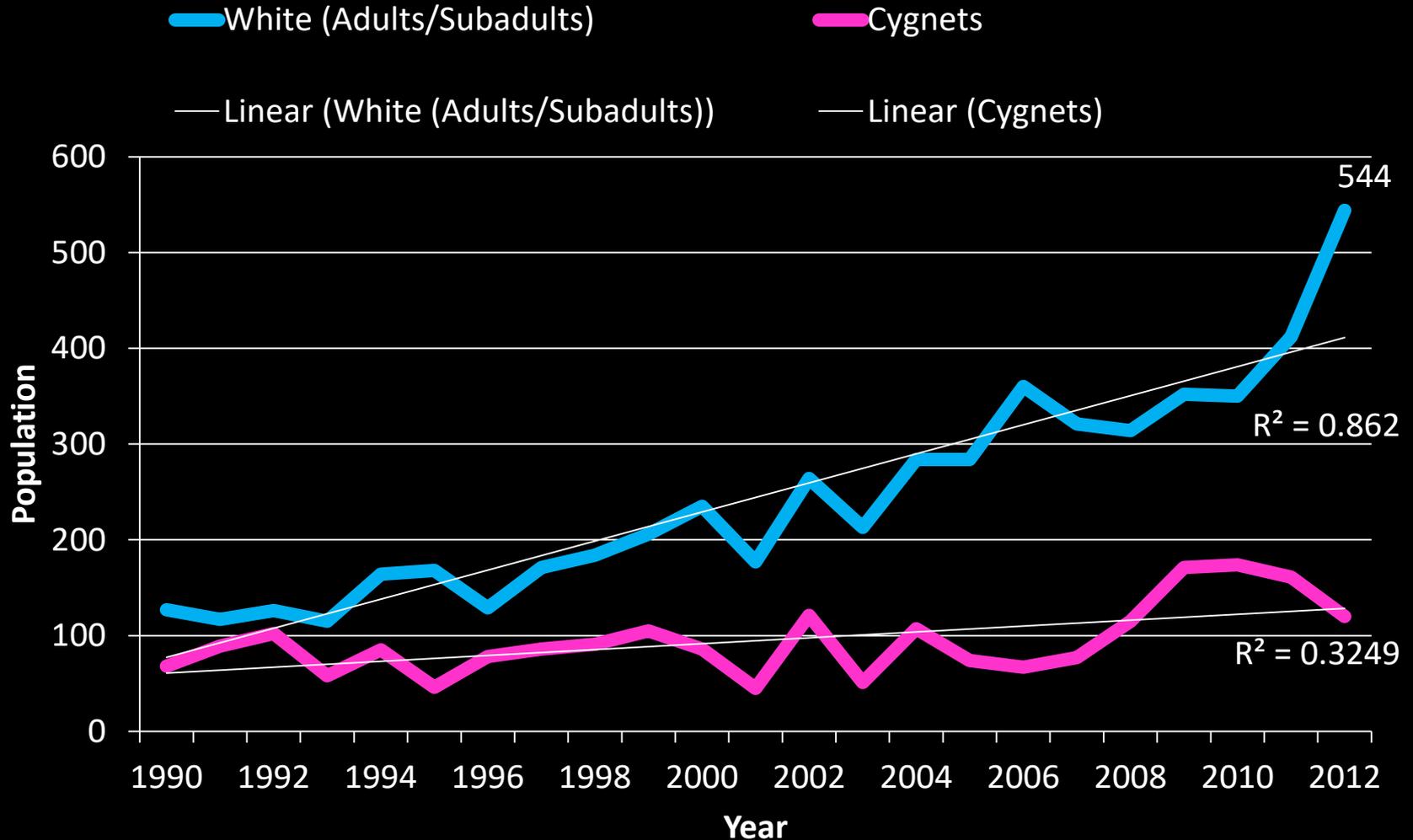
■ Nebraska ■ Other CF States



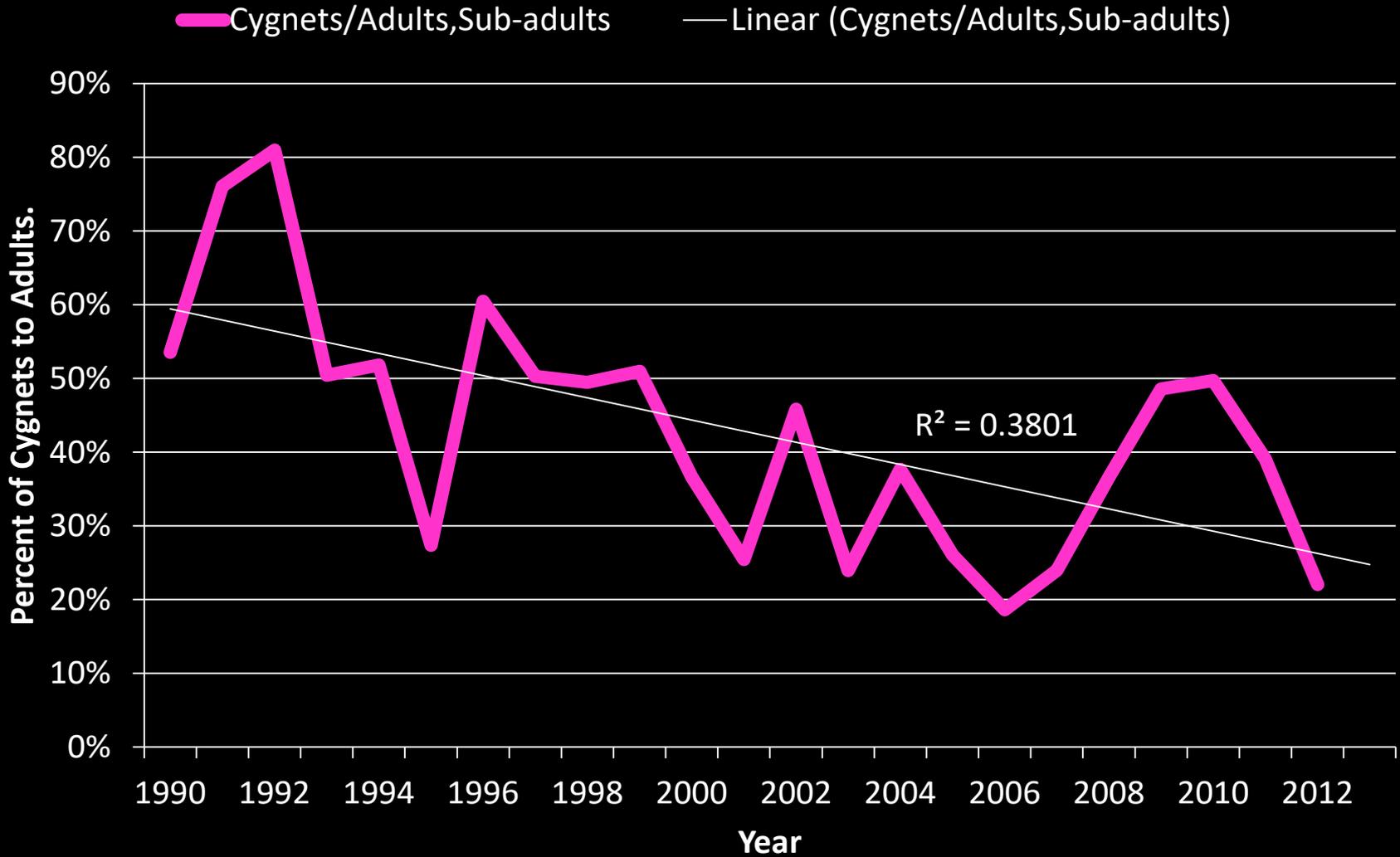
Wetland basins developed using NWI data (blue and green) in Sandhills study area (tan) of Nebraska and southwestern South Dakota (Bishop et al. 2011).



