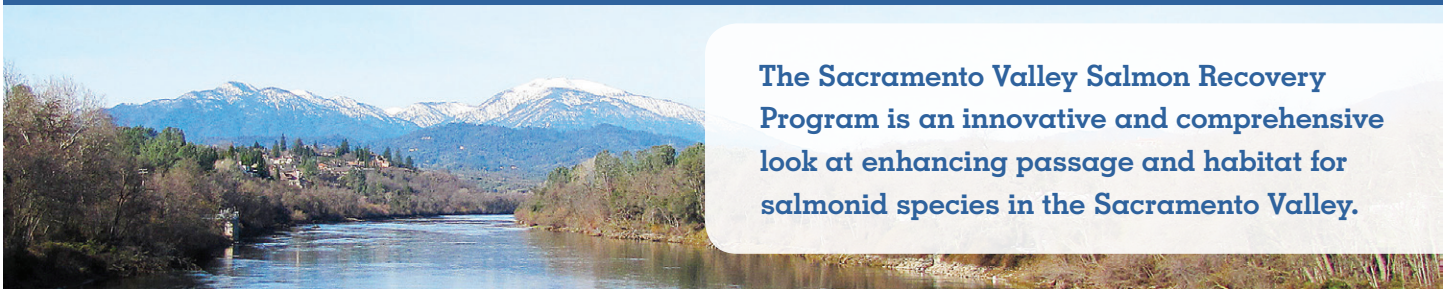
Sacramento Valley Salmon Recovery Program



The Sacramento Valley Salmon Recovery Program is an innovative and comprehensive look at enhancing passage and habitat for salmonid species in the Sacramento Valley.

The Sacramento River is home for four runs of Chinook salmon: spring-run, fall-run; late fall run and winter-run. The spring-run and winter-run Chinook salmon as well as steelhead and green sturgeon are listed as either threatened or endangered by state or federal agencies. All of these fish are anadromous, which means that they move from salt water to fresh water to spawn.

There has been tremendous progress on projects that have had a positive impact on salmon, yet more work is ahead. As we look forward, the next salmon recovery priorities, which make up the Sacramento. Valley Salmon Recovery Program, include the actions in the three categories listed below.

These priorities were originally developed as part of Dave Vogel's 2011 comprehensive report, *Insights into the Problems, Progress and Potential Solutions for Sacramento River Basin Native Anadromous Fish Restoration*. Importantly, the priorities complement the objectives contained in the National Marine Fisheries Service's Recovery Plan for the Sacramento River and Governor Brown's California Water Action Plan, and thus provide a comprehensive framework for the next generation of projects with state and federal agencies to benefit salmon in the Sacramento Valley.

Sacramento Valley water users and conservation partners are working together to advance this next generation of salmon projects, which includes:

1 **Fish Passage Improvements and High-Priority Fish Screens** — On the Sacramento River and its tributaries, many of the priority projects involve the removal of structural barriers to fish passage. Improving fishways, modifying riffles and eliminating predator habitat are examples of passage improvements included in the recovery program. Also, with the completion of the Meridian Farms Water Company, Natomas Mutual Water Company and Reclamation District 2035 Fish Screen Projects on the Sacramento River, all of the original high-priority diversions in the region will have been screened.

2 **Re-Managing Flows** — Improving flow timing on the Sacramento River and its tributaries is another priority that has been identified to improve salmon recovery in the Sacramento Valley. There are now opportunities to build upon previous flow agreements and develop and implement appropriately timed flows by: **a)** coordinating diversions on the Sacramento River to improve spawning juvenile salmonid survivability while also providing habitat for the Pacific Flyway. **b)** implementing projects to enhance flows on Deer and Mill Creeks will improve migration opportunities for Spring-run salmon.

3 **Habitat Improvements** — Habitat improvement projects have been identified as priorities on the Sacramento River and its tributaries to aid adult salmonid holding and spawning as well as juvenile salmonid rearing. Project examples include floodplain restoration, the creation of side channel spawning and rearing areas, the addition of habitat structures and spawning gravel, as well as innovative projects to create rearing habitat in rice fields.

