

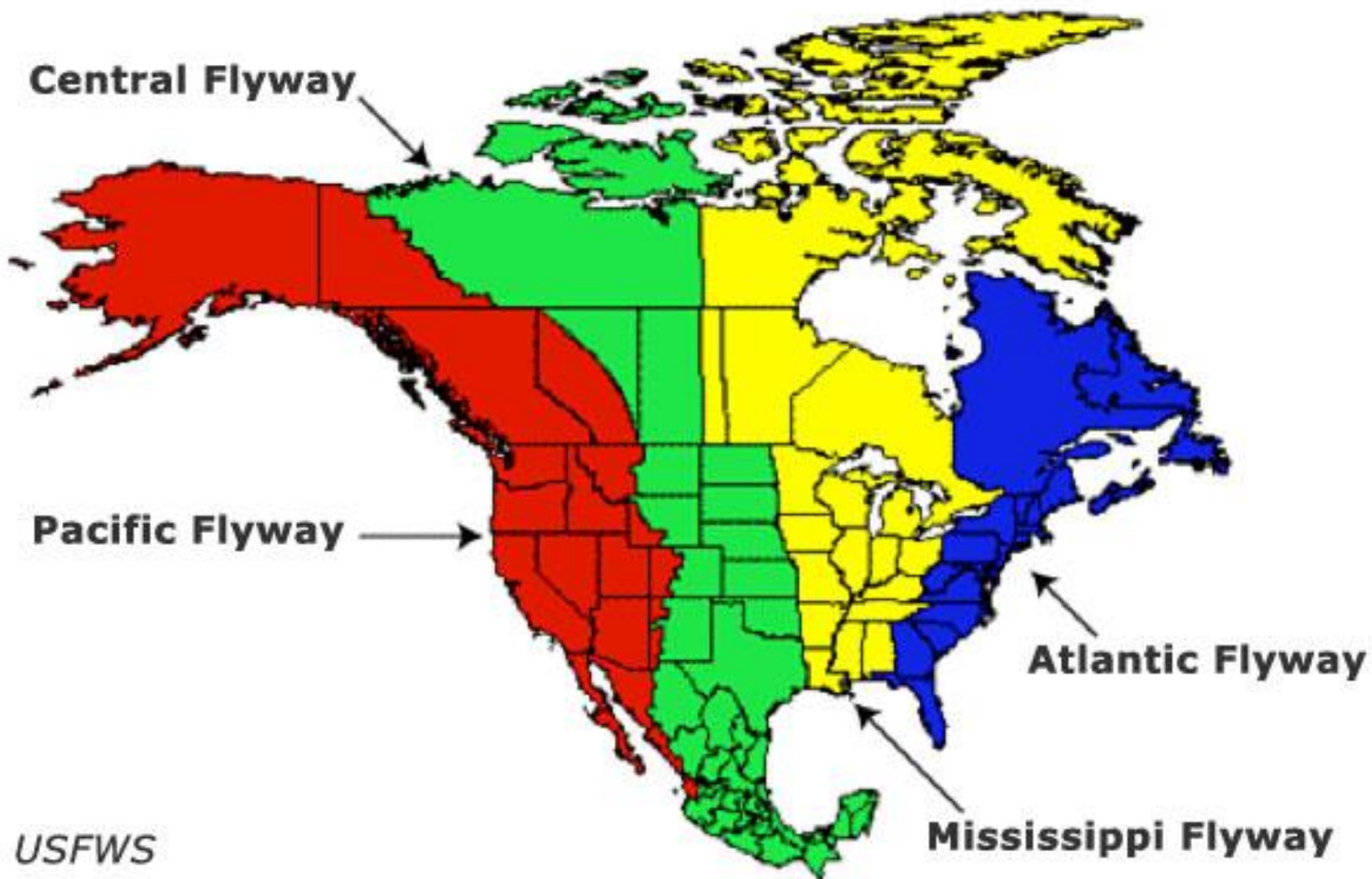
Klamath Basin Wetlands and the Pacific Flyway

