

Intermountain West Migratory Shorebird Survey

Max Malmquist, National Audubon Society
Janice Gardner, Sageland Collaborative



SAGELAND
COLLABORATIVE



Funding and Support

- GSL Advisory Council
- FFSL's GSL Research Grant
- Sageland Collaborative
- National Audubon
- Utah Division of Wildlife Resources
- Tracy Aviary
- USFWS
- Utah Division of Forestry, Fire and State Lands
- Utah State Parks
- Private duck clubs
- The Nature Conservancy
- Rio Tinto
- Great Salt Lake Audubon
- Wasatch Audubon Society
- Bridgerland Audubon Society
- Bureau of Land Management
- Amazing Volunteers
- **Plus 70 other organizations from TEN other states!**



Long-billed Curlew

Pacific Flyway



Goal

Evaluate migratory shorebird distribution and abundance at GSL and the Intermountain West region in order to provide a foundation for management of resources for shorebirds.



**Marbled
Godwit**



Mangers and Decision Makers:

Three Scales of Questions



The Region

- How many shorebirds does the Intermountain West sustain during migration?
- What does this mean for shorebird populations in the Flyway?
- What is the value of a wetland site compared to others across the region?



The GSL Ecosystem

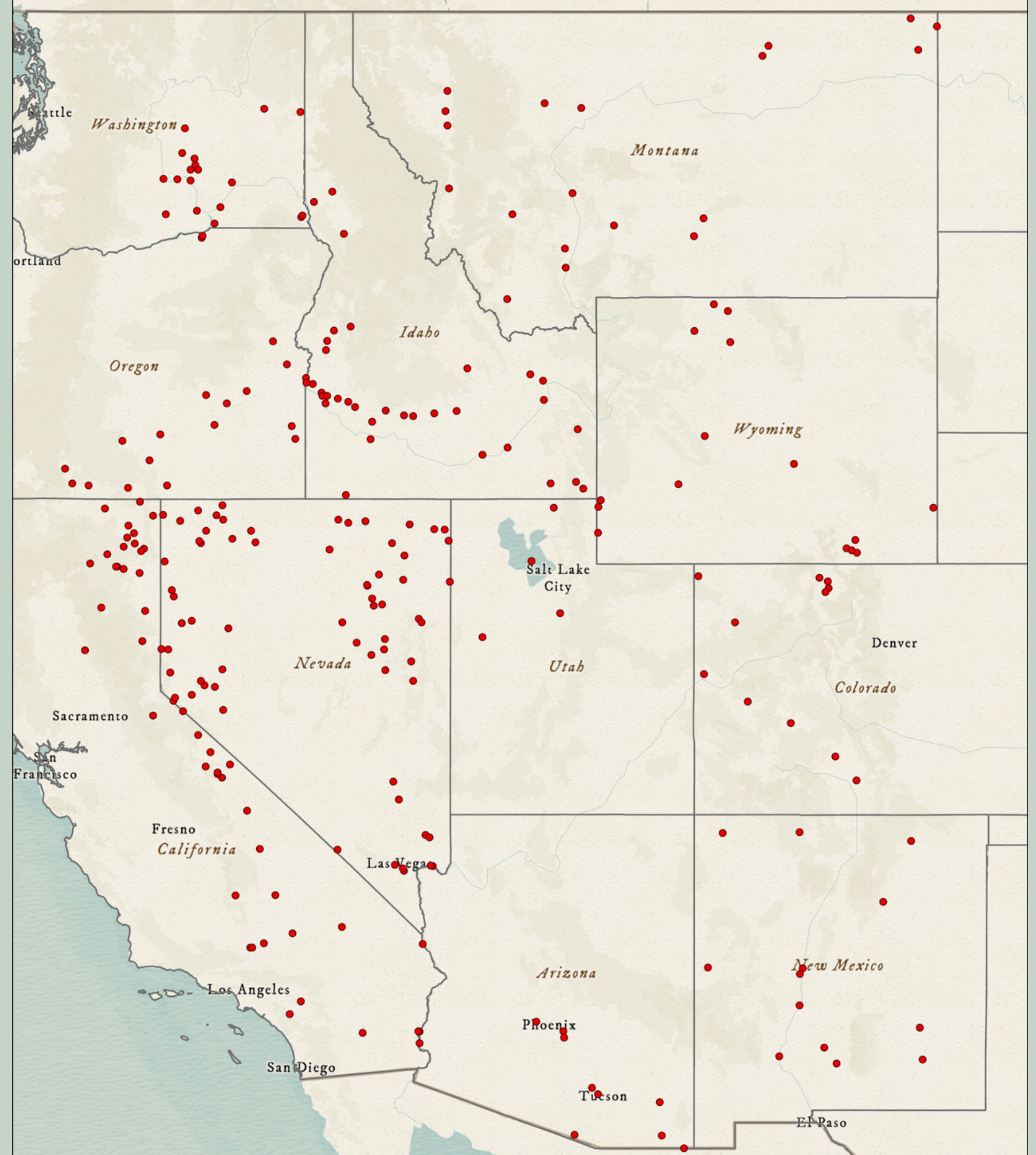
- How many shorebirds does the GSL Ecosystem sustain?
- What is the value of a wetland compared to others within the GSL Ecosystem?
- What wetlands are priorities to conserve (i.e., water allocations)?



The Wetland

- How does shorebird use vary across management units in a wetland?
- How does shorebird use increase after phragmites removal?
- Which areas are highest priorities for management?

Intermountain West Survey Sites

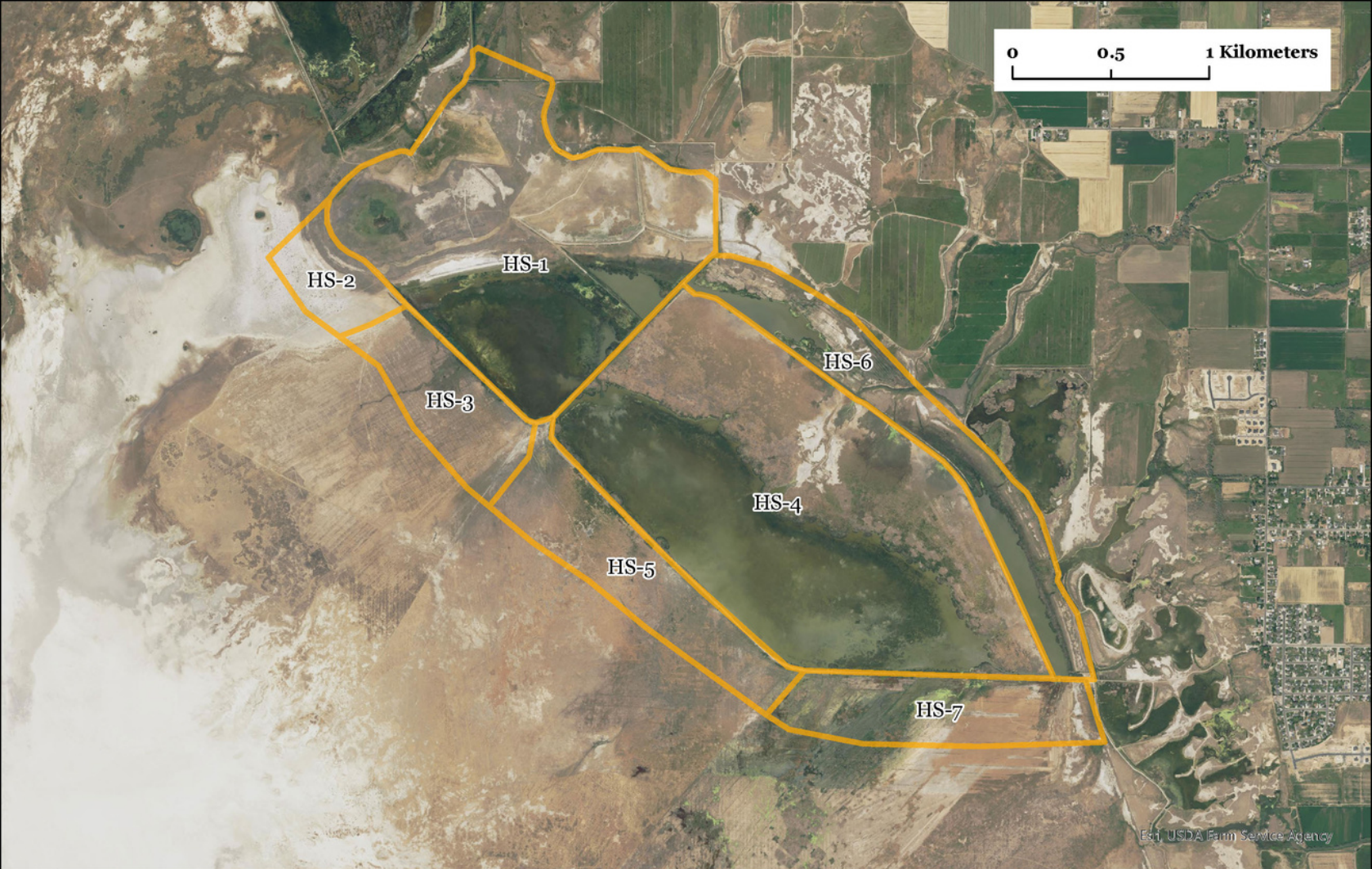


**Snowy
Plover**

GSL Ecosystem Survey Areas



Wetland Sites





Results

...but first, Caveats!

