

Telling Our Story: The Sacramento Valley



NCWA
Northern California Water Association

In the pages that follow you will get a glimpse into the Sacramento Valley, how its leaders are cultivating a shared vision in the Sacramento Valley for a vibrant way of life, and the central role water serves—from ridgetop to river mouth—in bringing this special region to life.

California's Sacramento Valley is truly unique. On the leading edge of ecological and economical sustainability, it's also an *exceptional* place to live, work and raise a family. The Sacramento Valley joins together a world-renowned mosaic of natural abundance: productive farmlands, healthy forests, wildlife refuges and managed wetlands, cities and rural communities, and vital rivers that support and feed fisheries and natural habitats. Through *efficient* management of the region's water resources, the Sacramento Valley will continue to provide what's *essential* to California's future success and prosperity. Nourishment and sustenance from the fields, habitats for fish and wildlife, hydro-energy, recreation and a special quality of life—the Sacramento Valley is home to all of this, and more.

We encourage you to learn about these documents and use them in any way helpful. Please click on the picture or text below to see the full document. You can also visit the NCWA website at www.norcalwater.org/infographics, or contact dochoa@norcalwater.org.

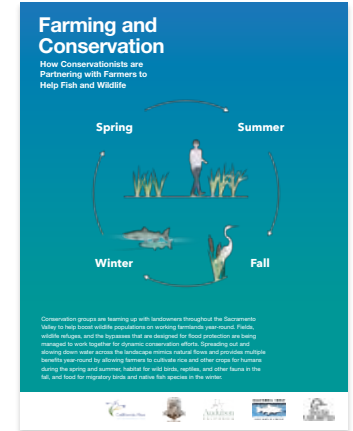
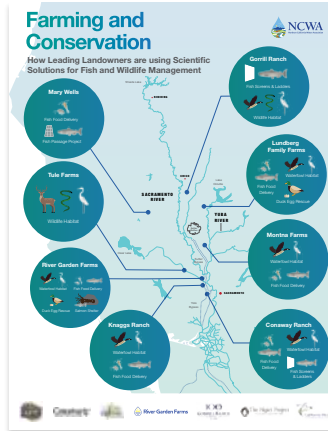
#SourcingOur SustainableFuture

The Sacramento Valley is sourcing our sustainable future through responsible management of the essential resource that millions of birds, hundreds of thousands of fish, thousands of farms and millions of people all rely on—water!



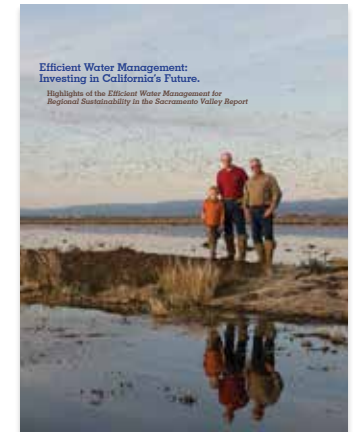
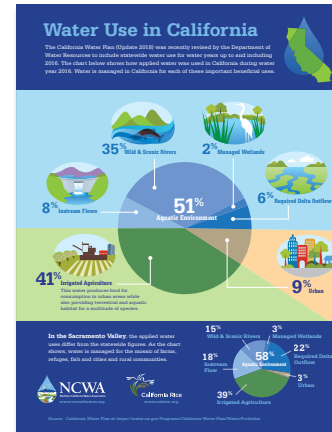
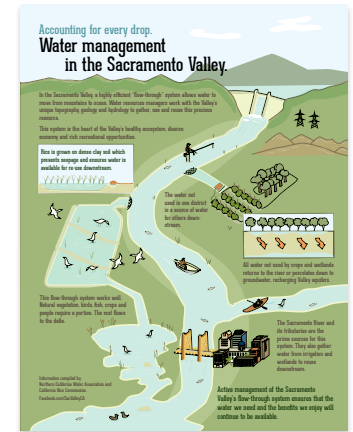
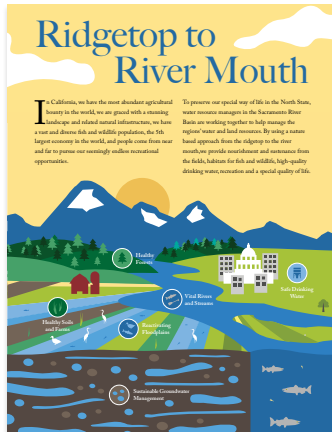
Personal Stories: Landowner Conservation and Stewardship

- Personal Stories - Series
- Farming and Conservation (Landowners)
- Farming and Conservation (Partners)



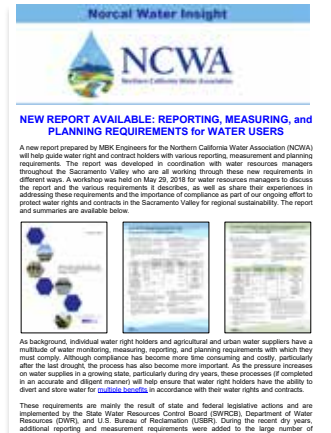
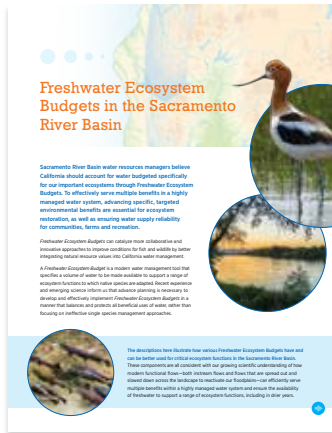
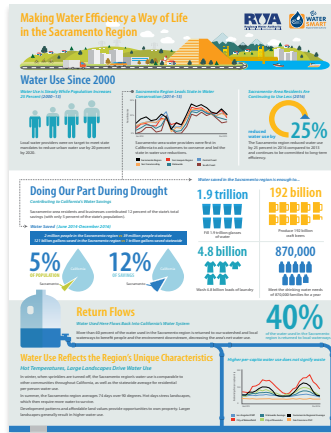
Ridgetop to River Mouth Water Management for Multiple Benefits

- Ridgetop to River Mouth
- Water Management Investments
- Managing Water in the Sacramento Valley for Multiple Purposes
- Water Management in the Sacramento Valley (English and Spanish)
- Modern Functional Flows for the Sacramento Valley
- Water Use in California
- Efficient Water Management: Investing in California's Future



Ridgetop to River Mouth Water Management for Multiple Benefits (Continued)

- Efficient Water Management for Regional Sustainability in the Sacramento Valley
- Making Water Efficiency a Way of Life in the Sacramento Region - RWA
- Nature-Based Solutions: Enlisting Natural and Working Lands in the Sacramento River Basin in the Fight Against Climate Change
- Ensuring High Quality Water in the Sacramento River Basin for Communities, Ecosystems, and Farms
- Freshwater Ecosystem Budgets in the Sacramento River Basin
- Reporting, Measuring, and Planning Requirements for Water Users
- Video: Managing Water for Multiple Benefits



Bay-Delta/ Voluntary Agreements

- Voluntary Agreements - Assets
- Voluntary Agreements - Early Implementation
- Voluntary Agreement - New Way Forward
- Versus: Uncovering Best Solutions for Fish, Wildlife and All Californians
- Improving the Bay-Delta Watershed: Providing Reliable Water
- Bay-Delta Water Quality Control Plan Update: How It Affects Californians
- Bay-Delta Plan Update Taking Points
- Collaboration Can Better Protect Our Rivers and Strengthen Water Resiliency
- Re-managing the Flow
- What's at Stake? The Importance of Protecting Water Resources in the Sacramento Valley

Voluntary Agreements

Adopting Water Management for Thriving Fish, Wildlife and Communities

The Northern California Water Association (NCWA) and its members work collaboratively to deliver safe water supply and water quality for residents of Sacramento Valley residents, farms and businesses, while at the same time supporting water conservation and environmental projects. California water agencies, farmers, cities, conservation organizations and state and federal agencies are all committed to working together to restore the health of the Bay Delta watershed by balancing environmental and water supply needs through an unprecedented and promising initiative called Voluntary Agreements.

Simply providing water flows through the Delta for the past decade has proven inefficient and costly. A different approach is necessary. Local agricultural practices have shown how to farm sustainably integrated with nature. It is critical to restore fish and other endangered species. Voluntary Agreements provide a robust approach to do this. They are a new way of managing water, habitat, environmental, floodplain restoration and other collaboration among stakeholders. Participants in Voluntary Agreements are already at work with early implementation projects, making habitat enhancements and activating floodplain acreage to benefit fish and wildlife in the region for years.

Adaptively Managed Flows

Based on annual hydrology and science-based habitat conditions, the combination of enhanced and reduced habitat conditions for endangered and sensitive species.

- Water operations on the American, Feather, Sacramento and Feather rivers will deliver up to 250,000 acre-feet of water for fish and wildlife in the Delta.

Habitat Enhancements

Science-based habitat enhancement projects will be completed through various management actions and other species through their lifecycle and support water-dependent species using their lifecycle. Projects include: dams, gates and abutments.

- More than 50 projects identified by Sacramento River water suppliers.