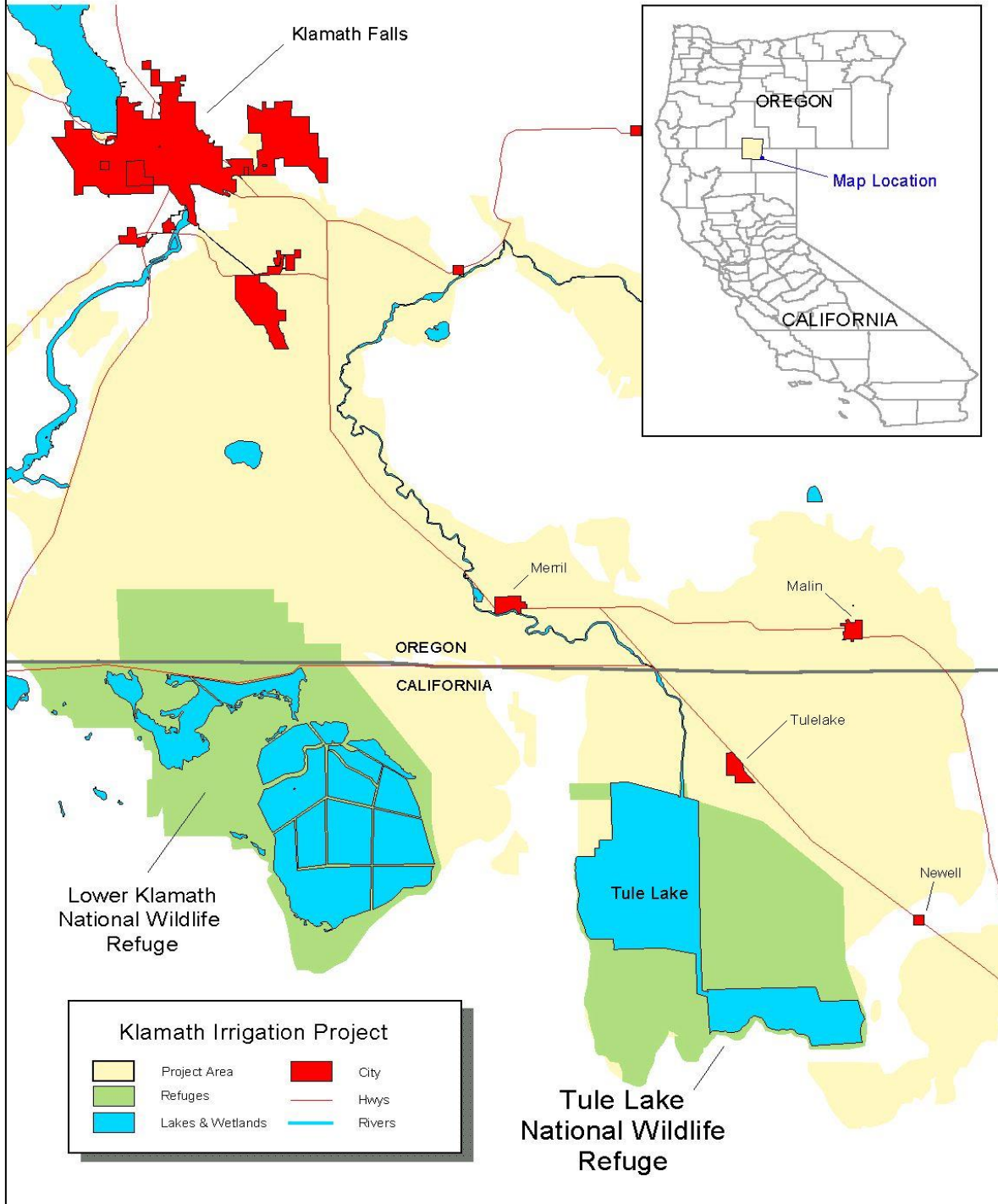
- The Klamath Basin in Context - [Dr. Mark Petrie, Ducks Unlimited](#)
- Truth and Consequences: Science to Inform Decision Making in the Klamath Basin - [Michael Casazza, USGS](#)
- Wetland Systems and Fish Recovery in the Klamath Basin - [John Vradenburg, USFWS](#)