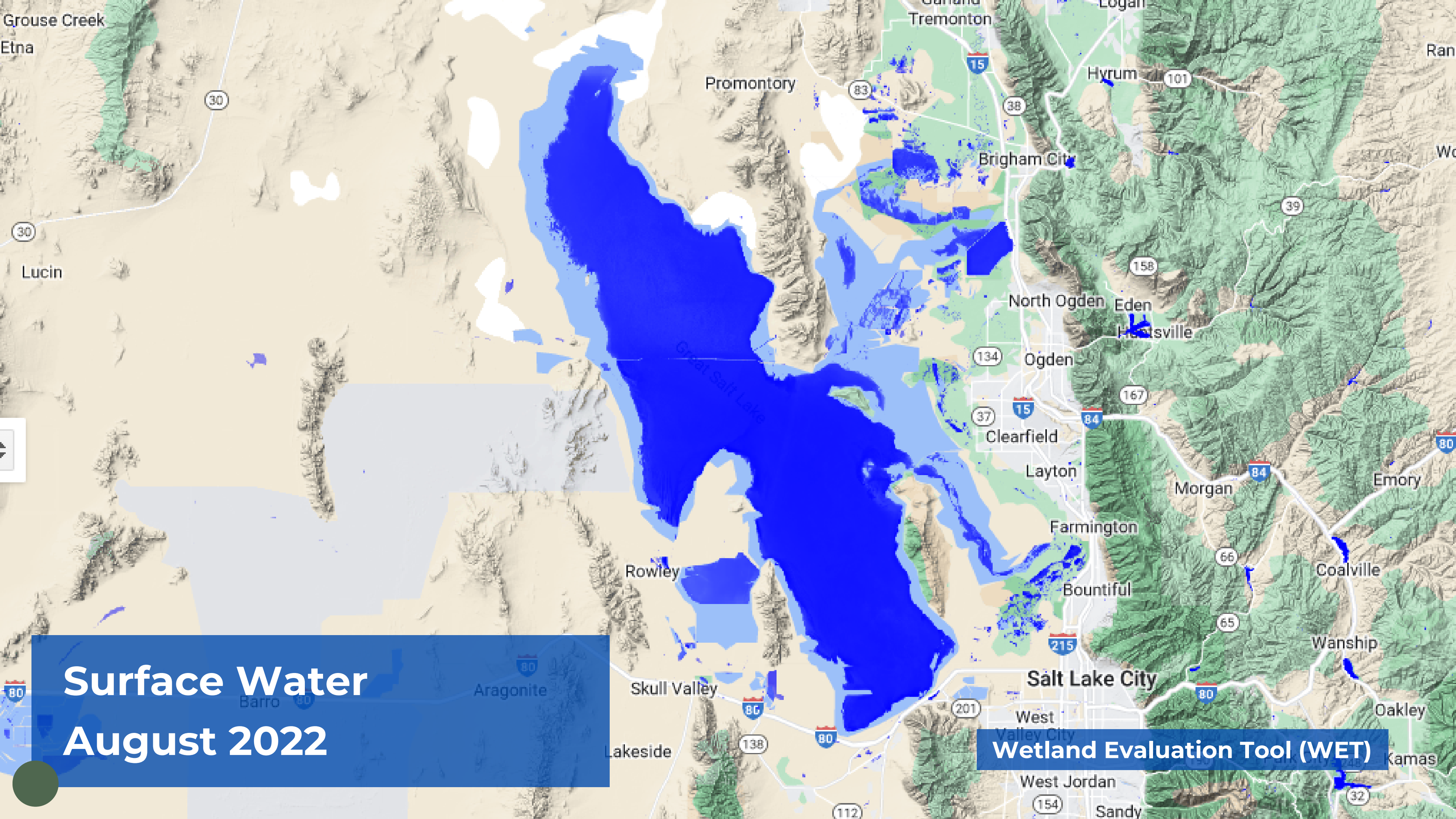
- **August 2022 Peak of Megadrought**
- **2023 Surveys Record Run-off**
- **Results are Uncorrected “Raw” Counts**
- **30-40 Additional Sites in Current Survey**



Prelim Results: GSL

**Lesser
Yellowlegs**





Surface Water
August 2022

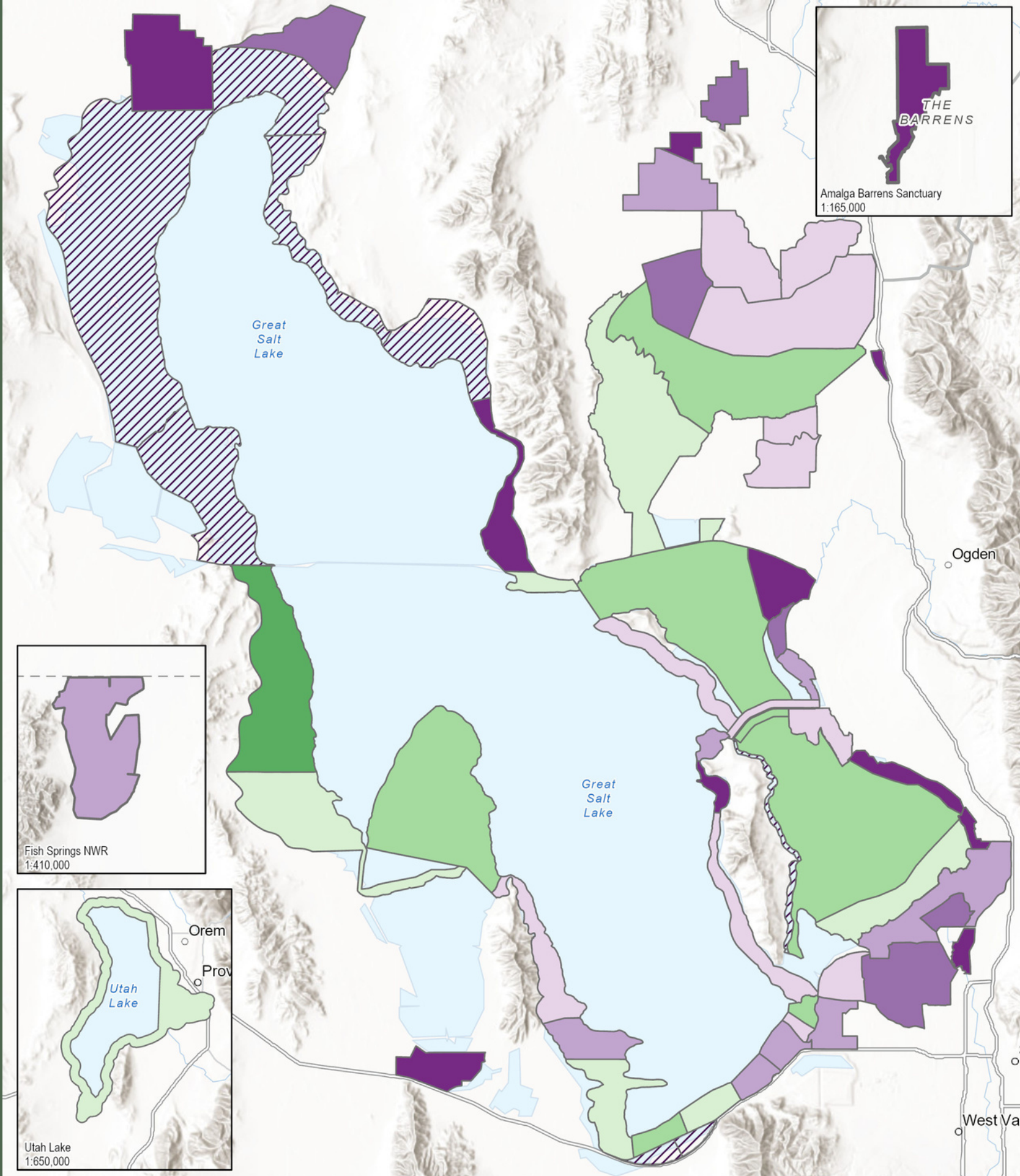
Wetland Evaluation Tool (WET)

Fall 2022

- 228,146 shorebirds
- 29 species
- ~75 percent on lands managed by Utah Division of Forestry, Fire and State Land
- Phalaropes were most abundant (73%)
- American Avocet second most abundant species (13%)

Fall 2022

All Shorebirds



Overall Shorebird Counts -
Fall 2022

0
1 - 199

200 - 499
500 - 999
1000 - 4999

5000 - 9999
10000 - 24999
25000 - 31458

0 5 10 Miles
0 10 20 Kilometers

N

Intermountain West
Shorebird Survey



Winter 2022-2023...



Surface Water
April 2023

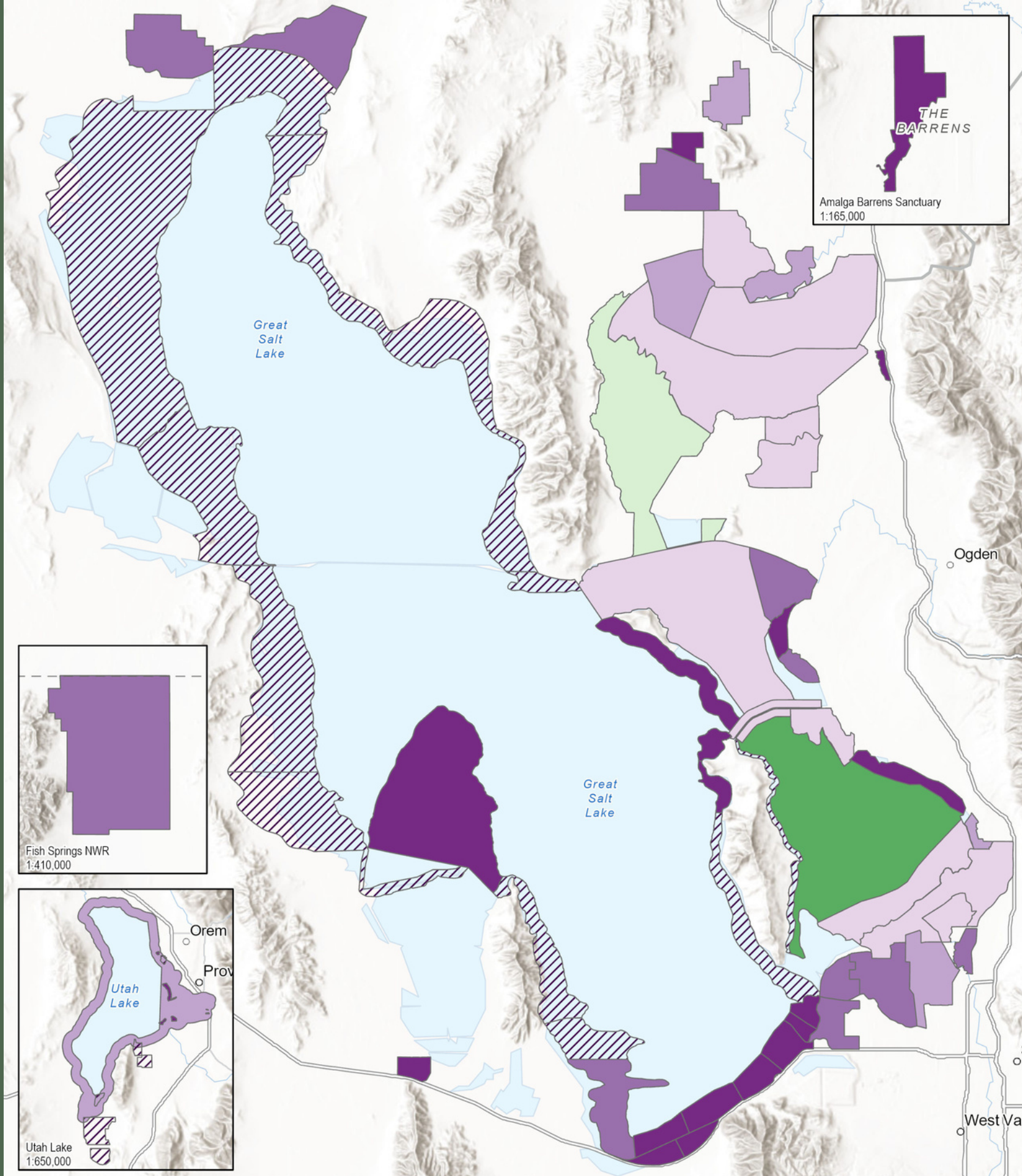
Wetland Evaluation Tool (WET)

