

Waterfowl and Mono Lake

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Mono Lake Workshop - Birds

June 25, 2026



Mono Lake

Overview

Goal: By the end of this presentation, you will understand the importance of Mono Lake for waterfowl populations and recent trends in abundance.

- Background / Overview
- Summary data
- Trends and drivers of trend

Mono Lake in the Pacific Flyway

PACIFIC FLYWAY WATERFOWL INVESTIGATIONS, MONO LAKE, 1948

(shaded area shown on map) Total number of ducks observed in general

W. Dombrowski

area estimated at 175,000 to 200,000.

Remarks

~~Estimated ducks in vicinity 300,000 - 400,000~~

~~the number. However including ruddies there are now well over a million~~

~~ducks on the lake 80% of which are ruddies and shovelers.~~

Background and Purpose

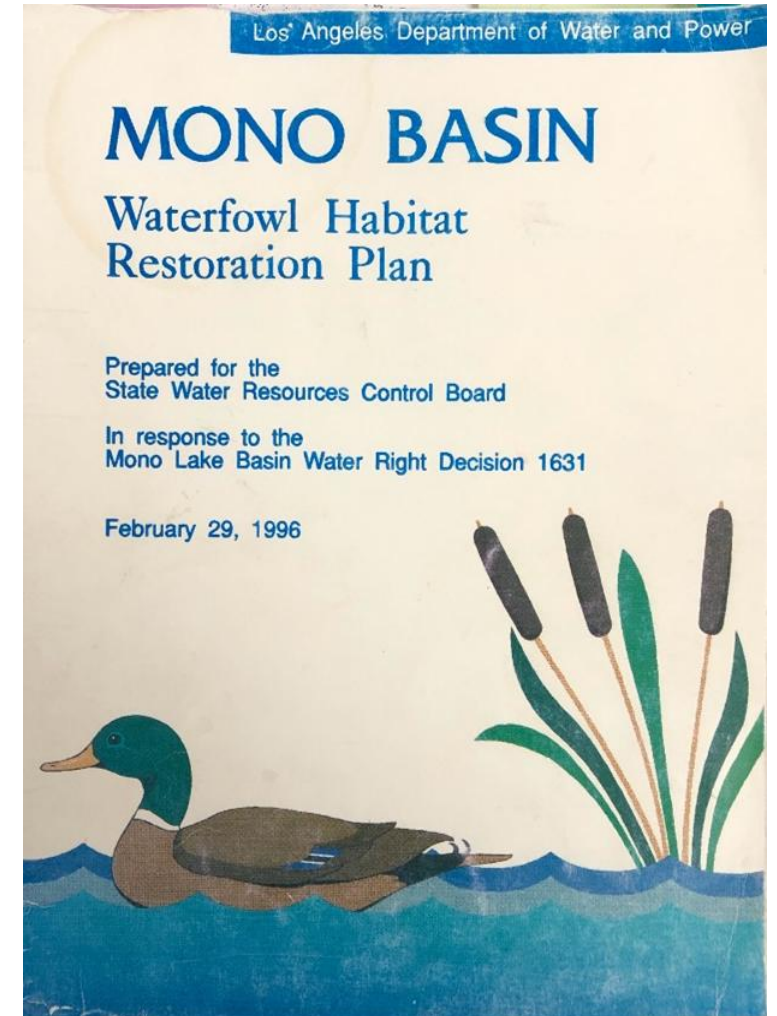
Decision 1631 (1994):

- Waterfowl disproportionately impacted lake level decline as compared to other species groups
- Target lake level of 6,392 feet would not restore all waterfowl habitat
- Restoration plan was required

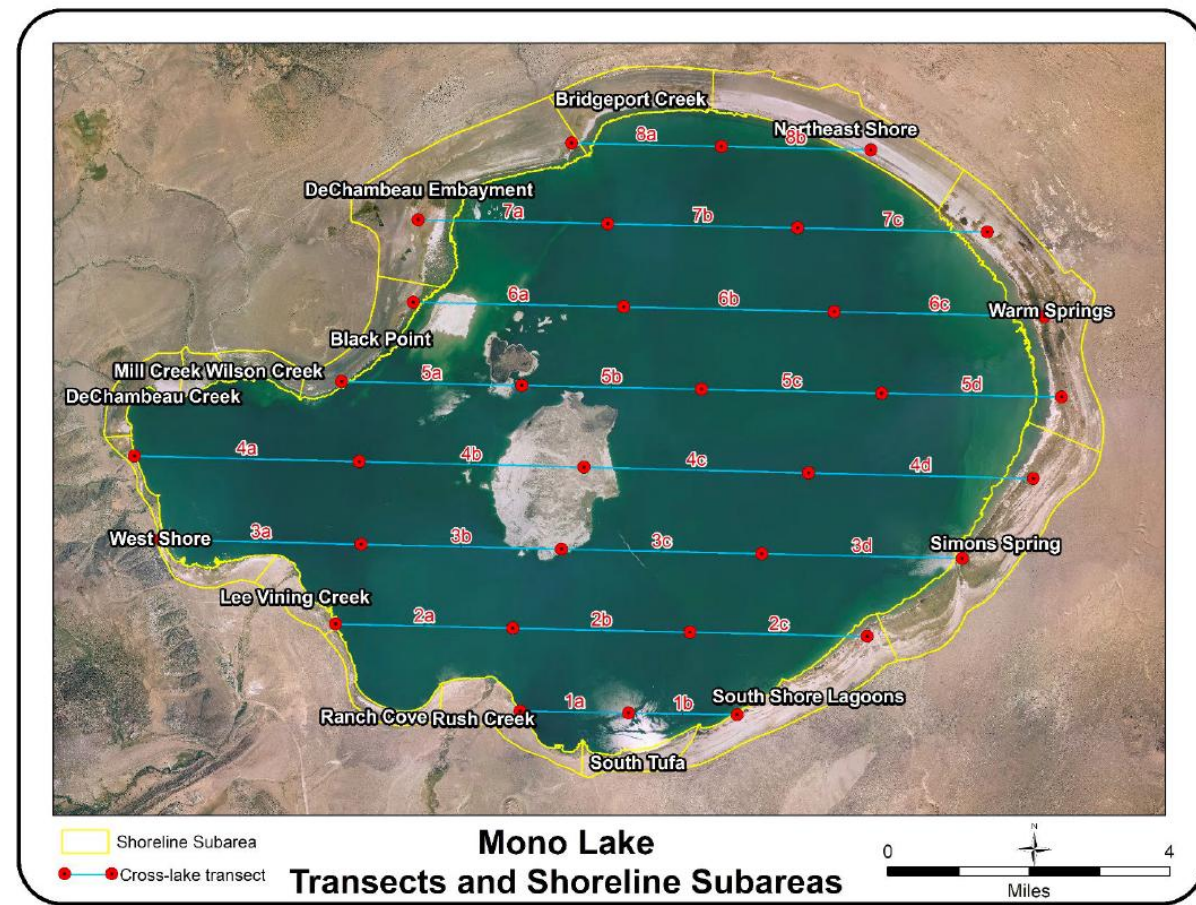
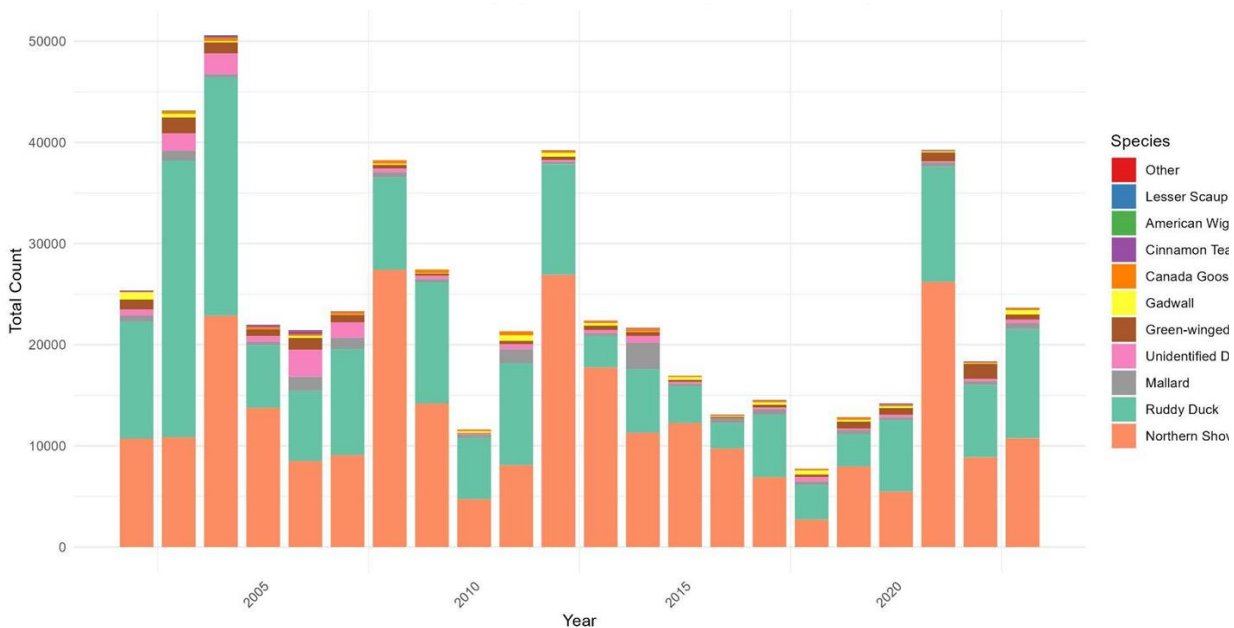
Order 98-05 (1998): Restoration Plan approved