The Klamath Basin in Context

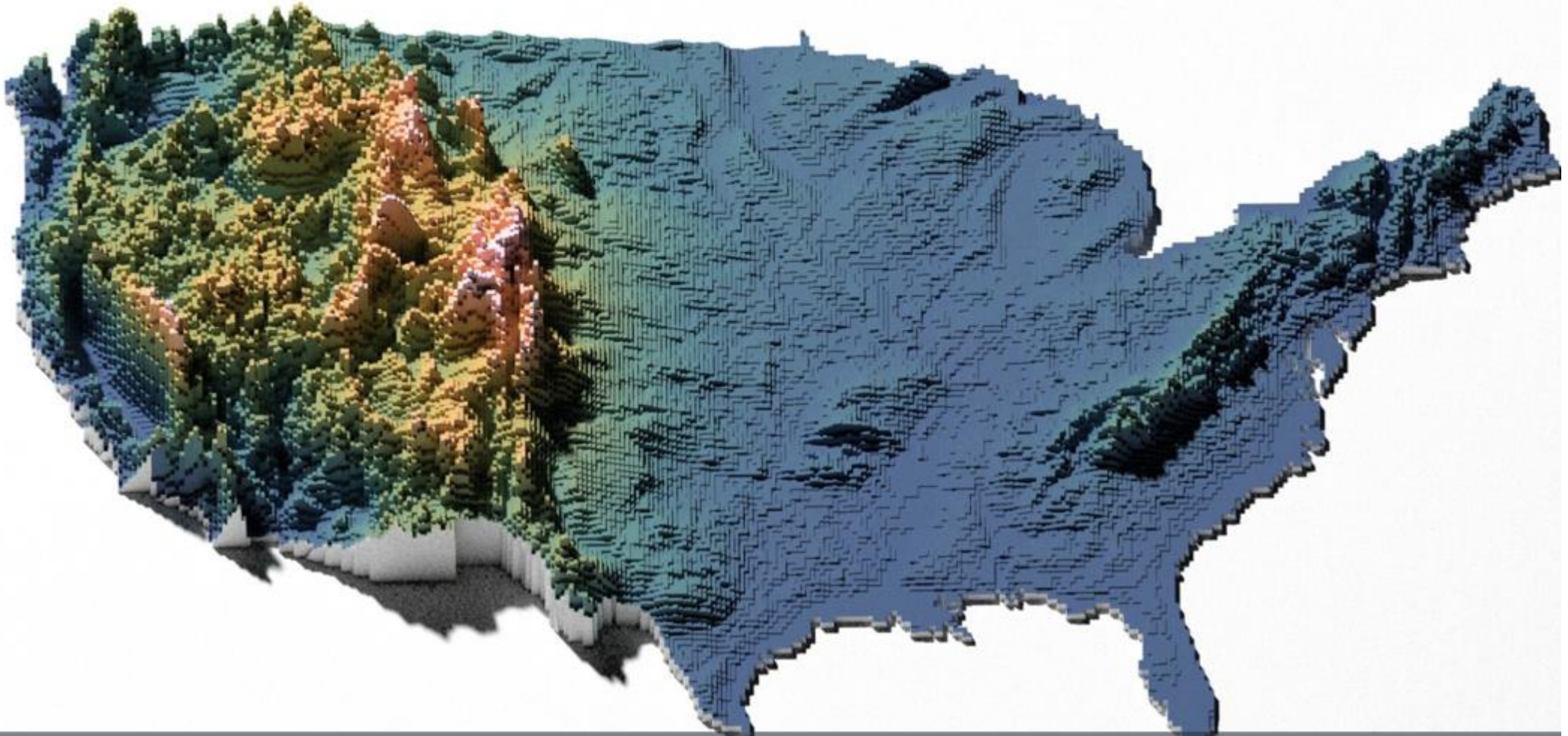
North American Migratory Bird Flyways

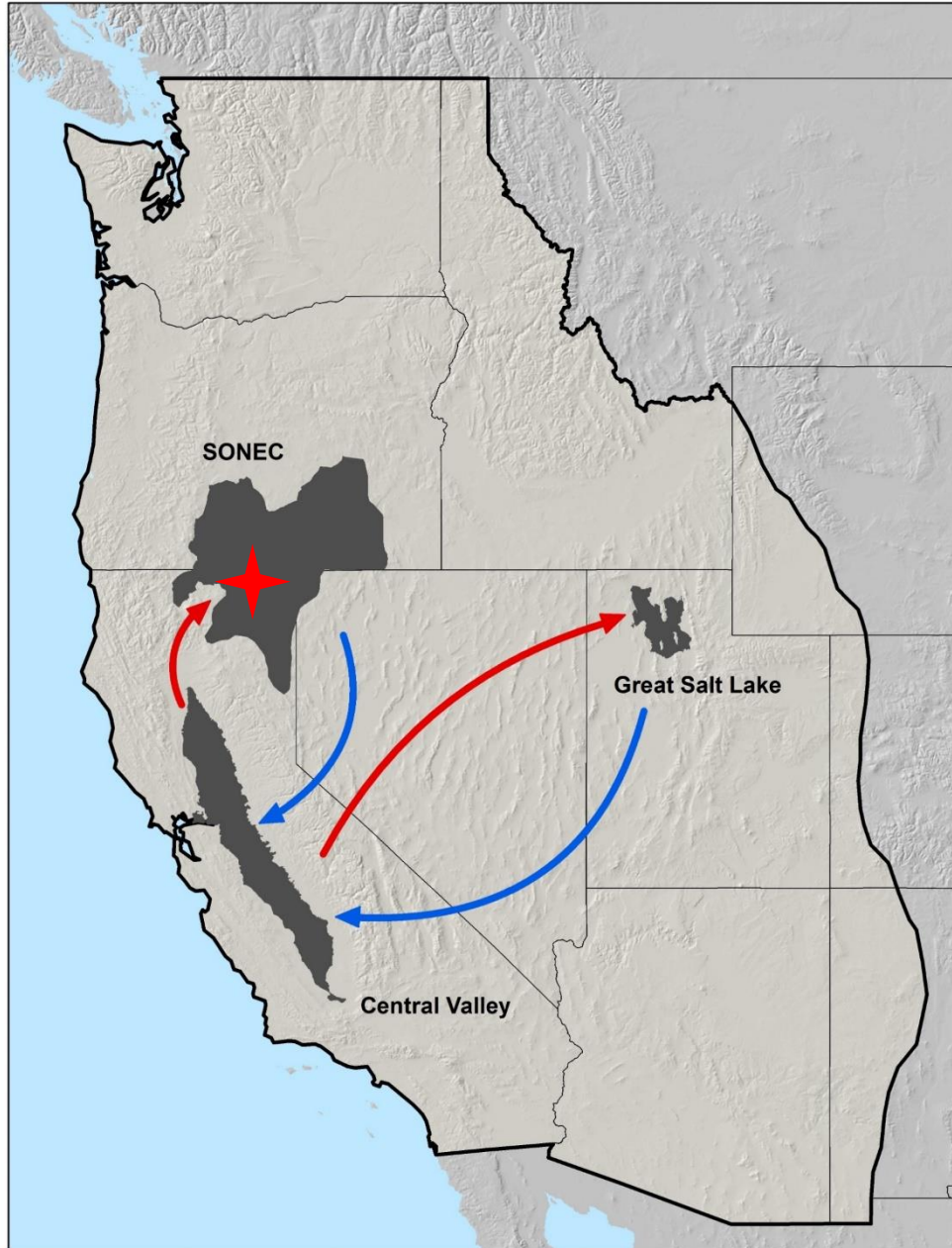




Lower Klamath & Tule Lake
National Wildlife Refuges...small
in the context of the larger refuge system

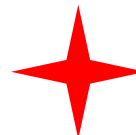
The West is big...but small from a wetland standpoint





The Legs of the Stool...or the “Big Three”

Between September and April
70% of all waterfowl use in the U.S
portion of the Pacific Flyway occurs here.