While each of the projects included in the program provide independent value, the comprehensive implementation of the program through this creative partnership will help advance salmon recovery in the Sacramento Valley.

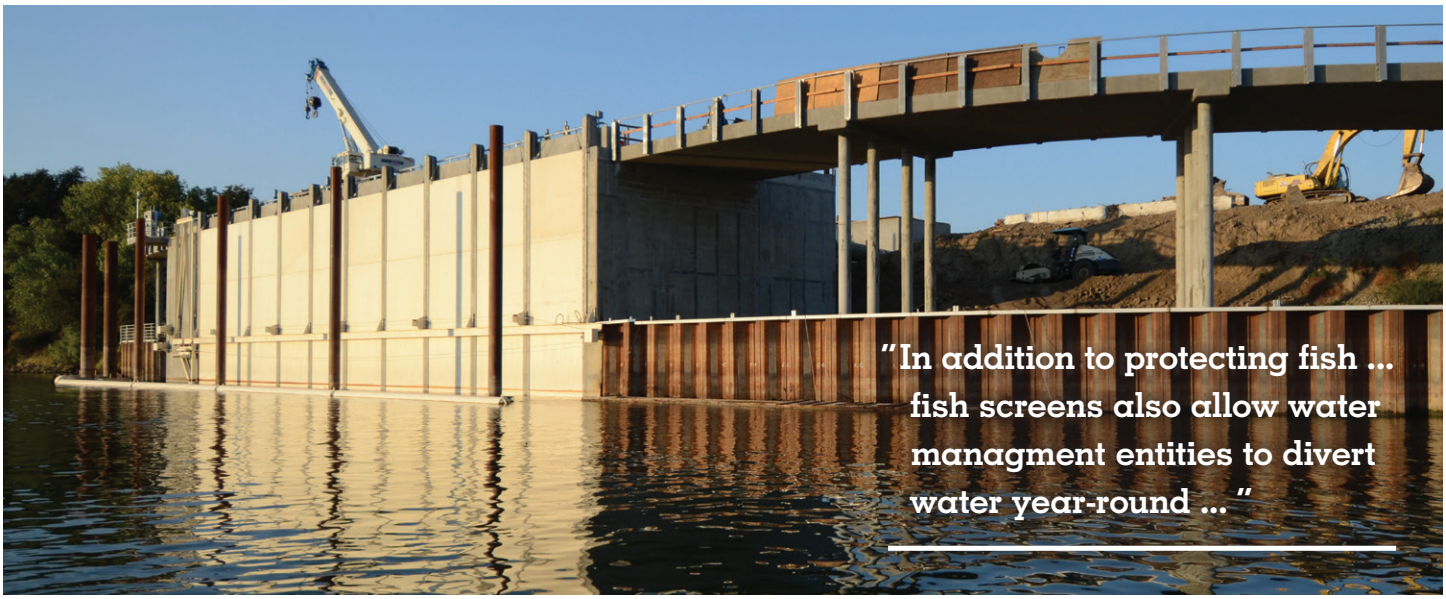
Sacramento Valley Fish Screen Program

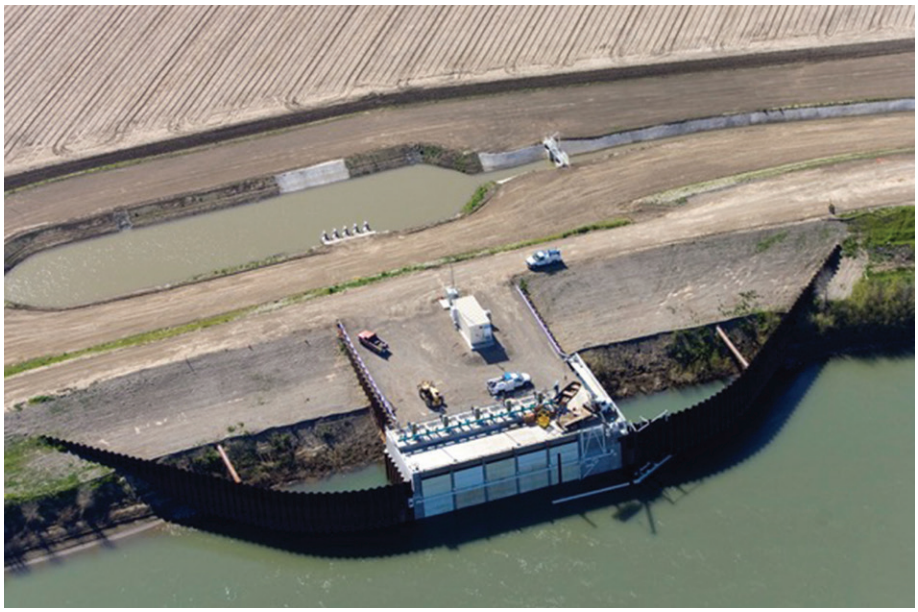
Nearly all of the major water diversions in the Sacramento Valley now pump water through state of the art fish screens. The fish screens, which create a barrier between fish in the river and the pumps diverting water from the river, protect both adult fish that are migrating up the river to spawn as well as resident or out-migrating juvenile fish.

In addition to protecting fish in the river, fish screens also allow water management entities to divert water year-round, allowing diversions in the fall and winter months to provide habitat for the waterfowl, shorebirds, raptors and other species that utilize the Pacific Flyway.

In the mid-1990s, the Anadromous Fish Screen Program (AFSP), which consists of representatives from the state and federal fisheries agencies, created a comprehensive list of the diversions the program considered its highest priorities for screening.

Since that time, of the almost 30 diversions that were identified as a high priority by the AFSP, all but three have been screened. The three remaining diversions are in the process of being screened and could all be completed as soon as 2018.





Re-managing the Flow

The major rivers and streams of the Sacramento Valley provide essential pathways for spawning salmon and steelhead. Flow agreements to benefit these fish are on every major watercourse in the Sacramento Valley.

