U.S. Fish and Wildlife Service

The Lahontan National Fish Hatchery Complex

Walker Basin Bulletin

A Program of the Desert Terminal Lakes Project

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USFWS Mission:

Working with others to conserve, protect and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people

Improving the Walker Basin for Wildlife, Recreation & Agriculture

Welcome to the first edition of the Walker Basin Bulletin. This newsletter will provide you with updates on programs that the US Fish and Wildlife Service (Service) is managing under the Desert Terminal Lakes Program (DTLP).

The Walker Basin is home to ranchers, farmers, fish, and wildlife. It's also important to anglers, hunters and the local economies. But balancing all these uses is a challenge.

The Service is one of many partners working to assess how best to improve river function, restore habitat, and increase water quality and quantity.

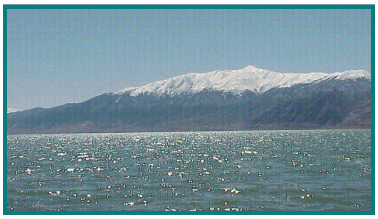
The Service has two programs under the DTLP. The first is **River Restoration,** focused on improving river function. The second is the **Fishery Improvement Program** focused on maintaining and enhancing the lake's ecosystem and the native fishery.

The work we are doing with our partners is intended to benefit all that call the Walker Basin "home."

Desert Terminal Lakes Program Overview

The Walker River is the third-largest river system in Western Nevada, with the Basin encompassing about 3940 square miles. Since the 1850's the river system has been the primary water source for agriculture in the basin.

The steady decline of Walker Lake's water level over the last century resulted in dramatic increases in salinity in the lake, severely impacting the lake's ecosystem.



Congress passed the Desert Terminal Lakes Program in 2002 to help "at risk" lakes such as Walker.

In 2005 the Service received funding to remove noxious weeds in the basin, restore river function, and rehabilitate riparian areas. Funding was also provided for fishery improvements in Walker Lake.

River Restoration Program

The River Restoration Advisory Group

US Fish & Wildlife Service's Lahontan National Fish Hatchery Complex

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Walker River Paiute Tribe

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Nevada Division of Conservation Districts

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Mason Valley Conservation District

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Smith Valley Conservation District

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Natural Resource Conservation Service

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Nevada Department of Wildlife

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The Nature Conservancy

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Walker River Irrigation District

Basin Assessment Report

Under the Desert Terminal Lakes Program (DTLP), the Service has received funding to address ways to improve river function and to remove invasive weeds that threaten the natural balance and biological diversity of the river and its flood plain.

The Service initiated a report on the historical and current conditions of the river to help prioritize restoration activities and funding of projects.

The report provides a general overview of the watershed followed by a focused description of river channel and river processes.

This report will help us develop recommendations for future conservation actions that we should take to improve habitat and river function.

The objectives of the study are to assess the physical environment of the Walker River, characterizing historic and current conditions.

The information will be used to identify current opportunities related to restoring to river function and habitat. Results from this report will also be used to monitor the success of restoration projects.

For this study, aerial photos of the basin dating back to 1938 were compared to more recent ones to determine how the river channel has changed over the decades. Scientists used aerial imagery to develop a digital map of the channel to understand how floods, drought and diversions have altered the river channel.

LiDAR, a method of using laser light beamed from low flying aircraft, was used to develop accurate topographic maps.

This newsletter will provide highlights from the basin report of how the river and basin have changed over the years and how those changes have affected the river's function.

We look forward to working with the advisory group and others to address issues related to river function that will help all who depend on the river and lake for their life or livelihood.

River Restoration Program continued

Noxious Weed Removal Actions

Tackling Tamarisk

Tamarisk is a deciduous shrub introduced to the western U.S. in the 1800's as an ornamental plant for windbreaks. It was introduced in the Walker basin around 1837.

