Nevada California Saline Lakes Workshop
Meeting Summary
10/18/2022 - 10/19/2022

Overview

The U.S. Geological Survey (USGS) Saline Lakes Ecosystems Integrated Water Availability Assessment (IWAAs) is a regional program to monitor and assess the hydrology of saline lakes in the Great Basin and the migratory birds and other wildlife dependent on habitats of saline lake watersheds. Twenty saline lakes across California, Nevada, Oregon, and Utah were identified by USGS partners as Great Basin priority ecosystems.

- California: Eagle Lake, Honey Lake, Mono Lake, Owens Lake
- California/Oregon: Goose Lake
- Nevada: Carson Lake, Carson Sink, Franklin Lake, Pyramid Lake, Ruby Lake, Walker Lake, Winnemucca Lake
- Oregon: Lake Abert, Harney Lake, Malheur Lake, Silver Lake, Summer Lake, the Warner Lakes
- Utah: Great Salt Lake, Sevier Lake

In Fall 2022, the USGS hosted three workshops, each tailored to a specific geographic area – Great Salt Lake, Nevada-California, and Oregon. These workshops were structured to identify and document environmental data collection activities and scientific monitoring and assessment needs that can be used to inform management decisions for the identified saline lakes watersheds and the wildlife that depend on them. The information gathered from all three workshops will be considered and incorporated into a publicly available strategic science strategy that will guide Saline Lake IWAAs activities and compliments and augments the environmental monitoring and assessment activities of federal, state, and local organizations.

During the Nevada California regional workshop, partners and stakeholders were informed about the goals and objectives for the Saline Lakes Program and were provided opportunities to give input during breakout group discussions. Throughout the 2-day workshop, participants had discussions about priority lakes of concern as well as discussions around viewing all terminal lakes in the Great Basin as interconnected. Discussions focused on past and current data collection activities, gaining diverse knowledge from experts, identifying missing information and knowledge, and determining participant priorities on which science-based information managers need to inform decisions. Throughout the workshop, breakout group discussions were facilitated by USGS employees.

Attendance

Seventy (70) participants attended the 2-day workshop, including federal, state, non-governmental organization (NGO), and research institute partners.

Presentations

USGS Presentations:

- Megan Saksa & Melanie Steinkamp, USGS, ''Saline Lakes Program, integrated science between the Water Management Area and Ecological Management Area'
- Rebecca Frus, USGS, 'Saline Lakes Ecosystem Integrated Water Availability Assessment'
- David O'Leary, USGS, 'Saline Lakes Ecosystem Literature Review'

Landscape as an Interconnected System Data Collection Presentations:

- Rachel Esralew, U.S. Fish and Wildlife Service, 'Water monitoring and water resources projects at selected National Wildlife Refuges that manage terminal lake ecosystems'
- Blake Barbaree, Point Blue Conservation Science, 'Intermountain West Shorebird Surveys: A 30-year perspective of the health of a critical network of saline lakes and freshwater wetlands'
- Andrew Johnson, Bureau of Land Management, 'BLM's assessment, inventorying, and monitoring program'
- Patrick Donnelley, U.S. Fish and Wildlife Service, 'Intermountain West Joint Venture: Wetland science and monitoring tools'

Regional & Lake Scale Data Collection Presentations:

- Chantal Losso, Nevada Division of Natural Heritage, 'New tools for statewide wetland assessment and monitoring'
- Sudeep Chandra, Global Water Center, University of Nevada – Reno
- Ryan Carle, Oikonos Ecosystem Knowledge, 'Results of coordinated phalarope surveys at western North American Saline Lakes, 2019-2022'
- Peter Stanton, Walker Basin Conservancy, 'Walker Lake: Progress and challenges in the first decade of the walker basin restoration program'

Key-Themes

Participants took part in four breakout discussions throughout the workshop focused on a variety of topics. The following summaries are organized by key themes identified in breakout room discussions.