Floodplain Restoration

Deliver water for up to seven floodplain restoration projects for the American, Feather, Sacramento and Feather rivers. Projects include:

- Nearly 100,000 acres of enhanced floodplain habitat identified by the Sacramento River Basin for active rearing, spawning and fish food production.

Channelized Floodplain

At least 20,000 acres of floodplain projects contributed by water suppliers across the state, with benefits and the federal government.

Voluntary Agreements

Adopting Water Management for Thriving Fish, Wildlife and Communities

Early Implementation Projects in the Sacramento River Basin

Each of these projects will be active in the December 2016 timeline established in the VA Framework, and will provide contributions to various management goals in the VA that include:

- Implementing a hydrologic plan that benefits floodplain habitat study
- 100 to 120 acres of enhanced floodplain habitat
- 17 to 24 acres of spawning habitat and 8,000 cubic yards of new spawning gravel
- Installation of an intake screen in high priority diversion
- A habitat unit to enhance fish passage and reduce sediment
- A program to provide food for juvenile fish as they migrate downstream
- A program to enhance habitat during low flow times

There are in addition to the 'regret' early implementation projects in the Sacramento River Basin that have been identified by the project team as well as existing funding from other sources. Collectively, these 'regret' early implementation projects will be delivering benefits for many species and help advance the recovery of endangered species in the Voluntary Agreements process continue to move forward. These projects, and the scientific research that the Sacramento River Basin has begun the initial adaptive program necessary to inform decision making and develop management options to successful fish and wildlife recovery.

For questions or additional information, please contact Todd Hanley at thhanley@ncwa.org

Voluntary agreements

Introducing a better solution for water fish.

Water Land & Sunlight: A Humid Life

The Sacramento River Basin is a unique place. It is a place where water, land, and sunlight come together to create a vibrant ecosystem. The basin is home to a diverse array of species, including fish, wildlife, and plants. The basin's water resources are essential for the basin's economy and the well-being of its people.

The New Way Forward

The basin's water resources are essential for the basin's economy and the well-being of its people. The basin's water resources are essential for the basin's economy and the well-being of its people.

One fish population are in trouble

There is a growing concern about the health of the basin's fish populations. The basin's fish populations are in trouble, and the basin's water resources are essential for the basin's economy and the well-being of its people.

A proven approach

The basin's water resources are essential for the basin's economy and the well-being of its people. The basin's water resources are essential for the basin's economy and the well-being of its people.

Trending downward

The basin's water resources are essential for the basin's economy and the well-being of its people. The basin's water resources are essential for the basin's economy and the well-being of its people.

Same water. Better results.

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Uncovering Best Solutions for Fish, Wildlife and All Californians

Comparing Floodplain Activation with Unimpaired Flows in the Bear River Channels

Channelized unimpaired flows vs. Multi-energetic floodplains.

Channelized unimpaired flows result in less habitat and less water available for fish and wildlife. Multi-energetic floodplains provide more habitat and more water available for fish and wildlife.

Improving the Bay-Delta Watershed Providing Reliable Water

The Bay-Delta Watershed is a critical part of California's water supply. The watershed provides water for millions of Californians and is essential for the state's economy and the well-being of its people. The watershed's water resources are essential for the state's economy and the well-being of its people.

The Board's Key Update

The Board's key update is to improve the watershed's water resources. The Board's key update is to improve the watershed's water resources.

Most of California Impacted

Most of California is impacted by the watershed's water resources. Most of California is impacted by the watershed's water resources.

Propose a Comprehensive Approach to Restoration

The Board proposes a comprehensive approach to restoration. The Board proposes a comprehensive approach to restoration.

Science

The Board's approach is based on science. The Board's approach is based on science.

Funding

The Board's approach is funded by the state. The Board's approach is funded by the state.

Flows

The Board's approach will improve water flows. The Board's approach will improve water flows.

Restoration

The Board's approach will restore the watershed. The Board's approach will restore the watershed.

Bay-Delta Water Quality Control Plan Update HOW IT AFFECTS CALIFORNIANS

Improve the Watershed's Resiliency

The Bay-Delta Water Quality Control Plan Update will improve the watershed's resiliency. The update will improve the watershed's resiliency.

Water

The update will improve water quality. The update will improve water quality.

Economy

The update will improve the economy. The update will improve the economy.

Food

The update will improve food security. The update will improve food security.

Groundwater Sustainability

The update will improve groundwater sustainability. The update will improve groundwater sustainability.

Better Alternatives

The update will provide better alternatives. The update will provide better alternatives.

Better Science

The update will be based on better science. The update will be based on better science.

Bay-Delta Plan Update TALKING POINTS

BACKGROUND

The State Water Resource Control Board is updating the Water Quality Control Plan for the Bay-Delta (Bay-Delta Plan Update). The update will improve the watershed's resiliency and provide better alternatives for water, land, and sunlight.

1. The State's proposed unimpaired flow approach would have significant impacts on farms, California communities, and the environment.

2. The proposed water trading program in the Delta would have significant impacts on farms, California communities, and the environment.

3. The update will be based on the best available science.

4. Water users support a healthy environment.

5. There are better alternatives.

Collaboration Can Better Protect Our Rivers and Strengthen Water Resiliency

Collaboration Can Better Protect Our Rivers and Strengthen Water Resiliency

Collaboration between water agencies, farmers, and conservation groups can better protect our rivers and strengthen water resiliency. Collaboration can better protect our rivers and strengthen water resiliency.

Water agencies, farmers, and conservation groups are working together to protect our rivers and strengthen water resiliency.

Collaboration can better protect our rivers and strengthen water resiliency.

Re-managing the Flow

The water users and agencies in the Sacramento River Basin provide essential pathways for groundwater and wetland. Their agreements to benefit fish and wildlife are essential to the state's economy and the well-being of its people.

Re-managing the flow in the Sacramento River Basin will improve water quality and provide better alternatives for water, land, and sunlight.

Delta River

American River

Feather River

Sacramento River

Yuba River

Grain River

Butte River

Colusa River

Delta River

Delta River

Delta River

What's at Stake?

The importance of protecting water resources in the Sacramento Valley

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What's at Stake?

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Reactivating the Floodplains

- Reactivating Our Floodplains: A New Way Forward for California
- Advancing Floodplain Reactivation in the Sacramento River Basin
- Too Big to Dream? A Landscape Scale Approach to Re-envision our Floodplains in the Sacramento Valley for Multiple Benefits

- Reactivating Our Floodplains in the Sacramento River Basin
- The Floodplain Forward: Bypasses and Fish Habitat
- Bypasses and Fish Habitat
- Proof in the Projects
- Fish Food Grown on Winter Rice Fields Could be Key to Recovering Imperiled Central Valley Salmon

- Fish Food on Floodplain Farm Fields
- Encouraging Results from Pilot Project Raising Salmon in Sacramento Valley Rice Fields
- Helping Salmon in the Sacramento Valley
- Active Floodplain Proposals in the Lower Sacramento River Valley

Reactivating Our Floodplains - A New Way Forward for California

The Floodplain Forward Coalition

The Sacramento Valley is a rich result of human settlement, farms, managed wetlands, and meandering rivers that support forests, fisheries, and wildlife. Farms, rural communities and cities strive not to actively change wetlands, rivers, and riparian areas, but to restore and improve them to what they have been for centuries.

Nearly all of the Sacramento Valley farmland is the historic floodplain. The natural floodplain is the area surrounding the river. Before levees and dams were built to protect people from winter flooding, the floodplain supported rich fish and wildlife populations.

Floodplains (primarily riparian, wildlife refuge, and the historic floodplain) are managed as floodplains and are managed to support riparian, wildlife, and historic floodplain in the Sacramento Valley. While continuing to provide flood protection for Sacramento River Basin communities, floodplains also provide multiple benefits for riparian, wildlife, and historic floodplain in the Sacramento Valley. Floodplains are managed to support riparian, wildlife, and historic floodplain in the Sacramento Valley. Floodplains are managed to support riparian, wildlife, and historic floodplain in the Sacramento Valley.

The Sacramento Valley is fertile ground for developing a new path forward for floodplains: water management that incorporates both available science and practical know-how from local re-engage managers to reactivate the floodplains in a way that:

- Enhances the best available science and the work of biologists in the recovery of California floodplains and ecosystems by increasing the use of science and information to inform decisions on how to manage floodplains in the Sacramento Valley, on the UC.
- Engage many forward-thinking businesses in the Sacramento Valley and enhance floodplains in the Sacramento Valley and enhance floodplains in the Sacramento Valley.

Reactivating Our Floodplains: A New Way Forward for California

The Floodplain Forward: Bypasses and Fish Habitat

By David Cox
Northern California Water Association

Today, 95% of the Central Valley's historical floodplains are cut off from the river by levees. Built in the early 1900s to combat devastating floods, levees and bypasses were constructed to control nearby towns and pump water quickly through the system. Even before invasive species, large rice dams, and Delta water export facilities were introduced into the system, salmon populations started to dramatically decline with the construction of the levees. Simply put, the levees prevented Chinook salmon from accessing their primary food source. To address this problem of access, a diverse group of government agencies, conservation groups, growers and water suppliers came together to develop a plan - this group is now referred to as the **Floodplain Forward Coalition**. Their task, as illustrated in the document below, is to reconnect the fish with the food and provide them a safe haven.

