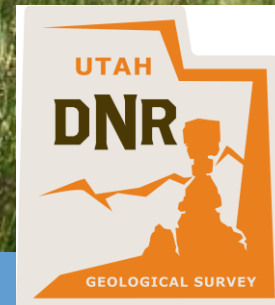


Central Basin Wetlands: Field Assessment and Hydrology Trend Analysis



Diane Menuz, Miles McCoy-Sulentic, Rebecca Lee

Talk Overview

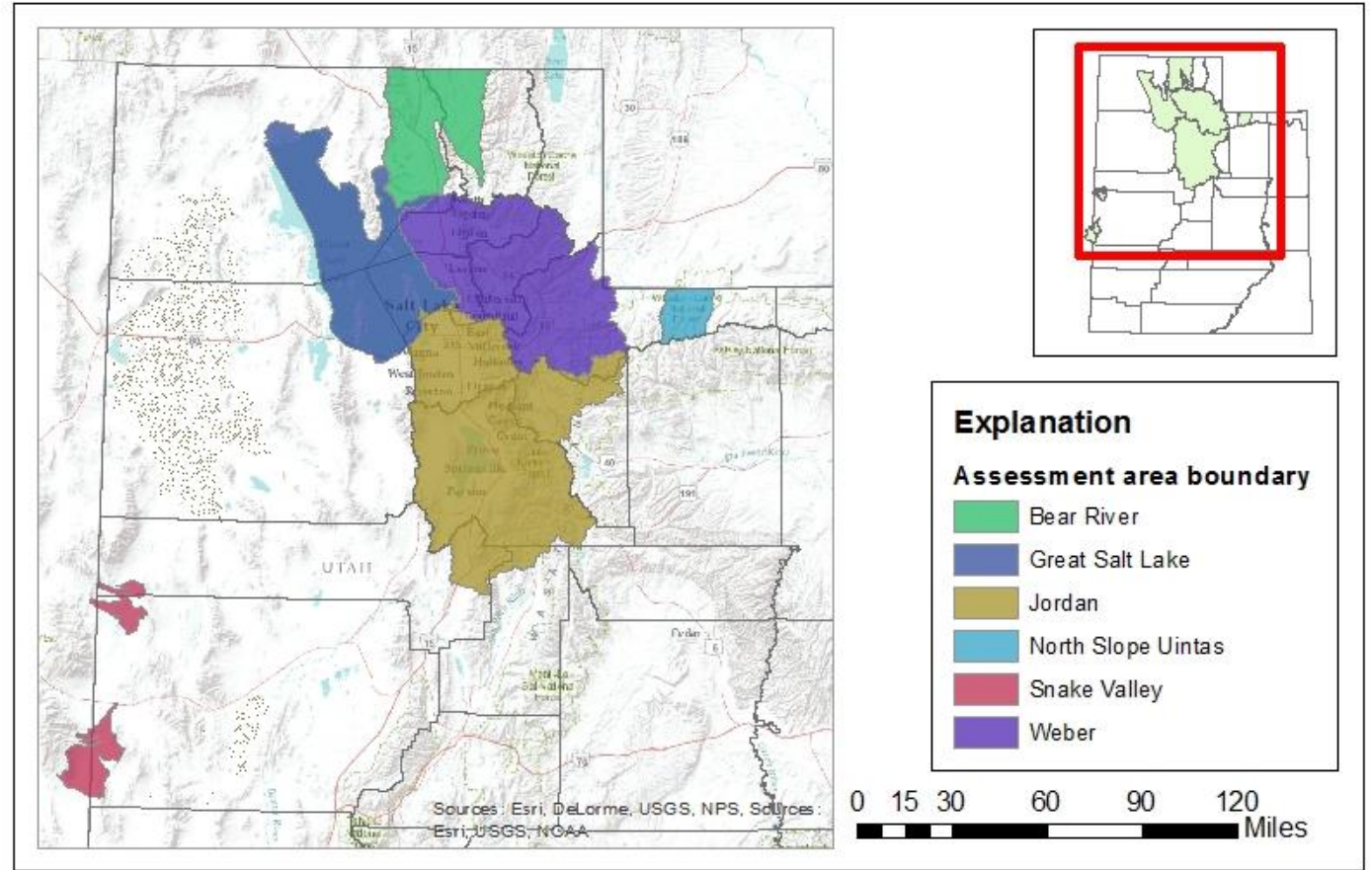
- Background
- Methods
- Results
- Trend Analysis
- Conclusions



Wetland Assessment

- Data on:

- Water chemistry
- Soil characteristics
- Plant community composition
- Stressors
- Qualitative condition measures
- Qualitative functional ratings
- Wildlife sightings, including mollusk collections





Project Goals

Baseline Information

- Types of wetlands
- Condition
- Key functions
- Common stressors

Data Uses

- Help determine mitigation standards and restoration goals
- Provide information for planning efforts
- Share with UDWQ to help their regulatory efforts

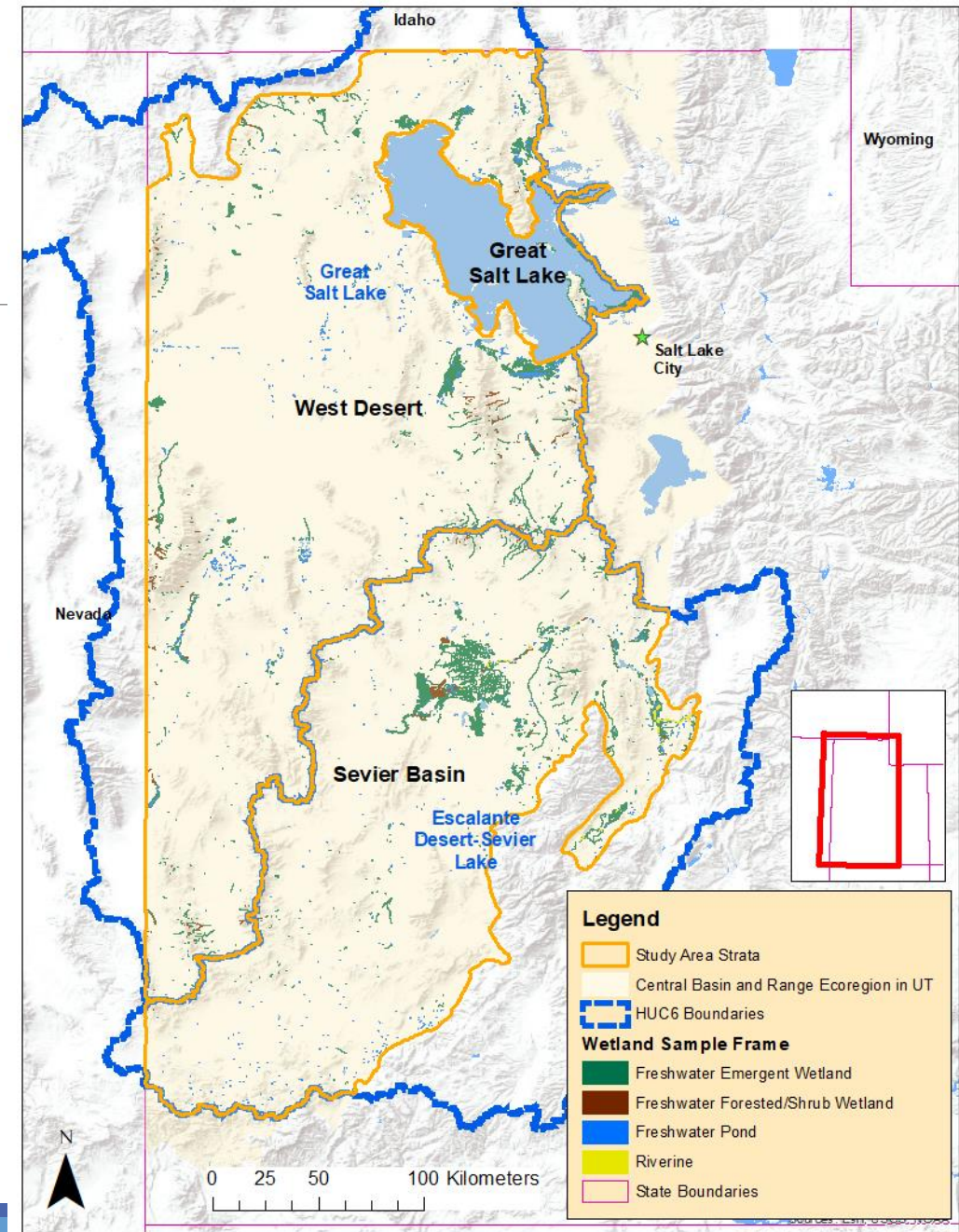
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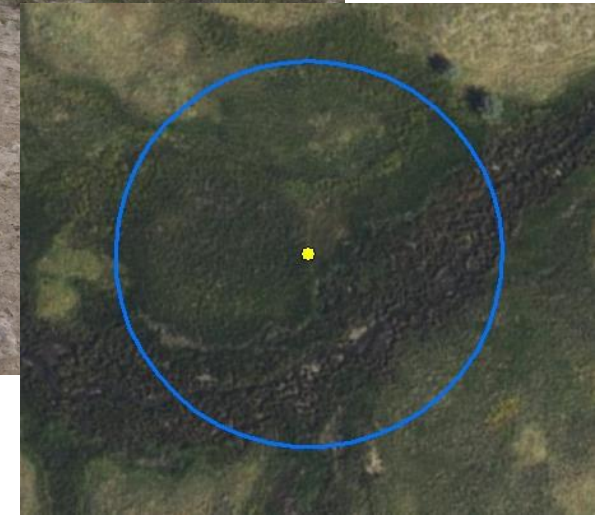
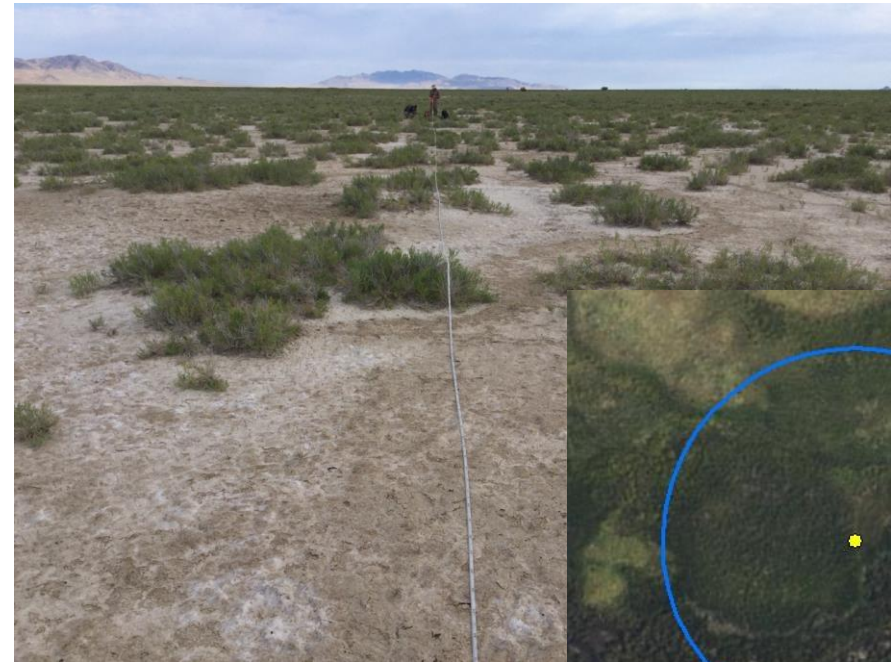
Central Basin Study Area