 Lower Klamath and Tule Lake NWR



Lower Klamath and Tule Lake NWR
have supported 5-6 million
waterfowl during fall

Equally important for many other wetland dependent birds



Lower Klamath Refuge

Normal: 25,000 acres of wetlands

Fall 2022: Predicting 0 acres

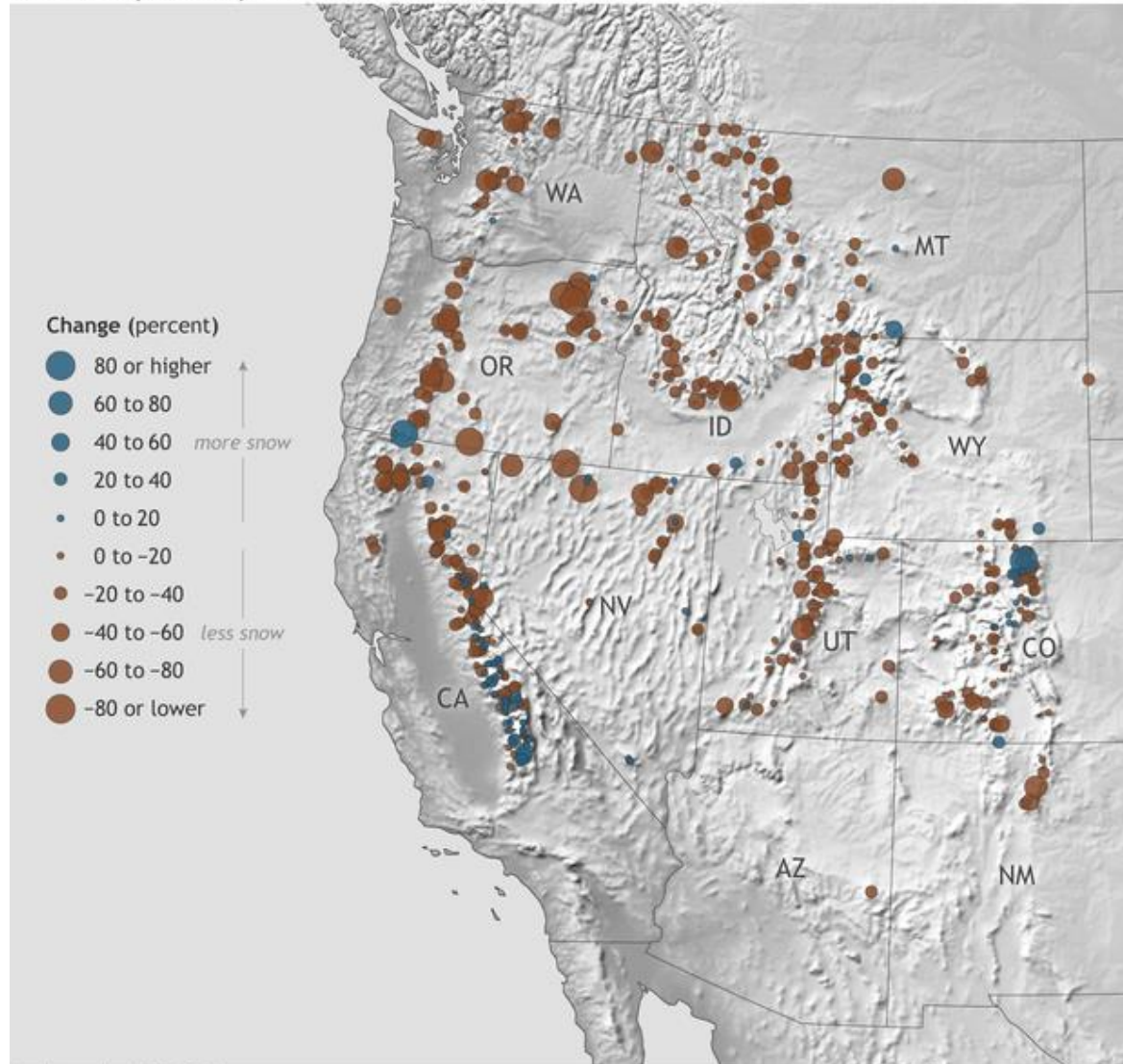
Tule lake Refuge
Normal: 15,000 acres of wetlands
Fall 2022: Predicting 0 acres





How resilient is the Pacific Flyway?