Trinity and **Shasta Lakes** are important sources of cold water storage. Timing the release of this cold water into the rivers is vital if spawning fish are to thrive.

Trinity Lake

Shasta Lake

Whiskeytown Reservoir

Keswick Reservoir

Clear Creek

In May and June, water is pulsed into Clear Creek to attract Spring-run salmon from the Sacramento River. From June through October, water released from Whiskeytown Reservoir keeps water temperatures cool.

Sacramento River Tributaries

Various flow agreements benefit spring run salmon.

Feather River

A water quality certification adopted in 2010 provides for specific flow and temperature requirements to accommodate spawning salmon and steelhead.

Lake Oroville

Sacramento River below Keswick Dam

In 1960, flow objectives were established for the protection of fish and wildlife. In 1990 and 1991 this policy was modified requiring more cold water when warmer temperatures would be harmful to fish.

Sutter Buttes

New Bullards Bar Reservoir

Yuba River

In 2008, the Yuba River Accord increased the streamflow requirements over previous levels, which benefits fish while insuring sufficient water supplies for irrigation and municipal uses.

Sacramento River at Wilkins Slough

The Rivers and Harbors Act of 1935 mandated a specific flow rate at Wilkins Slough be maintained. The primary goals at that time were navigation and flood control. In 1992, Congress made protection of fish and wildlife a secondary goal and this requirement was updated in 2009.

Folsom Lake

American River below Nimbus Dam

In 2000, the Flow Management Standard was developed, which established minimum flow standards to improve the conditions for fall-run Chinook salmon and steelhead. Additionally, releases are adjusted to maintain sufficiently low water temperatures for steelhead rearing in summer and Chinook spawning in the fall.