Stratum		West Desert	Sevier Basin
Land ownership (%)	Federal	73.5	64.8
	Private	17.7	26.2
	State	8.1	9.0
	Tribal	0.7	<0.1
Land cover from NLCD (%)	Developed	0.7	1.6
	Agricultural	1.6	4.6
	Forested	5.9	13.8
	Shrubland	55.9	62.3
	Grassland	8.9	13.7
	Barren	26.1	3.2
	Open water	0.3	0.1
	Wetlands	0.6	0.6



Utah Rapid Assessment Procedure

- Developed starting in 2013, based on NatureServe's Ecological Integrity Assessment, initial focus on wetland *condition*
- Added additional components over time, including functional assessment
- Study plots of about 0.5 ha centered around randomly selected points



Stressor Data



Categories of Assessment

- Landscape (100-m buffer)
- Hydrology
- Soil
- Vegetation

Assessed for **Scope** (Area Affected) and **Severity**, which translates into an **Impact Score**

Condition Metrics

Metrics are scored between A (5 points) to D (1 point).

Categories

- Landscape Context
- Hydrology
- Soil Disturbance
- Vegetation Structure
- Vegetation Community

Rank	Description
A	Reference Condition. No or minimal human impact. Management focus is on preservation and protection
B	Slight Deviation from Reference. Management focus is on prevention of further alteration.
C	Moderate Deviation from Reference. Management focus is on restoration.
D	Significant Deviation from Reference. Restoration may be necessary and difficult with uncertain outcome.

Talk Overview

- Background
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- **Results**
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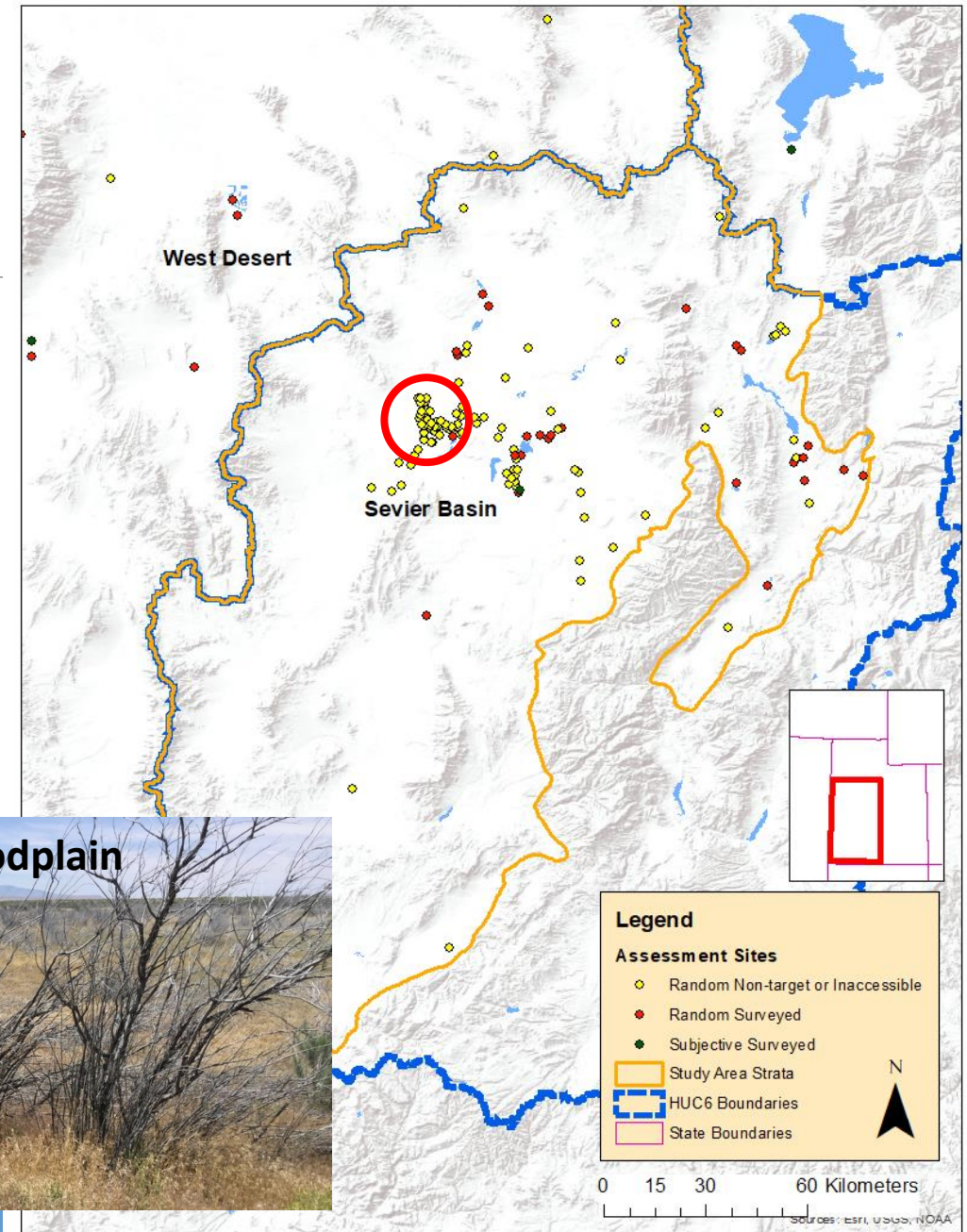
Sample Frame Accuracy

Site Evaluation	West Desert	Sevier Basin
# Sites Evaluated	51	140
% Target Wetlands	90.2	24.3
% Non-Target Aquatic (Ditches, Wasteponds)	5.9	7.9
% Non-Target Non-aquatic	3.9	63.6
% Uncertain	0.0	4.3

