Water and Birds in the Arid West: Habitats in Decline
UNITED NATIONS — Nigeria. Syria. Somalia. And now Iran.

In each country, in different ways, a water crisis has triggered some combination of civil unrest, mass migration, insurgency or even full-scale war.

The ecological catastrophe that turned a vast Bolivian lake into a salt desert

Cape Town could become first major city in world to run out of water after 90-day warning

South African city's mayor warns supply will run dry in April on 'day zero‘
We all rely on water

Populations of birds are in danger with severe declines in habitat

Photos, clockwise from top left: Mary Miguez/Audubon Photography Awards; Melissa Groo/Audubon Photography Awards; Gary L’Estrange Photography/iStock; Megumi Aita/Audubon Photography Awards
Water Issues in the Arid West
Western Water Initiative

Saline Lakes & Associated Wetlands

- Great Salt Lake
- Lahontan Wetlands
- Lake Abert
- Owens Lake
- Salton Sea

Colorado River Basin

Lotem Taylor/Audubon
Lahontan Valley, Nevada
Key Migrant Shorebirds

- American Avocet
- Black-necked Stilt
- Marbled Godwit
- Western Sandpiper
- Least Sandpiper
- Long-billed Dowitcher
- White-faced Ibis
- Wilson’s Phalarope

Photos: Tom Grey
More than 50% of the world's population of American White Pelicans rely on western saline lakes.
American Avocet
> 50 % global population

Snowy Plover
> 20 % global population
What is Audubon’s Water and Birds in the Arid West Report?

- Summarizes the status and threats to birds and their habitats in the arid West
- Focuses on Saline Lakes and Colorado River Basin
- Available on Audubon’s website [www.audubon.org/westernwater](http://www.audubon.org/westernwater)
- Findings include saline lake habitats are in decline
- Threats include water development and climate change
Saline Lake Priority Birds

- Ruddy Duck
- Eared Grebe
- American White Pelican
- White-faced Ibis
- American Avocet
- Western Snowy Plover
- Marbled Godwit
- Western Sandpiper
- Wilson’s Phalarope

Photo Jim Burns/Audubon Photography Awards
American Avocet

Photo Tom Grey

Plissner et al. 2000
A Network of Habitats for Birds
Data Visualization by Katie Peek
Source: *Water and Birds in the Arid West*, National Audubon Society, July 2017
American White Pelican

Saline Lakes in Intermountain West support more than 50% of Global population
Eared Grebe

Saline Lakes in Intermountain West support more than 99% of North American population

Photo Peter Knoot
If water levels decline simultaneously across sites, little redundancy is left in the network of western saline lakes.

Jehl and Johnson 1994
Saline Lakes & Associated Wetlands - Threats

In 2014 and 2015, many saline lakes in the Intermountain West were at their near lowest or lowest levels, or completely dry.

- Water Diversions
- Habitat Conversion
- Drought
- Water Quality
- Climate Change

Side-by-side comparisons of satellite imagery comparing 1985 and 2015; two years separated in time for which precipitation across the western U.S. was similar for a two-year period (1984-85 and 2014-15).
Salton Sea only significant increase in inland water habitat among notable losses since 1899 (numbers in m²)

- Lower Klamath: -457
- Central Valley: -7,600
- Mono Lake: -20
- Owens Lake: -108
- Tulare Lake*: -687
- Lower CO River Delta: -2,780
- Salton Sea: +360

* The disappearance of Tulare Lake was part of the larger habitat loss of the Central Valley.
- Water rights are over allocated
- No water right for Lake Abert
Chewaucan Basin agricultural lands

Photo Stan Senner
Solutions for People AND Birds

Photo Melissa Groo/Audubon Photography Awards
Progress against the odds
Owens Lake restoration
Salton Sea, California

Photos: (from left) Courtesy of the Salton Sea History Museum; Drew Feldman
LA CRISIS DEL SALTON SEA ES REAL
CA.AUDUBON.ORG/SALTONSEA
Salton Sea birds across the hemisphere

Each white dot on this map indicates a bird that was banded at the Salton Sea and recovered elsewhere in the Western Hemisphere. This data includes 78 species of birds banded between 1998 and 2014. The program is overseen by the U.S. Geological Survey.
Salton Sea

Photo Tom Giebel/Creative Commons Atomische
Map of Great Salt Lake showing the historical high, low and average levels from 1900-2016.

- Agriculture
- Urban uses
- Salt mining
- Brine shrimp industry
- Recreation & tourism
- Wildlife

Source: 2017 UGS Open File Rpt. 661 – Utah Wetland Functional Classification v.1, - Fig. 1 - R. Emerson; R. Sempler.
Audubon’s Gillmor Sanctuary, Great Salt Lake
Looking Ahead

- More balanced solutions for water policy and water management
- Water sharing agreements, improve flows
- Increase public/private funds for water conservation and restoration
- Engage stakeholders
- Support additional science monitoring and research
- Improve understanding of habitat connectivity and climate change
Knowledge Gaps

• Baseline estimates of bird abundance
• Baseline estimates of habitat extents that can be updated regularly to assess change
• Monitoring of bird populations to understand responses to changing conditions
• Research to better understand migratory connectivity of birds among saline lakes and other regions
• Improved estimates of future water supply and corresponding impacts on birds
• Learn more www.Audubon.org/westernwater
• Send inquiries to science@audubon.org
• Contact Marcelle Shoop, Audubon’s Saline Lakes Director, at mshoop@audubon.org
• Or contact Karyn Stockdale at kstockdale@audubon.org