Purpose of Monitoring (Order 98-05): *“The information developed through the monitoring program can be used to evaluate the results of increased stream flows, rising lake levels, waterfowl habitat restoration measures required by this order, and waterfowl habitat restoration efforts undertaken by other agencies and landowners in the Mono Basin.”*

- Standardized monitoring implemented 2002 – present
 - 3 summer ground counts of Mono Lake
 - 6 fall aerial surveys of Mono Lake, Bridgeport, and Crowley)
 - Annual photography of Mono Lake, Bridgeport, and Crowley

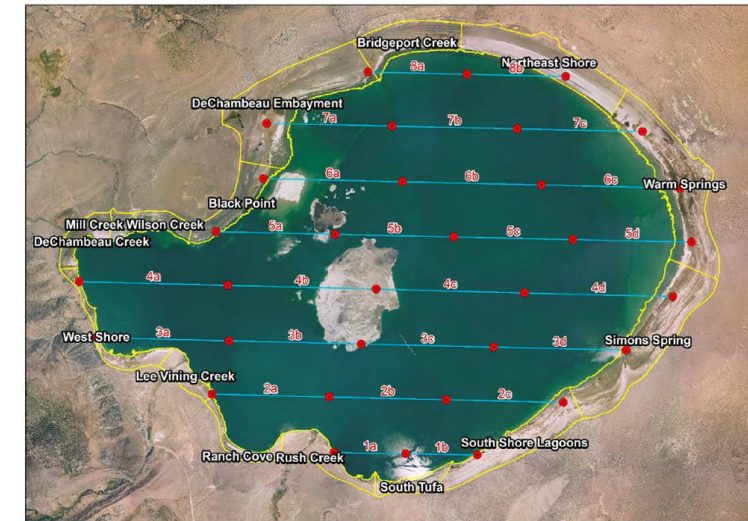
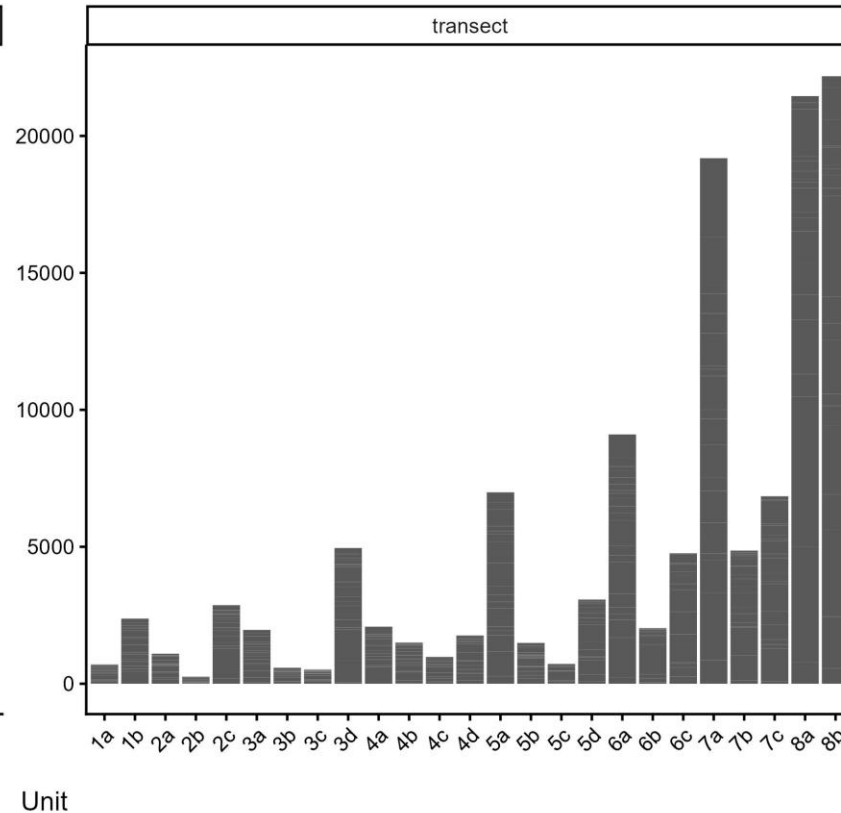
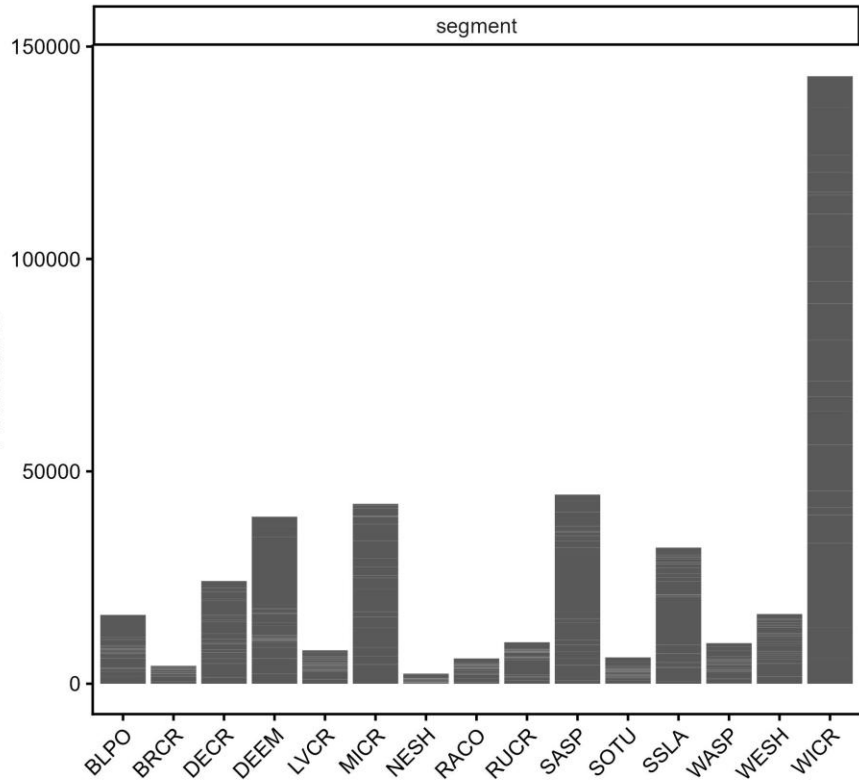


Fall Surveys (2002 - 2023)