Our bypasses are engineered to push water out of the system as quickly as possible when the Sacramento Valley floods. The primary function is to reduce the threat of flooding to our cities, communities and farms. We are now uncovering ways to re-engineer and better use our bypasses to also benefit fish and wildlife without impacting the primary function of flood protection. By reactivating our floodplains and allowing bypasses to connect to the river more frequently and for longer durations, we can mimic historical flood patterns and restore the natural wetland productivity needed to recover imperiled fish and wildlife populations.

With the ability to move water during non-flood times to floodplains and other managed wetlands along the bypasses, we can create large shallow sections of water on dormant fields. The water only flows through these bypasses and into these dormant fields as a gentle solar panel producing billions of opportunities. This primary food source for endangered salmon is slowly being

Fish Food on Floodplain Farm Fields

Boosting Imperiled Salmon Populations using California's Ricefields

The Fish Food on Floodplain Farm Fields is a collaboration project with farmers, conservationists, scientists, and state and federal agencies and it's proving that we can help produce 40 times more food for salmon.

This leads to salmon growing three times faster and increasing their ability to complete their journey to the Pacific Ocean. Which, ultimately has the potential to dramatically boost salmon populations in California.

The Challenge:

Today, 95% of the Central Valley's historical floodplains are cut off from the river by levees. Built in the early 1900s to combat devastating floods, levees and bypasses were constructed to control nearby towns and pump water quickly through the system. Even before invasive species, large rice dams, and Delta water export facilities were introduced into the system, salmon populations started to dramatically decline with the construction of the levees. Simply put, the primary food source was

Advancing Floodplain Reactivation in the Sacramento River Basin

A Portfolio for Fish and Wildlife

Our respective organizations, the Floodplain Forward Coalition, are very excited to work together with you and our various partners in our collective efforts to reactivate the floodplains in California's Sacramento River Basin, which will result in multiple benefits for the region and the State of California. The Floodplain Forward Coalition has proposed the following portfolio of projects, which together will help reactivate our floodplains in the Sacramento Valley for the benefit of fish, wildlife and people.

Reactivating the Floodplain

We are very excited that farmers (primarily riparian, wildlife refuge, and the historic floodplain) are managed as floodplains and are managed to support riparian, wildlife, and historic floodplain in the Sacramento Valley. While continuing to provide flood protection for Sacramento River Basin communities, floodplains also provide multiple benefits for riparian, wildlife, and historic floodplain in the Sacramento Valley. Floodplains are managed to support riparian, wildlife, and historic floodplain in the Sacramento Valley. Floodplains are managed to support riparian, wildlife, and historic floodplain in the Sacramento Valley.

Bypasses and Fish Habitat

Boosting imperiled salmon populations by reengineering how we manage our bypasses year-round

Collaborative efforts among farmers, conservationists, scientists, and state and federal agencies are proving that by reactivating our historic floodplains and using our bypasses more effectively, we can help produce 40 times more food for salmon. This leads to salmon growing three times faster and increasing their ability to complete their journey to the Pacific Ocean. Which, ultimately has the potential to dramatically boost salmon populations in California.

The Challenge

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Encouraging Results from Pilot Project Raising Salmon in Sacramento Valley Rice Fields

By Paul Bottoms, Manager of Environmental Affairs, California Rice Commission

The second year of the California Rice Commission (CRC) Pilot Salmon Project (salmon) has yielded very positive results and should pave the way for the CRC and our fish conservation partners to develop methods to collect winter floodwater in rice fields.

In late March, we released nearly 200 baby salmon that were raised in rice fields in Yuba County. Later, we released a set of control groups that were reared and released using more traditional approaches. Fish in both of these groups were fitted with a very sophisticated tag, allowing us to track their travels through the watershed and out to the ocean. Our hope was to demonstrate year field-reared fish might have greater survivability during their journey to the ocean. The best our experiment in previous studies in these fields. Fortunately, our 2020 graduating class of young salmon took us to our upstream.

Before getting to the results, it's helpful to know what reasonably expected survival rates are for your project. In our past projects with acutely high water, it's possible to get as high as 15 to 20 percent survival. In drier years, similar to the 2012-2013 season, expected survival typically ranged from 3 percent and is often three or more.

The experiment survival rates of our 2020 rice field-reared salmon was nearly 43 percent - nearly 4.5 times higher than our control groups and substantially higher than other similar studies during the period. We could not be happier with these results, and they may serve as the baseline for work by CRC and fish conservation partners to continue efforts to develop a large-scale strategy to use rice fields to better protect, just as we have used them to help for the decades now.

Too Big to Dream?

A Landscape Scale Approach to Re-engage our Floodplains in the Sacramento Valley for Multiple Benefits

By Lewis Blair, General Manager, Reclamation District 108

How critical are Sacramento Valley floodplains to a vibrant future?

A California fish and game biologist from 1920 gives us a clue. The report documents the Sacramento River commercial salmon catch declining from 100,000 tons in 1933 to less than 1 million pounds by 1937. The impetus of the report may be the fact that the greatest increase may be the actual subject that people point to as the cause of the salmon decline had not yet arrived on the scene - invasive species, large rice dams, and Delta water export facilities were not yet introduced into the system until years later.

What did occur during that decade was the starting point of re-imagining the Sacramento River system as the 1920 and 1930s focused on the debate on how to allow Sacramento Valley flooding. The result was a system of levees and bypasses that was conceived and constructed to control the nearby towns. Riverbanks were raised with levees, and the historic thought that floodplains with water and juvenile fish were either eroded or replaced with rice. The levees were designed to keep the main rivers within their narrow banks to move water quickly through the system. The water functioned to high flood water in flood bypasses and in very high flows, which were not designed to keep the main rivers within their narrow banks to move water quickly through the system. The result was a significant reduction in the frequency and duration of flooding on the historic floodplains. This reduction in floodplains' productivity was exacerbated by the development of a series of storage systems that gated and channelized the floodplains to rapidly drain the lands in the valley.

But why is our floodplain important for fish? Here scientific research is showing us why. The health of a juvenile fish greatly influences its chances of surviving its journey to sea and back and returning as a large adult salmon. Our current river system produces tens of millions of juvenile salmon every year, but they are not the fully juvenile fish that our historical floodplains once helped produce. The picture below, courtesy of California Trout, shows how the same fish, one year raised in the Sacramento River and the other on the adjacent floodplains, these floodplains better grow so much faster and longer.

The Big to Dream | 1

Proof is in the Projects

Through collaborative projects, introduced and adopted fish are returning to areas they once roamed in more than 100 years ago. These key projects demonstrate some of the work being done on the West Side of the levee.

- **Night Project: Fish on Rice Fields**
Fish in rearing and food production for salmon and steelhead. The Night Project provides additional fish to rice fields within the basin for enhanced food security. By introducing the kind of Atlantic long duration flood project that was used in the Yuba Basin, high densities of amphipods and invertebrates are produced in rice waters. Connecting endangered fish with this habitat is vital for the species long term survival. Scientists and farmers are working together to use private lands to create the most cost-effective and viable means of operation on the Delta Project. This is a large effort because the floodplains are used to produce rice. Scientists and farmers are working together to use private lands to create the most cost-effective and viable means of operation on the Delta Project.
- **Des Rios Agricultural System Enhancement**
A re-imagining habitat and wildlife production for salmon and steelhead. The Des Rios Project provides nearly 1,000 acres of reconnected floodplain habitat that will serve as a suitable habitat for future innovative water management, combined farming, and salmon recovery efforts. Located at the confluence of the Sacramento River, Barto Creek and Toulon Branch, the area will be re-engineered entirely by rice growers on the upper Sacramento River. Rice Creek spring run, and further River spring and fall run. These wetlands provide our engineering through the Sacramento river will be able to access the adjacent agricultural floodplains in the Delta, multiple times per year as the Same Bryan insurance from bacteriophage. [Read More About Des Rios](#)

HELPING SALMON IN THE SACRAMENTO VALLEY

Collaborative Pilot Project

As part of an assessment to help improve river habitat and salmon populations, the California Rice Commission (CRC) and our fish conservation partners are developing methods to collect winter floodwater in rice fields.

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Project Features

- This project is a collaborative effort between the CRC and our fish conservation partners.
- The project is a collaborative effort between the CRC and our fish conservation partners.
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Partners

- California Rice Commission (CRC)
- California Trout
- The Nature Conservancy
- Delta Stewardship Council
- Delta Water Exporters Association
- Delta Water Project
- Delta Water Project
- Delta Water Project

Reactivating Floodplains in the Sacramento River Basin

How working lands on both sides of the levees are aiding fish and wildlife.

Conservation and Flood Protection

Choosing between conservation and flood protection on large levees is an either/or proposition in the Sacramento River Basin. Restored, wildlife habitat and the bypasses are only one way of flood protection for our cities and food source but are even being investigated to create diverse ecosystems habitat for fish and wildlife. This effort is underway on both sides of the levees.

What is the Wet Side and Dry Side?

The two areas located on both sides of the levees are defined as follows:

- **Wet Side** - Areas located within the floodplains of the river channel and bypasses, including the areas of river channel and bypasses, including the areas of river channel and bypasses, including the areas of river channel and bypasses, including the areas of river channel and bypasses.
- **Dry Side** - Areas located outside the floodplains of the river channel and bypasses, including the areas of river channel and bypasses, including the areas of river channel and bypasses, including the areas of river channel and bypasses.