Adult/Juvenile Demographic



Cygnets/Adult Ratios

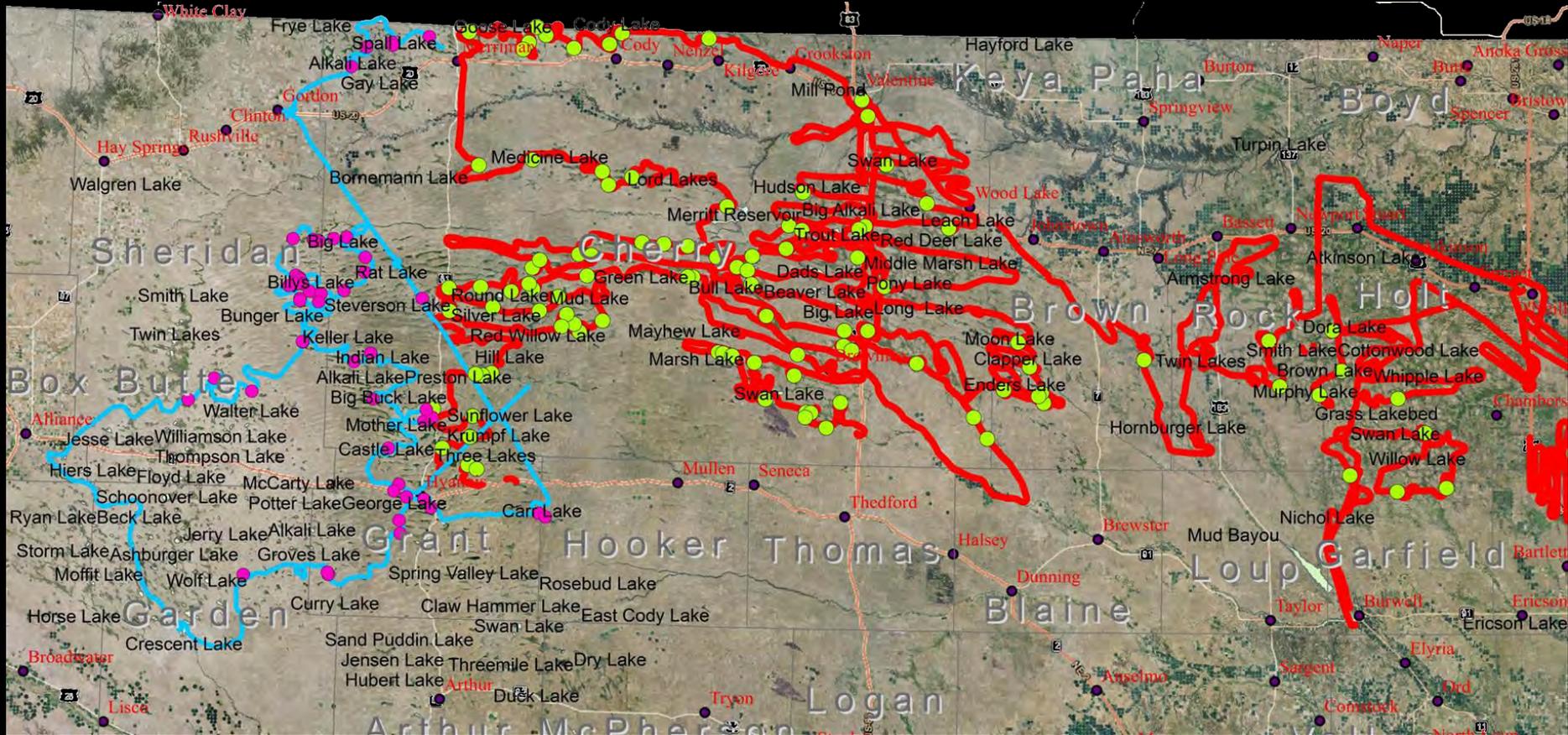


Research of Trumpeter Swans in the Nebraska Sandhills

- Due to declining production ratios, it is necessary to evaluate breeding success:
 - Nesting propensity.
 - Hatch rates.
 - Brood survival.
- First in depth look at in the HPF since their reintroduction.



Aerial Survey



Aerial Survey

- **328 Trumpeter Swans**
- **128 pairs**
- **84 nests**



Raw Nest and Brood Data

- 9 nests were visited.
 - A total of 72 eggs.
 - Average Clutch size 5.4.
 - 37 (51%)* eggs hatched and 8 (89%) nests hatched at least one egg.
 - *With the removal of Vaughn Lake nest (5 eggs), 55% of surviving eggs hatched.
 - Average initial brood size 3.8.
 - 13 (35%) cygnets reached fledging age.
 - Average cygnets fledged 1.4.