Originating in central Asia, tamarisk has an extensive root system that grows deep into the soil. This allows tamarisk to grow further back from the river, occupy a large area, and use more water across the floodplain than native plants. It is well suited to hot, arid climates and alkaline soils common in the western U.S. These adaptations have allowed it to effectively exploit many of the degraded conditions in southwestern river systems today.

By the 1900's tamarisk stands dominated many low-elevation river, lake, and stream banks across the west, and today covers an estimated 1 to 1.5 million acres of land in the western U.S.

Tamarisk reproduces primarily through wind and water-borne seeds and requires a wet, open surface to establish itself. In the presence of established native vegetation, tamarisk seedlings are not as competitive. However, when native vegetation is suppressed, by conditions like late flooding, fire, drought, and animals eating native saplings, tamarisk is better able to invade. Once established, tamarisk grows so densely that it pushes out native vegetation. It also has a higher tolerance for fire, drought, and salinity than native plants and can actually increase fire frequency and intensity, drought and salinity. It is water intensive, with an average annual water usage of up to 4.2 acre-feet/acre.

Removing this invasive plant and re-establishing native vegetation is a major goal of this program. To help meet this goal, the Service is working closely with the Walker River Paiute Tribe to establish a demonstration tamarisk removal project on the Reservation. The project has been completed primarily by Tribal labor. Eighty acres of tamarisk were removed and chipped, and ten of those acres are undergoing re-vegetation using native, salt tolerant seeds.

Removing tamarisk in 2009 with the WRPT

The remaining 70 acres will be monitored for passive re-vegetation while being managed for noxious weeds. The knowledge gained will be incorporated into a comprehensive 5 year plan for tamarisk removal, control, and re-vegetation on the lower Walker.

East Walker Noxious Weed Program

The Walker River Basin Cooperative Weed Management Area (CWMA) has finished year one of a noxious weed project. They mapped and removed non-native weeds such as tamarisk along the East Walker River. This is part of a multi-year project that in the future will address weeds on the West Walker and mainstem. The project is in collaboration private landowners, federal, state, and local agencies and funded primarily through the DTLP.

AWARD WINNING PARTNERSHIP

This weed partnership received national attention in a recent National Association of Conservation Districts report that highlighted 25 out of 3,000 Conservation District programs.

FISHERY IMPROVEMENT PROGRAM

FACTOID

Fishing License Sales have fallen 80% since 1997 in Mineral County and 40% in Lyon County

Fishery Improvement Program Team Members:

US Fish & Wildlife Service's Lahontan National Fish Hatchery Complex

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Walker River Paiute Tribe

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Nevada Department of Wildlife

Brief History of Walker Lake

Walker Lake is a terminal, saline lake that is a remnant of Pleistocene Lake Lahontan. Lake Lahontan was a large inland, freshwater sea that once covered much of western and northern Nevada.

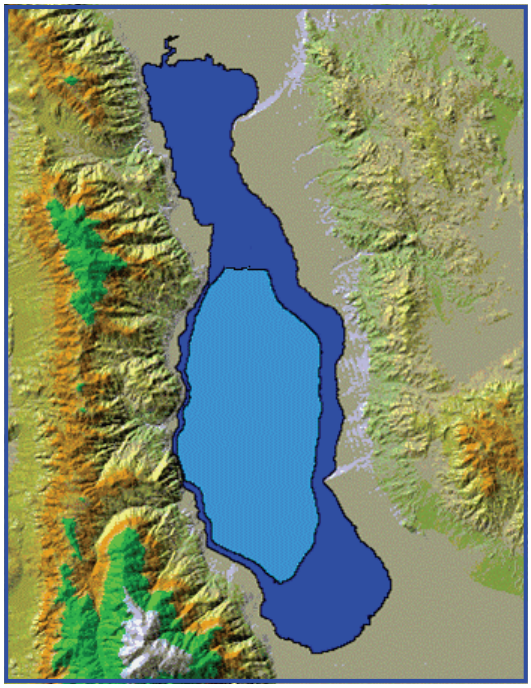
Snow pack from the Eastern Sierra mountain is the main source of water for the Walker River and Lake.