Spring 2023

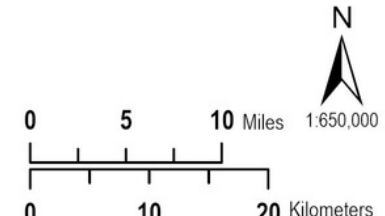
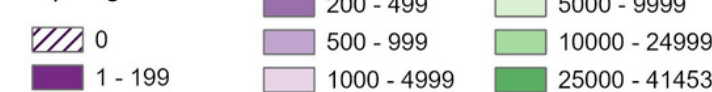
- 84,128 shorebirds
- 23 species
- American Avocet most abundant species (49.9%)
- Phalaropes second most abundant (26.5%)
- 65.4% were on lands managed by Utah Division of Forestry, Fire and State Land
- Division of Wildlife Resource's Waterfowl Management Areas second highest counts (11.5%)

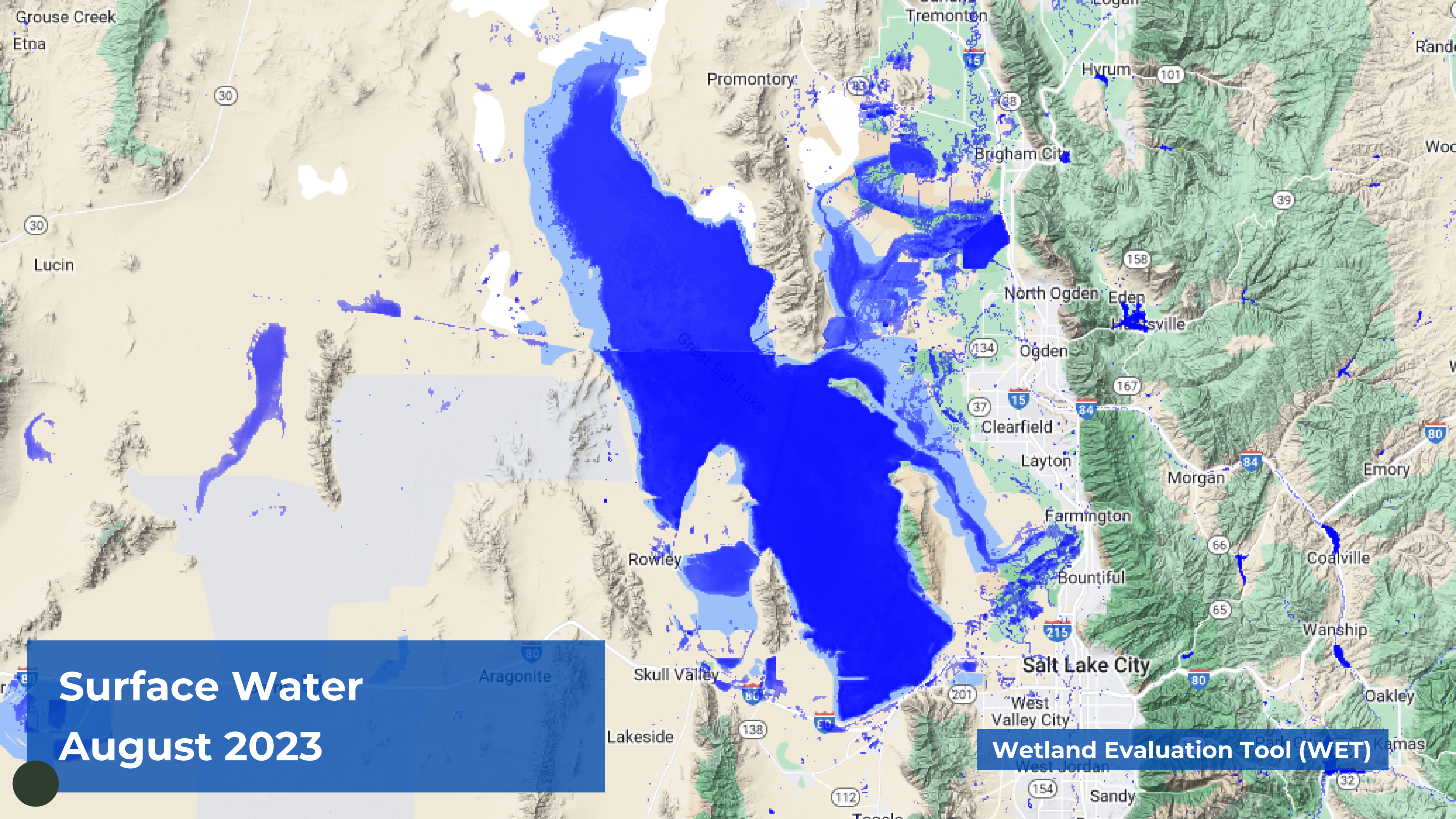
Spring 2023

All Shorebirds



Overall Shorebird Counts -
Spring 2023





Surface Water August 2023

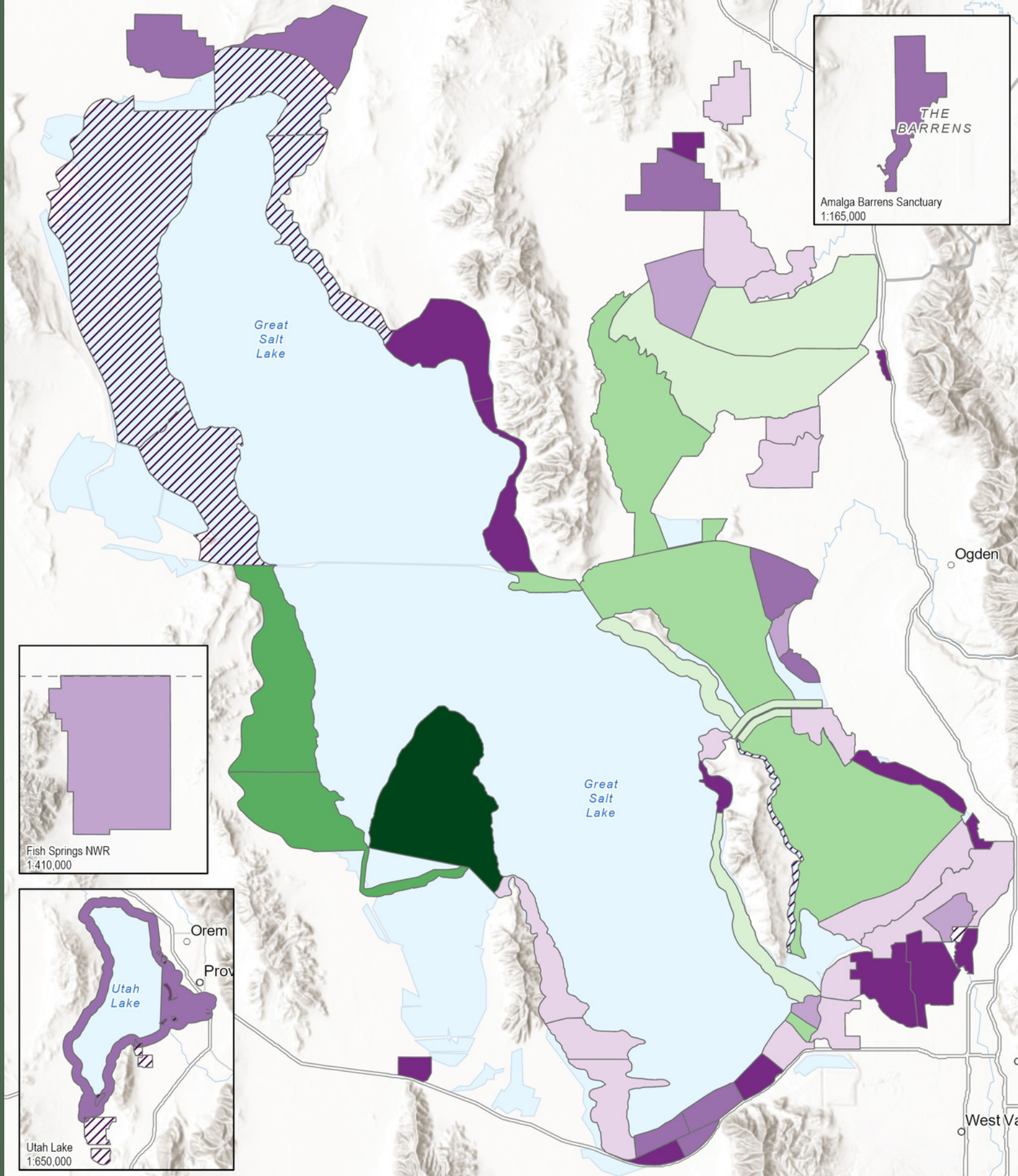
Wetland Evaluation Tool (WET)

Fall 2023

- **295,088 shorebirds**
- **30 species**
- **Phalaropes most abundant species (68.9%)**
- **American Avocets second most abundant (17.4%)**