With today's knowledge of the landscape and scientific understanding of the wildlife interests with these historical floodplains, we have improved our water management to include natural flows across the landscape and have created bypasses.

Fish Food Grown on Winter Rice Fields Could be Key to Recovering Imperiled Central Valley Salmon

Roger Corns, Rice Grower, Garcia Farms, Yuba County, CA

A first-of-its-kind study reveals that rice fields can play an important role in restoring river ecosystems and lowering imperiled salmon populations in the Sacramento Valley. California Trout working with Garcia Farms and a coalition of farmers and public agencies, recently completed a detailed five-year experiment evaluating how farm fields can be managed to grow food to support wild salmon populations in the fall and winter months, which will grow food for people during winter. We summarized the scientific studies in [Farm Fields as Food](#). [View the full study for free!](#)

California native fish populations are struggling for survival. Before the Central Valley was developed, leaved and drained, over four million acres of floodplains were inundated each winter. These shallow, fertile floodplains were highly productive and created the food that supported over two million salmon, tens of millions of waterfowl and abundant wildlife populations. Over half 150 years more than 95 percent of floodplains has been cut off from Central Valley's floodplains, effectively starving river ecosystems of their primary food source and the aquatic food web, the water energy captured by plants and algae on floodplains that in turn feeds the bugs that are the primary food source of juvenile salmon. This is a growing body of research that points to a lack of available fish food in channelized Central Valley rivers as a leading cause in the dramatic and continuing decline of native fish populations.

Field Food on Floodplain

The idea behind the "Fish Food on Floodplain Farm Fields" experiment was to simulate to rice with growers who farm the former riparian floodplains in the Sacramento Valley. The idea behind the "Fish Food on Floodplain Farm Fields" experiment was to simulate to rice with growers who farm the former riparian floodplains in the Sacramento Valley. The idea behind the "Fish Food on Floodplain Farm Fields" experiment was to simulate to rice with growers who farm the former riparian floodplains in the Sacramento Valley.

ACTIVE FLOODPLAIN PROPOSALS IN THE LOWER SACRAMENTO RIVER VALLEY

This map shows the locations of various floodplain reactivation projects across the Lower Sacramento River Valley. Projects include:

- **Delta Stewardship Council (DSC) Delta Project**
- **Delta Water Project**
- **Delta Water Project**
- **Delta Water Project**
- **Delta Water Project**

The map also shows the locations of various floodplain reactivation projects across the Lower Sacramento River Valley. Projects include:

- **Delta Stewardship Council (DSC) Delta Project**
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Reactivating the Floodplains (Continued)

The Sacramento Valley & Waterfowl



California's Sacramento Valley is the single most important waterfowl area for waterfowl along the Pacific Flyway with 4 million waterfowl migrating to the region every fall from as far away as Alaska, Canada, and Mexico. The Sacramento Valley's world-renowned mosaic of natural resources, including farms, wildlife refuges, and managed wetlands, cities and rural communities, and surrounding green work together in concert to support and feed waterfowl, shorebirds, upland and other species.

As the map on the remote side shows, diverse land types such as riparian, rice, landscape wetlands, and other farm wetlands help with food and shelter through winter and spring, acting as a natural wetland to the low of 90% of the historic wetland area in the state.

Each year between 500,000 and 800,000 acres of rice are planted in the Sacramento Valley, providing habitat for an estimated 200 species, including many birds. A typical fall and winter season would see 100,000 acres of rice harvested, leaving 200,000 acres of rice stubble open and available to waterfowl. This rice stubble and nearly 40 percent of waterfowl food resources in the Sacramento Valley, its adjacent wetlands, and other riparian areas provide habitat for 2,000 waterfowl species within the National Wildlife Refuge and State Wildlife Areas also make substantial contributions to the Pacific Flyway habitat in the region.

All of this habitat underpins the ability of Sacramento Valley water districts and companies to divert and deliver surface water resources year-round in an accord with their customers and water rights. According to the Central Valley Joint Venture (CVJV), the combined water water needs of floodplain rice and wetlands in the Sacramento Valley is almost 1.2 billion acre feet per year.

Currently, the region is experiencing a biomass balance, providing just enough food for the waterfowl and other birds nesting in the Sacramento Valley in the winter months. Reducing water to other areas would result in less water of habitat to feeding the birds, leaving the birds without adequate food (see <http://www.nrc.ca.gov/conservation/>).

Thanks to the state of its parts, the Sacramento Valley is an ecological success story when floodplain water resources are the result of food to create a resilient habitat that works for both human and birds.


This includes more than 200,000 acre feet of water needed to meet CVJV water supply and the region and managed wetland.



DOS RIOS

AGRICULTURAL SALMON EASEMENT

BUILDING PARTNERSHIPS & REACTIVATING FLOODPLAINS



FISH FOOD PROJECT

RECONNECTING FLOODPLAIN-DERIVED FISH FOOD TO ENHANCED SALMON POPULATIONS

PROBLEM	CAUSE
The winter-run chinook salmon population continues to recover against historic lows in the Sacramento River.	The historic floodplains once served as a feeding ground for juvenile salmon. As California's Sacramento Valley rice, rice-farmland, and other agricultural lands have been converted to other uses, the floodplains have been lost. This has led to a decline in the amount of fish food available to support fish populations.

25k TONS OF FISH FOOD PER YEAR

2k TONS OF FISH FOOD PER YEAR

PROJECT IMPACT

15,000 percent more fish food (invertebrates and macroinvertebrates) for fish is produced on the floodplains (and nearby water channels) that flow into the Sacramento River.

15k PERCENT MORE FISH FOOD

149x FLOODPLAIN SAMPLE

6x CANAL SAMPLE

12 FARMERS

50k POUNDS OF BUGS PER ACRE (FISH FOOD)

70 POUNDS OF BUGS PER ACRE (FISH FOOD)

COLLABORATION

The Fish Food Project demonstrates what is possible when historically spawning factories come together to help the salmon population in California. By coming to help floodplain farms, we can have a direct impact on increasing population numbers and restore one of California's heritage species.

GOVERNMENT AGENCIES

CONSERVATION GROUPS

FARMERS

WATER DISTRICTS

SCIENTISTS

PARTNERS

UC DAVIS CAL PACIFIC NORTHERN CALIFORNIA WATER ASSOCIATION SACRAMENTO VALLEY FARMERS

EFFORTS

50 PROJECTS

The Fish Food Project is one of 50 efforts in the Sacramento Valley Salmon Recovery Program.

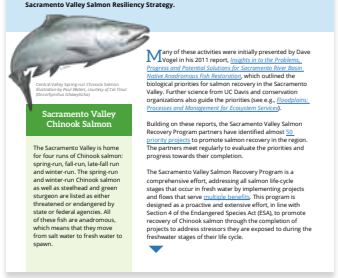
Sacramento Valley Salmon Recovery Program

- Sacramento Valley Salmon Recovery Program
- Salmon Snapshot
- Salmon Life Cycle
- Butte Creek Salmon Recovery
- Aiding Salmon in the Upper Sacramento River
- Improving Conditions for Salmon
- Helping Salmon in the Sacramento Valley
- Re-managing the Flow

Sacramento Valley Salmon Recovery Program

Local water management entities, conservation organizations and state and federal fisheries and water management agencies in 2014 joined together to form the Sacramento Valley Salmon Recovery Program, a collaborative partnership to complete projects and improve science to promote recovery of salmon and other species of fish in the region. These actions are implementing both the National Marine Fisheries Service's Recovery Plan for the Sacramento River and the California Natural Resources Agency's Sacramento Valley Salmon Resiliency Strategy.

Many of these activities were initially presented by Dave Engel in the 2011 report, *Salmon in the Sacramento Valley: A Guide to the State's Salmon Recovery Program*. This report provides a comprehensive overview of the program and the various agencies involved. It also includes a list of projects and a map of the Sacramento Valley.

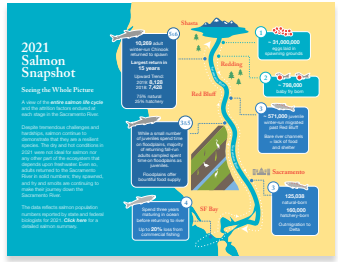


2021 Salmon Snapshot

Saving the Whole Fish

15 years ago, the Sacramento River salmon population was at historic lows. Today, thanks to the efforts of the Sacramento Valley Salmon Recovery Program, the population is showing signs of recovery.

15 years ago, the Sacramento River salmon population was at historic lows. Today, thanks to the efforts of the Sacramento Valley Salmon Recovery Program, the population is showing signs of recovery.



SALMON LIFE CYCLE



The salmon life cycle is a complex process that involves many stages, from spawning to returning to the river. Each stage is critical to the survival of the fish, and any disruption can have significant impacts on the population.

BUTTE CREEK SALMON RECOVERY

A Lesson in Functional Flows

The Butte Creek salmon recovery project is a model of what is possible when conservation groups and water management agencies work together. By restoring functional flows in the creek, we can improve the habitat for salmon and other species of fish.