NCWA
Northern California Water Association

For more details visit www.norcalwater.org/efficient-water-management/instream-flows/

Priority Projects 2015-16
Sacramento Valley Salmon Recovery Program

The following are the priority projects that are being actively pursued by project champions participating in the Salmon Recovery Program **(Project Champions are in Bold Print)**. To effectively implement the Salmon Recovery Program, the various partners in the program are "adopting" projects, becoming the champion for the project and leading efforts to get the project implemented. Many of the project champions are adopting projects that are not located within their service area, with some projects sited many miles outside of the water management entity's boundaries.

Sacramento River Settlement Contractor Projects

- Restoration of Painter's Riffle on the Upper Sacramento River (Project Completed in 2014). **Glenn-Colusa Irrigation District**
- Creation of spawning riffle near the Market Street Bridge. **Glenn-Colusa Irrigation District**
- Restoration of 2 side channels on the Upper Sacramento River. **Glenn-Colusa Irrigation District**
- Tisdale Bypass, Notch Tisdale Weir; install operable gate and false weir. **Sutter Mutual Water Company**
- Add salmon rearing habitat structures in the upper Sacramento River (pilot projects). **River Garden Farms**
- Yolo Bypass, Tule Canal Fish Passage - Replace failed crossings with operable gates in the Tule Canal to prevent fish stranding and create 130 acres of high quality floodplain rearing habitat. **Cal Marsh and Farm, CalTrout & DWR, USBR, American Rivers**
- Yolo Bypass, Fremont Weir Fish Passage Enhancement Project: Retrofit fish passage structure in Fremont Weir to allow connectivity with river at 22 feet. Interim project will facilitate annual upstream migration of adult salmon and sturgeon & facilitate studying feasibility of entrainment of salmon juveniles from river into Bypass without disrupting Yolo Bypass land uses. **Cal Marsh and Farm, CalTrout & DWR, USBR**
- Yolo Bypass, replace Wallace Weir to block adult salmon entry into Colusa Drain and re-direct attraction flow to Tule Canal; incorporate a year-round fish capture facility to facilitate temporary trap and haul needed until passage created through Fremont Weir. **Cal Marsh and Farm, CalTrout & DWR, USBR**
- Yolo Bypass, Floodplain rearing on managed agricultural floodplains in Yolo Bypass and satellite locations throughout the Valley. **CalTrout & Cal Marsh and Farm**
- Cut earthen channel from Tule Canal to Fremont Weir; redesign Fremont Weir fishway. **Cal Marsh and Farm, CalTrout & DWR, USBR**
- Sutter Bypass, Replace Weir 1 with operable bladder-type weir, to solve adult fish passage, create floodplain rearing habitat for juvenile salmon, improve winter water management for managed wetlands on Sutter National Wildlife Refuge and a develop a Sutter Bypass water management plan. **Sutter Bypass Butte Slough Water Users Association, Tule Basin Farms, Cal Marsh and Farm, CalTrout, USF&W**
- Colusa Drain, Eliminate adult salmon passage through Knight Landing Outfall Gates (KLOG) using a physical barrier. **Reclamation District 108**

Upstream Tributary Projects

- Implement Deer Creek floodplain restoration projects to improve channel complexity and rearing habitats. **Deer Creek Conservancy and American Rivers**
- Increase late spring flows and fall flows in lower Deer and Mill Creeks for access from the Sacramento River including water rights acquisition, conjunctive use wells and water use efficiency plans and improvements. **Los Molinos Mutual Water Company and The Nature Conservancy**
- Modify critical riffles periodically near the mouth of Mill Creek to facilitate passage for migration. **Los Molinos Mutual Water Company and The Nature Conservancy**
- Improve fish passage at the Cemetery Ditch siphon on Mill Creek. **Los Molinos Mutual Water Company and The Nature Conservancy**
- Gravel additions and increased channel complexity in Mill and Deer Creeks. **Los Molinos Mutual Water Company**

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The Nature Conservancy
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