Fall 2023

All Shorebirds



Overall Shorebird Counts -
Fall 2023



Shorebirds x Phragmites Management

TOTAL SHOREBIRDS



0



1 - 150



151 - 300



301 - 450



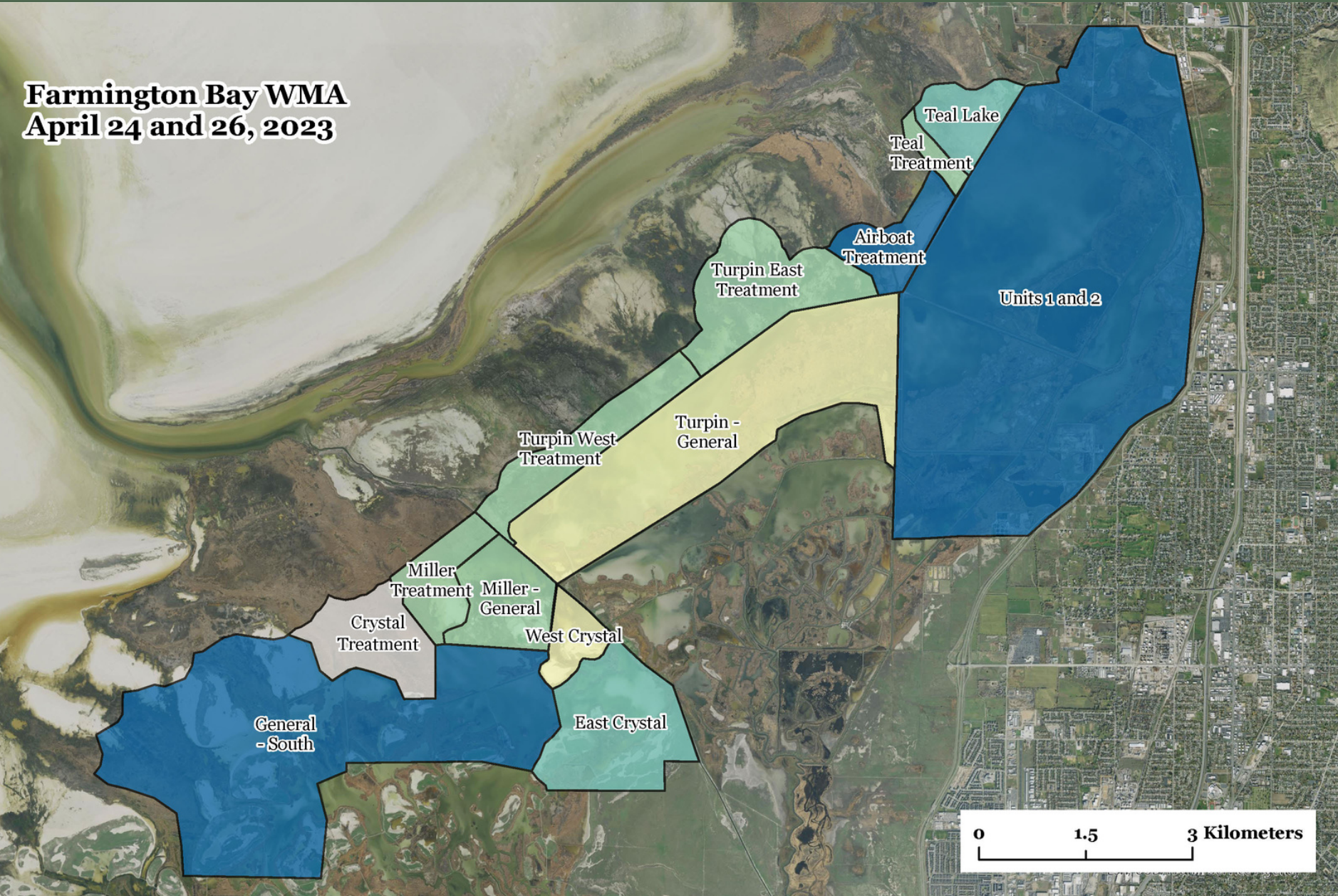
451 - 600



601 - 845

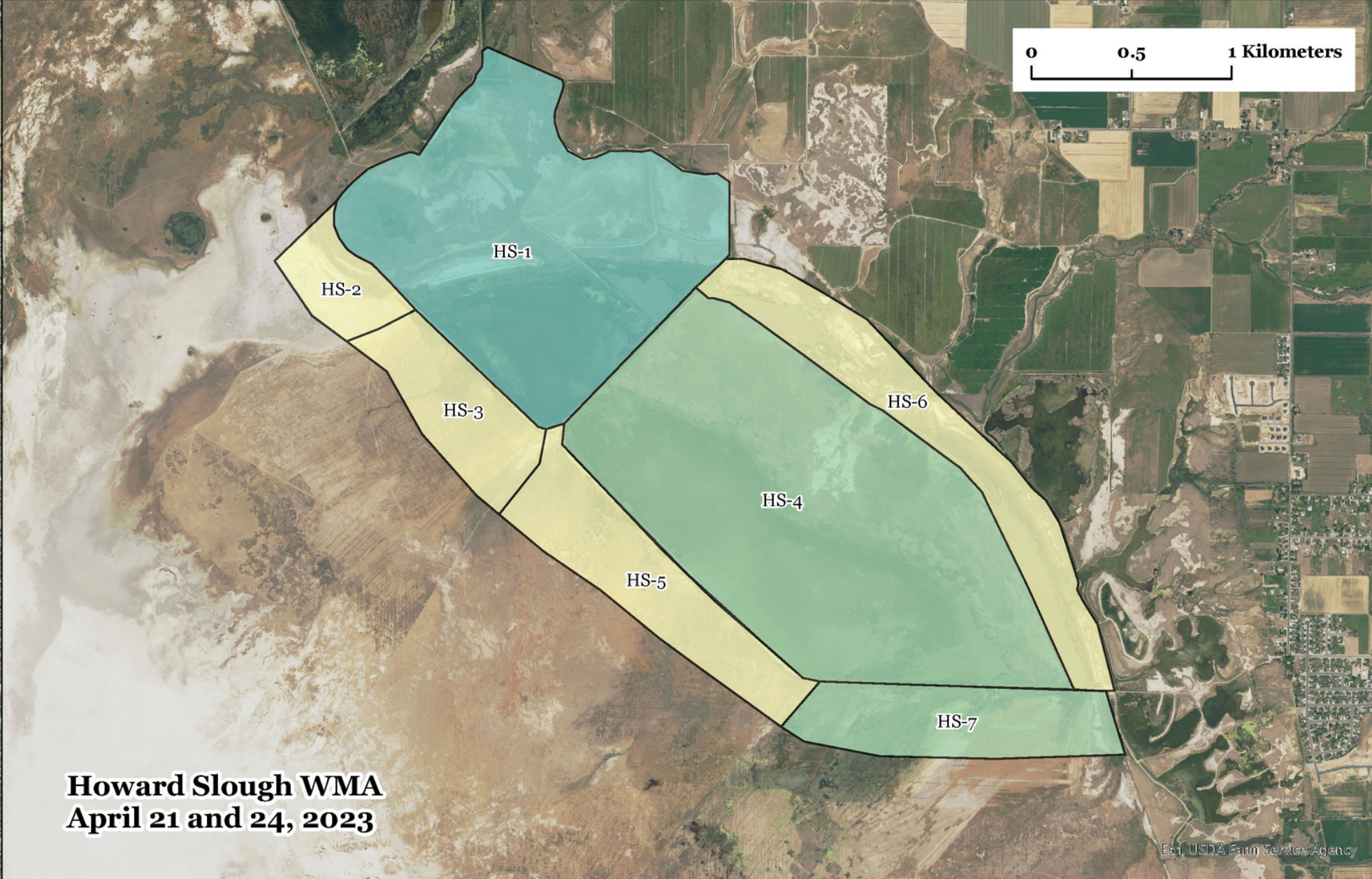


Farmington Bay WMA
April 24 and 26, 2023



0 0.5 1 Kilometers

Howard Slough WMA
April 21 and 24, 2023

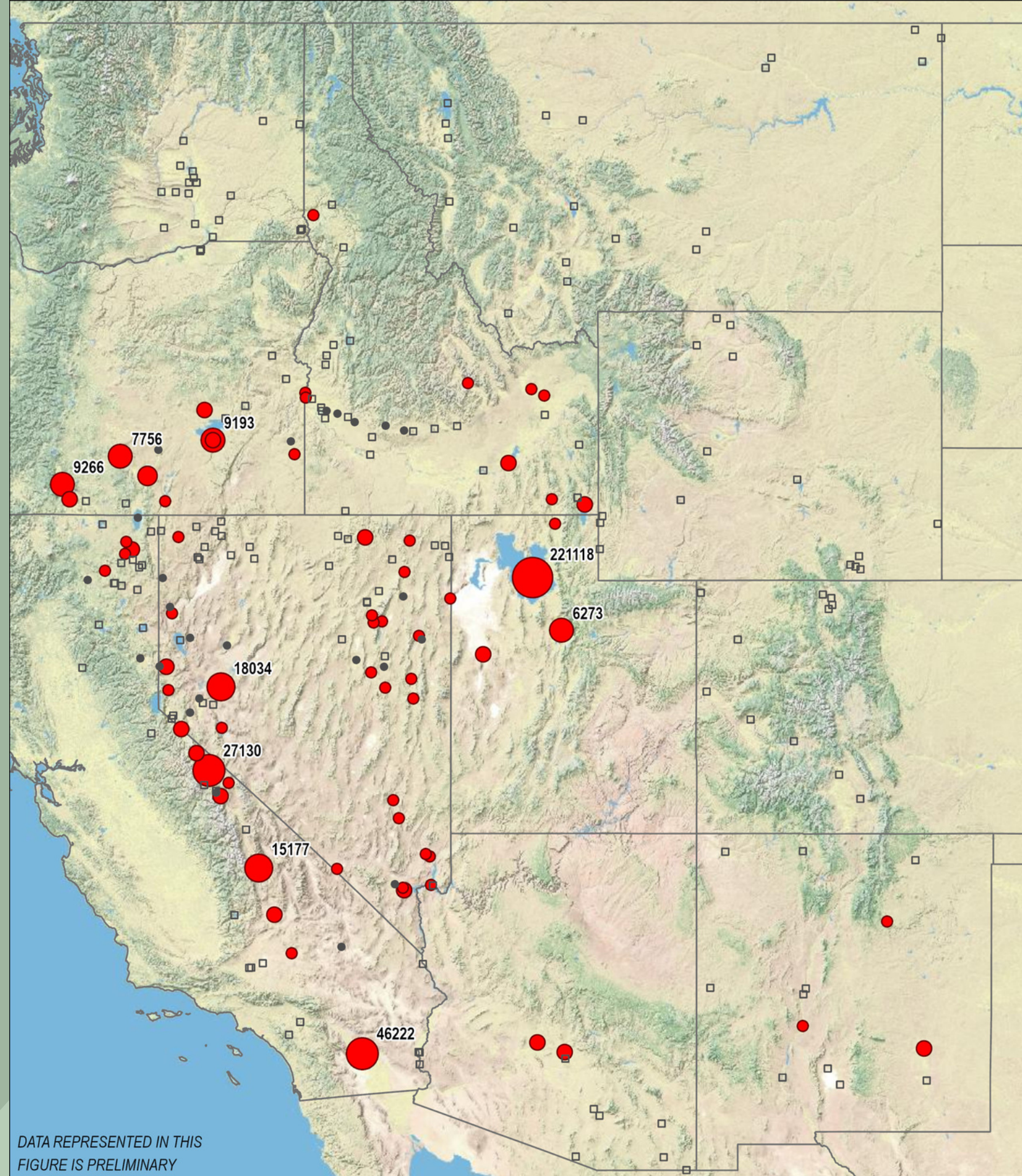


Prelim Results: Regional

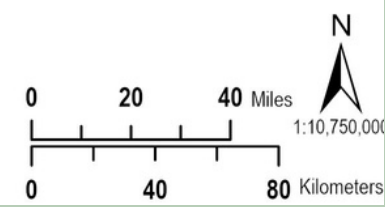