Aiding Salmon in the Upper Sacramento River

How farmers and ranchers are improving habitat for imperiled salmon populations.

How farmers and ranchers are improving habitat for imperiled salmon populations.



Sacramento River Basin Improving Conditions for Salmon

For the past decades, water resource managers have been working with state and federal agencies and conservation partners to improve habitat for imperiled salmon populations in every part of the Sacramento River Basin.

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HELPING SALMON IN THE SACRAMENTO VALLEY

Collaborative Pilot Project

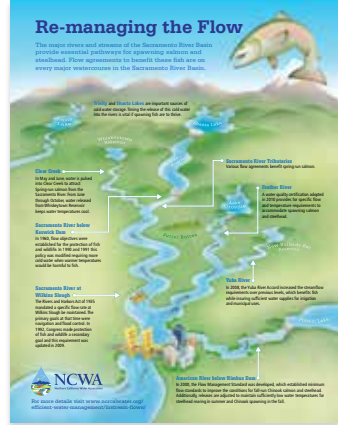
Collaborative Pilot Project



Re-managing the Flow

How water users are improving habitat for imperiled salmon populations in the Sacramento River Basin.

How water users are improving habitat for imperiled salmon populations in the Sacramento River Basin.



Sacramento Valley Salmon Recovery Program (Continued)

- Restoring the Salmon Runs: A time for Action
- River Garden Farms Salmon Habitat Restoration Project
- Protecting Fish
- Meridian Farms Water Company
- Natomas Mutual Water Company
- Freshwater Ecosystem Budgets in the Sacramento River Basin
- Bypasses and Fish Habitat
- Fish Food on Floodplain Farm Fields

Restoring the Salmon Runs - a Time for Action

Sacramento Valley water resources managers are partnering with habitat and fish species and conservation organizations to improve migratory corridors and habitat for salmon. The missions taken and the money spent more than \$1 billion over the past few decades - have been helpful but there is still more work ahead to restore the salmon runs.

Fish screens Place 80 percent of the steel mesh for the Sacramento River screen to address ridge, fence other steel structures to prevent through water to fish screens while the steel mesh is held up in the river.

Spawning gravel is reintroduced to gravel bars to improve spawning habitat. Over 200,000 tons of gravel has been added to the Sacramento River since 2007.

Flow agreements to build better habitat and other fish as an early step to improve the Sacramento River. The details of the flow agreements are available at www.waterboards.ca.gov/sacramento/

Migration corridors are important to help young salmon travel and produce to help restore the fish runs. The Sacramento River is currently building a Salmon Small Damper. This is a project of water which is being built in the Delta's California National Wildlife Refuge. The project is being built in the Delta's California National Wildlife Refuge. The project is being built in the Delta's California National Wildlife Refuge.

River Garden Farms Salmon Habitat Restoration Project

ADDITION OF REARING STRUCTURES

In addition to the major reduction in reproduction habitat, a large amount of rearing habitat for young salmon was lost in upstream areas where the large Sacramento Valley dams were built.

This project will add rearing structures in the upper mainstem Sacramento River where optimal spawning habitats currently exist. It is anticipated that implementation of this action will result in major gains in juvenile salmon survival by protecting habitat from predation and improving rearing habitat conditions.

Shrub clusters in the vicinity of young salmon habitat are important to provide shade and cover for young salmon.

New structures would be composed of woody debris and large, upright boulders placed in deep areas of the river channel.

In addition to fish screens, other projects have been completed at River Garden Farms to improve fish habitat. This includes riparian zone revegetation and boulder placement in the original landing point. Riparian zone revegetation will help to improve habitat for the fish runs.

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Protecting Fish

More than 100 million fish are lost each year in the Sacramento-San Joaquin River Delta. The largest portion of the loss is due to fish screens. The largest portion of the loss is due to fish screens. The largest portion of the loss is due to fish screens.

Fish protected through this program include: Chinook Salmon, Steelhead Trout, Coho Salmon, and White Sturgeon.

The LARGEST portion of the loss is due to fish screens. The largest portion of the loss is due to fish screens. The largest portion of the loss is due to fish screens.

Benefits: Fish screens also allow water management activities to draw water out of the river for irrigation. This can reduce the amount of water available to the river, which can reduce the amount of water available to the river.

Costs: The average annual cost of fish screens is \$1.5B per year, or about \$1,500 per acre, or about a quarter mile in length.

NCWA (National Council on Water) is a national organization that works to protect the water resources of the United States.

MERIDIAN FARMS WATER COMPANY

Inlake Consolidation and Fish Screen Project Sutter County, California

March 2021

The Meridian Farms Water Company (MFWC) provides irrigation water to about 10,000 acres in three distinct service areas in Sutter County. The project is a consolidation of the three service areas into one. The project is a consolidation of the three service areas into one.

PROJECT BENEFITS:

- Provide Federally-based management fish species with protection from potential entrainment risk.
- Satisfy the criteria for protection and recovery of fisheries and fish habitat per the 1992 Central Valley Project Improvement Act.
- Enhance opportunities for recreational fishing, water efficiency, and diversify revenue.

NATOMAS MUTUAL WATER COMPANY

AMERICAN BASIN FISH SCREEN AND HABITAT IMPROVEMENT PROJECT

March 2021

The Natomas Mutual Water Company (NMWC) is a private, mutual water company that controls surface water rights for over 250,000 acres in the Sacramento area. The project is a consolidation of the three service areas into one.

PROJECT SUMMARY (SEE PROJECT TIMELINE ON SURVEY): NMWC has been voluntarily engaged in the American Fish Restoration Program since 2005 to consolidate and screen to fish (river diversions). The project is a consolidation of the three service areas into one.

Phase 1 - Sutter Diversion (2008-09) - Completed 2013

In the first implementation phase, a new diversion on the Sacramento River with fish screens has been constructed to improve rearing conditions in the American Basin Canal. In addition, the low flow dam at the confluence of the American Basin Canal with the Sacramento River was removed, creating a significant barrier to fish migration west into Placer County.

Phase 2 - Pittsburg Lake Diversion (2010-11) - Completed 2015

In the second phase, National second phase project was completed and designed with a new structure equipped with retractable fish screens. This new technology has proven to be a cost-effective alternative to the fish gate screens and allow the screens to be retracted in the winter during high flow flows.

Phase 3 - Riverside Diversion (2012-13) - Completed 2018

The two remaining diversions will be screened in place similar to the Pittsburg Lake Diversion. These diversions will be constructed in coordination with the US Army Corps of Engineers National Basin Flood Control Program that will support the discharge of water to current design standards.

Freshwater Ecosystem Budgets in the Sacramento River Basin

Sacramento River Basin water resources managers believe California should account for water budgeted specifically for our important ecosystems through Freshwater Ecosystem Budgets. By effectively using multiple benefits to a highly managed water system, advancing cost-effective, targeted environmental benefits, are essential for ecosystem restoration, as well as ensuring water supply reliability for communities, farms and recreation.

Freshwater Ecosystem Budgets can improve collaboration and innovative approaches to improve conditions for fish and wildlife by better integrating water resources into the California water management.

A Freshwater Ecosystem Budget is a water management tool that specifies a portion of water to be made available to support a range of freshwater ecosystems for which water agencies are asked to invest resources and manage water. The budget is a tool to help water agencies to allocate and effectively manage Freshwater Ecosystem Budgets in a manner that supports and protects all stakeholders of water, while also restoring the freshwater single species management approach.

The description here illustrates how various Freshwater Ecosystem Budgets have been used to support a range of ecosystem benefits in the Sacramento River Basin. These components are all considered with a primary objective of supporting a range of ecosystem benefits and their use can be applied and shared about across the landscape to maintain our freshwater ecosystem. An effectively water budget can be used to support a range of ecosystem benefits, including fish and wildlife.

Bypasses and Fish Habitat

Boosting imperiled salmon populations by managing how we manage our bypasses year-round.

Collaborative efforts among farmers, conservationists, utilities, and state and federal agencies are proving that by managing our historic, floodplain and using our bypasses during dry times of the year, we can create high quality habitat that produces up to 140 times more food for salmon than the river. This leads to salmon growing five to ten times faster than increasing their chances of survival on their journey to the Pacific Ocean. This ultimately has the potential to dramatically boost salmon populations in California.

The Challenge: Today, 95 percent of the Central Valley's historical floodplains are cut off from the river by levees. Built in the early 1900s to combat devastating floods, levees and bypasses were constructed to avoid highly eroded and high water quality through the system. Even before invasive species, large fish dams, and Delta water export facilities were introduced into the system, sediment and siltation accumulated in the system, reducing the effectiveness of the levees. Shallow pass primary food resources and key rearing habitats are no longer available to water species.

Fish Food on Floodplain Farm Fields

Boosting Imperiled Salmon Populations using California's Reckless.

The Fish Food on Floodplain Farm Fields is a collaborative project with farmers, conservationists, utilities, and state and federal agencies and is proving that we can help produce 40 times more food for salmon. This leads to salmon growing five times faster and increasing their ability to complete their journey to the Pacific Ocean. Which, ultimately has the potential to dramatically boost salmon populations in California.