Trends in April snowpack in the U.S. West, 1955–2020



April trends, 1955–2020

NOAA Climate.gov / Data: EPA

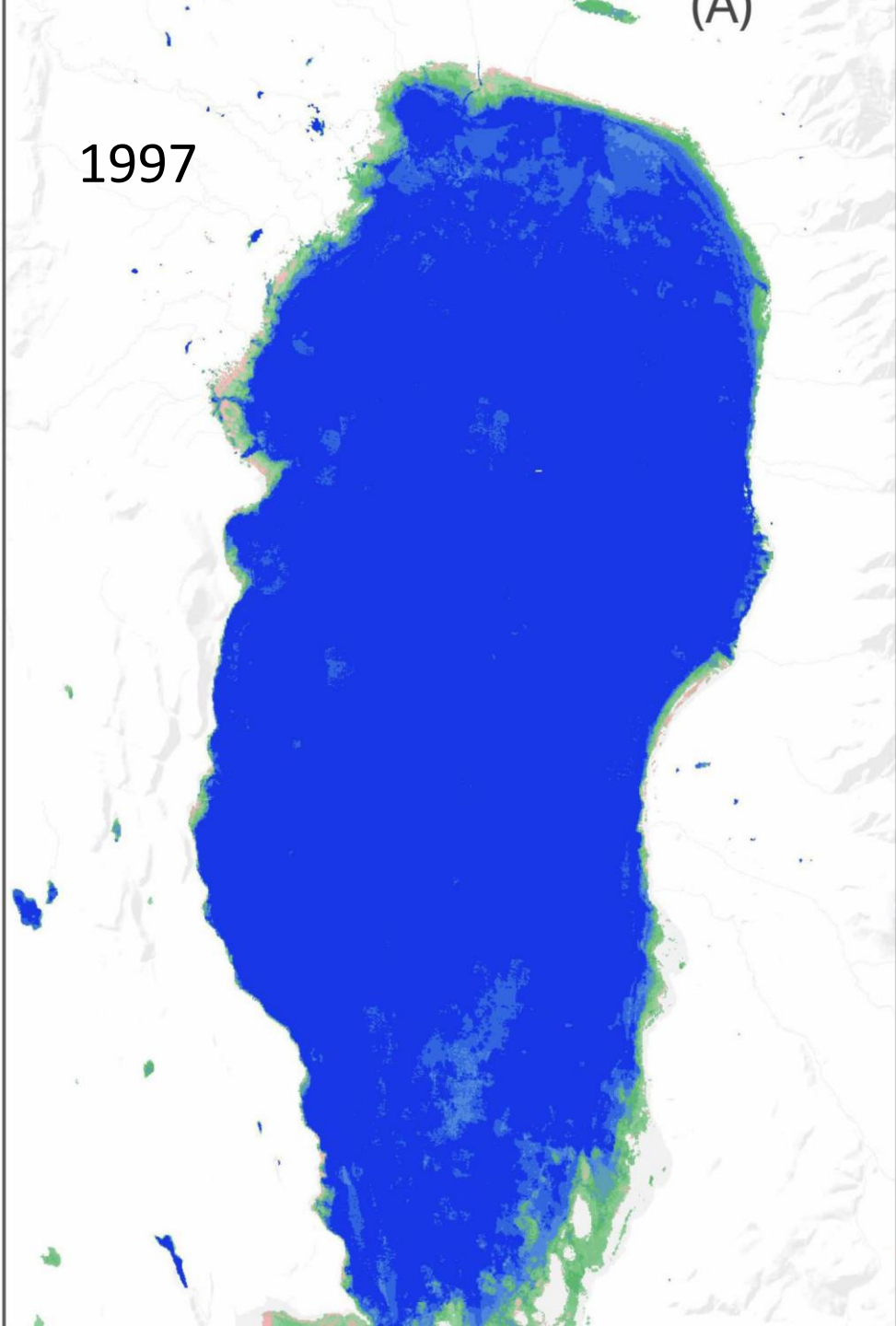
An Empire Built on Snow

23% average decline in snowpack since 1955

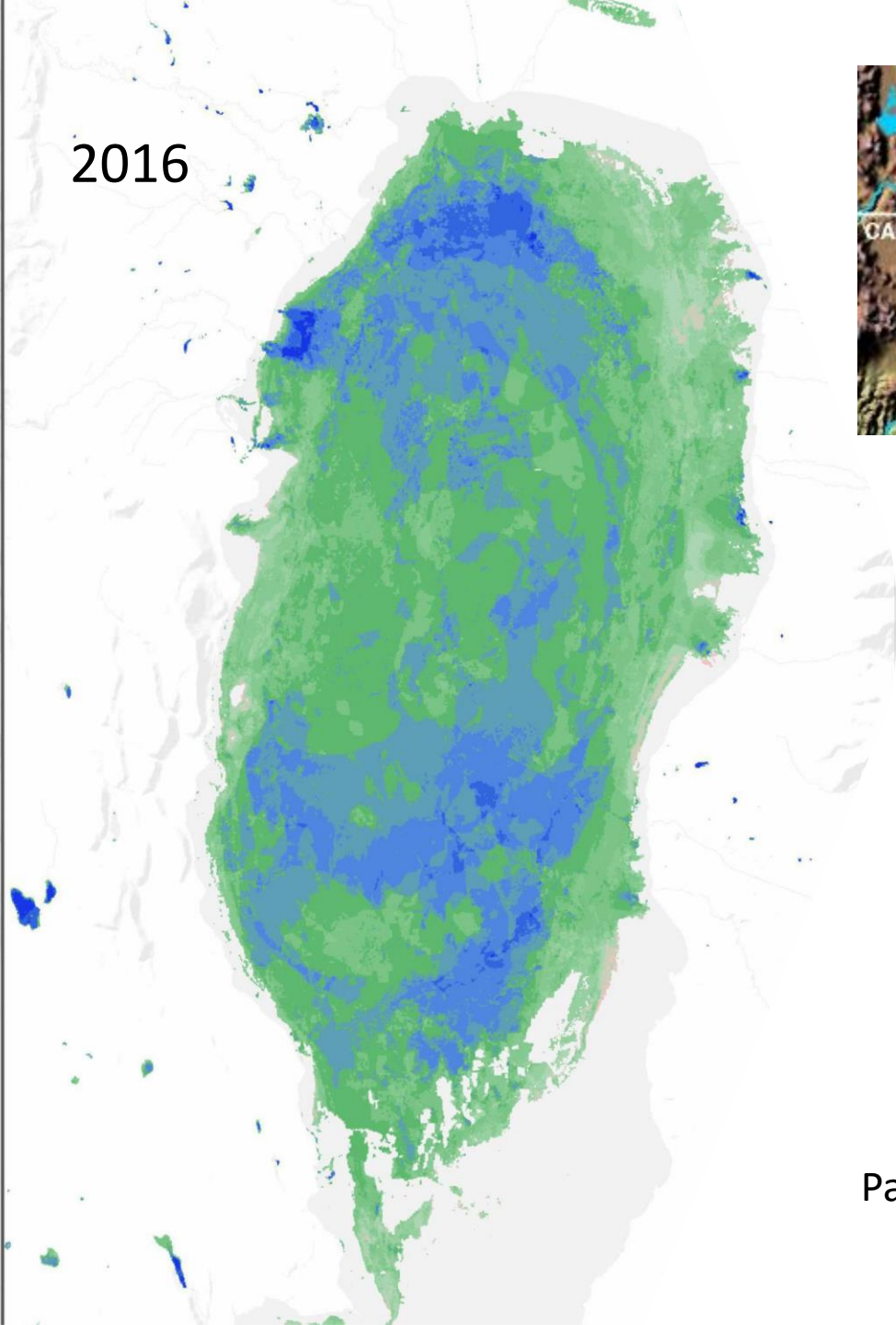
86% of all stations show a decline since 1955

(A)