**Wilson's
Phalarope**



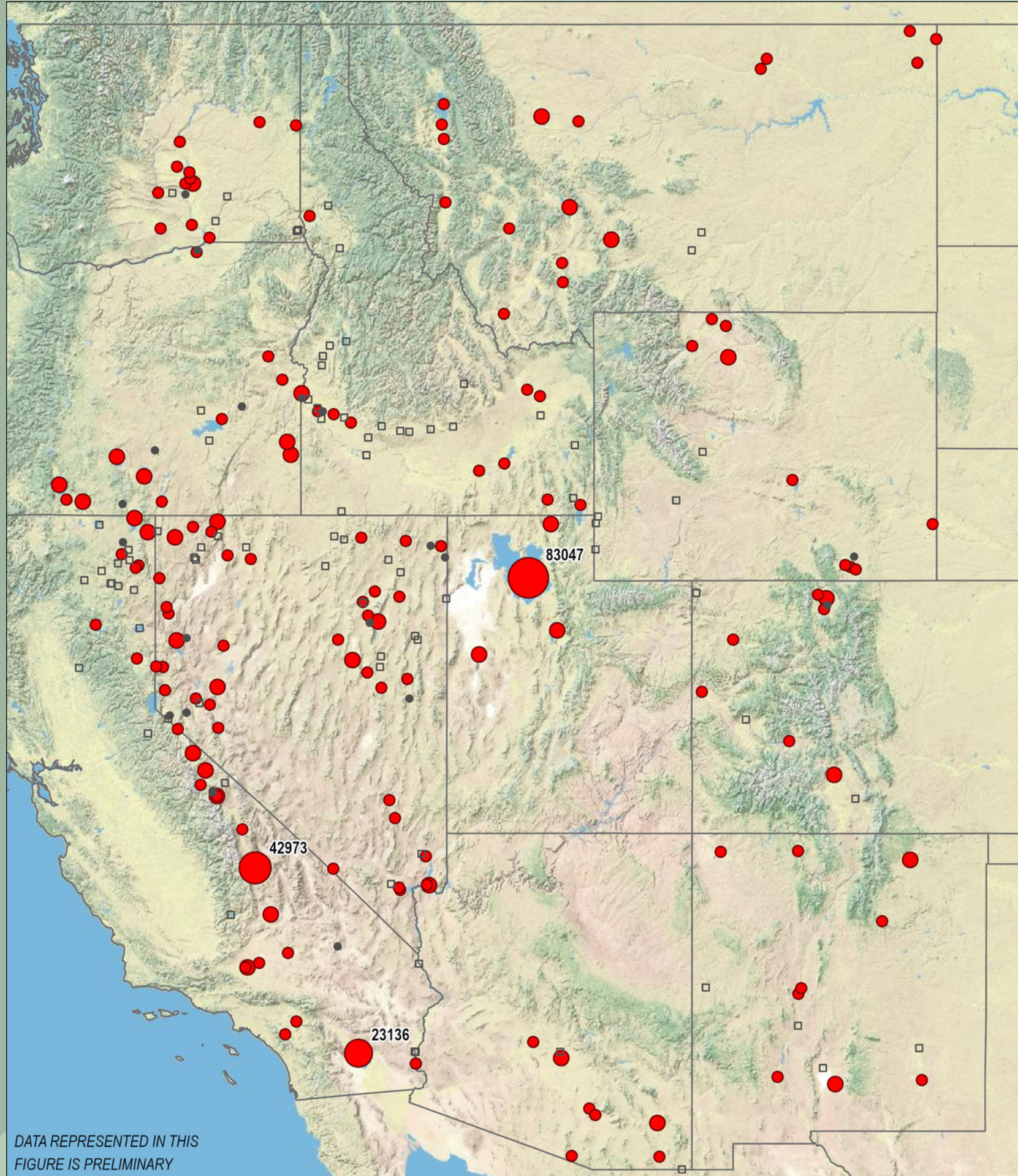
Fall 2022 Regional



Shorebird Survey Sites - Fall 2022

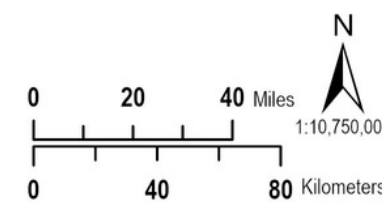


Spring 2023 Regional

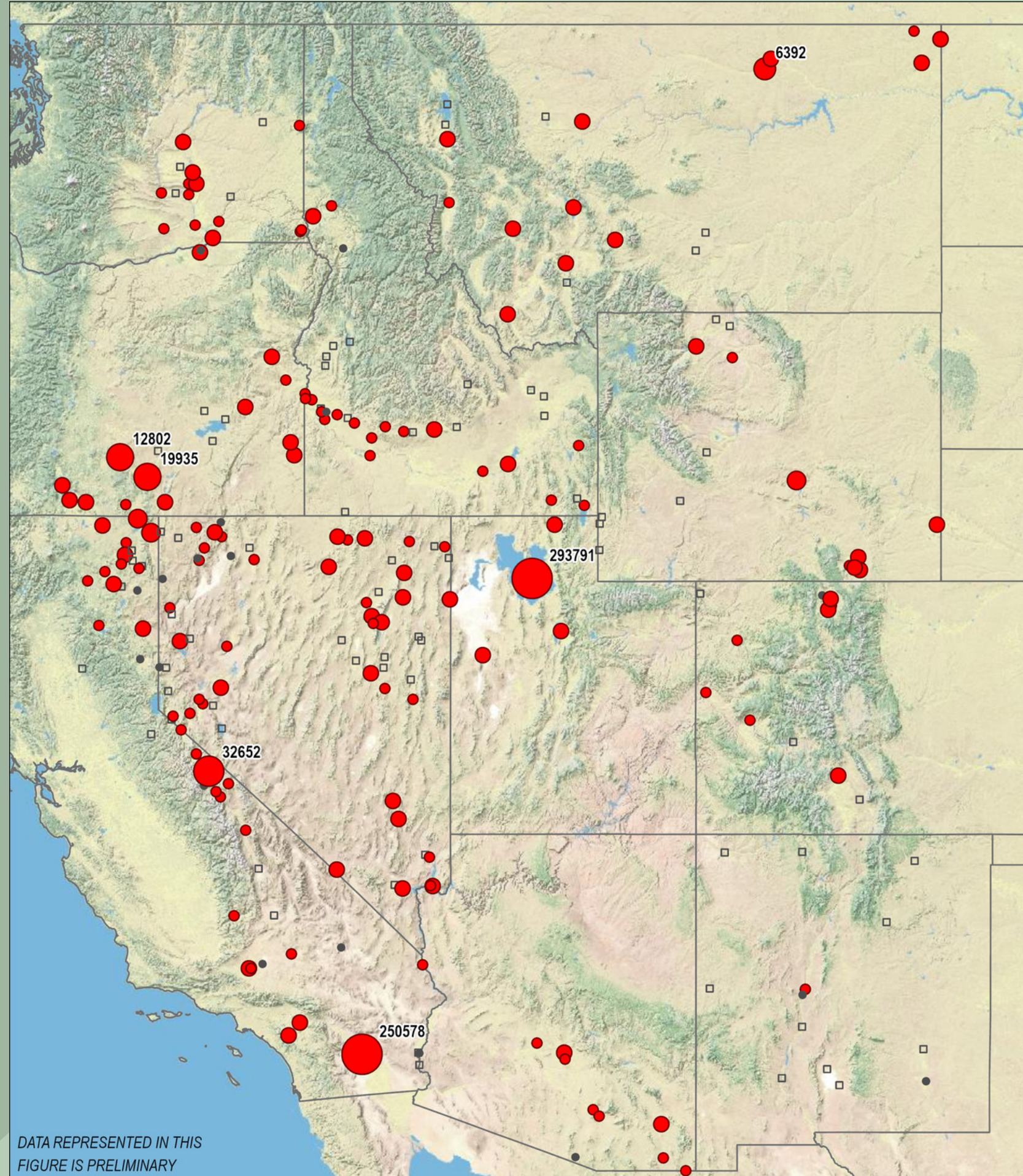


DATA REPRESENTED IN THIS
FIGURE IS PRELIMINARY

Shorebird Survey Sites - Spring 2023

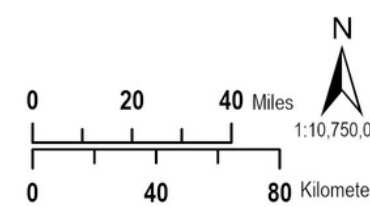


Fall 2023 Regional



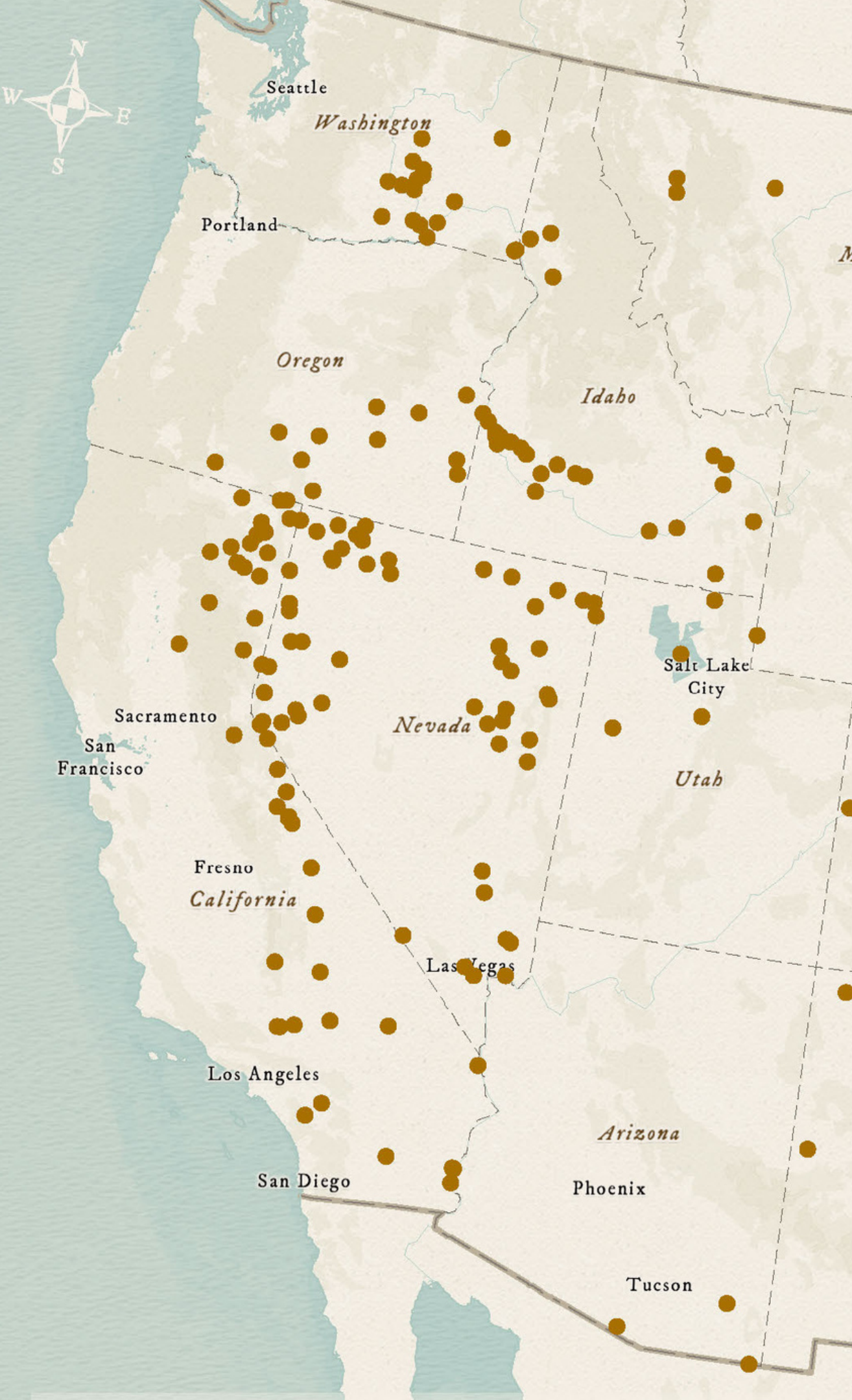
DATA REPRESENTED IN THIS
FIGURE IS PRELIMINARY