The Challenge: Today, 95 percent of the Central Valley's historical floodplains are cut off from the river by levees. Built in the early 1900s to combat devastating floods, levees and bypasses were constructed to avoid highly eroded and high water quality through the system. Even before invasive species, large fish dams, and Delta water export facilities were introduced into the system, sediment and siltation accumulated in the system, reducing the effectiveness of the levees. Shallow pass primary food resources and key rearing habitats are no longer available to water species.

Pacific Flyway

- Central Valley Refuge Needs
- A Freshwater Ecosystem Budget for Birds and the Pacific Flyway
- Pacific Flyway Habitat in the Sacramento Valley
- Centerpiece of the Pacific Flyway
- Wetland Areas and Rice Fields in the Sacramento Valley of California
- The Sacramento Valley and Waterfowl
- Why Spring Diversions on the Sacramento River Are Important to Serve Multiple Benefits

Central Valley Refuge Needs

April 2022

There are two types of refuge needs in the Central Valley: water and funding. Funding needs for the refuges can be further defined by following categories: infrastructure, conservation tools, water purchase and habitat project design. It is assumed that each of the refuges will need to secure funding for water acquisition and conservation planning costs as well as general maintenance funding over time.

A current study has estimated that to permanently purchase all the riparian habitat needed for the refuges, it would cost \$485 million (\$302 million south of Delta and \$183 million north of Delta). In addition to water acquisition needs, there is roughly \$150-165 million in capital for infrastructure to deliver the water to the refuges. It will be at least \$60 million to conserve and maintain an estimated 81,000 acres needed annually for conservation uses.

North of Delta

The total investment for 4 water allocations for the north of Delta refuges is 23,750 acre-feet. The average enhancing for surface refuge water for north of Delta refuges through Reclamation compliance agreements is approximately 923 acre-feet.

Sacramento RRB

Major non-derivative canal improvements needed to increase capacity, Central Lateral and West Lateral need to be replaced with larger pipes. The estimated cost is \$20 million. The refuges would benefit from an exchange between Maxwell CD and Green-Clatsop CD to receive water from Maxwell CD for the northern part of the refuges.

Delta RRB

Needs some conveyance infrastructure improvements to receive peak flows with the 18-gate that need to be defined and designed a cost estimate. Need to replace 18-gate with 30x300 Gates and 2 miles of water delivery canals to provide water to approximately 3,500 acres in West CD. It is the maximum capacity of 10,000,000.

Delta RRB

Canal improvements - Population 1 hanted lift pumps, will be completed in 2021 to save for fall flood. It requires replacement work that will cost estimated \$12 million.

Delta RRB

Canal improvements - Population 1 hanted lift pumps, will be completed in 2021 to save for fall flood. It requires replacement work that will cost estimated \$12 million.

Water needs are calculated based on the refuges 10 to 150% of the water necessary for baseline habitat values and incremental total 4th water necessary to maximize the habitat value of the refuges.

A Freshwater Ecosystem Budget for Birds and the Pacific Flyway

Sacramento River Basin

January 2020

Nearly 25 million birds, 100 million game fish, and 2.4 billion shellfish rely on California's Sacramento River Basin, making this an internationally important area for migratory birds and a key riparian area along the Pacific Flyway. The Sacramento River Basin's varied ecosystem supports a variety of natural resources, including forests, wetlands, rangelands, and public riparian and state wildlife areas to meet their habitat needs. Much of the habitat value of these lands, from wetland areas and for some species nesting areas is related to surface water deliveries. Given the development of the Sacramento Valley over the last 100 years, much of that water must now be delivered to these areas through a complex and interconnected water infrastructure system.

THE PACIFIC FLYWAY ECOSYSTEM

As the attached map shows, birds and other species using the Pacific Flyway are reliant upon varied land uses that include wetlands and managed wetlands (both privately managed wetlands and public riparian and state wildlife areas) to meet their habitat needs. Much of the habitat value of these lands, from wetland areas and for some species nesting areas is related to surface water deliveries. Given the development of the Sacramento Valley over the last 100 years, much of that water must now be delivered to these areas through a complex and interconnected water infrastructure system.

Pacific Flyway Habitat in the Sacramento Valley

Conservation progress has been made to enhance habitat for migratory species, including shorebirds, waterfowl, and other waterfowl dependent species in the Sacramento Valley.

Being the water, birds and other species using the Pacific Flyway are reliant upon varied land uses that include wetlands and managed wetlands (both privately managed wetlands and public riparian and state wildlife areas) to meet their habitat needs. Much of the habitat value of these lands, from wetland areas and for some species nesting areas is related to surface water deliveries. Given the development of the Sacramento Valley over the last 100 years, much of that water must now be delivered to these areas through a complex and interconnected water infrastructure system.

CENTERPIECE OF THE PACIFIC FLYWAY

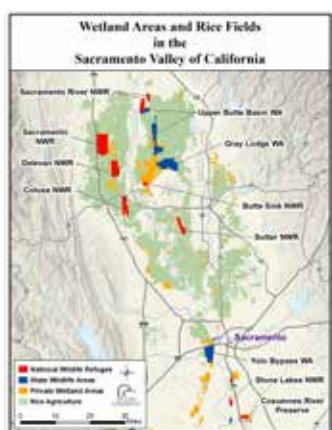
Sacramento Valley sites form one of the most important centers of the Pacific Flyway. Approximately 500,000 acres of the fields in the region, in conjunction with 7,500 acres of managed wetlands, provide food and other habitat requirements for nearly 200 million species. Together, Sacramento Valley sites form an ecologically important habitat for:

- Internationally recognized shorebird habitat
- One of the largest concentrations of breeding shorebirds of other wetlands, and waterfowl dependent species
- More than a dozen species, including such birds as Red-winged Blackbird, Green-winged Teal, and Lesser Scaup
- 11 types of migratory birds, including the Golden Plover
- A number of fish that include migrating fishes and game in the Sacramento Valley during the winter season

Thanks to help from conservation organizations like California Rice Commission, local governments, conservation organizations and state and federal agencies to expand and enhance wildlife habitat on our farms.

Key Initiatives include:

- Regional Conservation Partnership Program
- Wetland Habitat Enhancement Program
- WaterShare



The Sacramento Valley & Waterfowl

California's Sacramento Valley is the single most important wintering area for waterfowl along the Pacific Flyway with 8 million waterfowl migrating to the region every fall from all over the world, Canada, Alaska, and Siberia. The Sacramento Valley's well-managed riparian, and natural resources, including forests, wetlands, rangelands and managed wetlands, support and feed waterfowl, shorebirds, game and other species.

As the map on the opposite side shows, diverse land types such as refuges, rangelands, game wetlands, and other farm estate hold both food and shelter through winter and into spring, acting a storage wetland during the low of 95% of the historic wetland areas in the state.

Each year, between 300,000 and 600,000 acres of rice are planted in the Sacramento Valley providing habitat for more than 200 species, including game birds, in a spring and winter, and around 250,000 to 300,000 acres of rice in the fall and winter, providing significant and essential habitat for Pacific Flyway waterfowl, and other migratory waterfowl food resources in the Sacramento Valley. In addition, more than 40,000 acres of privately managed wetland and 27,000 acres within the National Wetlands Refuge and Lake Wildlife Area also make important contributions to the Pacific Flyway habitat in the region.

All of this habitat is reliant upon the ability of Sacramento Valley water districts and companies to meet their duties within water resources they need to combine with their contracts and water rights. According to the Central Valley Joint Water Users (CVJWU), the combined winter water needs of flood-irrigated rice and wetlands in the Sacramento Valley is about 1.1 million acre feet per year.

Currently, the region is experiencing resource imbalances, providing just enough food for the waterfowl and other birds migrating to the Sacramento Valley in the winter months. Reducing water to the rice would result in less acre of habitat by taking the habitat, leaving the birds without adequate food and shelter.

Thanks to the work of key players, the Sacramento Valley is an ecologically important area for waterfowl and other birds migrating to the Sacramento Valley during the winter months. Reducing water to the rice would result in less acre of habitat by taking the habitat, leaving the birds without adequate food and shelter.

This includes more than 250,000 acre-feet of water needed to meet CVJWU and supply grain for refuges and privately managed wetlands.

Why Spring Diversions on the Sacramento River are Important to Serve Multiple Benefits

Overview

In the Sacramento Valley, water systems including rivers, streams, reservoirs and diversions are carefully managed to serve multiple benefits. To effectively serve multiple benefits, water resources must be managed in an efficient manner, with the same block of water often used to achieve overall beneficial uses as it moves through the region's waterways. As such, any proposal to change water management operations will result in reduced impacts to the environment, species, farming, groundwater, and local communities in the Sacramento Valley.

During the dry years in 2014-15 and again in early 2018, National Marine Fisheries Service, the State Water Resources Control Board and others were recommending that water be held back in Shasta Lake to protect cold water for winter-run Chinook salmon. To do this, water releases out of Keswick Reservoir below Shasta would be limited during the spring to less than 2,250 cubic feet per second (cfs), potentially limiting Sacramento River diversions until June 1. Cold water management is important for migrating salmon below Shasta Lake. But, it is also important that water management decisions be made with understanding and consideration of the tradeoffs involved and how the disruption in water diversions and supplies would impact Sacramento River diversions and all of the beneficial uses they support. To the extent possible, decisions should be made to maximize multiple benefits for all parts of the environment, farming and local communities. This proposal action would have the following impacts:

- Decreasing farmed and terrestrial habitat acreage
- Harming ability of juvenile spring-run Chinook salmon to emigrate out of tributaries to the Sacramento River
- Limiting access to drinking water by local communities diverting from the Sacramento River
- Negatively impacting local economies
- Hampering the achievement of sustainability under SCMA

The following synopsis describes these impacts in more detail.