1997



2016



Goose Lake

Blue – Semi Perm Wetland

Green – Seasonal Wetland

Patrick Donnelly et al. 2022



Medford

Ashland

Klamath Falls

Yreka

Lakeview

Goose Lake

G

Mt Shasta

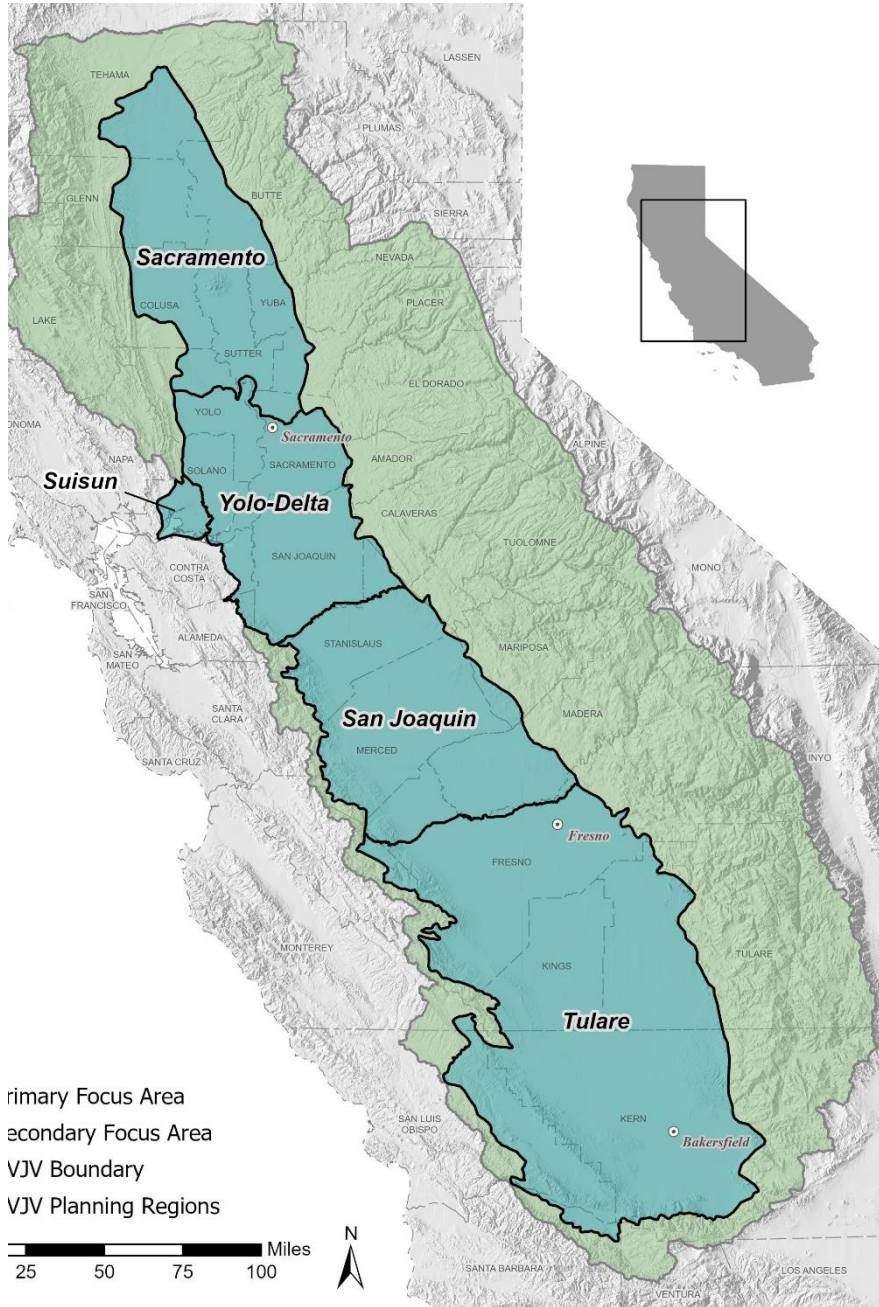
Redding

Central Valley

Chico

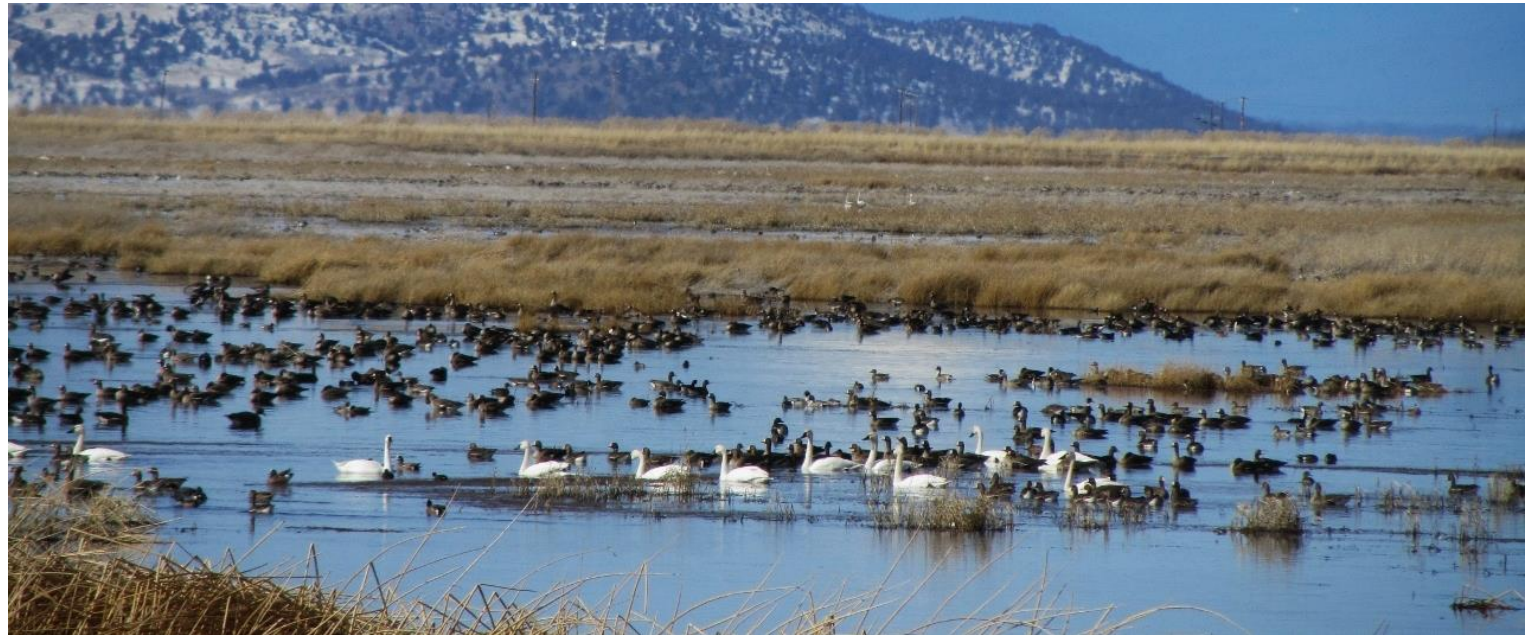
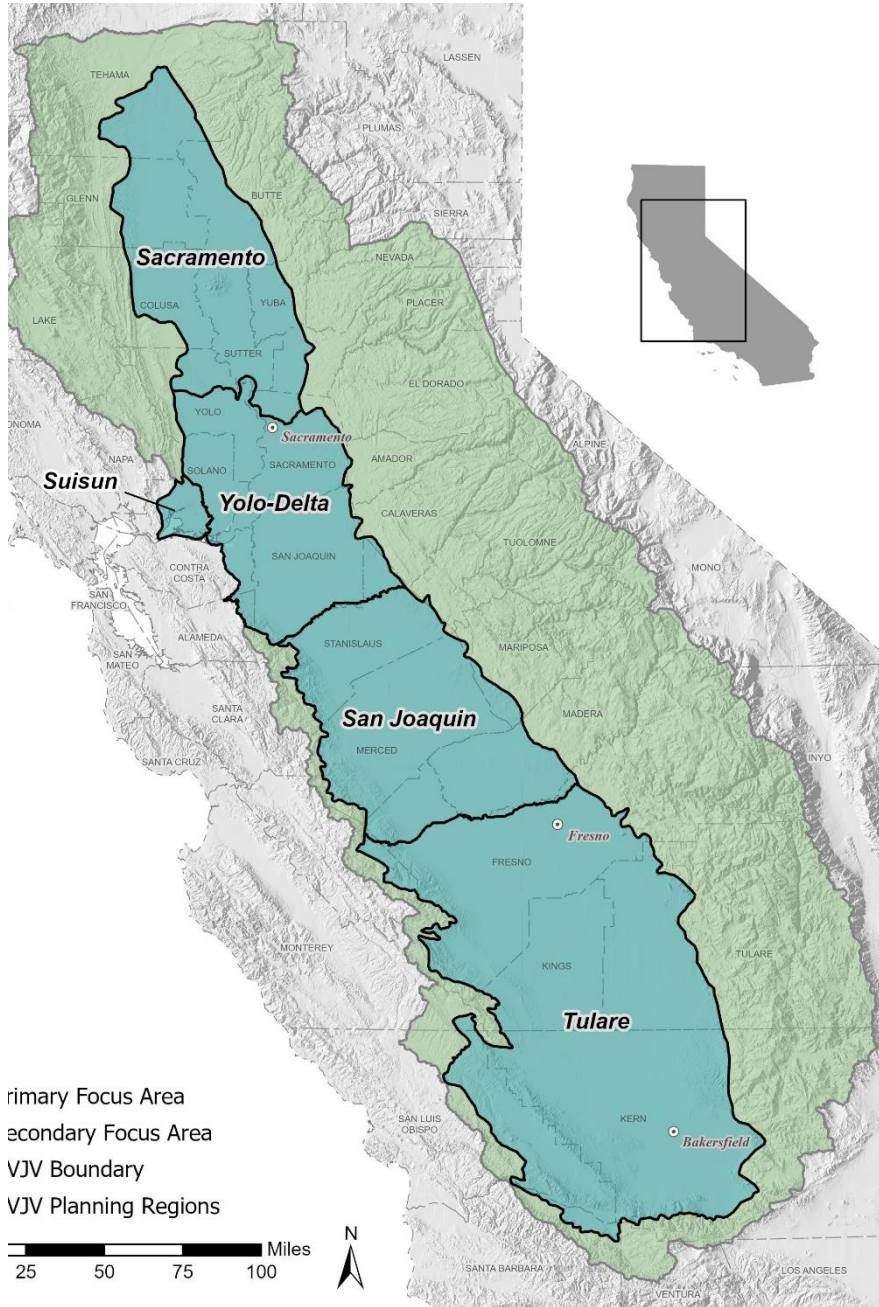
PYRAMID LAKE PAIUTE RESERVATION