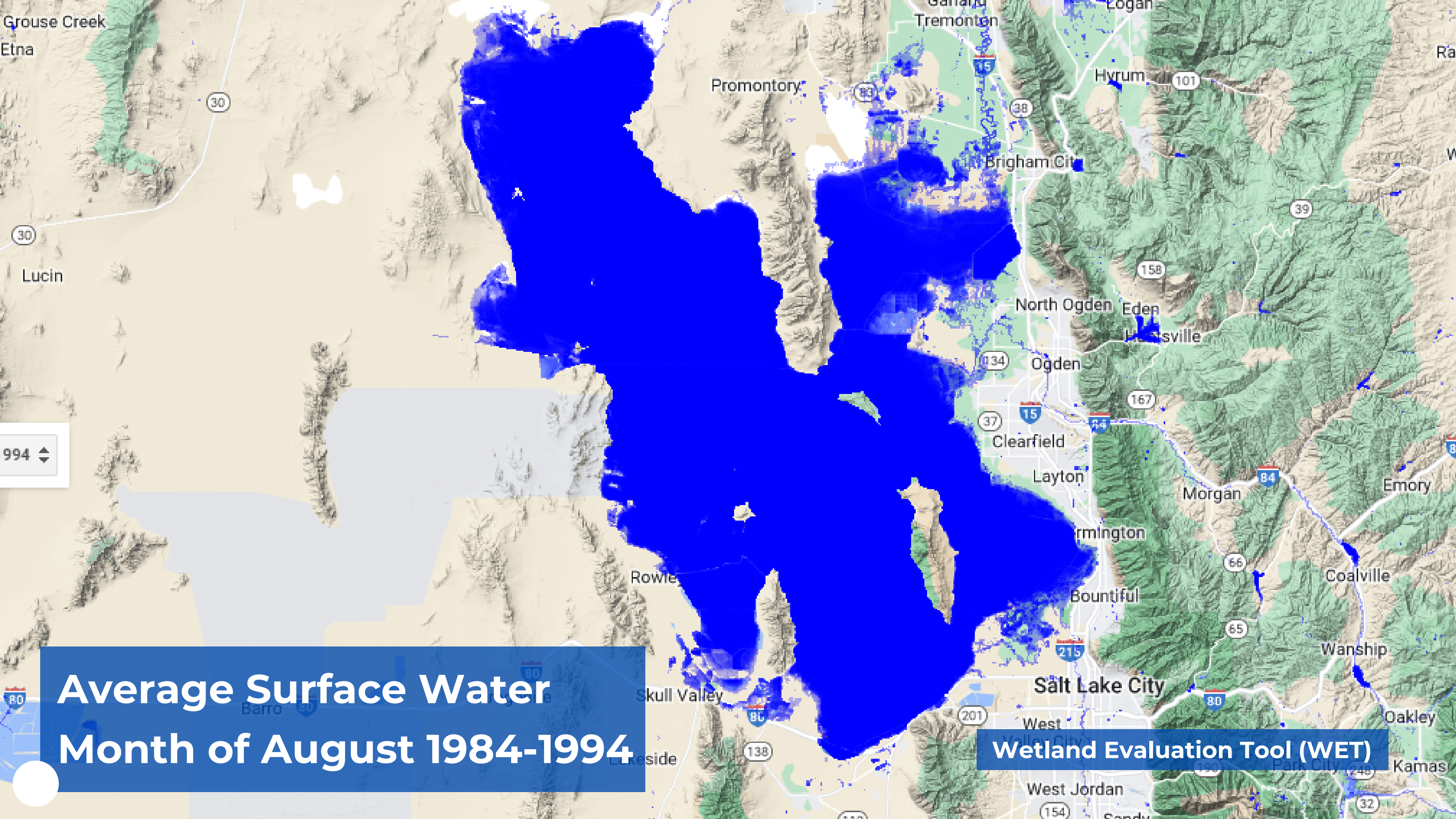
Shorebird Survey Sites - Fall 2023



Regionwide Comparisons Then vs. Now

Season and Year	Shorebird Counts (All Species)
Fall Migrations 1989-1995	670,953 (median)
Fall Migration 2022	366,659
Fall Migration 2023	608,134
Spring Migration 1989-1995	271,902 (median)
Spring Migration 2023	124,043





Average Surface Water Month of August 1984-1994

Wetland Evaluation Tool (WET)

Fall Migration at GSL Then and Now

Species	Fall 1989-1995 Median and Ranges	Fall 2022 and Fall 2023 Ranges
Black-necked Stilt	53,520 (2,904 - 65,570)	(19,025-20,706)
American Avocet	220,272 (25,785 - 252,358)	(25,399 - 51,362)
Marbled Godwit	13,647 (113 - 16,315)	(1,057 - 6,455)
Phalaropes	65,579 (620 - 111,277)	(165,078 - 203,255)

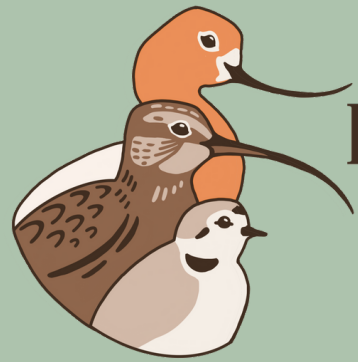


What is Next

- **Shorebird Surveys: April 2024, August 2024, April 2025, August 2025**
- **Refine counts and estimates**
- **Robust GSL and regional comparisons**
- **Wetland Evaluation Tool**
- **Phragmites mapping**
- **Prioritizing wetland and water management based on results**
- **Brine fly research**
- **Flyway connections with our Sister Saline Lakes**



**Least
Sandpiper**



Intermountain West
Shorebird Survey

Thank You!