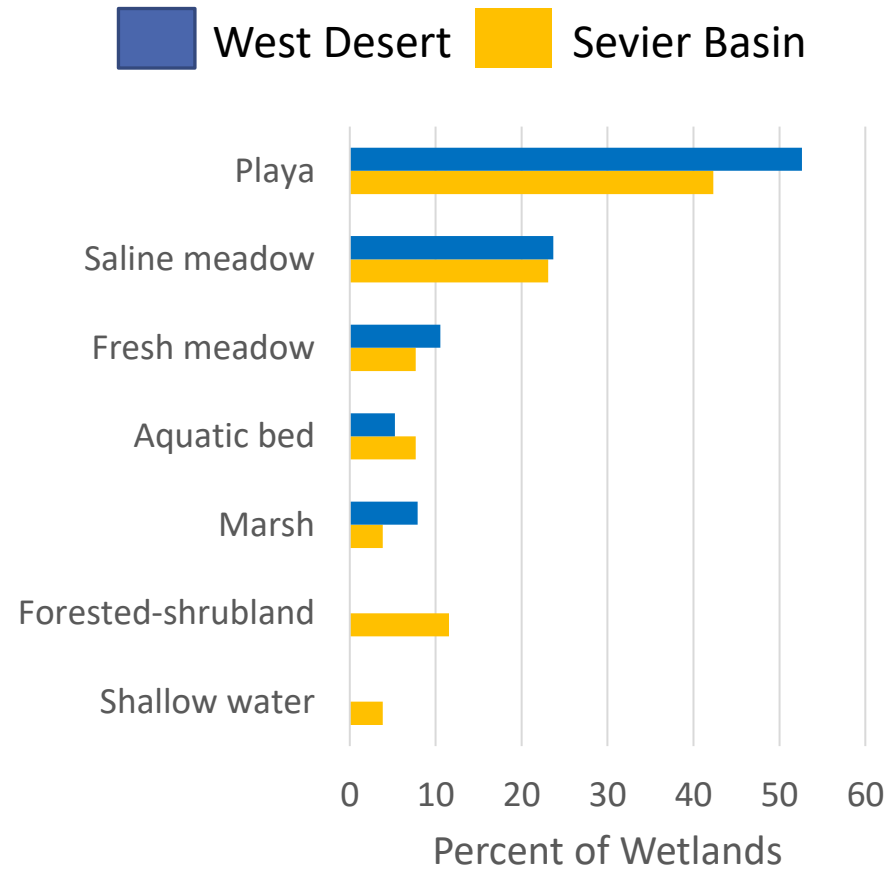
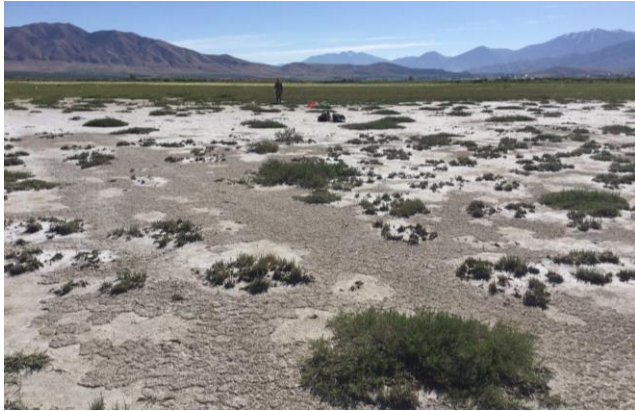
North Clay Knoll Reservoir