Central Valley

50% of all food provided by
 winter-flooded rice



Central Valley

... half of normal wetland acres by late November

1986

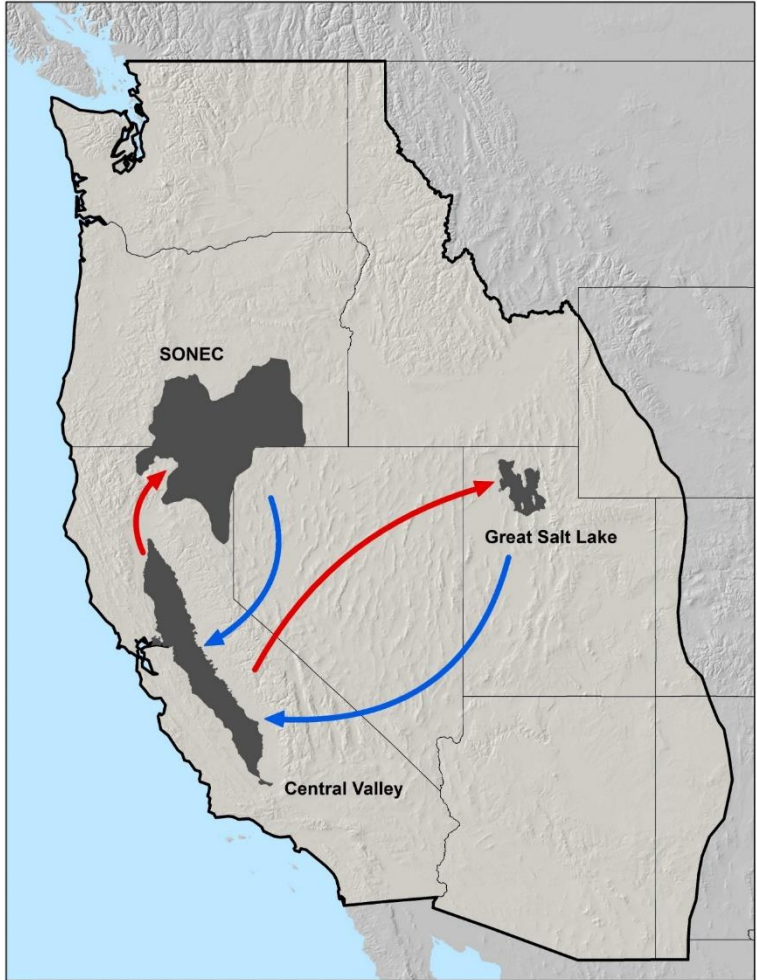


2,300 Square Miles

2022



900 Square Miles



The Big Three...water dominoes.

There will be species consequences outside of waterfowl