Diminishing Lakes Pose Serious Consequences for Communities, Livelihoods, and Wildlife

Why we should act at Great Salt Lake before it's too late.

Wilson's Phalarope, a globally declining species, is dependent on western saline lakes and adjacent wetlands during fall and spring migration. Photo: Lillian Bowling-Kaufman Photography, Inc.

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Throughout the world, millions of migratory birds are drawn to saline—or salt—lakes and the mosaic of wetlands that border their shorelines. These lakes and their water sources also benefit millions of people, their businesses, their livelihoods, and quality of life.

Yet, alarming stories and photos of drying lakes across the globe point to devastating impacts that arise when these lakes no longer receive needed water flows.

Recognizing that Great Salt Lake's water levels are on a long-term decline, Audubon joined the *Great Salt Lake Advisory Council* in Utah commissioned a report to more fully understand the social, environmental, and economic consequences that arise when saline lakes lack sufficient water. The report, *Consequences of Drying Lake Systems Around the World*, surveyed eight such lakes and found there are significant threats to human health from dust and substantial harm to livelihoods, as well as negative impacts to birds, other wildlife, and recreation and tourism opportunities. In some cases, the costs of a declining lake have exceeded billions of dollars.

The report examines:

- *Owens Lake, Salton Sea, and Mono Lake in California*
- *Lake Urmia and Bakhtegan Lake in Iran*
- *Aral Sea situated in Kazakhstan and Uzbekistan*
- *Lake Poopó in Bolivia*
- *Dead Sea in Israel and Jordan*

While each lake is unique, with challenges specific to the location and circumstances, the similarities are striking. Most often, it is the increased demand for water, which is then diverted, that is a primary driver in reducing flows (and water levels) to these lakes and often intensified by drought and changes in temperatures affecting precipitation and evaporation. The report identifies adverse outcomes for nearby and regional communities. Just a few mentioned in the report include:

- Toll on **public health** - High levels of exophagal cancer and respiratory illnesses near Aral Sea due dust from exposed lakebeds; unhealthy levels of particulate matter at Owens Valley, Salton Sea and Lake Urmia.
- **Mitigation** reaching into the billions of dollars to minimize or control dust and replace some habitat features to mitigate damage and control dust. Owens Lake mitigation efforts will cost $5.6 billion* through 2025; initial reclamation for the Dead Sea will total $3 billion; $472 million for a 10-year phase of habitat restoration and dust mitigation at Salton Sea.
- **Harm to livelihoods**, such as at the Aral Sea where some 60,000 fishing jobs were lost due to the collapse of the fishery from increasing salinity and elimination of spawning and feeding areas; and major declines in agricultural productivity from increased salts in soil and on crops.
- A loss of **birds and fish** due to the demise of habitat and food sources.
- Major **decreases in property values** including an estimated $7 billion at Salton Sea
- **Tourism and recreation** economies at-risk. Some $1.6 million in property at Lake Urmia.

**Note: All financial figures in 2019 Dollars*

The report illustrates that surrounding communities and governments face enormous challenges addressing the negative impacts of drying lakes. Taking action after the situation reaches a crisis stage, if action is taken at all, is rarely and almost completely restore the losses to the environment, to businesses, or to communities.

Waiting until there is a crisis at Great Salt Lake provides the least effective opportunity to develop responses and solutions.

The Opportunity for Utah and Great Salt Lake

Although water levels at Great Salt Lake and its wetlands vary seasonally, and naturally over time, it levels drop too far and for too long the lake's ecosystem cannot continue to fully benefit the surrounding communities, the businesses, or the birds that rely on it. Often we hear that lake levels have been low before, but the lake has bounced back —such as in the 60s when the record low occurred, or in the early 1990s and 1990s when levels also dipped down. But, a 2017 report explains that consumptive water uses over the last 150 years have reduced river inflows by 29 percent and lake elevations by approximately 6 feet resulting in an overall sustained downward trend. The lake's ability to bounce back in the future is more uncertain now than ever given Utah's anticipated population growth (nearly doubling by 2065), climate stress, proposals for large upstream diversions and pressures to divert and reuse wastewater flows that currently supply the lake.