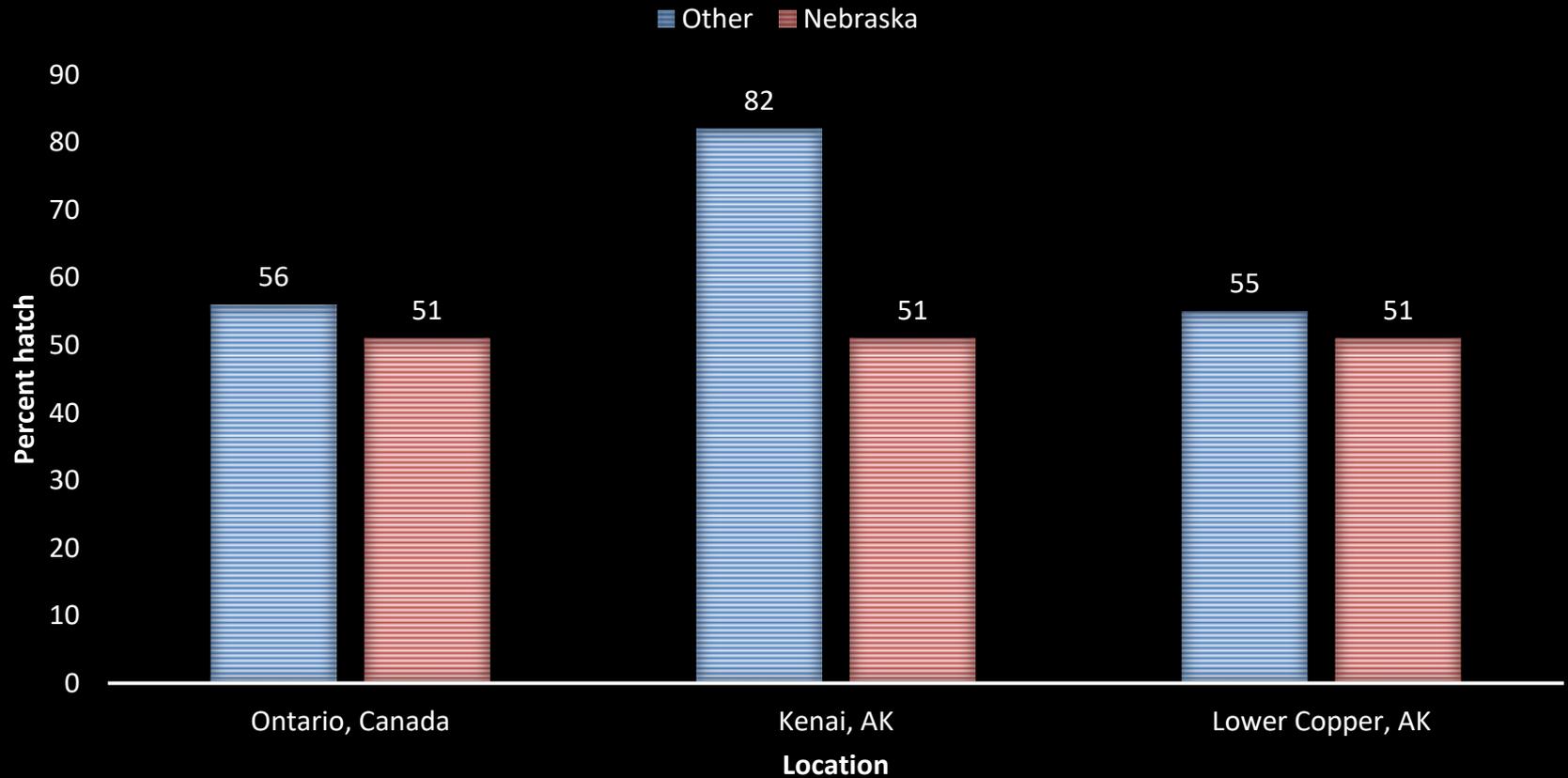
Raw Nest and Brood Data

- 29 breeding pairs were surveyed.
 - 26(90%) nests had at least one egg hatch.
- Of the 26 broods.
 - 104 cygnets were initially observed.
 - Average observed initial brood size 4 cygnets.
 - 48 reached fledging (46%) age.
 - Average number cygnets fledge 1.8.
 - 18(69%) broods fledged at least one cygnet.