Fall Surveys - Distribution

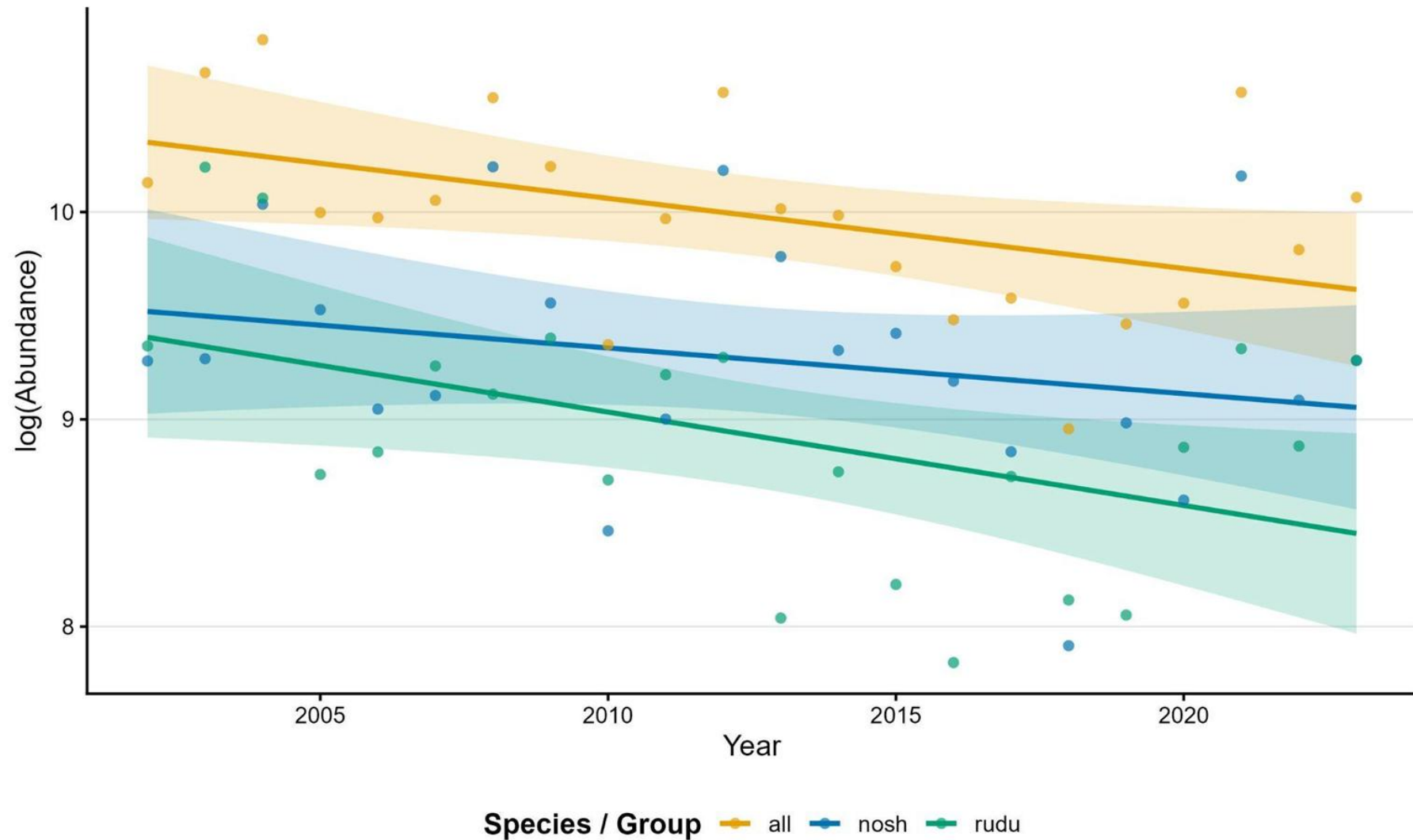
Abundance by Unit and Survey Type



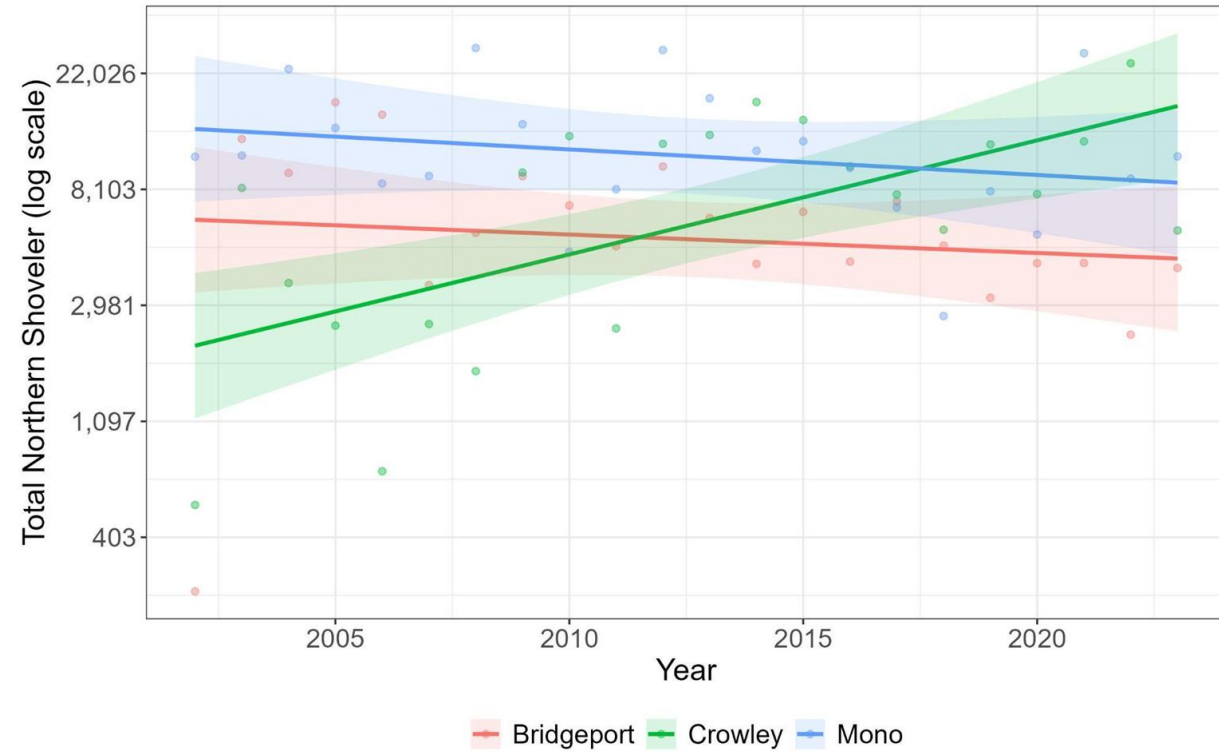
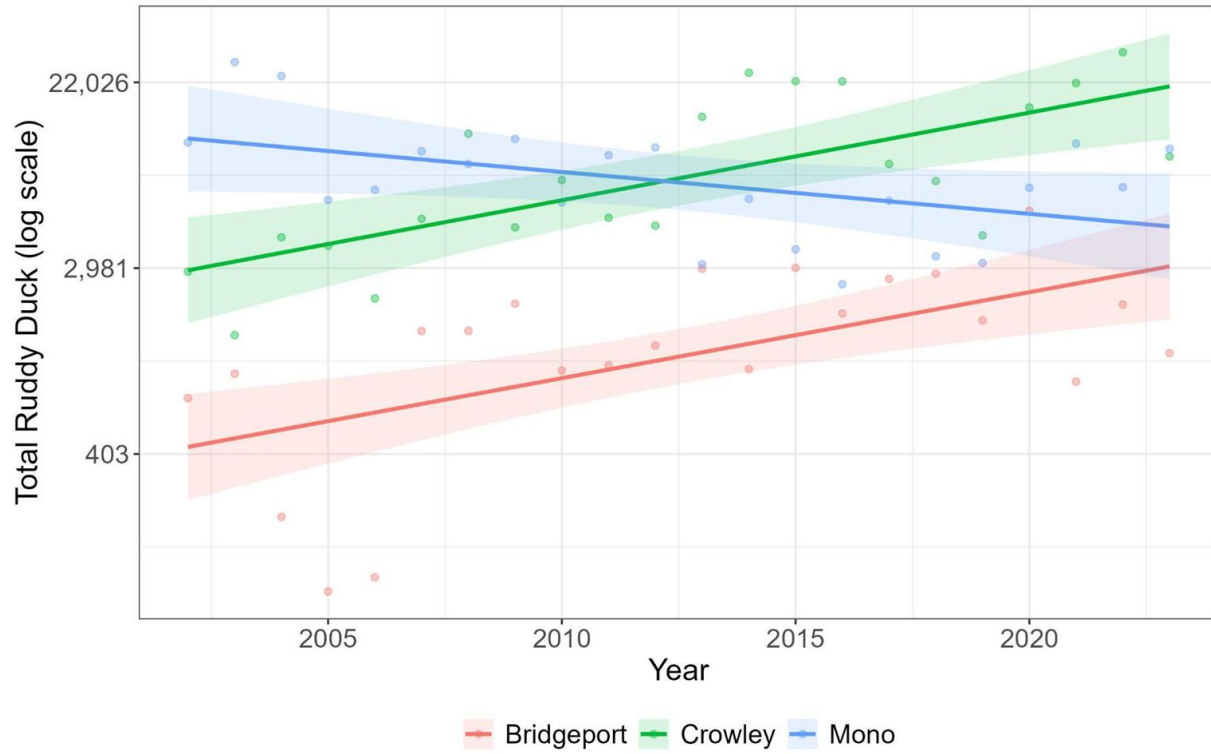
Fall Trends (2002 - 2023)