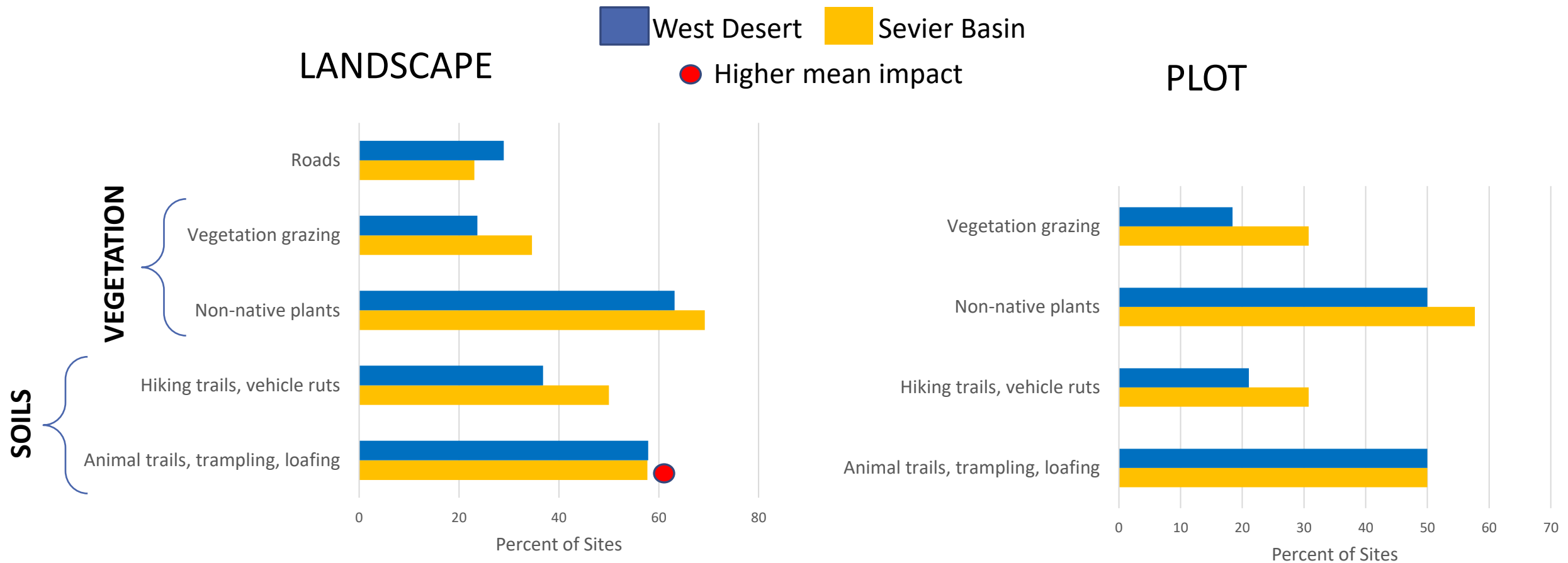
Sevier River Floodplain



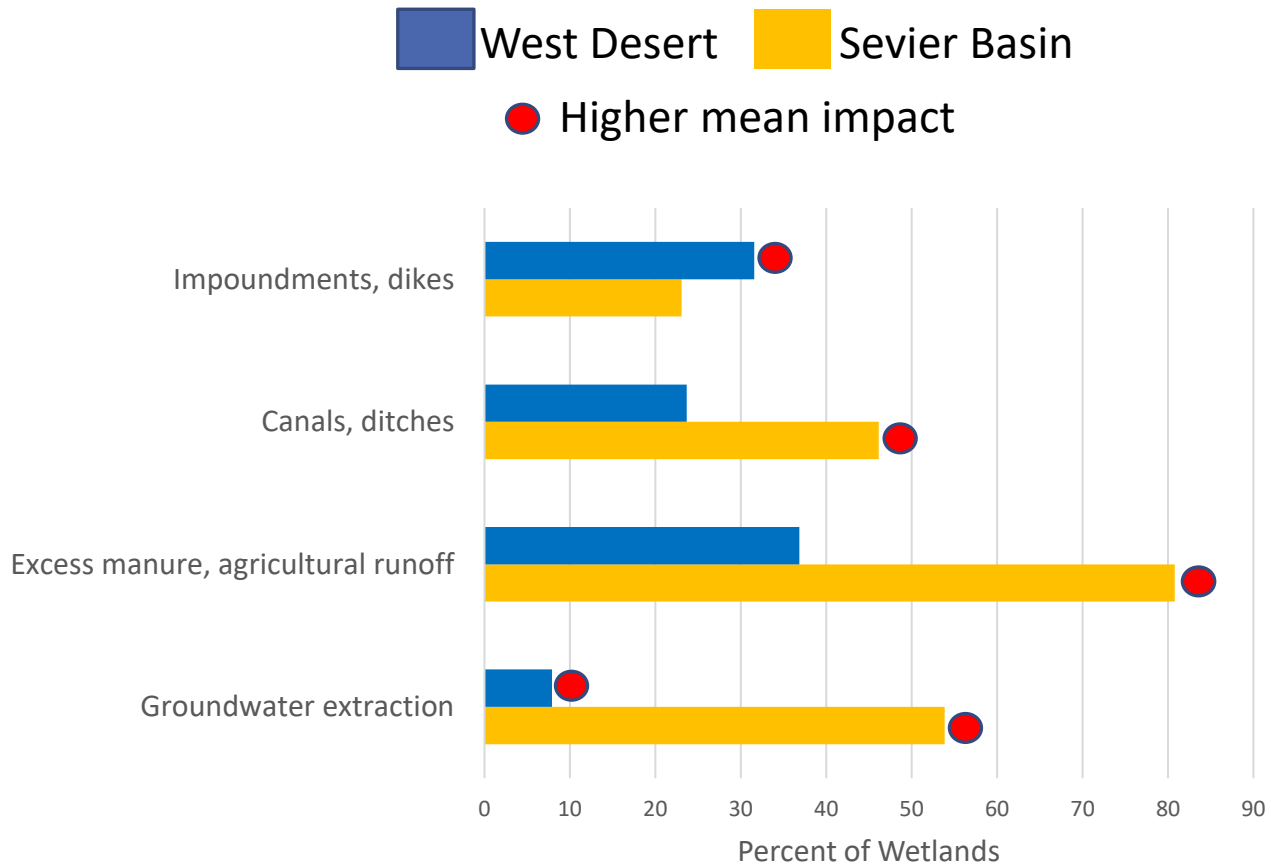
Wetland Types



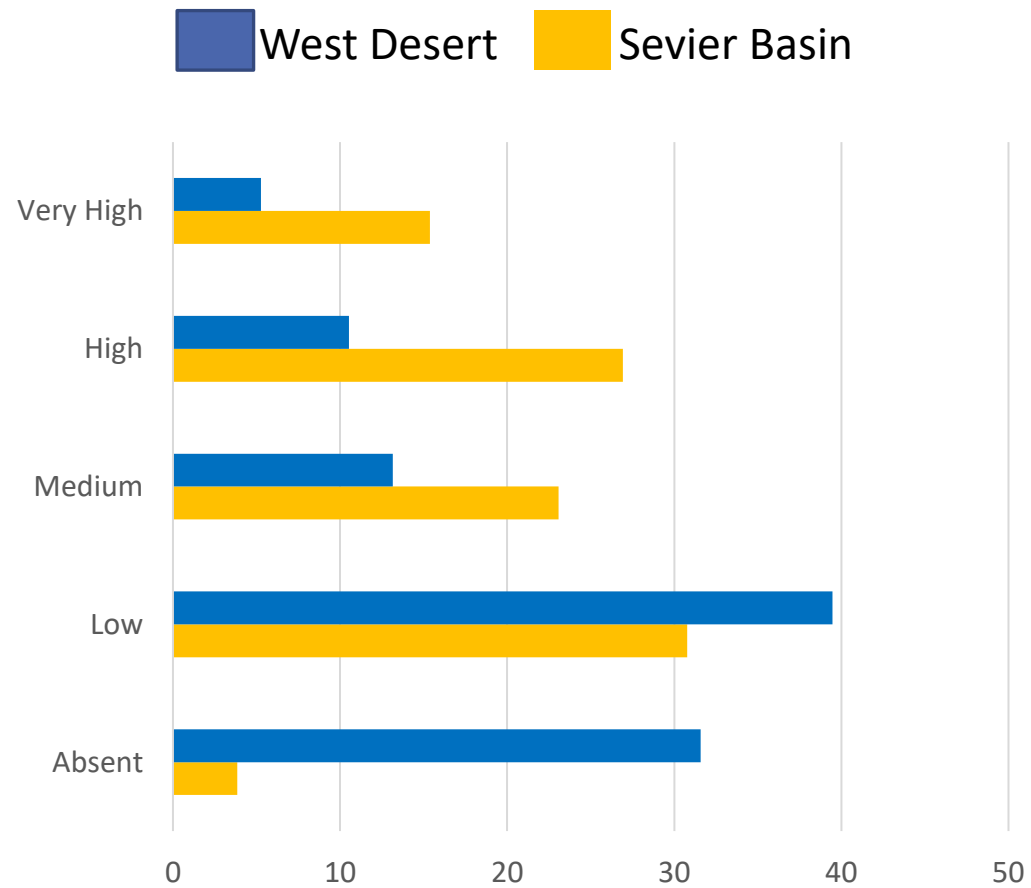
Buffer and Plot Stressors



Hydrology Stressors



Overall Stress by Categories





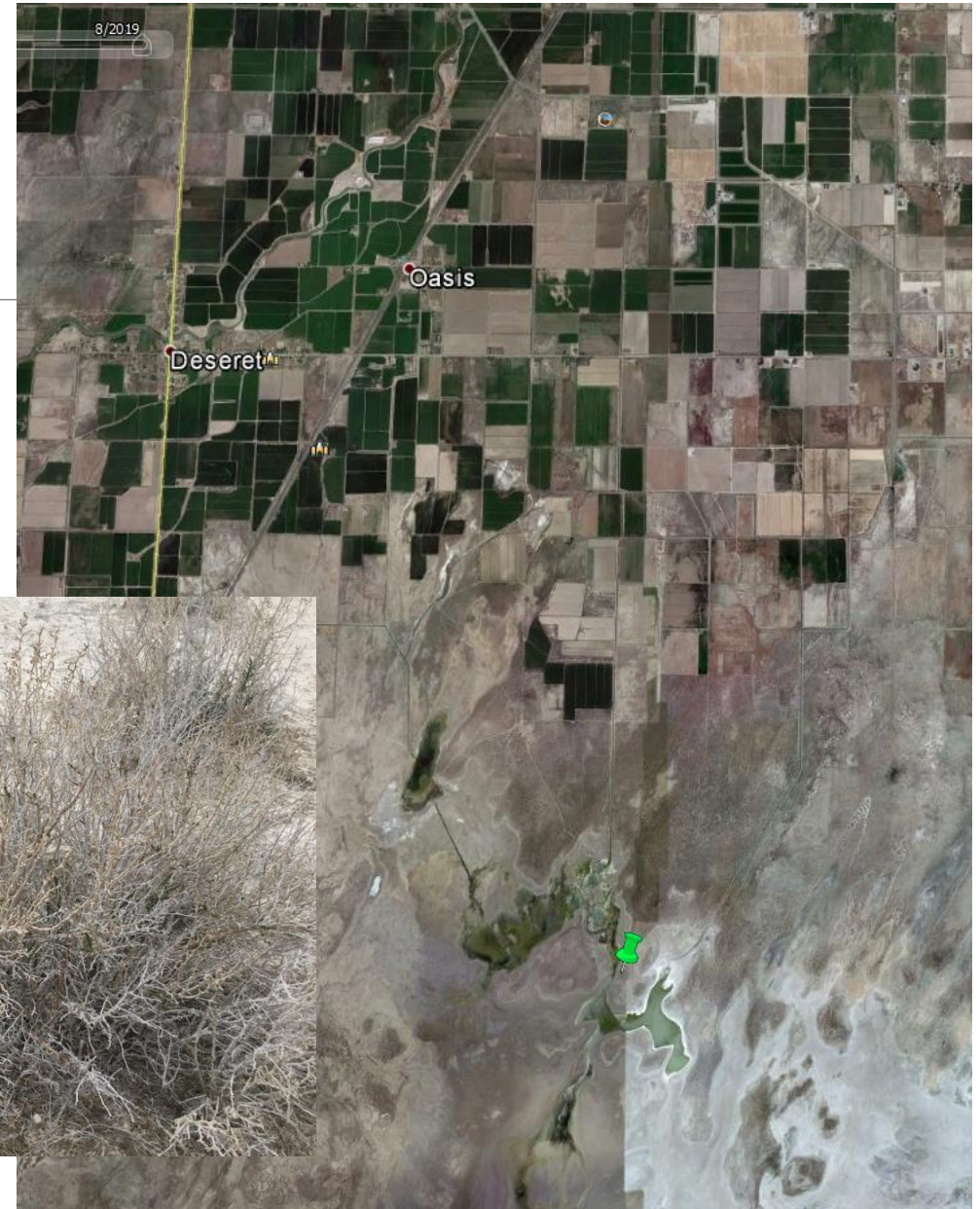
Condition Results

- At least half of sites scored as A for almost all metrics in West Desert
- Metrics that frequently had high scores ($\geq 75\%$ sites with A or B in each strata)
 - Buffer and landscape elements
 - Connectivity
 - Absolute noxious cover
 - Site soil disturbance
 - Algae growth
 - Turbidity