Named after Joseph Walker, a guide on the 1845 John Fremont expedition, Walker Lake is defined as a terminal lake because it has no outlet. Water flowing into Walker Lake only exits by evaporation, leaving behind naturally occurring salts that increase as the water level declines.

Walker Lake historically supported populations of native fish, including tui chub, Tahoe sucker, Lahontan redside, speckled dace, and a thriving, naturally reproducing population of large Lahontan cutthroat trout (LCT).

In 1885 a significant commercial fishery existed for LCT, as witnessed by Indian Agent W.D.C. Gibson who reported that the lake "abounded with trout."

But water levels have dropped over 150 feet in the past 100 years, resulting in an increase of total dissolved solids (TDS) or salts that threaten the lake's ecosystem, and the native LCT fishery.



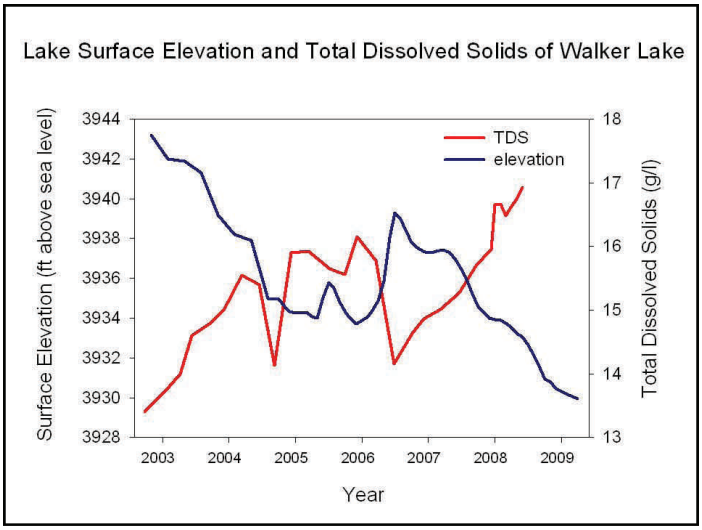
Light blue - current conditions
Dark blue - 1882 lake elevation

Restoring Native Fish to Nevada Waters

Under the Desert Terminal Lakes Program, the Service has embarked on a comprehensive, partnership-based Fishery Improvement Program.

The Program includes the formation of the Fishery Improvement Team (Team), with representatives from the Service, the Walker River Paiute Tribe, and the Nevada Department of Wildlife.

The Team is working cooperatively to understand how the lake's ecosystem and the native fishery are responding to changes in water level, river water inflow, and salinity.



As water levels drop in Walker Lake, salinity in the water increases. Native trout have adapted to this environment.

Restoring Native Fish to Nevada Waters continued from page 4

From 2006-2008 over 210,000 tagged LCT were stocked in Walker Lake

By researching how LCT stocked from the Lahontan National Fish Hatchery and Mason Valley Hatchery are surviving in the lake, the team is learning what management actions we can take to improve their long-term survival in the lake.

The Team has been investigating a variety of methods to improve acclimation of LCT prior to stocking. These actions include improving acclimation methods in a laboratory setting and using river inflow to allow for self-acclimation in the freshwater lens at the mouth of the lake.

Understanding LCT survivorship and growth under variable lake, river flow, and salinity levels will assist us in developing strategies to achieve the goal of restoring a self-sustaining lake population of LCT.

In addition, the Team expanded the creel census to determine seasonal catch rates and assess angler satisfaction.

The Team has funded research on LCT prey items, including tui chub and small insects, and how they respond to fluctuating lake levels, river flow, and salinity.

Angler information is vital to these ongoing studies. If you catch a tagged fish, please call the number below.

We will provide updates on our research and findings in future newsletters.

If you catch a tagged fish,
call 775-861-6355
Please tell us the total length, tag color and number, and where you caught it.

lvd # 230

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Visit us on line:
www.fws.gov/lahontannfhc/walker

Please contact us if you have questions about our activities in the Basin.

775-861-6300

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