

# WATER DEEPLY

In depth-coverage of water in California and the American West. Learn more about us.

FOLLOW US   

Topics  [Executive Summaries](#) [Articles](#) [Community & Insight](#) [Background](#) [Search](#) [About](#)

 [Subscribe for updates](#)

[AGRICULTURE](#)

[ENVIRONMENT & WILDLIFE](#)

[MANAGEMENT & SUPPLY](#)

[SOLUTIONS](#)

[ARTICLES](#)

[GENERAL](#)

# Cosumnes River Provides Model for Floodplain Restoration in California

[Share](#)

[Tweet](#)


 [Share via Email](#)

Research in the Cosumnes River watershed in the eastern Sacramento-San Joaquin Delta region has shown the benefits to water storage and wildlife from floodplain restoration that could prove useful across the state.

WRITTEN BY

[Michelaina Johnson](#)

PUBLISHED ON

 April 19, 2017

READ TIME

Approx. 4 minutes

**Never miss an update.** 

Sign up for our newsletter to receive weekly updates, special reports and featured insights as we cover one of the most critical issues of our time.

 [SUBSCRIBE](#)



Flooding in the lower Cosumnes River watershed in January 2017. Research has shown that floodplain restoration on the Cosumnes can help recharge groundwater and boost fish habitat. Michael R. Eaton

**WITH CALIFORNIA'S SURFACE** drought over, the state can prioritize investing in groundwater recharge and floodplain restoration to help fight one of its biggest lingering problems: groundwater overdraft. As it does so, the relatively unknown Cosumnes River watershed has emerged as a model.

Roughly half of the groundwater basins in California's Central Valley are critically overdrafted, including the San Joaquin Valley basin to the south of the Cosumnes. Though groundwater levels in the Cosumnes basin have also appreciably declined since the 1950s, cutting edge research at the Cosumnes River Preserve, a 50,000-plus acre public-private partnership in the eastern Sacramento-San Joaquin Delta, has shown that floodplain restoration

## Related Articles



**Drought and Flood:  
Two Extremes, Yet  
Closely Linked**

July 14, 2015



**Flooding Is the Future  
of California's Water  
Supply**

Dec. 11, 2015



**Effort to Steward a  
Rare Free-Flowing  
California River Gains  
Traction**

Nov. 2, 2017



**A Landmark  
California Plan Puts  
Floodplains Back in  
Business**

Oct. 10, 2017



**Putting the Floodplain  
Back into Farming**

Feb. 25, 2016



**Why Floodplains  
Could Be California's  
Buffer Against  
Climate Extremes**

Feb. 23, 2017



**Plan for San Joaquin  
Valley Reservoir to  
Recharge  
Groundwater Draws  
Concern**

Aug. 8, 2017



**Delta Tunnel  
Alternative:  
Embracing Flooding  
for Water Supply**

Oct. 24, 2016



**Mark Cowin: Planning  
for California's Water  
Future**

July 14, 2016



**Report: Extinction  
Looming for Most of  
California's Salmon**

can substantially recharge groundwater as well as provide habitat and improve fish migration.

Preliminary results from an ongoing University of California Water study on the Cosumnes River suggests that breaching levees to allow small- and medium-sized floods to inundate agricultural fields could triple the recharge provided by irrigation. This is welcome news as California figures out how to make the state's surface and groundwater systems more sustainable and have more multi-beneficial uses for humans and wildlife.

Facing diminishing groundwater levels, the state passed the Sustainable Groundwater Management Act (SGMA) in 2014 to work toward long-term groundwater sustainability. That same year, voters approved the Water Quality, Supply and Infrastructure Improvement Act (also called Proposition 1) to provide \$7.5 billion for water-related infrastructure projects. Groundwater supplies roughly 30 percent of water deliveries in the state, and that amount skyrockets in droughts, such as the recent record-breaking one. California's dependence on groundwater for agricultural and municipal use has caused an immense statewide overdraft averaging over 1 million acre-feet per year. This is partly due to the vast majority of Central Valley rivers being dammed and leveed, which shrinks the river's floodplain and consequently reduces groundwater recharge.

## Most Popular

1

### Two Years After California's Biggest Dam Removal, Fish Rebound

In 2015 the San Clemente Dam was demolished, in part to restore the watershed and protect endangered steelhead trout. Now scientists are studying the impacts and the findings have them optimistic about the future. Oct. 30, 2017

2

### Why Hydroelectric Utilities Are Endangered by Soaring Solar and Wind

Nov. 6, 2017

3

### California Should Give Prop. 1 Money to Groundwater Storage Projects

Oct. 31, 2017

4

### Farm vs. City: California Landmark Water-Sharing Deal May Be Crumbling

Nov. 13, 2017

5

### Major Water Rights Settlement for Arizona Tribe Goes to Congress

Oct. 27, 2017

“Think of the river as a really slowly beating heart,” explained Michael Eaton, former project director for the Nature Conservancy at the Cosumnes River Preserve who still lives along the Cosumnes. “When it flowed high, it would have pushed water into the aquifer ... When the river receded, it would have drawn from the aquifer [and] it would have kept the river alive and wet, if not flowing.”