Condition Results

Components scored C or D in $\geq 50\%$ of Sevier Basin sites

- Hydroperiod
- Water quality
- Litter accumulation
- Woody species regeneration

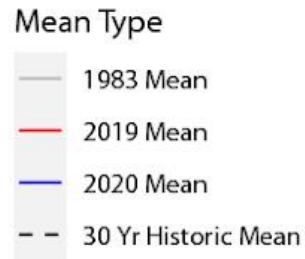
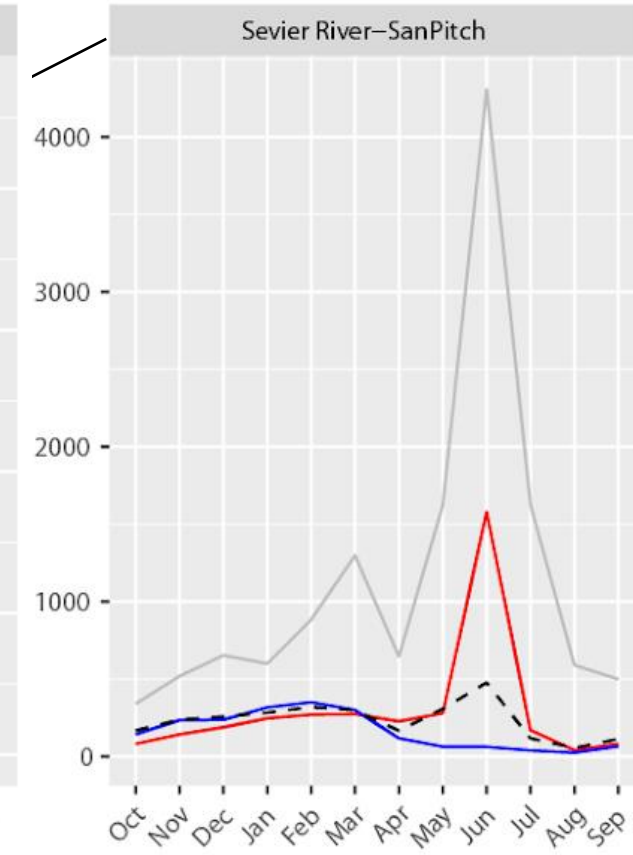
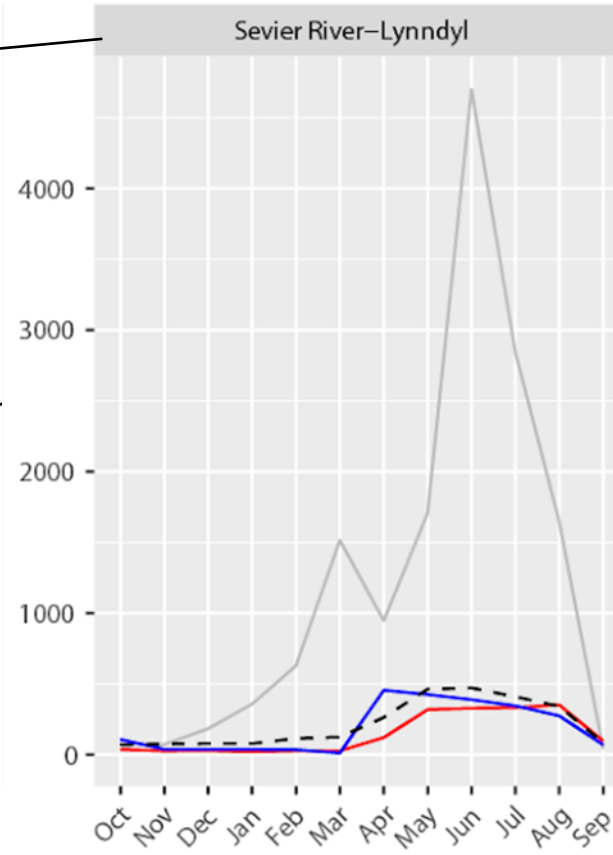
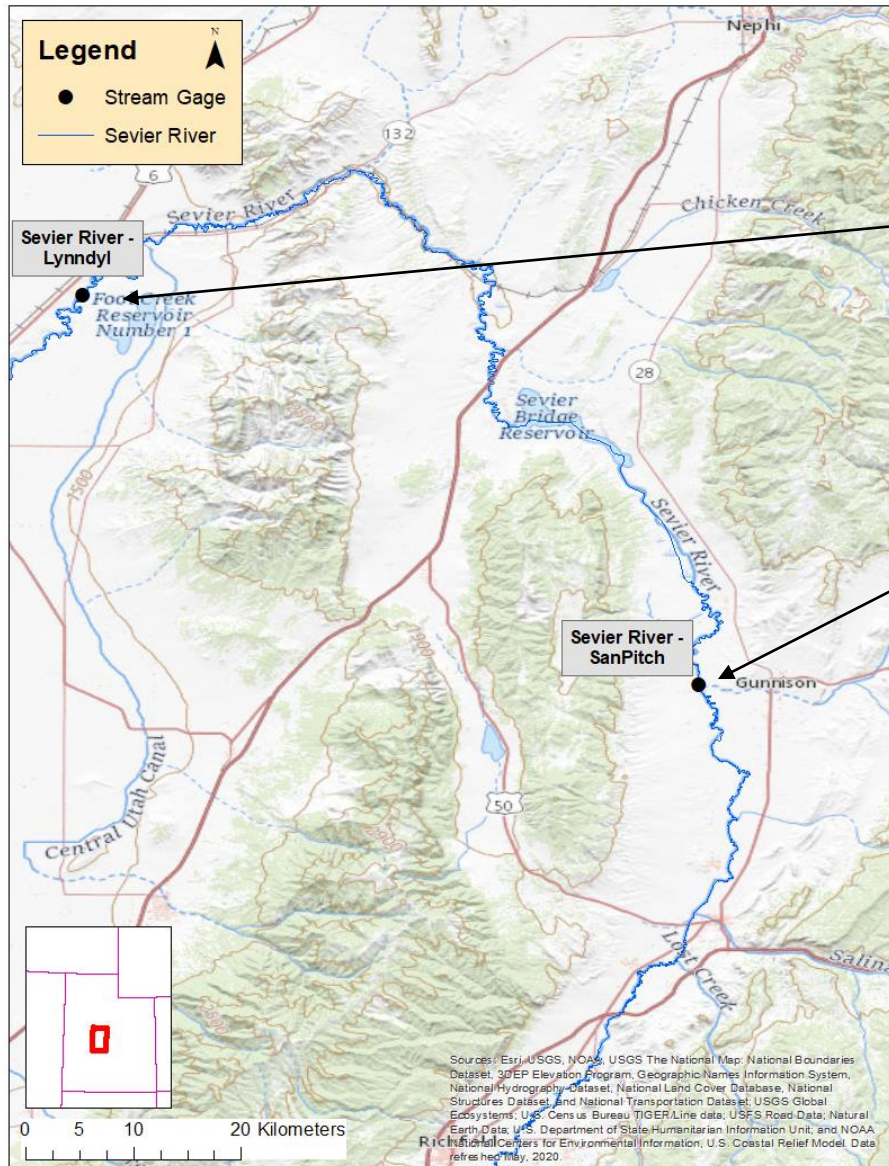


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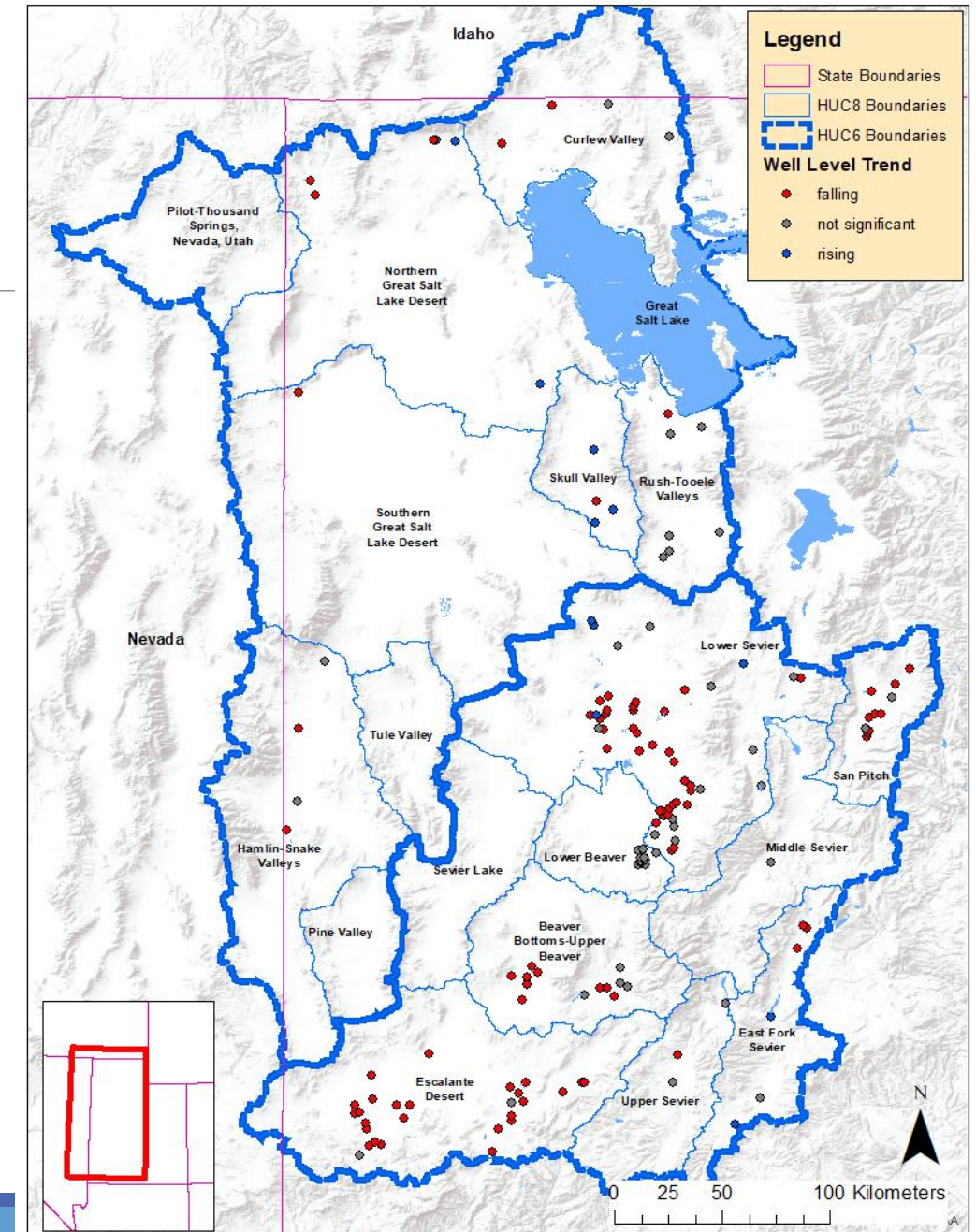
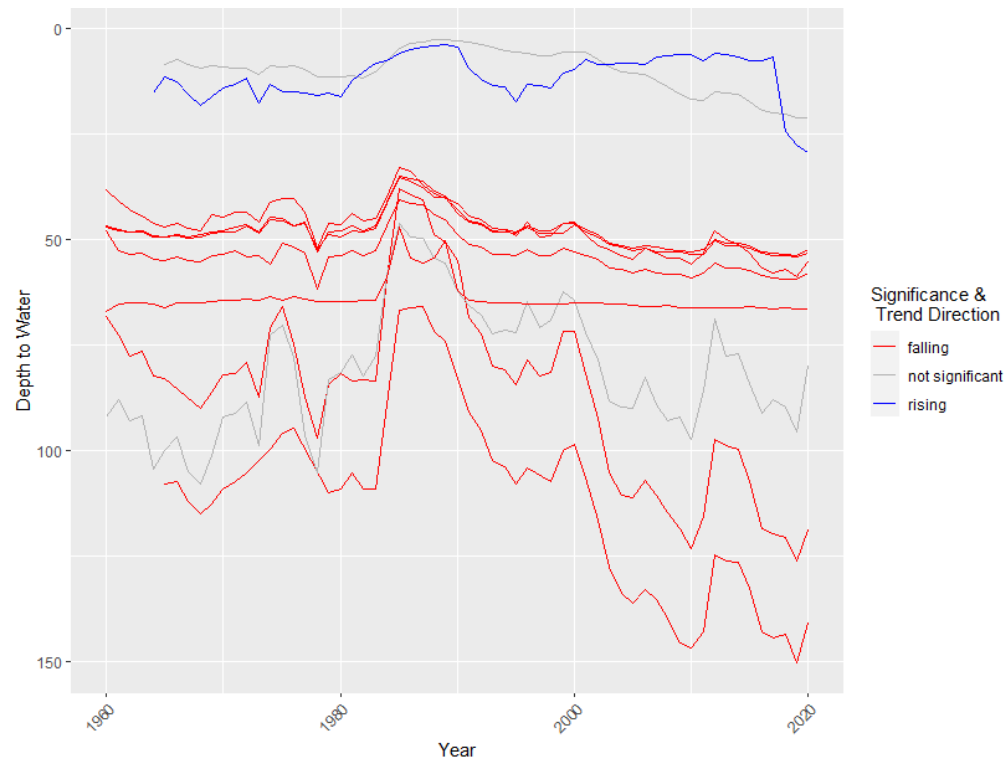