Max Malmquist | Max.Malmquist@audubon.org

Janice Gardner | janice@sagelandcollaborative.org

Want to join us? Learn more and sign up:
sagelandcollaborative.org/shorebirds

Black-bellied Plover

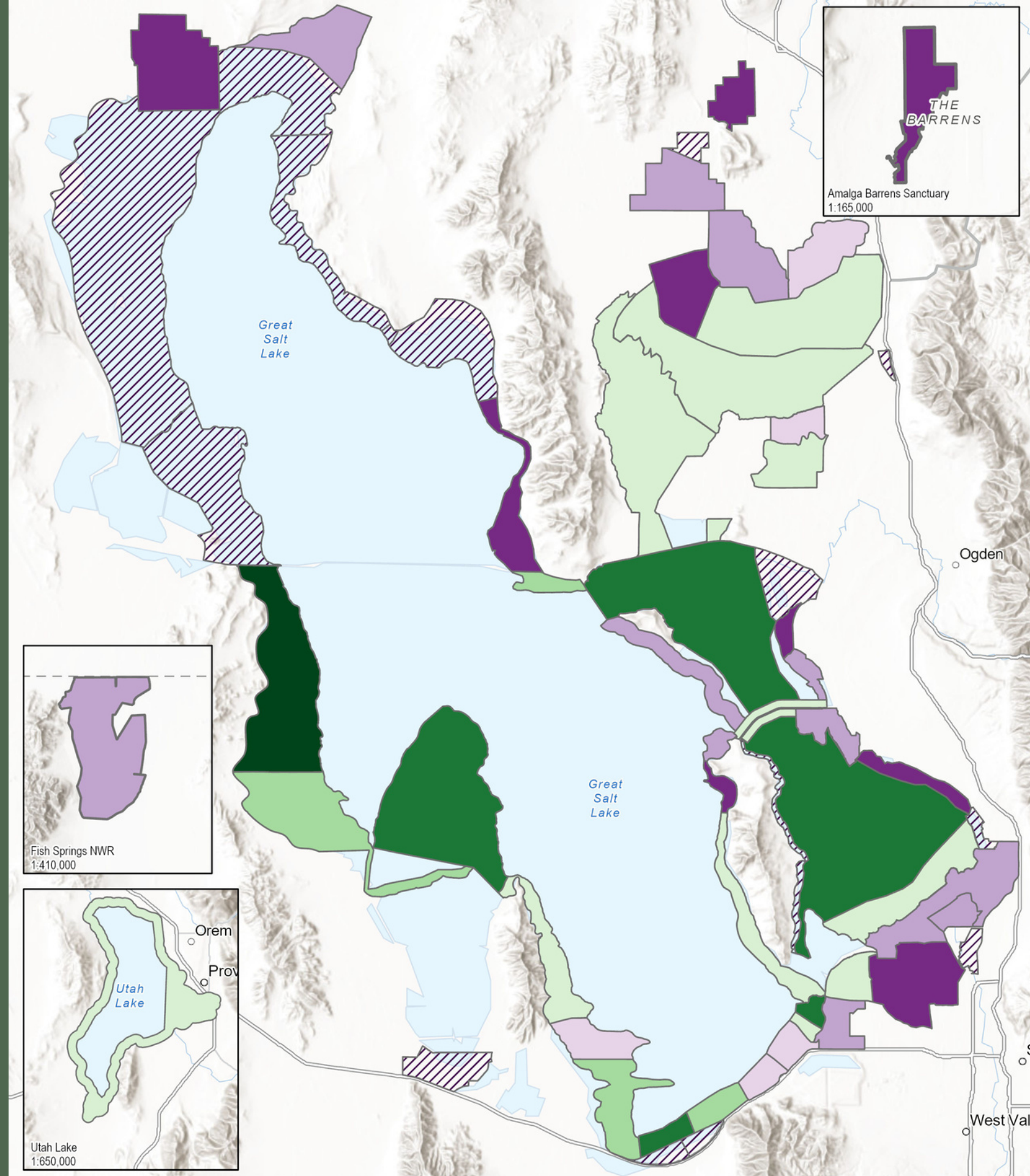


SAGE LAND
COLLABORATIVE



Fall 2022

Phalaropes

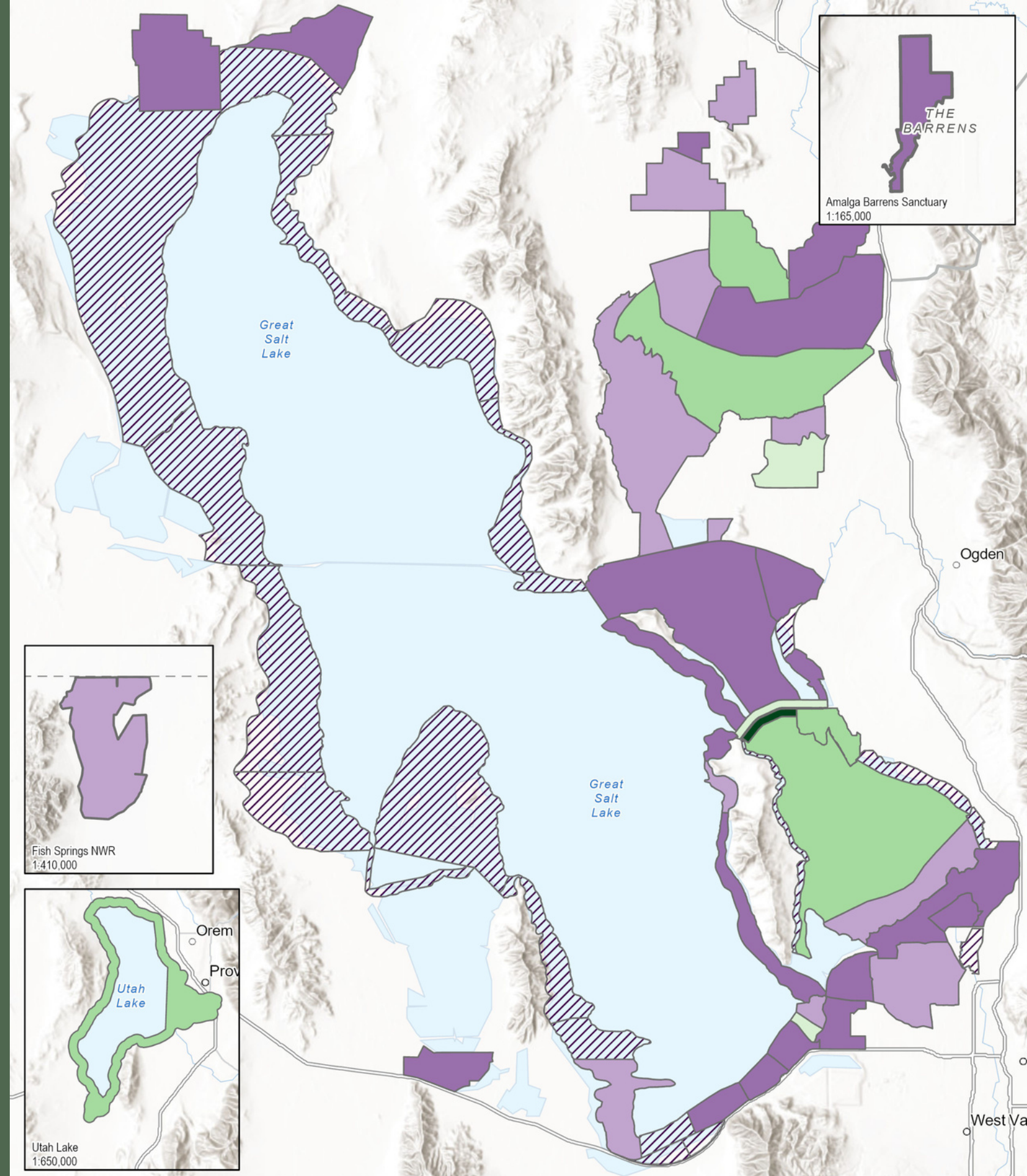


Phalarope Totals (species combined) -
Fall 2022

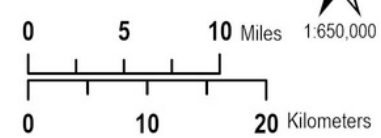
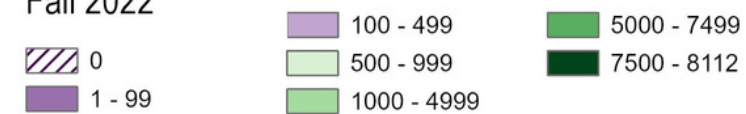