<u>Saline Lakes of Greatest Concern</u>

In breakout groups, participants discussed which saline lakes were of greatest concern to them and their organizations or Tribes. Lakes listed by breakout groups include (in alphabetical order): Adobe Lake, Black Lake, Eagle Lake, Franklin Lake, Honey Lake, Humboldt Sink, Mono Lake, Owens Lake, Pyramid Lake, Ruby Lake. Participants discussed the significance of these

lakes for bird habitat, aquatic species, and adjacent human communities. They also discussed the interconnectedness of Saline Lakes in the Great Basin including precipitation levels, variable water levels, and the impact that timing of water levels may have on bird species.

Missing Landscape Scale Knowledge

After a series of presentations regarding landscape scale data collection participants discussed missing knowledge at that scale. Participants identified gaps including:

- bird distribution and movement throughout the Great Basin region
- how birds adapt to changes in the system, including a better understanding of ephemeral habitats
- better forecasting of water availability and for smaller-scale data – such as climate data
- detailed information on water rights, specifically withdrawal/diversion information, and policies that impact water availability
- the impacts of groundwater withdrawals, including withdrawals for irrigation, on the ecosystems
- connecting the impacts of food webs at multiple scales
- a monitoring plan at the landscape scale rather than for specific sites that could lead to a better understanding of the whole system

Past & Current Data Collection Activities

Workshop participants were asked to identify their past, current, and future data collection activities in breakout groups to inform the USGS Saline Lakes Science Strategy. Participants identified:

- bird surveys and banding, specifically on shorebirds and waterfowl
- soil and water data
- watershed-scale model development
- bathometry measurements
- water budget calculations

Missing Lake Specific Knowledge

Following a series of lake data collection presentations specific to the Nevada California geographic region, breakout group participants were asked to identify missing knowledge on specific lakes. Participants identified gaps including:

- some lakes lack baseline data
- many lakes need long-term monitoring
- limited data on water availability, water cycling, water quality - including mining impacts on water quality, groundwater, snowpack, sedimentation, surface water/groundwater interactions, and evaporation
- limited information on the impact of dust on the ecosystems
- more data needed on food webs

- limited knowledge about the impact of restoration efforts
- a better understanding of the interconnectedness of water and habitat use. Are we conserving, restoring, protecting the right habitat, in the right place, at the right time?
- existing data accessibility challenges
- limited solutions for cost-effective data collection

Managers' Science Needs

In breakout groups participants were asked to consider what science would be most helpful for managers. In general, participants identified that mangers have different data needs and too much data may prove more challenging. When there is too much data, it is not clear to the managers which issues should have priority focus. There were questions around how much trust managers can put into predictive models as climate change impacts the region. Participants also discussed:

- the need for data from local landowners and water boards
- a need for real-time monitoring and remote sensing at the right geographic scale and timeframe
- data on soil types
- accurate water budgets
- comprehensive data on a wider variety of bird species at an equivalent level of detail across species

Priority Data Gaps

The final workshop activity was an exercise to prioritize and reflect on the data gaps participants had identified in breakout discussions. A virtual whiteboard captured each data gap on individual sticky notes and the language of the identified data gap was refined by participants. Participants were asked to indicate their top three priority data gaps using stickers they could drag and drop on to the virtual white board. These priorities will help inform the USGS Saline Lakes Science Strategy and Implementation Plan. Participants identified the following top priorities:

- additional groundwater/surface water monitoring to better understand the interactions and threats, including changes to precipitation and temperature patterns and timing, at the watershed level.
- water budget calculations, including evapotranspiration for certain saline lakes
- identification of key habitat characteristics and conditions, and potential changes to those in the Great Basin
- tracking movement of individual birds to determine how habitats are used across the Great Basin Saline Lakes, habitat connectivity, and populations of specific bird species using telemetry or the Motus network
- forecast water availability into the future and include appropriately scaled climate metrics

- track water-use and water demand

Next-Steps

Information gathered at the workshops and in other discussions will be blended with the literature review that is currently in progress. The blended information will inform the development of the USGS Saline Lakes Science Strategy and Implementation Plan. The Strategy and Plan will help guide environmental data collection activities and scientific research of the Great Basin Saline Lakes ecosystems to better inform and support management decisions. The goal is to have a plan that is nimble and able to adapt as needed. USGS Saline Lakes Team members may reach out to some participants for clarification on what was heard during the workshop or to provide expertise. Additional communication points with participants and the public are planned.