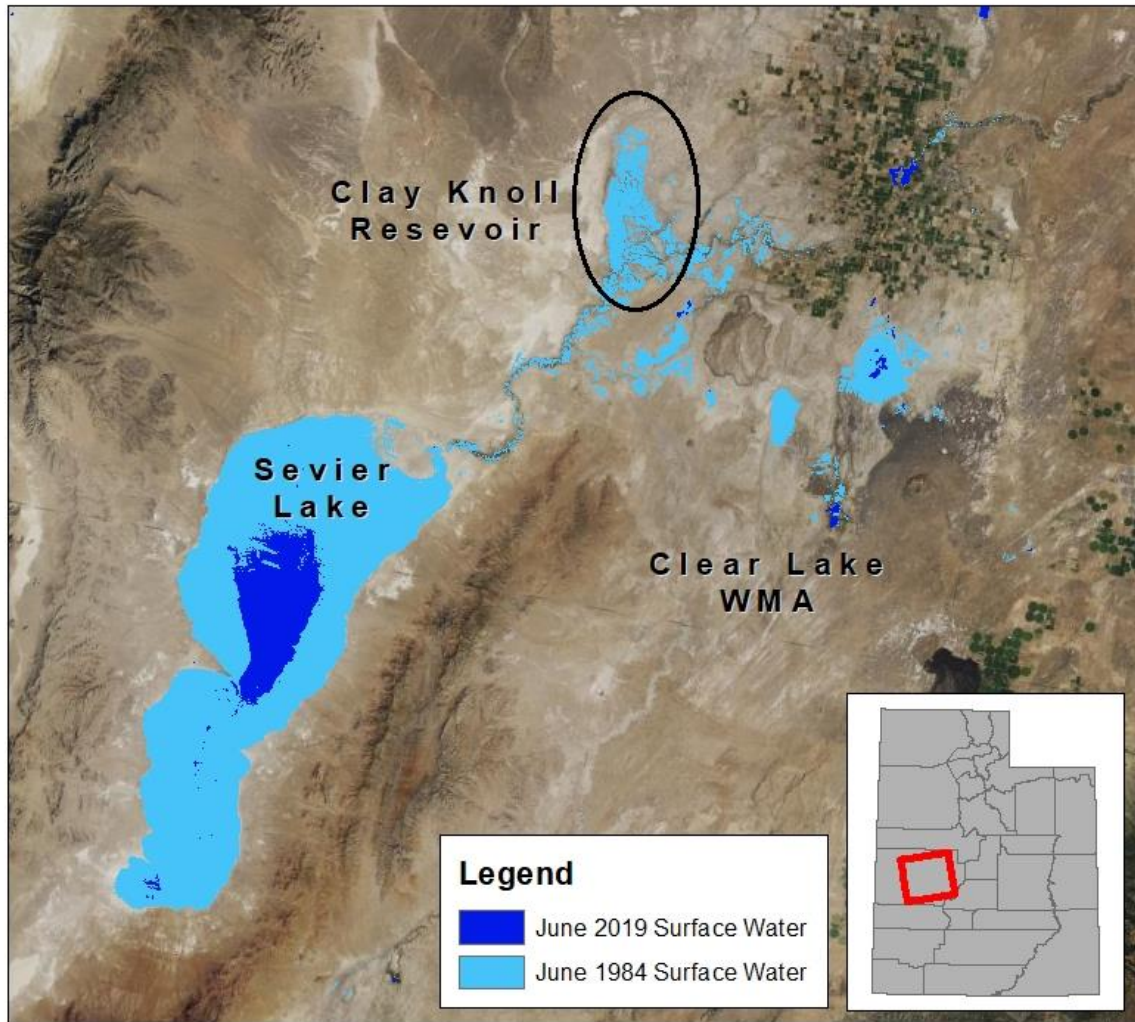
Stream Gage Locations



Groundwater Trends

Lower Sevier



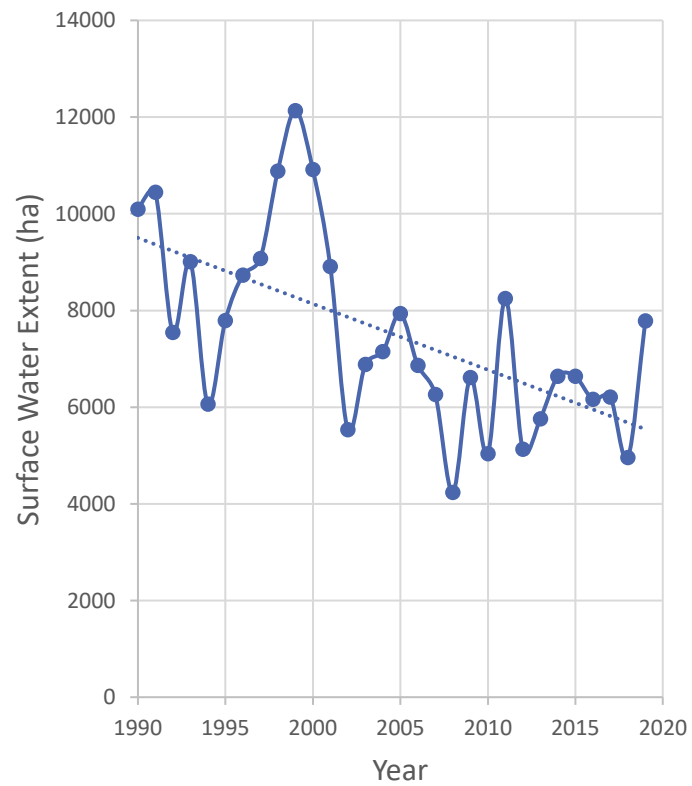


Surface Water Extent

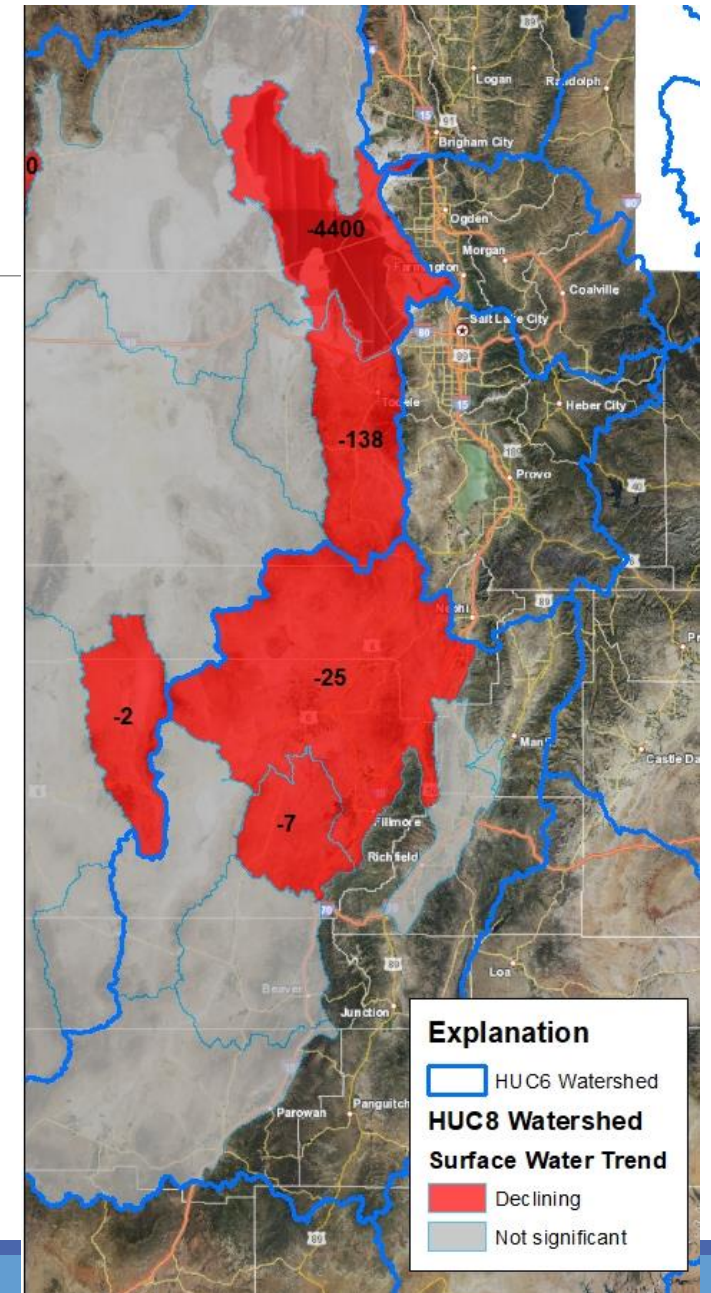
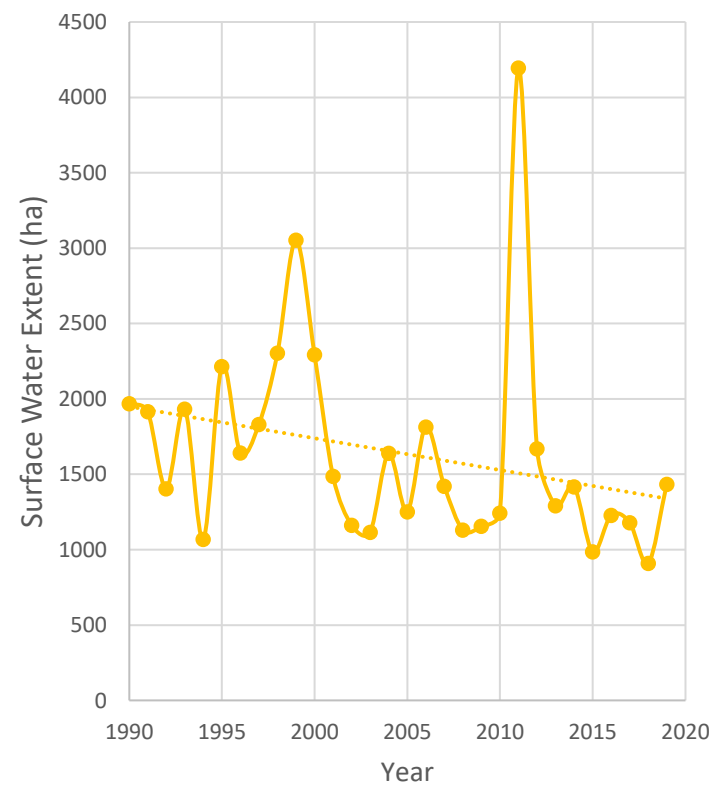
- Global Surface Water Explorer models surface water extent using Landsat imagery on a monthly basis