The consequences that arise from extended periods of low water inflows at saline lakes are not theoretical. Utahns are in a unique position to start working now on solutions to guide long-term water planning that include a clear and collective vision for Great Salt Lake and Utah's future.

That's why Audubon supported the *2019 Concurrent Resolution by the Utah Legislature and the Governor to Address Declining Water Levels at the Great Salt Lake*", which recognizes the importance of ensuring adequate water flows to the lake and its wetlands and the need for a policy that "supports effective administration of water flow to the lake and its wetlands to maintain or increase lake levels, while balancing economic, social, environmental needs, including the need to sustain agricultural land."

What this means for Saline Lakes and Birds in the Arid West

Audubon has long recognized the importance of saline lakes to migratory birds and people. Many of Audubon's chapters in Utah, Nevada, California and Oregon, along with the Audubon California state office have worked for decades to protect Owens Lake, Mono Lake, Salton Sea, Lake Abert, Lahontan Valley and Great Salt Lake.

Water from California's Owens Lake was almost entirely diverted to Los Angeles in the early 20th Century. Because of air quality issues, Los Angeles was required to control dust from the dried lakebed. In 2014, a group spearheaded by Audubon California and Eastern Sierra Audubon and comprised of other conservation groups, Native American tribes, industry, state and federal agencies, worked with the City of Los Angeles to complete a Master Plan that set a course to maintain wildlife habitat at Owens Lake while controlling dust. Some of the mitigation measures include spreading gravel and planting vegetation, in addition to efficient water-based measures to create shallow flooding areas, mudflats and islands providing important shorebird habitat. Now supporting hundreds of thousands of shorebirds during spring and fall migration, to mark Owens Lake as the Audubon Society's first site of the Western Hemisphere Shorebird Reserve Network site.

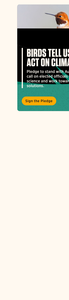
The Salton Sea is one of the few remaining large inland bodies of water in California where migratory shorebirds and waterbirds can find refuge. For more than a century it was a major resting and stopover site for upwards of 400 species and millions of birds. But the sea is losing 40 percent of its inflows and lake levels will drop by 40 feet over the next 15 years, exposing almost 100 square miles of lakebed, as water is diverted to help meet the needs of southern California. The loss of the inland water source has serious health and economic ramifications for people, especially nearby communities. It will also affect the wildlife that depend on the Salton Sea.

Audubon California identified and modeled 38,000 acres of different habitats needed to sustain bird populations and to relieve the State of California's or-Your Plan to reduce dust. Unfortunately, even with a dust plan and several hundred million dollars in funding to build the habitat and dust mitigation projects, implementation is behind schedule. Finding solutions and funding are key steps, but putting plans into action is urgently needed now before air quality conditions worsen and we lose more species of birds at the Sea either to disease from poor water quality or abandonment due to lack of habitat. The relevant communities that lies around the sea and the species that depend on the sea for habitat need the State of California to fulfill its promise of a sustainable Salton Sea for people and wildlife.

Great Salt Lake and its Wetlands - an Essential Hub in a Network of Saline Lake Habitats in the West

Audubon's 2015 report, *Water and Birds in the Arid West: Habitats in Decline*, explored the water challenges facing saline lakes in the Intermountain West. It found that shorebirds, other waterbirds and waterfowl use these unique lakes and their wetlands as a network of habitats and critical stopovers. There is no similar network of habitats in the West that can meet the needs of many of these shorebirds and waterbirds. Audubon identified nine priority lake systems, three of which located in California are examined in the Consequences of Drying Lakes report —every saline lake in the West is at risk of drying.

Great Salt Lake is not only an immeasurably vital resource for Utahns, it also is a centerpiece in that network of saline lakes that are the Intermountain West. With more than 7 million birds using Great Salt Lake annually, degradation of habitat and lack of water will create devastating for birds and the Western saline lake network as whole. The drying lakes report reinforces the importance for Utahns to be proactive and work together on water issues facing Great Salt Lake.



Great Egret. Photo: Melissa Groo/Audubon Photography Inc.