Sustainable Groundwater

- Sustainable Groundwater Management
- The State of Sacramento Valley Groundwater
- Looking at Groundwater Sustainability through a Local Lens
- Sacramento Valley Groundwater Assessment

A PATHWAY FOR THE FUTURE: Sustainable Groundwater Management in the Sacramento Valley

March 2022

FACT SHEET: The State of Sacramento Valley Groundwater

July 1, 2017

Looking at Groundwater Sustainability through a Local Lens

Vignettes on Local Groundwater Conditions in the Sacramento Valley: 2017-18

Local leaders on the Sacramento Valley floor are well organized and committed with respect to Sustainable Groundwater Management Act (SGMA) implementation. The entire Sacramento Valley floor is covered by Groundwater Sustainability Agreements (GSAs) and the local entities are all working hard towards the completion of Groundwater Sustainability Plans (GSPs) by January 2022 that will address relevant natural resource conditions for GSAs. The fact sheet <https://www.ncwa.ca.gov/sustainable-groundwater-plans> is in more detail.

To provide context to local groundwater management in the Sacramento Valley and the ongoing efforts for active and cooperative management of surface and groundwater resources, we have compiled the following vignettes on groundwater conditions prepared by local leaders throughout the Sacramento Valley. These vignettes provide a glimpse into the current groundwater conditions across the Sacramento Valley floor through a local lens, which reflects how GSAs are addressing sustainable water management into the future. These vignettes also show the active engagement of local agencies that are working together to implement GSAs and to sustainably manage water resources in the region for [sustainable](https://www.ncwa.ca.gov). These vignettes together offer a snapshot of current groundwater (2017-2018) conditions, with an emphasis on the groundwater conditions that have responded to the recent wet years after a long series of dry years since the turn of the century.

Groundwater resources are an essential part of the Sacramento Valley groundwater provides nearly 30 percent of the region's water supply, with this percentage greatly increasing during dry years and during sustained droughts. The active management and preservation of Northern California's groundwater resources is thus critical to the economic, social and environmental fabric of the region.

Sacramento Valley Groundwater Assessment Active Management - Call to Action

Prepared for Northern California Water Association

August 2018

Prepared by: Davids Engineering, MacCallum Water Resources, West Yost Associates

June 2014

Sites Reservoir

- Sites Reservoir Provides Significant Public Benefits and Has Strong Statewide Support
- Sites Reservoir: Increasing Drier Year Supplies
- Sites Reservoir: Water for the Environment
- Building the Sites Reservoir
- Sites Reservoir: Good for California
- Sites Reservoir Project: Offstream Water Storage

Sites Reservoir Provides Significant Public Benefits and Has Strong Statewide Support

Sites

When California voters unanimously passed Proposition 13 in 1978, there was strong support for Chapter 9, "Statewide Water System Operational Improvement and Drought Preparedness." This chapter provides an innovative investment program that will have California water users pay for their share.

Additionally, the California Water Action Plan requires that the administration will work with the Legislature to make funding available to share in the cost of storage projects. Funding partners step forward. The state will facilitate among willing local partners and subsidize the development of financially sound, multi-benefit storage projects, including working with local agencies to enhance feasibility studies. For example, the [State Water Resource Control Revolving Fund](#) provides grants to the Sacramento Valley. It is a potential funding source for the San Joaquin and State government determine the viability of a proposed off-stream storage project - "Sites Reservoir" (Page 12)

Significant [public benefits](#) include water quality improvements, reduced salinity levels in the Sacramento-San Joaquin Delta (Deltas), improved flood protection for migratory birds and other native species, and more reliable cold water for the benefit of salmon in the Sacramento Valley river system. In turn, the project will contribute to long-term health of the Delta by providing net improvements.

Investment (SES) in Sites Reservoir by water agencies throughout California, known as [California Investment](#).

Strong support from a bipartisan group of federal, state and local officials throughout the state.

Broad statewide support from [farmers](#) and people in every region of California.

The advancement of Sites Reservoir should be part of an integrated water management solution for the administration. The public benefits and dedicated ecosystem water from Sites Reservoir could be used by California's resource agencies as a flexible water management tool to address environmental needs in any given year, depending on hydrology and other conditions in the Sacramento River Basin and the Delta.

Sites [STATEWIDE PLAN](#)

SITES RESERVOIR

Increasing Drier Year Supplies

More than two years ago, California needs to address statewide water management challenges by implementing innovative solutions that address our state's need for a sustainable and affordable water supply. Managing the state's water resources remains one of the greatest challenges that will continue to face California's policy makers well into the future. The state's water infrastructure is getting older and stressed beyond its capabilities.

Sites Reservoir will significantly improve the state's water management systems in drier periods, and restore much-needed flexibility and reliability that has been lost in the system.

How It Works

Located in the upper end of the basin of the Sacramento River, Sites Reservoir will provide habitat and cold stream water to the Sacramento River and other water users. Sites Reservoir will provide habitat for migratory birds and other native species, and more reliable cold water for the benefit of salmon in the Sacramento Valley river system. In turn, the project will contribute to long-term health of the Delta by providing net improvements.

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Sites Reservoir Project

Environmental water to drier periods for habitat fish and species. Provide habitat for migratory birds and other native species. More reliable cold water for the benefit of salmon in the Sacramento Valley river system. In turn, the project will contribute to long-term health of the Delta by providing net improvements.

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Sites Reservoir Project

SITES RESERVOIR

Water for the Environment

California is facing multiple challenges in how to manage its water infrastructure and supply, including concerns regarding rising temperatures, declining snowpack, drought, dry winters, and more water diversions. The project challenges to the state's ability to meet its goal of creating a water-rich state, including a more reliable water supply and protecting and enhancing the environment. To be successful, California's policy makers must take a portfolio of actions that include new water storage.

Sites Reservoir Project is a water storage enhancement to the California water system that will provide multiple environmental benefits to improve aquatic habitat conditions and enhance dry year conditions. The reservoir will be operated to accommodate climate change and improve environmental and water supply system resilience.

KEY ENVIRONMENTAL BENEFITS

- Up to 10 percent of the project's water would be available for and managed by state and federal agencies to address environmental needs.
- Nearly 40,000 acres feet of water would be available for managed release into central, north and south of the Delta, providing a more sustainable water supply to benefit migratory birds and other species.
- With the anticipated reduction in snow-melt, cold water stored in the existing reservoirs will be reduced, making it more difficult to manage the temperature of water released for salmon and other species downstream. The operation of Sites Reservoir will allow Delta, Central, and South of the Delta to store water later into the summer months for the benefit of fisheries.
- Project operations will also improve water quality and availability in the Delta by releasing upstream cold water to improve conditions for Delta smelt, among other species.

Sites Reservoir will be operated to provide significantly more water during drier periods, complementing other drought management tools in addressing California's water management challenges into the future and beyond.

About Sites Reservoir

Located 10 miles west of the town of Marysville in rural Colusa and Glenn Counties, Sites Reservoir would be a 1.8 million acre-foot off-stream storage facility to provide water for drier periods.

How It Works

The reservoir will capture and store storm-related runoff and flood flows in the Sacramento River after all other water rights and regulatory requirements are met.

Sites Reservoir will be operated to provide significantly more water during drier periods, complementing other drought management tools in addressing California's water management challenges into the future and beyond.

As Sites Reservoir moves through the final permitting process, the Sites Project Authority is working with the NCS community, state, and federal agencies to ensure that the environmental water from Sites is managed appropriately. For more information, please visit [www.sitesproject.org](#).

SITES PROJECT AUTHORITY

Building the Sites Reservoir

WATER FOR OUR CITIES, FARMS AND WILDLIFE

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SITES PROJECT AUTHORITY

Sites Reservoir: Water for California

TIME TO ACT

Building Sites Reservoir is critical to a more reliable water supply.

Water supplies throughout the North State have planned for dry years in California like 2021.

2021 Reduction in Sacramento Valley Surface Water Supplies (in %)

Water supplies in the Sacramento Valley are part of the Sacramento State Water Plan. The plan calls for a 20% reduction in water supplies in the Sacramento Valley. The plan also calls for a 20% reduction in water supplies in the Sacramento Valley. The plan also calls for a 20% reduction in water supplies in the Sacramento Valley.

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NCWA

Sites Reservoir Project

Citizen Water Storage

North of the Sacramento River, Marysville, California

Overview

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SITES PROJECT AUTHORITY

Dry Year Planning

- Planning for a Dry Year in the North State
- Drought, Flood and Fire: Managing Extreme Events in the Sacramento River Basin

Planning for a Dry Year in the North State

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NCWA

Drought, Flood, and Fire: Managing Extreme Events in the Sacramento River Basin

Water management in the Sacramento River Basin has always been defined by climatic variability in climate and conditions—extreme events of drought, flood, and fire have shaped the region. Across the basin, experience navigating these highly variable conditions has informed a robust set of water management practices to address their impacts while balancing water supply and demand.