- Calculated mean May through September water extent in HUC8s and HUC12s in study area
- Ran Mann-Kendall Trend Test to evaluate for 30-year trends (1990-2019)

HUC8 Trends

Rush-Tooele Valleys

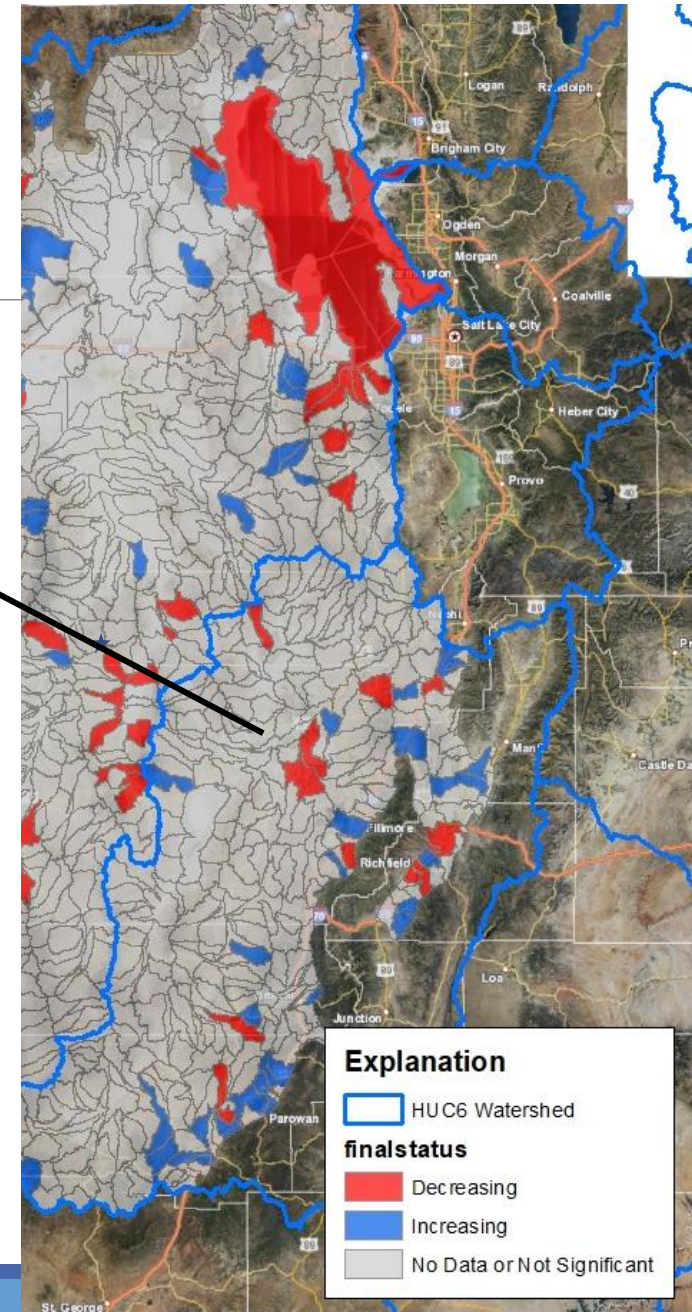
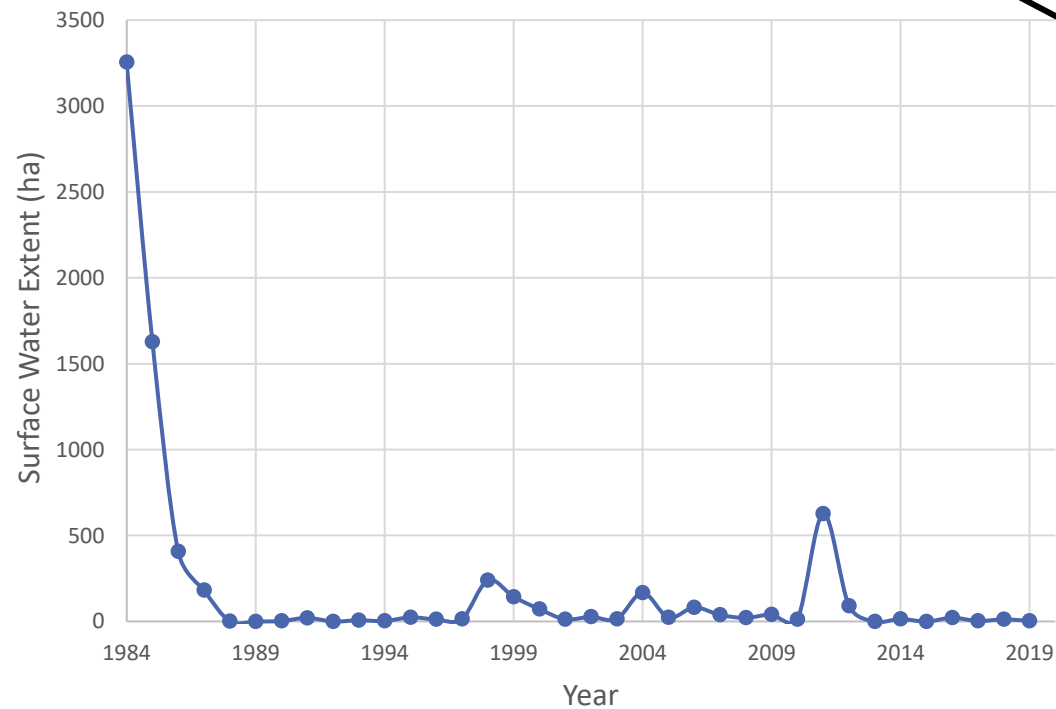