Linear trends in log(Abundance) over time

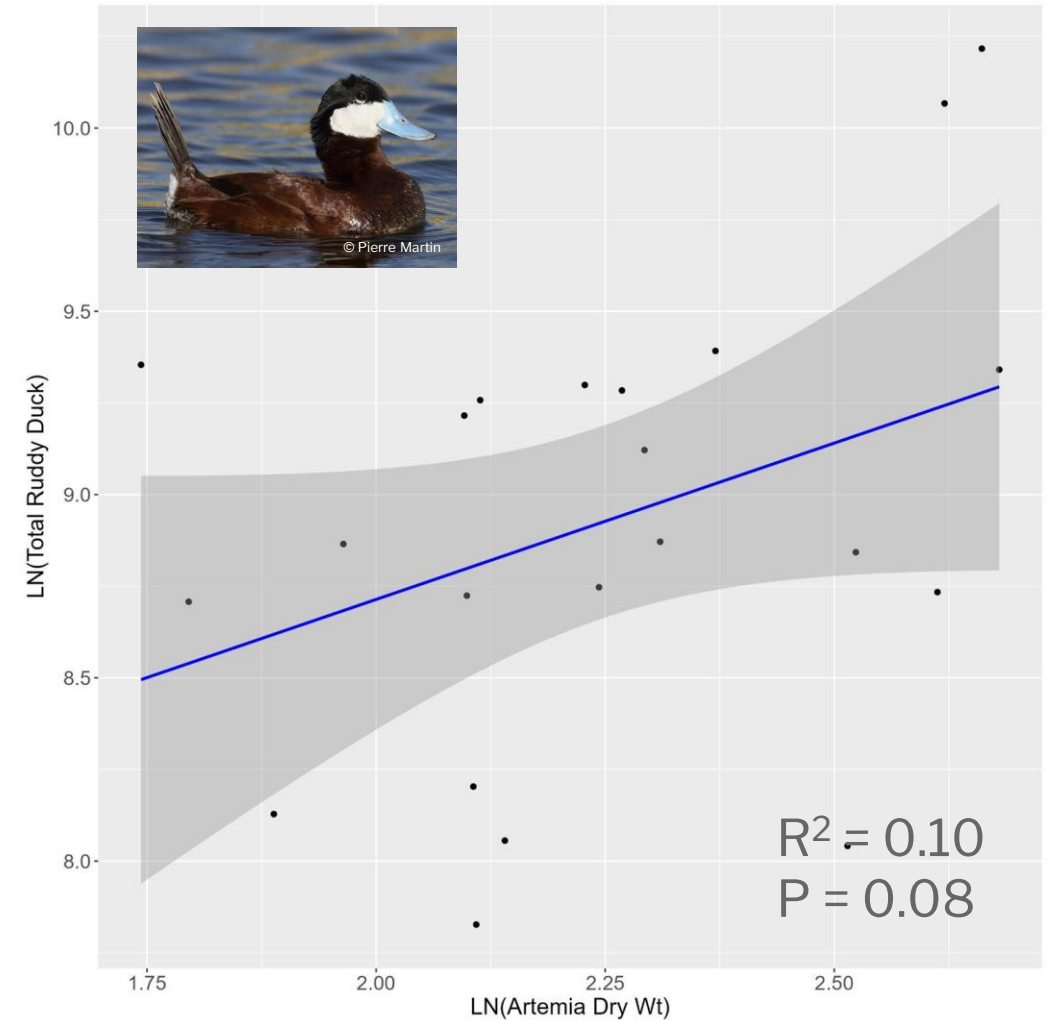
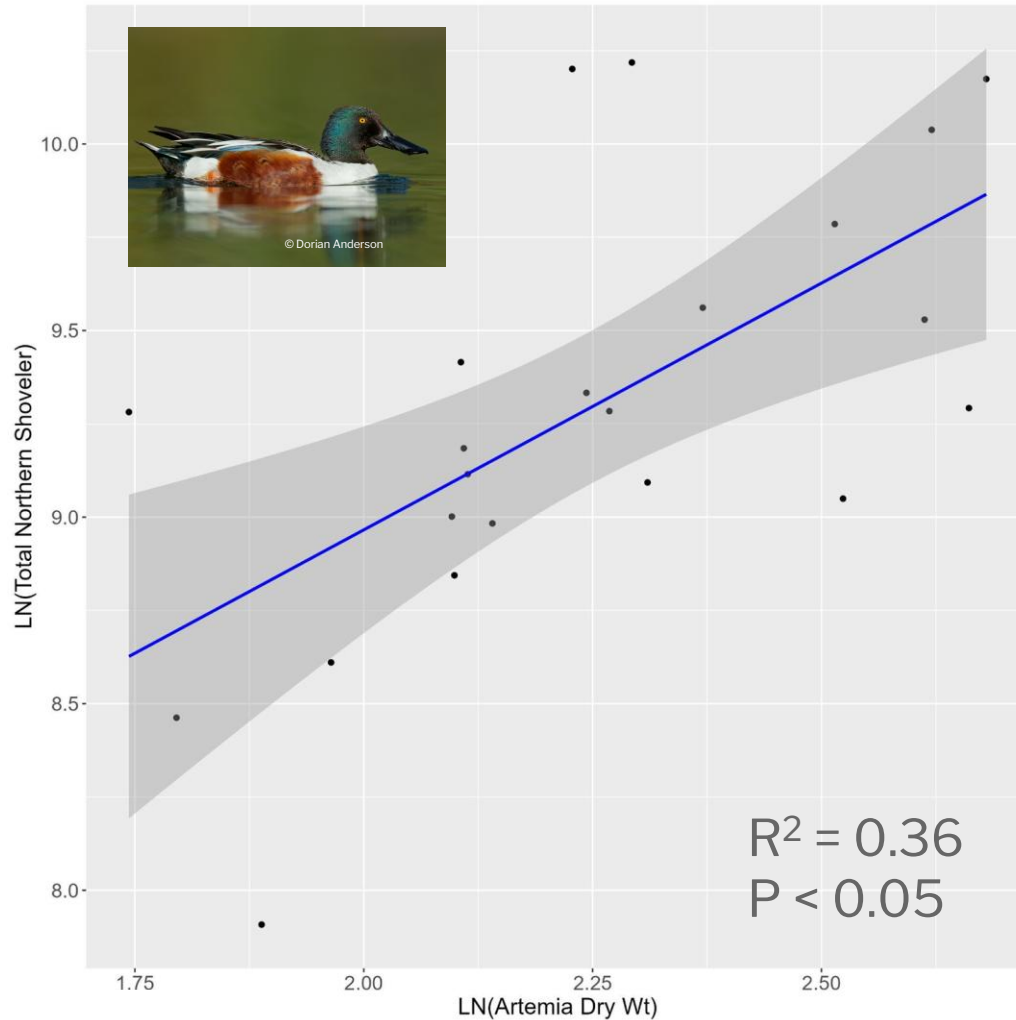
Points = observed data | Lines = fitted model | Shading = 95% CI



Landscape Context (2002 - 2023)



Fall Waterfowl and *Artemia* (Brine Shrimp)



Summer Breeding Birds

3 ground surveys per year

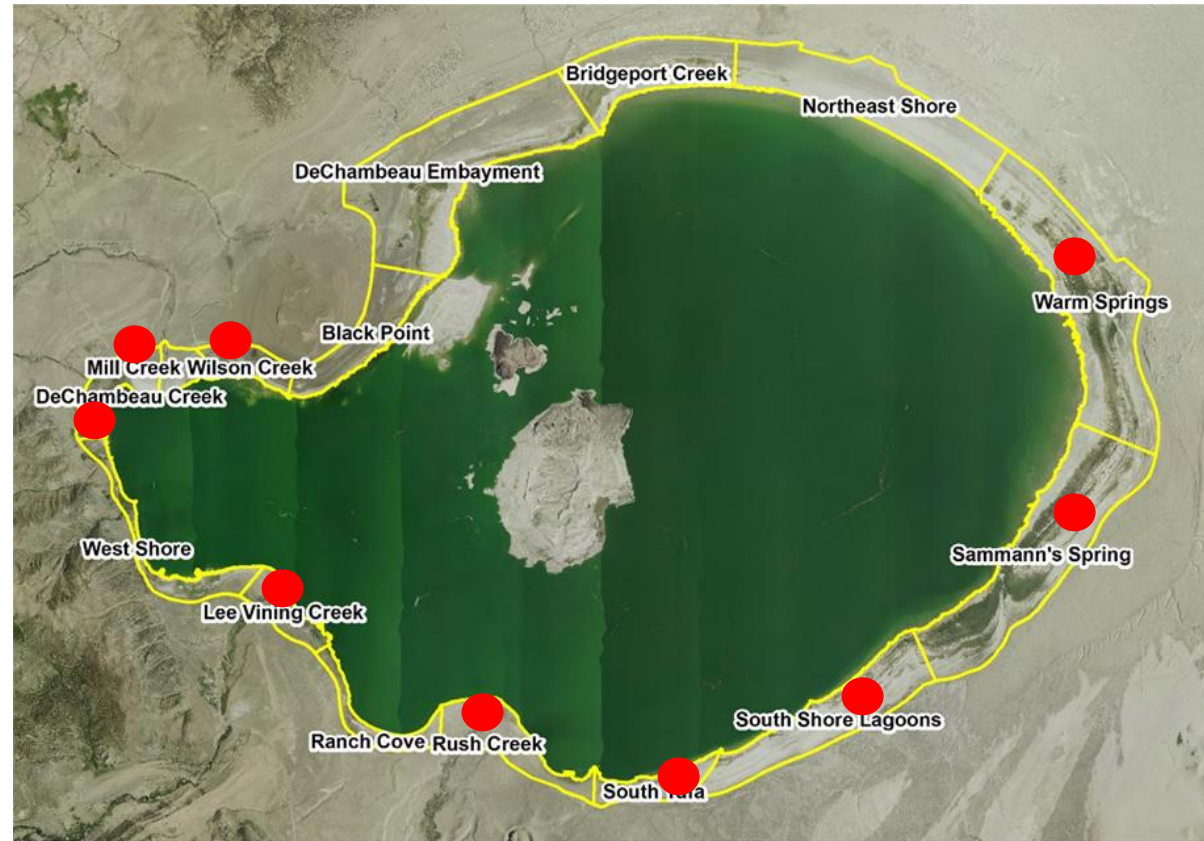
9 shoreline units

Recorded:

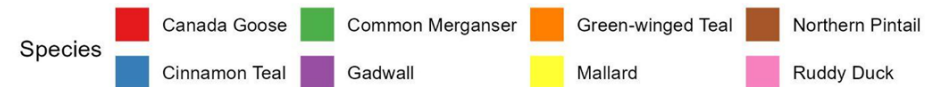
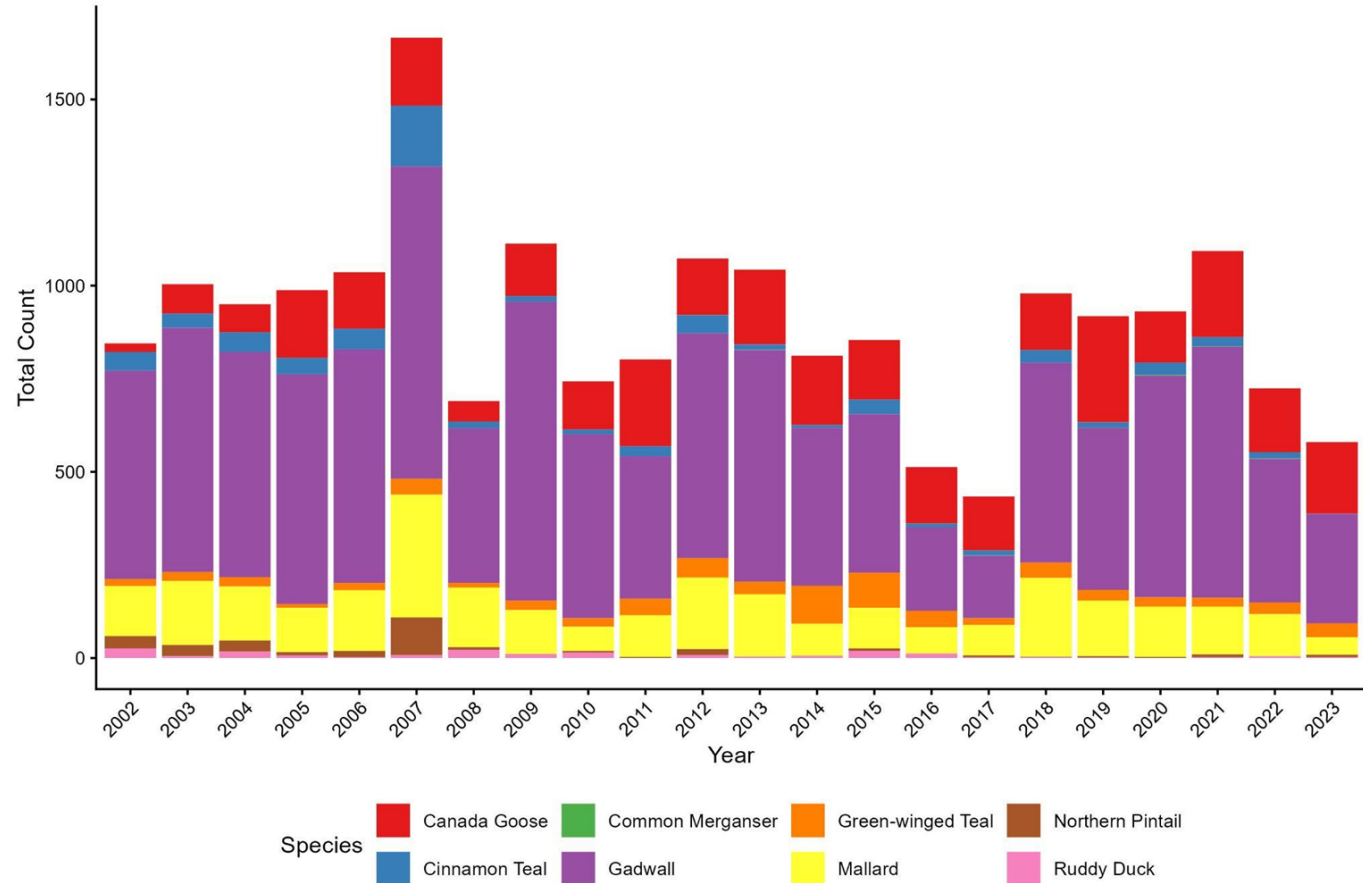
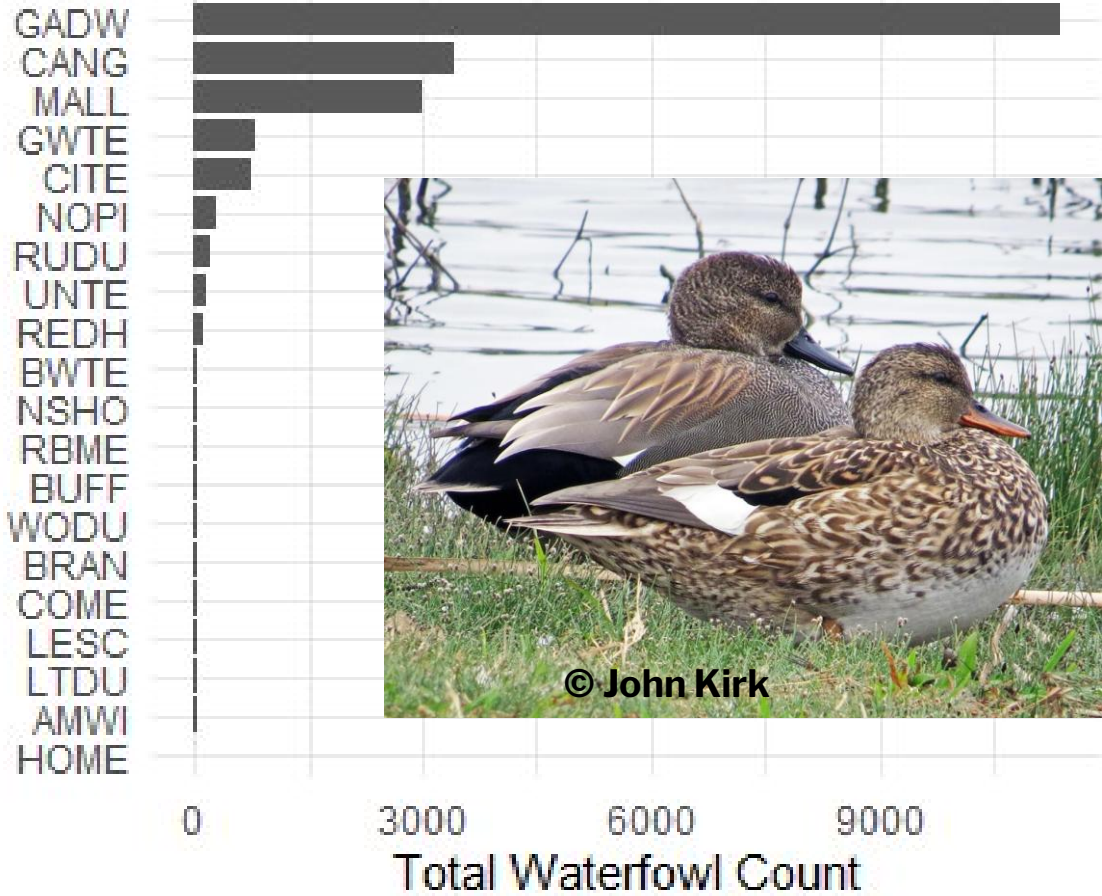
adults