The uniqueness of the Cosumnes River compared to the other rivers in the Central Valley has made it the reference system for researchers studying floodplains and groundwater recharge. Because the Cosumnes is the only nearly dam-free river draining the western slope of the Sierra Nevada and its flow is produced predominantly by rain rather than snow, the Cosumnes retains a relatively natural flood regime, including near annual flooding of its lower watershed.

Beginning in the late 1990s, U.C. Davis researchers became interested in the river after the largest flood in the Cosumnes’ recorded history completely inundated the lower watershed. Two decades of research in the lower watershed has revolutionized river restoration in California. Perhaps the most well-known study on the Cosumnes, published in 2008, demonstrated that juvenile Chinook salmon reared in floodplains have higher survival and growth rates than those confined to a river channel, which is critical considering state law has stringent

rules to protect this fish. The floodplain restoration at the Cosumnes River Preserve resulting from levee breaching also revealed that native habitat, such as oak riparian forest, will return to a landscape if natural processes are restored.

These findings provide proof for the multiple benefits of floodplain restoration. Joshua Viers, professor and watershed scientist at U.C. Merced, highlighted that floodplain restoration is a “fairly low-cost means through which to achieve [the] multiple benefits” desired by Proposition 1, which funds conjunctive use projects.

He also noted that “floodplain restoration is going to have to happen in conjunction with a lot of other things ... because the groundwater deficit is so large.” Other strategies include off-season flooding of agricultural fields and mandatory dam releases to generate sufficient flow for fish migration and groundwater recharge.

At the Cosumnes River Preserve, thousands of acres of crop fields are flooded during winter to create migrating waterfowl habitat and to recharge groundwater, displaying the multiple benefits of off-season agricultural field inundation. The studies looking at how the Cosumnes River behaves as a naturally flowing river have informed how dam operators should manage water releases to mimic natural flow regimes for fish.



Extensive groundwater pumping has disconnected the Cosumnes River from its aquifer, causing it to lose its flow in summer and fall. (The Nature Conservancy)

Despite the pathbreaking research and restoration occurring in the lower Cosumnes River watershed, more than half a century of extensive groundwater pumping from agriculture and nearby urban growth has disconnected the river from its aquifer and generally caused the river to lose its baseflow during summer into mid-fall. The [Cosumnes Coalition](#), a partnership advocacy group for the Cosumnes, plans to utilize SGMA to address groundwater extraction and promote new multi-benefit projects that will augment recharge and return base flows to the river.

Eaton, who is also an adviser for the Cosumnes Coalition, describes the Cosumnes' influence on the SGMA as synergistic – lessons learned from the Cosumnes helped to shape the SGMA, which, in turn,

will shape multi-benefit projects on the Cosumnes and elsewhere.

“Modern groundwater science suggests that we’ve only begun to tap the potential of the Cosumnes for highly cost-effective groundwater recharge,” said Eaton. And future research on the topic will undoubtedly reveal promising new techniques for enhancing water reliability and storage in California.

*Never miss an update. Sign up [here](#) for our Water Deeply newsletter to receive weekly updates, special reports and featured insights on one of the most critical issues of our time. ■*

### About the Author

#### Michelaina Johnson

Michelaina Johnson is a freelance journalist and recent graduate of the University of California, Berkeley. She studied water issues of the American West and now works in water policy in Washington, D.C.

#### RELATED

**Drought and Flood: Two Extremes, Yet Closely Linked**

July 14, 2015

#### RELATED

**Flooding Is the Future of California’s Water Supply**

Dec. 11, 2015

#### RELATED

**Effort to Steward a Rare Free-Flowing California River Gains Traction**

Nov. 2, 2017

### Most Popular Stories

1 **Two Years After California’s Biggest Dam Removal, Fish Rebound**

Oct. 30, 2017

2 **Why Hydroelectric Utilities Are Endangered by Soaring Solar and Wind**

Nov. 6, 2017

3 **California Should Give Prop. 1 Money to Groundwater Storage Projects**

Oct. 31, 2017

4 **Farm vs. City: California Landmark Water-Sharing Deal May Be Crumbling**

Nov. 13, 2017

**Major Water Rights Settlement for Arizona**

**Never miss an update.** Join thousands of industry insiders and get a free weekly wrap-up of need-to-know Water news.

Your email address (we'll never share it.)

 Sign me up.