Today and into the future, these extreme events of drought, flood, and fire are expected to increase in frequency and volatility, with their impacts magnified by a changing climate. In response, water resource managers in the Sacramento River Basin are taking action to address these changing conditions.

In addition to the historic set of practices, innovative new approaches are being deployed to address the new challenges of increasingly extreme conditions. In addition to managing the impacts of extreme events, each of these actions presents opportunities to enhance water supply reliability and improve conditions for fish and wildlife now and into the future.

NCWA

Drinking Water / Water Quality

- Ensuring Access to Safe Drinking Water for All California Communities
- Ensuring High Quality Water in the Sacramento River Basin for Communities, Ecosystems, and Farms
- An Accelerated Regional Salinity Management Approach to Protect Beneficial Uses in the Sacramento River Basin

Ensuring Access to Safe Drinking Water For All California Communities

A Californians have a right to safe, clean, affordable and accessible water under the "human right to water" established in state law in 2012. In recent years the State has made considerable progress toward addressing areas that lack safe drinking water beginning with the enactment of SB 200 and the creation of the Safe and Affordable Drinking Water Fund in 2015, funding for small water suppliers and rural communities under SB 502 in 2021, as well as a suite of on-line tools, including the Aquifer Risk Map for Domestic Wells and State Small Systems, the Public Water System Risk Assessment Map, and Drinking Water System Violations Map. These tools provide both a policy framework and significant financial resources to support activities that are otherwise cost prohibitive for impacted communities. With these tools in place both state and local entities have the resources to help ensure that all California communities have access to water that meets the health-based standards of the state and federal Safe Drinking Water Act.



“Providing clean, dependable water supplies to communities, agriculture, and industry while restoring and maintaining the health of our watersheds is both necessary and possible.”

Governor Gavin Newsom, Executive Order E-10-19 (April 2019)



April 2022

Ensuring High Quality Water in the Sacramento River Basin for Communities, Ecosystems, and Farms

The State of Water Quality

Water quality is **essential** to ensure the ecological and economic sustainability of the natural and working lands of the Sacramento Valley with its world-renowned resource of productive farmlands, wildlife refuges and managed wetlands, cities and rural communities, and meandering rivers that support and feed fisheries and vital wildlife habitats. The Sacramento Valley is securing our sustainable future through responsible management of the essential resource that millions of birds, hundreds of thousands of fish, thousands of farms and millions of people all rely on water.

The Sacramento River Basin leadership has advanced a regional approach focused on sustainable water management and climate resilience for **all** beneficial uses and users of water in the Sacramento River Basin as described below. For generations the communities and farming families in the Sacramento River Basin have cultivated a shared vision for a vibrant way of life throughout the region that depends upon high quality water for all forms of life. These leaders and their families live, work and play in the region and have a direct interest in ensuring high quality water for all these purposes. This approach builds on the culture and strong partnerships in the region with water suppliers, local governments, landowners and conservationists—all working together with state and federal agencies to ensure safe drinking water, healthy aquatic life and reliable water supplies for farms and ranches.





An Accelerated Regional Salinity Management Approach to Protect Beneficial Uses in the Sacramento River Basin

July 15, 2021

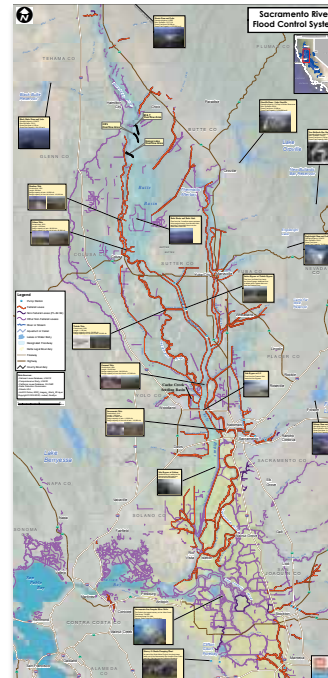
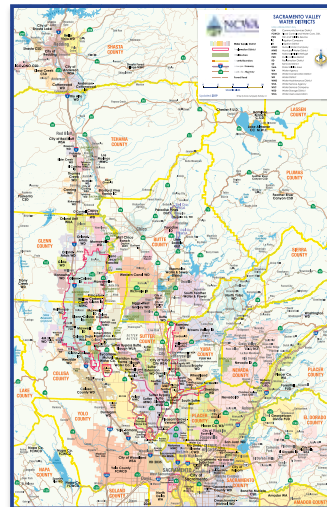
The Sacramento Valley Water Quality Coalition (Coalition) is advancing a regional salinity management approach with a detailed [characterization of salinity sources and distribution](#) in the Regional Water Quality Board that will accelerate and focus present salt management practices in the Sacramento River Basin for beneficial uses under the Porter-Cologne Water Quality Act and the Basin Plan Amendments. The regional approach and subsequent implementation will address the goals in the Regional Board's Salt and Nitrate Management Plan (SNMP) to protect beneficial uses by: 1) maintaining water quality that meets applicable water quality objectives and pursuing long term managed restoration where reasonable, feasible and practicable; 2) controlling the rate of degradation through a "managed degradation" program; and 3) implementing salinity management activities to achieve long-term sustainability and prevent continued impacts to salt sensitive areas. This includes salt management practices described in the CV-Salts technical reports.

This regional approach builds on the culture and strong partnerships in the region with water suppliers, local governments, landowners and conservationists—all working together with state and federal agencies to ensure safe drinking water, healthy aquatic life and reliable water supplies for farms and ranches as described in [Ensuring High Quality Water in the Sacramento River Basin for Communities, Ecosystems, and Farms](#). For generations the communities and farming families in the Sacramento River Basin have cultivated a shared vision for a vibrant way of life throughout the region that depends upon high quality water for all forms of life. The Sacramento River Basin is securing our sustainable future through responsible management of the essential resource that millions of birds, hundreds of thousands of fish, thousands of farms and millions of people all rely on water. The region's leaders and their families live, work and play in the Valley and have a direct interest in ensuring high quality water—including salt-free—for all these purposes.



Maps

- Water District Map
- Flood System Map



- Mission Factsheet
- Who We Are Factsheet
- Strategic Planning and 2021 Priorities
- Video: Inspiration for NCWA
- Video: NCWA Generations

NCWA
Northern California Water Association

Mission:
To advance the economic, social, and environmental sustainability of the Sacramento Valley by enhancing and preserving its water rights, supplies, and water quality.

Vision:
The Northern California Water Association (NCWA) is committed to advance the economic, social, and environmental sustainability of the Sacramento Valley by enhancing and preserving its water rights, supplies, and water quality for the rich mosaic of farmlands, cities and rural communities, refugees and managed wetlands, and meandering rivers that support fisheries and wildlife.

#SourcingOurSustainableFuture:
The Sacramento Valley is sourcing our sustainable future through responsible management of the essential resource that millions of birds, hundreds of thousands of fish, thousands of farms and millions of people all rely on—water.

CULTIVATING A SHARED VISION IN THE SACRAMENTO VALLEY FOR A VIBRANT WAY OF LIFE.
www.npcalwater.org

NCWA
Northern California Water Association

California history is filled with stories of competing interests seeking new water supplies to satisfy their ever increasing needs. Over the years, many of these interests have threatened the water rights and supplies, the environment, communities and the way of life in Northern California. The Northern California Water Association (NCWA) was formed in 1992 to present a unified voice to ensure that this region has reliable and affordable water supplies—both now and into the future.

Who We Are:
We are the water districts, water companies, small towns, rural communities and landowners that beneficially use both surface and groundwater resources in the Sacramento Valley. NCWA Board of Directors and staff are committed to safeguard water supplies in the Sacramento Valley and constructive leadership in the pursuit of solutions to resolve California's most pressing water problems. As a result, NCWA is the recognized voice of Northern California water. NCWA represents the entire Sacramento Valley, which extends from Sacramento to north of Redding, and between the crests of the Sierra Nevada and the Coast Range.

Board of Directors
NCWA is governed by a Board of Directors (Board) who are elected by the NCWA members every other year. The Board meets six times a year in different places throughout the Sacramento Valley. The Board sets the priorities for NCWA, oversees the organization and actively represents NCWA in various state and federal venues. The Board members are listed at www.npcalwater.org.

NCWA Staff
NCWA is actively involved in all aspects of California water at both the state and federal level, including the various regulatory, legislative, legal and communication arenas. A full listing of the NCWA staff and their biographies can be seen at www.npcalwater.org. NCWA staff are always available to help NCWA members at any time by phone and we can attend Board meetings, annual meetings and any other meeting upon request.

What We Do:
NCWA brings the water leaders in the region together to safeguard the region's water rights and supplies by working with Congress, the State Legislature, state and federal agencies, and various stakeholders throughout the state. NCWA has also led coordinated efforts for water resource managers to implement sustainability initiatives and integrated regional planning across this diverse region.

Efficient. Essential. Exceptional.
www.npcalwater.org

NCWA
Northern California Water Association

Ridgetop to River Mouth Water Management

Strategic Planning and 2021 Priorities

Approved by Board of Directors on March 3, 2021