broods

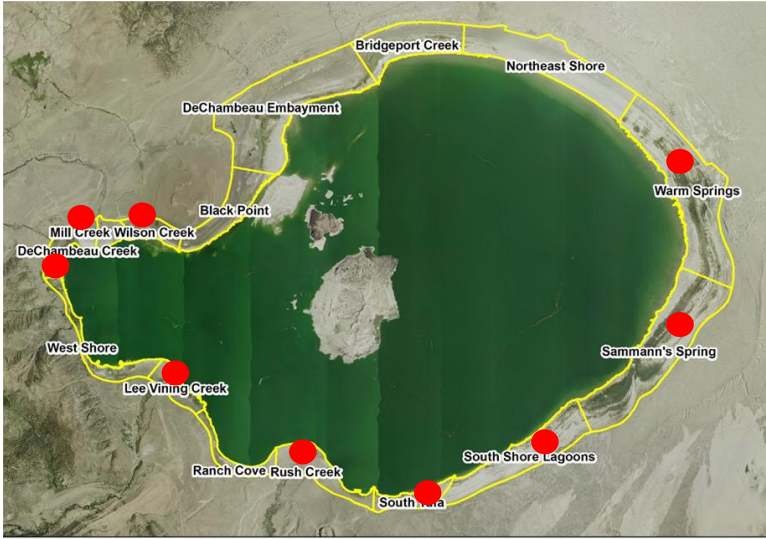
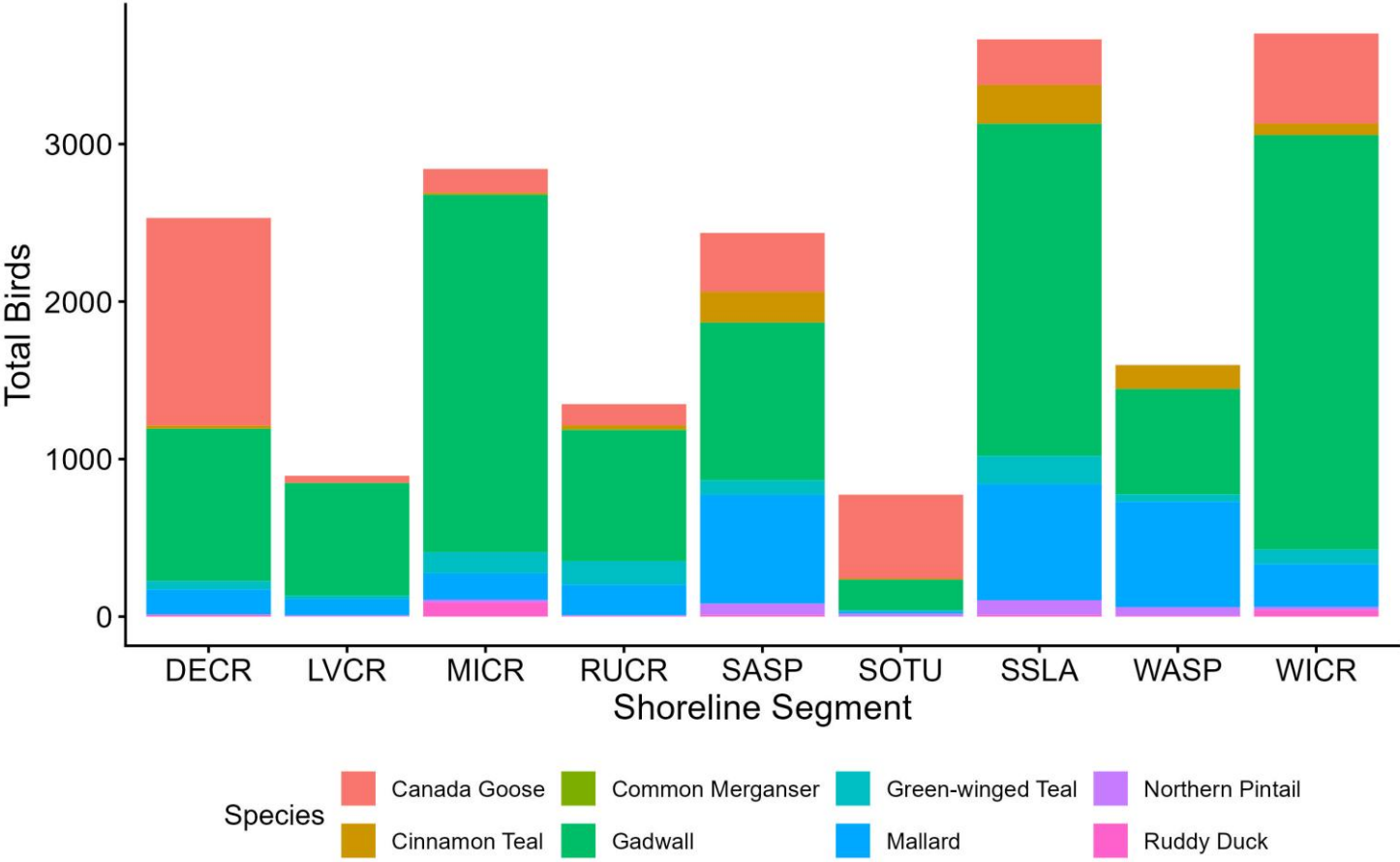
ducklings



Summer Surveys



Summer Surveys - Distribution

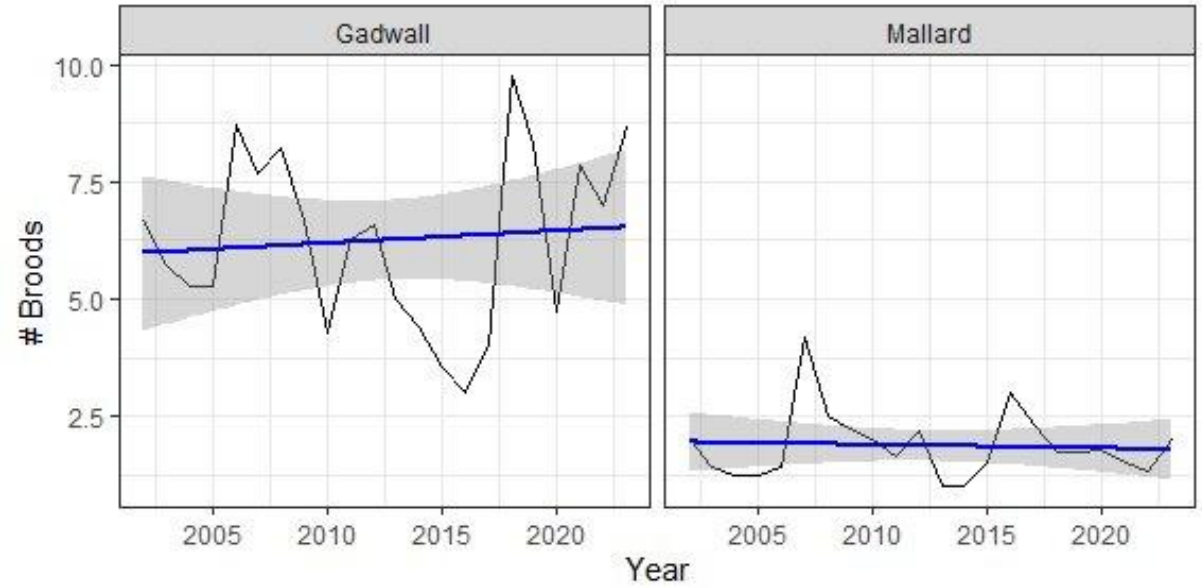
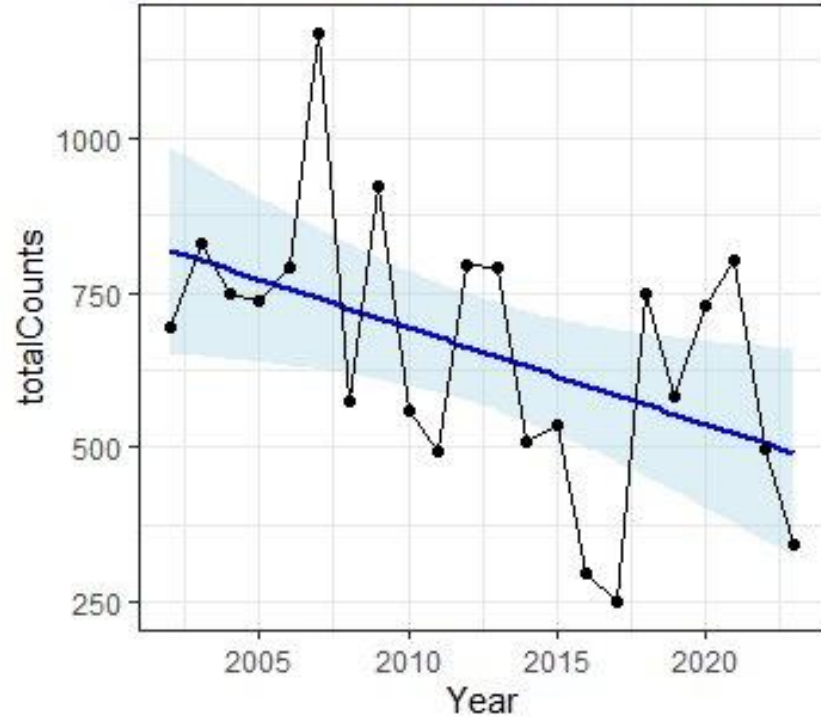