Fall 2022

American Avocet

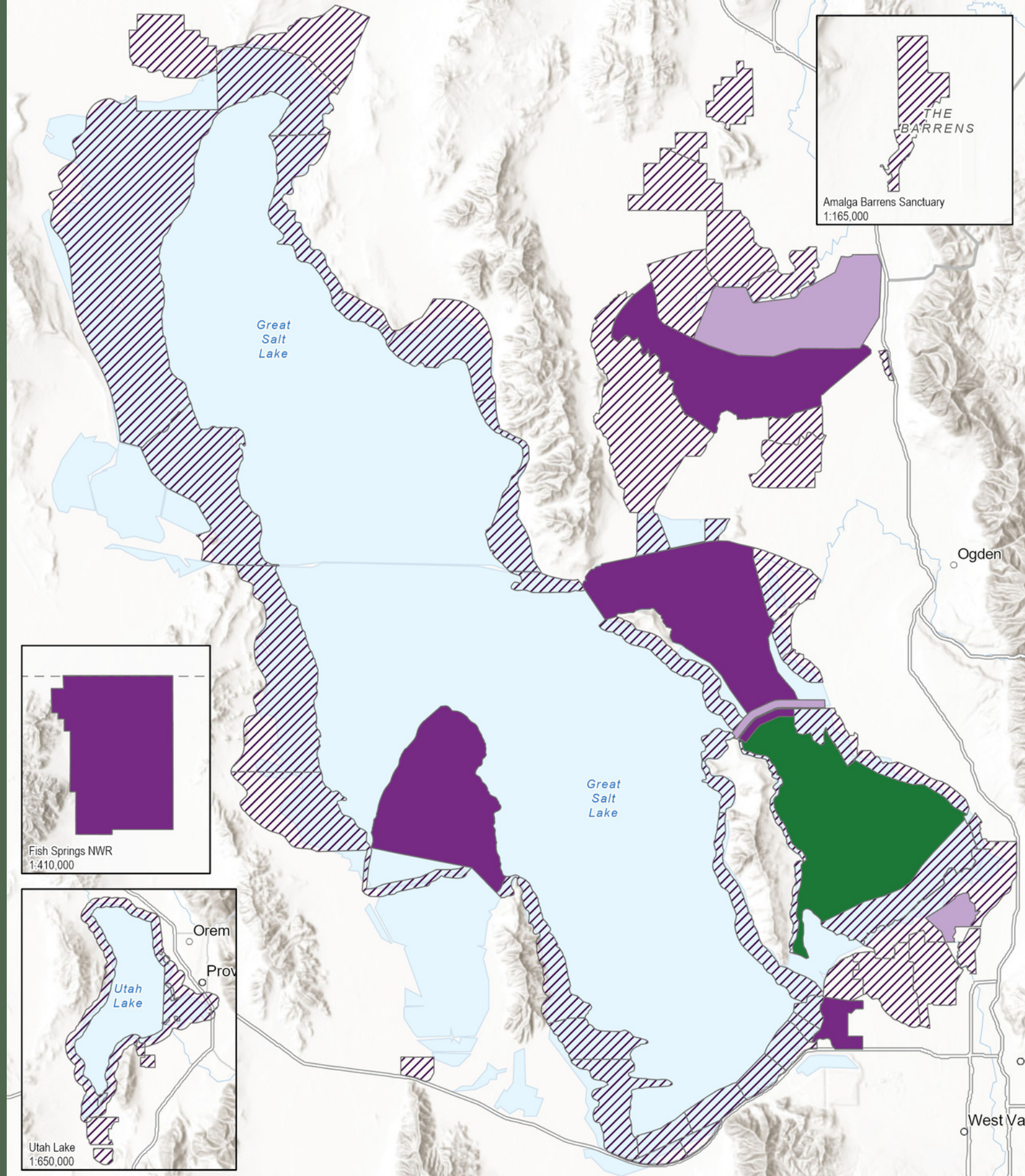


American Avocet Totals -
Fall 2022

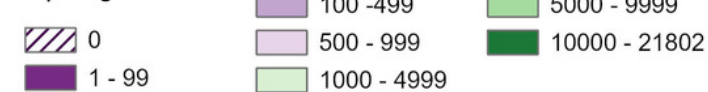


Spring 2023

Phalaropes



Phalarope Totals (species combined) -
Spring 2023

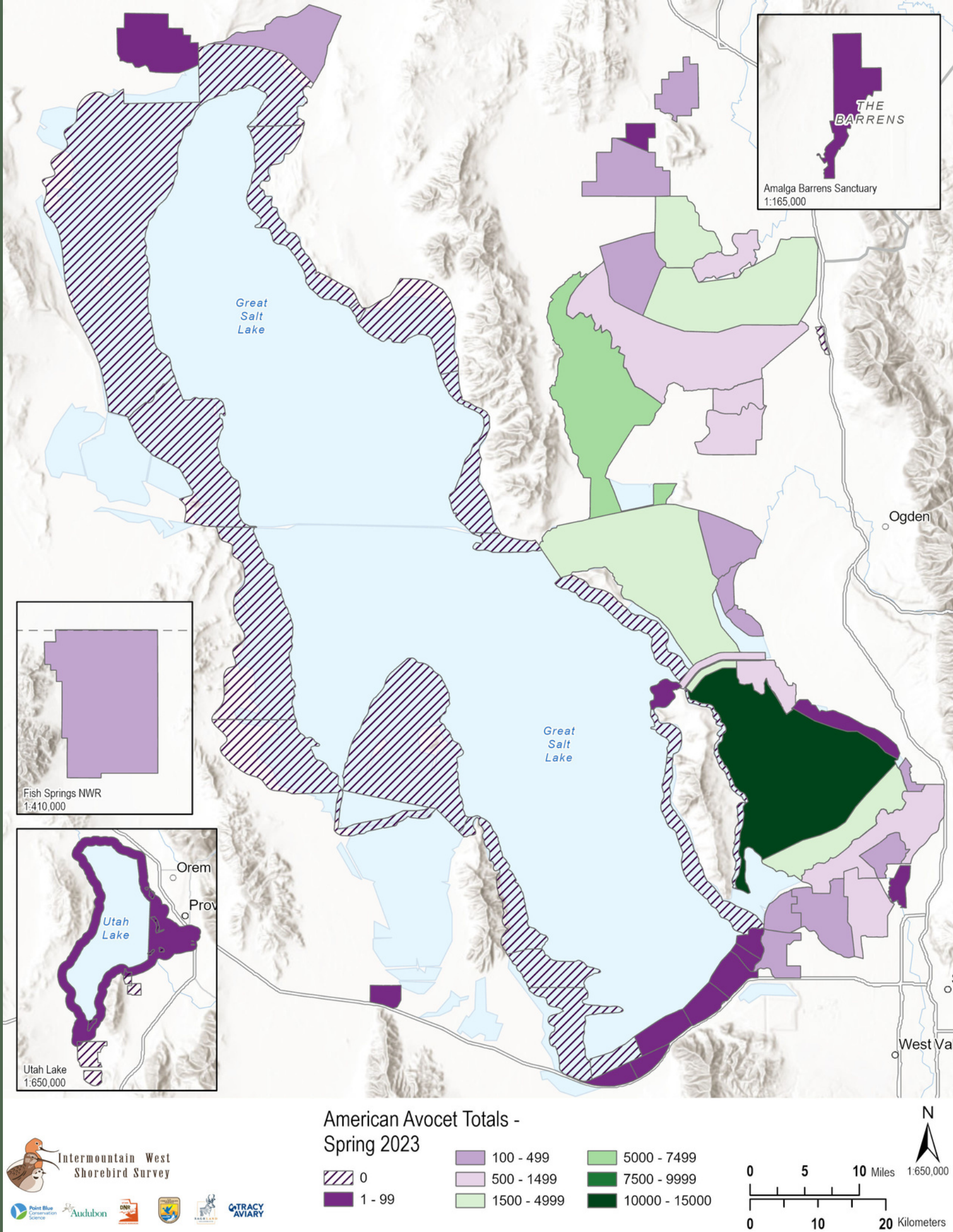


Intermountain West
Shorebird Survey



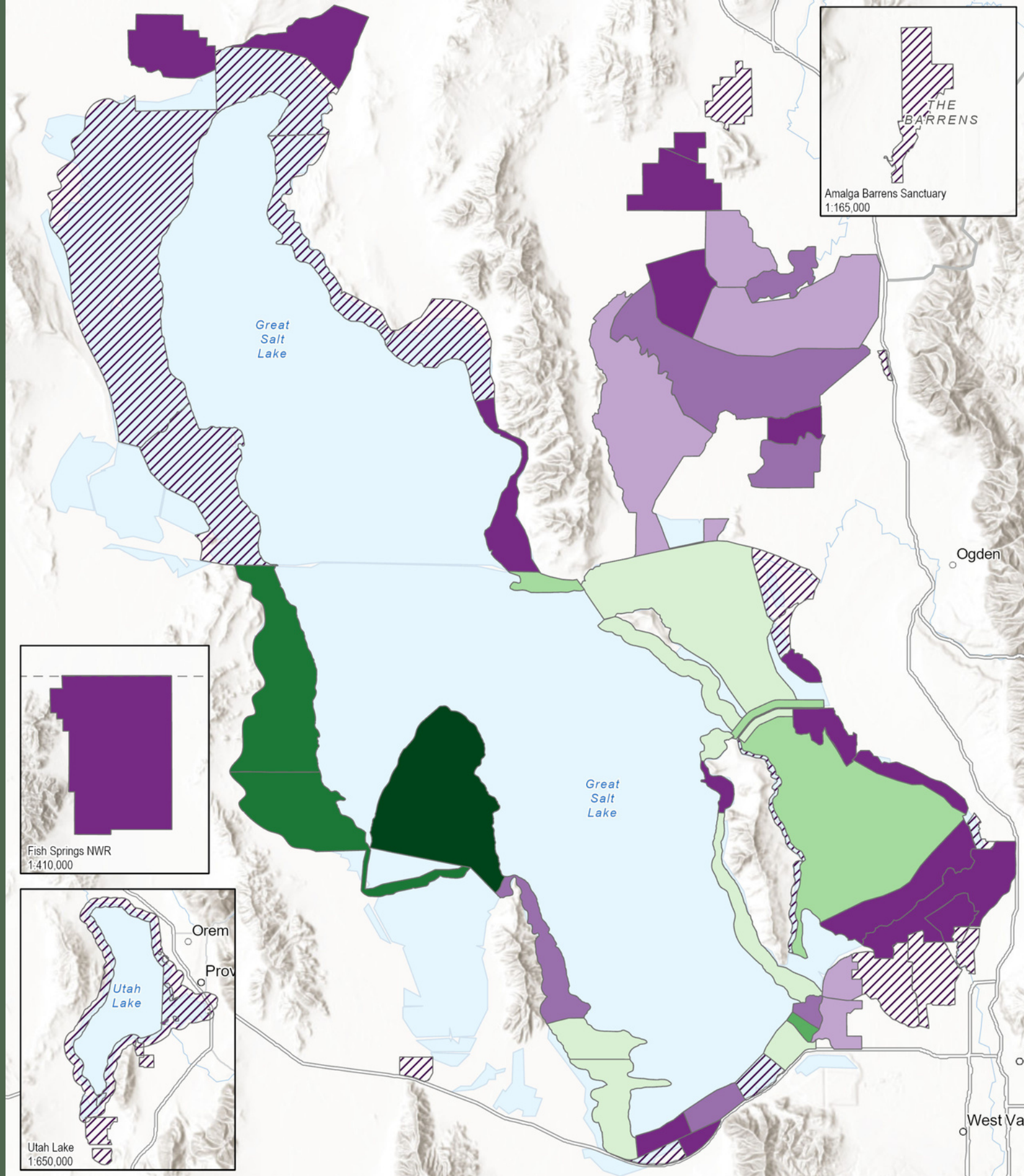
Spring 2023

American Avocet

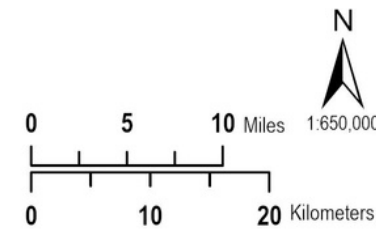


Fall 2023

Phalaropes

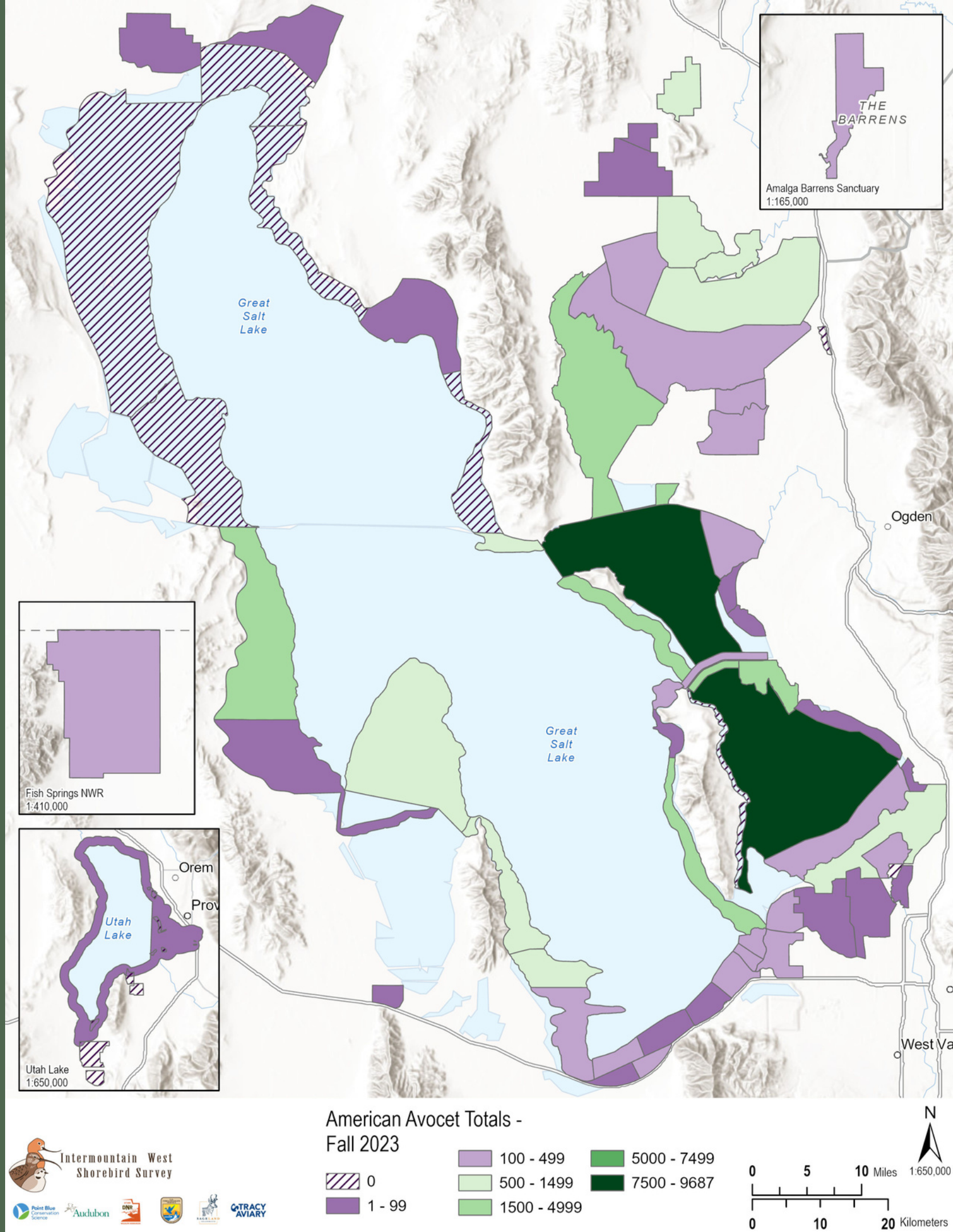


Phalarope Totals (species combined) -
Fall 2023



Fall 2023

American Avocet



Shorebird Survey Sites Then

Shuford et al. (2002)'s 1989-1995 shorebird surveys



Black-necked Stilt