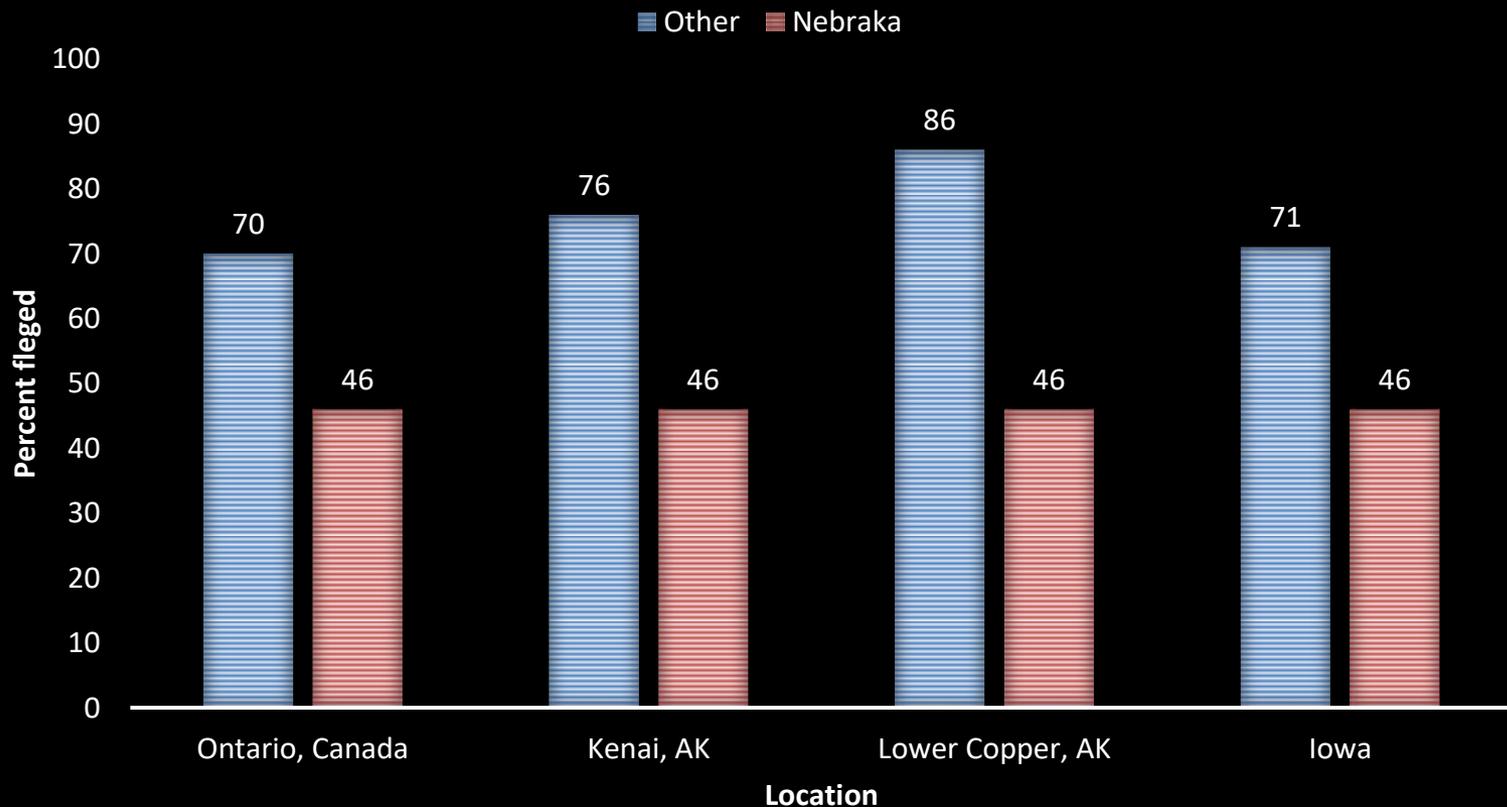
How do other populations compare?

Hatch rates in Nebraska, Ontario Canada, and Alaska.



How do other populations compare?

Cygnets fledging rates in Nebraska, Ontario Canada, Alaska, and Iowa.



Conclusion

- Trumpeter Swan population in Nebraska is growing but production appears to be declining.
- Initial hatch rates appear to be slightly lower than other populations.
- Initial raw data shows concerning trends of low cygnet survival rates relative to other Trumpeter swan populations.
 - Potential Causes:
 - Pairs maybe spreading into lower quality habitat.
 - Potentially reaching capacity.
 - Genetic diversity is lower in the HPF than other populations (Ransler et al. 2011).
 - Predator densities.
 - Other?





Acknowledgements:

- ▶ Sandhills Landowners, including Valentine NWR.
- ▶ A. Hanson, J. Rydell, Z. Brashers – NGPC Fisheries
- ▶ T. Krolkowski , N. Rau, A. Engel, K. Decker, M. Haugen, M. Ellstrom, J. Powell – NGPC Wildlife

- ▶ NGPC
- ▶ Region 6, USFWS
- ▶ Rainwater Basin Joint Venture
- ▶ U. of Nebraska-Kearney
- ▶ Sandhills Task Force