Summer Breeding Birds

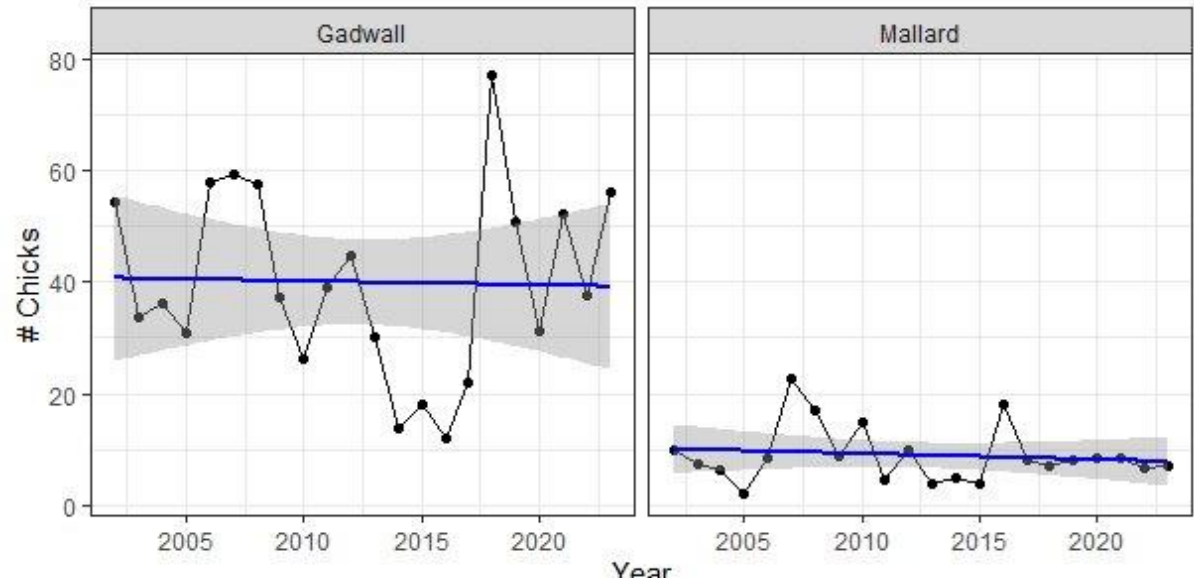
Broods

Adults

Base: MALL & GADW counts by year



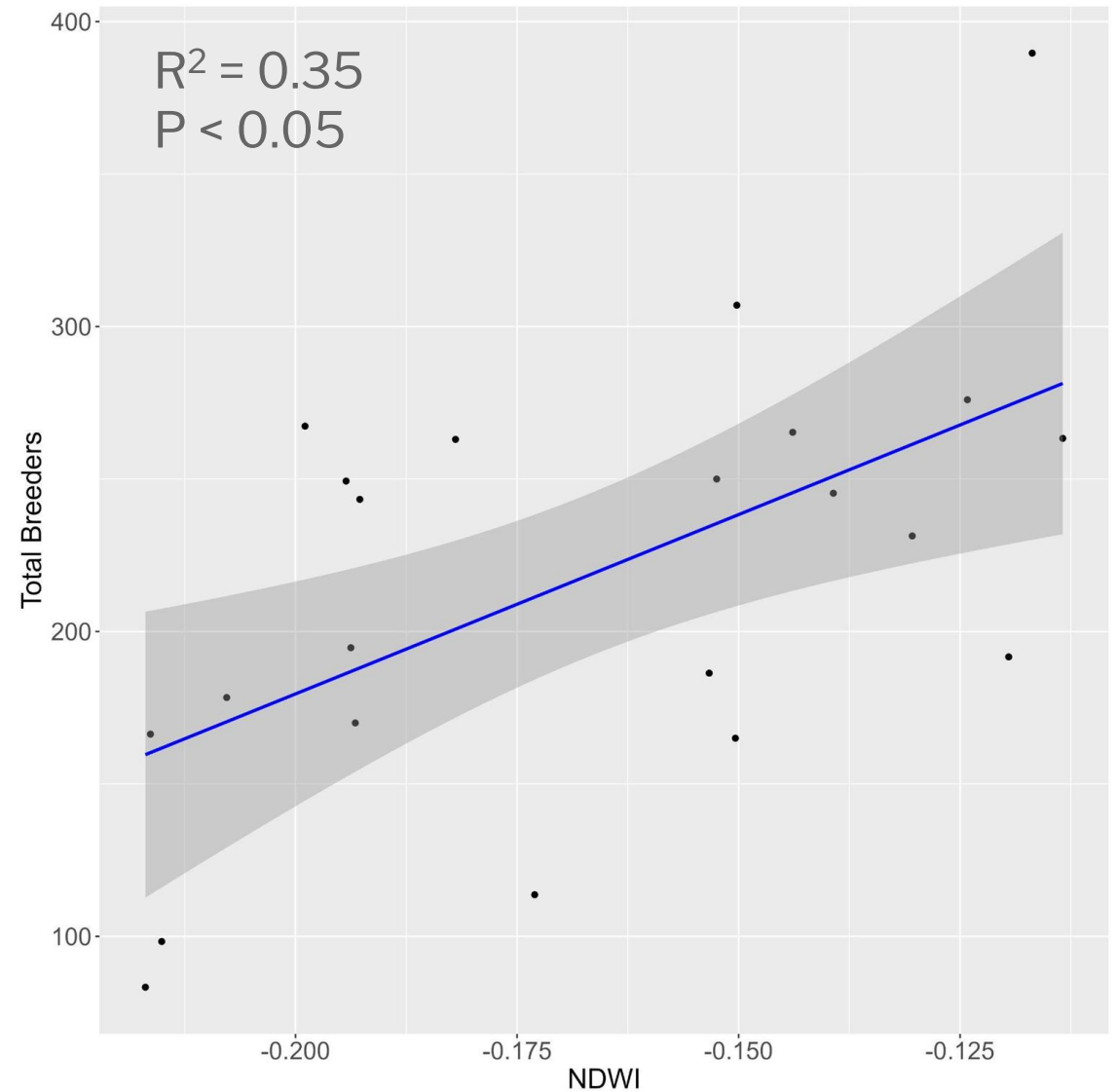
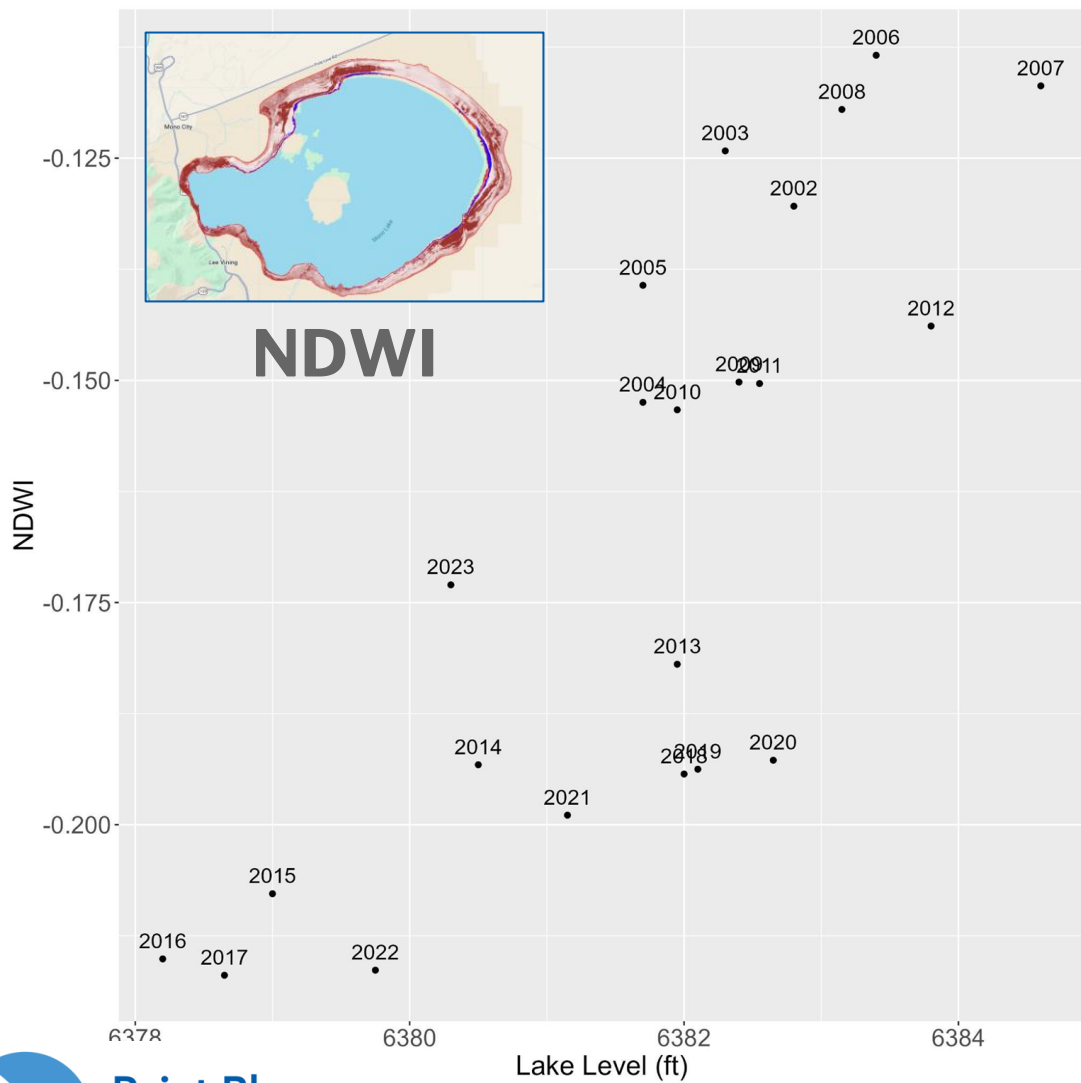
Ducklings