Lower Sevier

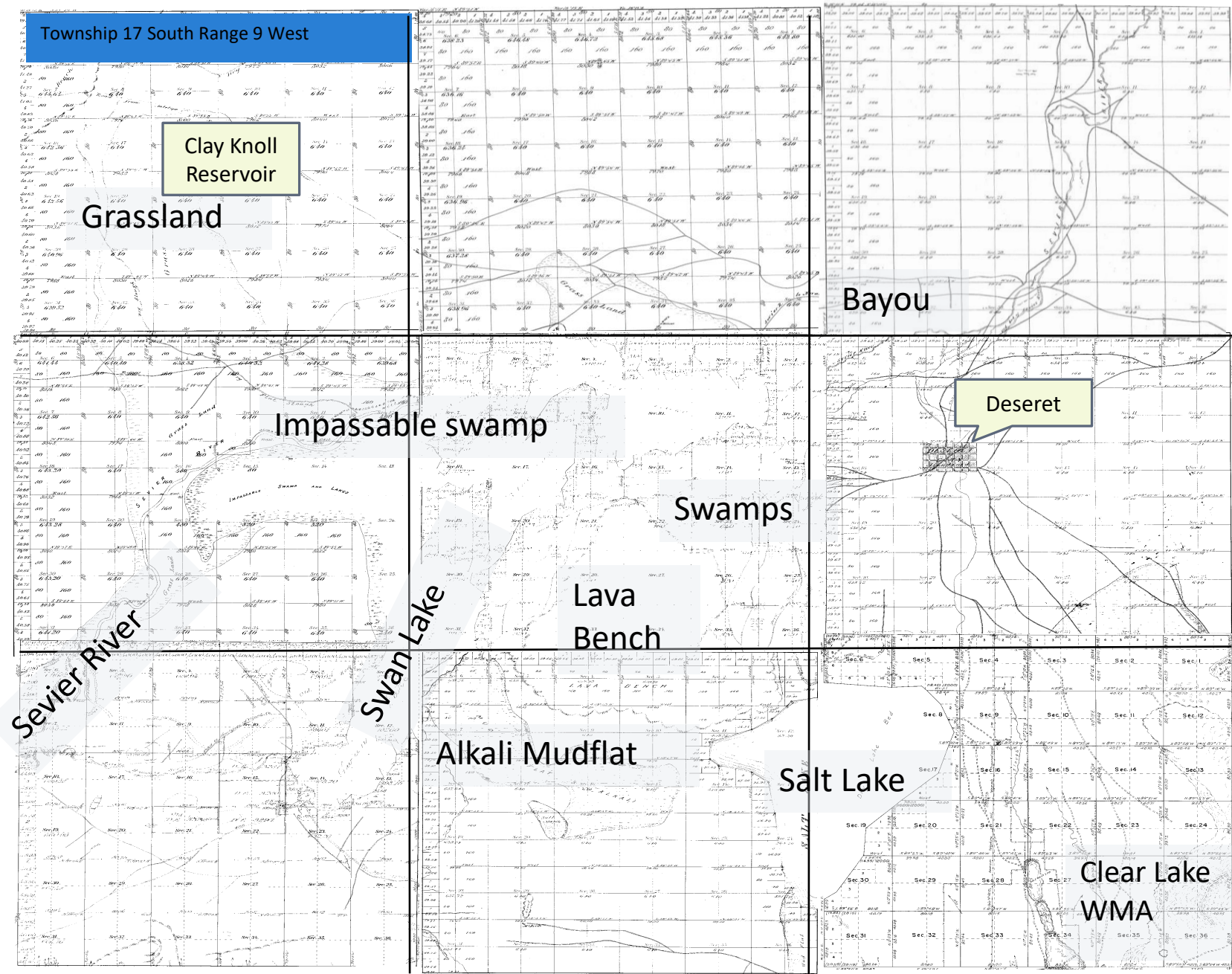


HUC12 Trends

North Clay Knoll Reservoir-Old River Bed



Delta was...a
delta?



Talk Overview

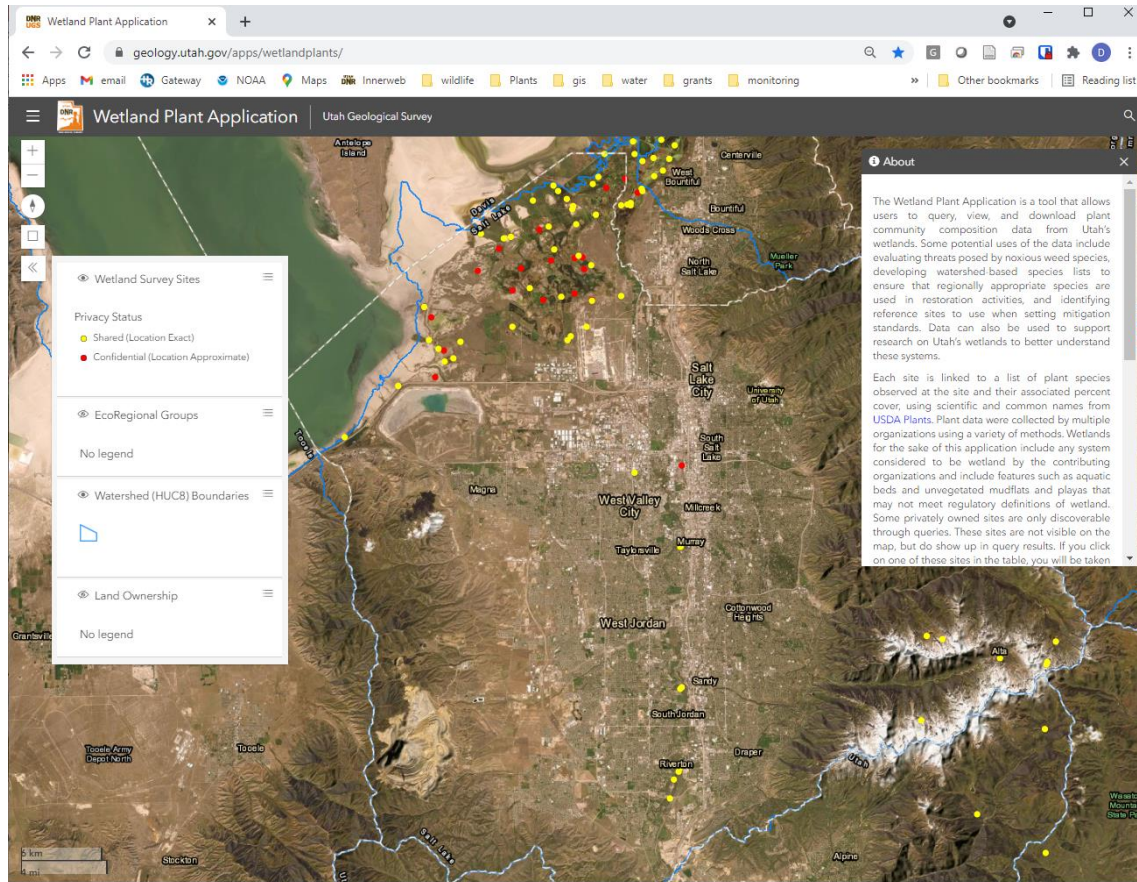
- Background
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Conclusions

- Many aspects of study area wetlands in good shape
 - Many wetlands located in remote settings with few landscape stressors.
 - Grazing common, but generally low impact.
 - Noxious weeds uncommon; native species dominate most sites.
 - Playa wetlands most common, tend to have less impacts from non-native species and anthropogenic activities such as grazing.
- However:
 - Results *do not* account for wetland losses.
 - Serious concerns about hydroperiod, water quality, and effects on vegetation structure in Sevier Basin.
- Loss of water top threat to wetlands in Sevier Basin
 - Decline in some areas occurred during early settlement
 - Decline in other areas likely ongoing
- Could we see similar losses in West Desert?





Outputs

- Final report to be published within year
- Vegetation data and key study results shared on online applications
- Future guide to Central Basin wetland plants

Acknowledgements

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- Funders: U.S. EPA's Wetland Program Development Grant and Multipurpose Grant; additional funding from the Endangered Species Mitigation Fund for mollusk-specific data collection
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