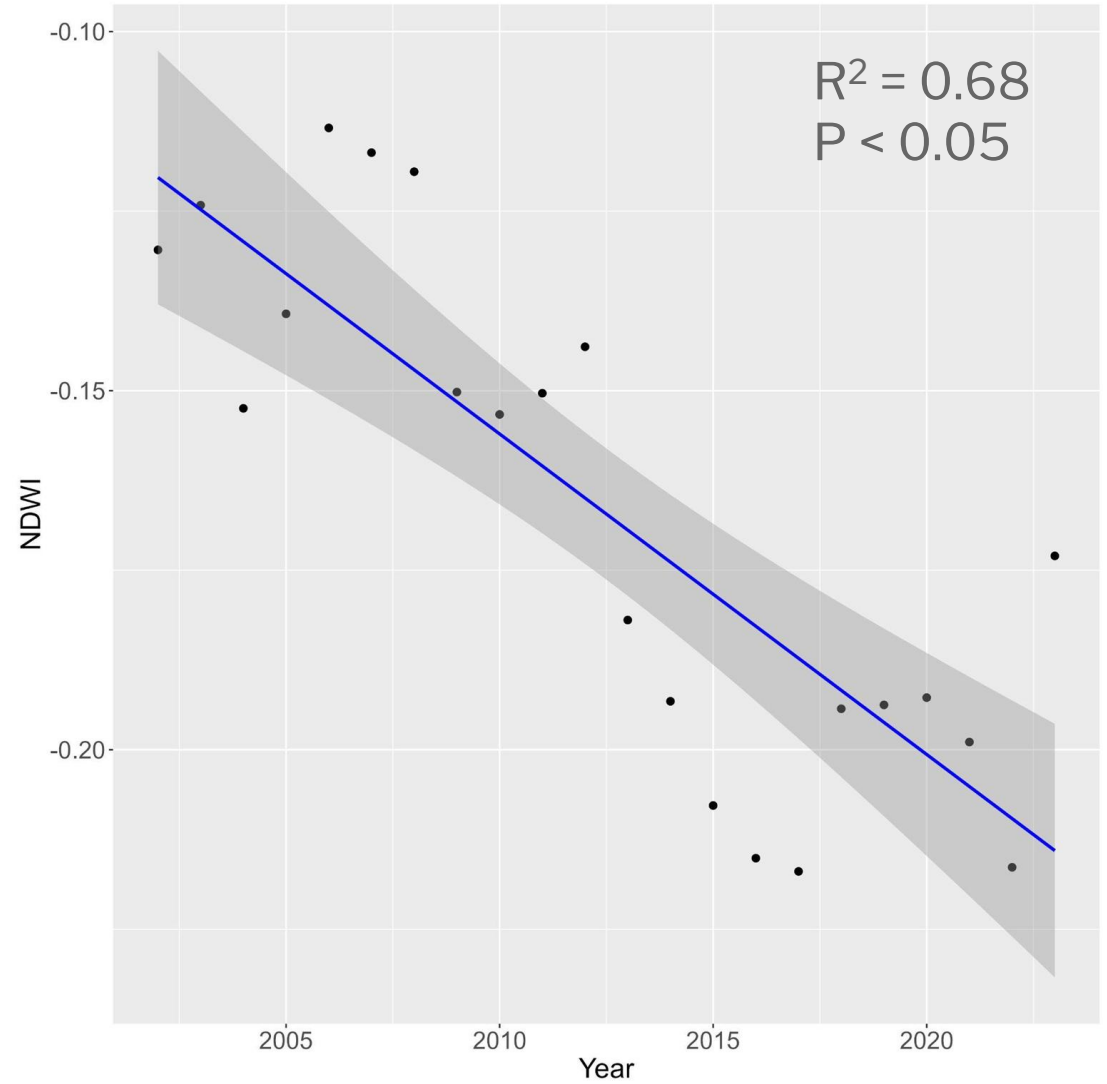
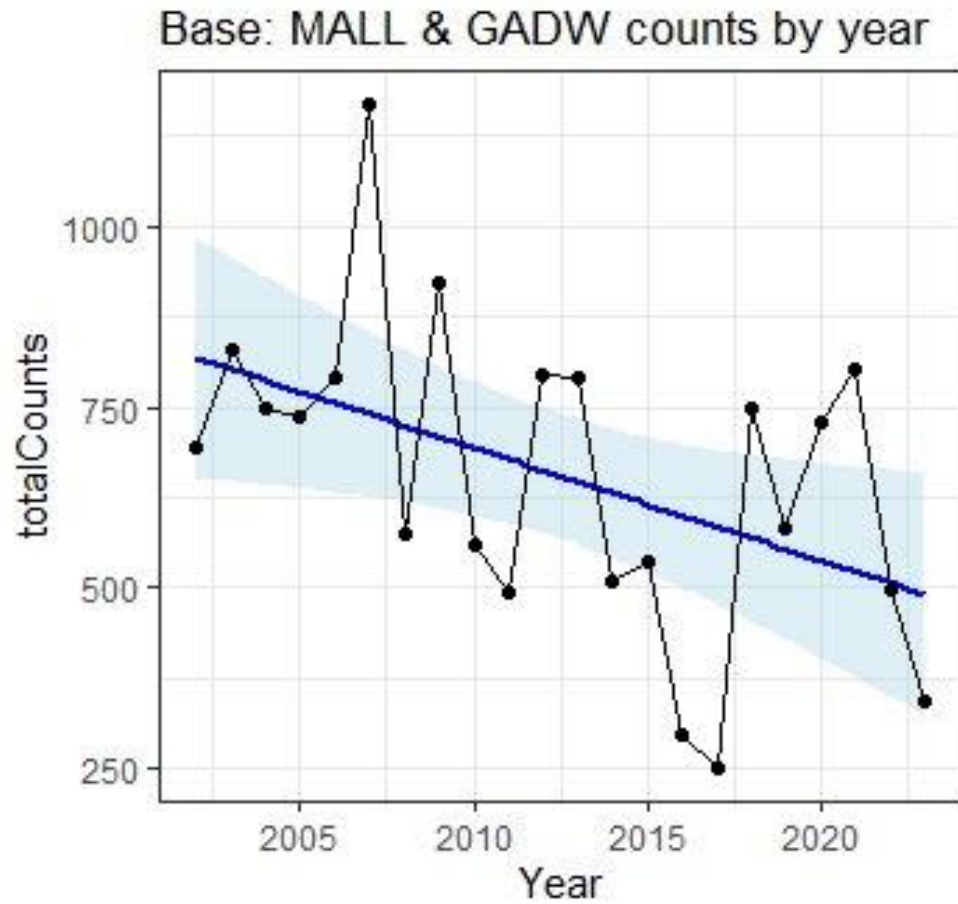
Landscape Context

Species	Gadwall	Mallard
Mono Lake ¹	-0.028*	-0.025*
California ²	11.4*	-13.2*
Nevada ²	18.5*	-7.1*
Utah ²	31.7*	-1.3*
Oregon ²	22.9*	-13.3*
USA ²	18.2*	-11.1*
CA breeding ³	0.005	-0.022*

Lake Level and Breeding Habitat



Breeding Birds and Habitat



Summary

Mono Lake waterfowl historically numbered in the 100s of thousands to millions but have declined substantially since 1948

Ongoing data collection provides a robust data set to understand population dynamics of breeding and migratory waterfowl using Mono Lake, in particularly in response to changing lake levels

Evidence of declining use of the lake by the most abundant species: migrating Ruddy Duck and Northern Shoveler and breeding Gadwall and Mallard - though productivity appears stable

Declines in Gadwall and Ruddy Duck are unique to Mono Lake when compared to broader trends but declines in Mallard and Northern Shoveler have been observed in other systems and across the Flyway

Changes in fall *Artemia* biomass is tied to the abundance of Northern Shoveler and Ruddy Ducks

Changes in lake fringing wetlands is significantly tied to the abundance of breeding waterfowl and lake level: **higher lake level = more wetland habitat = more breeding ducks**

More work needed to understand the difference in trend between breeding adults and productivity

Acknowledgements

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California DFW
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LADWP

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