



**FLOODPLAIN
FORWARD**

Investing in Life on the Move

Floodplain activation supports Salmon, Waterfowl and Shorebirds during critical life stages so that wildlife can complete their migration journeys.

Salmon



Waterfowl



Shorebirds



Migration in the Sacramento River Basin

The Sacramento River Basin supports remarkable migrations of salmon, waterfowl, and shorebirds. Chinook salmon are born in its rivers and migrate to the Pacific Ocean before returning to complete their life cycle. Ducks, geese, and other waterfowl travel from Arctic breeding grounds to wintering habitat across the Sacramento Valley floodplains, while shorebirds stop to rest and refuel along the Pacific Flyway during migrations that span from the Arctic to the marshlands of South America.

Successful Migrations Need: **Sun, Land & Water**

The key element for successful migrations is a robust food source (and safe haven) produced in California's Sacramento Valley through the combination of sun, land and water on the rich floodplain landscape consisting of bypasses, ricelands, refuges, and riparian zones ([see How](#)).

Sun

Sunlight drives plant growth across the floodplain, supporting dense vegetation that stabilizes soil and provides habitat.

Land

In turn, the land absorbs and slows water, reducing downstream flooding while recharging groundwater.

Water

Periodic flooding spreads nutrient-rich sediments from rivers onto the land, replenishing soils and boosting fertility.



+ This food source, referred to by scientists as “energetics,” offers salmon, waterfowl and shorebirds critical nourishment for their long journey and an ability to evade predators.

Chinook Salmon: Starting on the Floodplains

Water spreading across floodplains (including winter-flooded rice fields) creates an abundance of zooplankton and other aquatic insects that serve as a natural food source for juvenile Chinook salmon. Research by UC Davis and California Trout reveals that salmon exposed to these floodplain food webs can grow up to five times faster than those rearing only in river channels, making them larger, stronger, and better able to evade predators during migration.

There are two ways floodplains support our migrating salmon, either through augmenting food deliveries to the river or by putting salmon directly on ricelands.

This growing body of science demonstrates the value of water on the landscape and how important the floodplains are to the recovery of our salmon populations.



UC Davis researchers found that 20% of the juveniles that had access to floodplain and riparian zone food sources, make up 80% of the adults who return to spawn.



Chinook Salmon Pacific Ocean Migration

After leaving the Sacramento River, Chinook salmon disperse throughout the Pacific Ocean, where they spend one to four years feeding and growing before returning to their natal rivers to spawn. Ocean conditions and water temperatures influence the timing, routes, and duration of each run's migration. Winter-run Chinook typically migrate south to waters off Morro Bay before returning to the San Francisco Bay. Spring-run, Fall-run, and Late Fall-run travel as far north as Central Oregon, though Fall-run and Late Fall-run commonly move south into Monterey Bay before turning north.

- ▶ Spring-run Chinook
- ▶ Fall-run Chinook
- ▶ Late Fall-run Chinook
- ▶ Winter-run Chinook

Pacific Ocean

Washington

Oregon

California



A Holistic Approach to Create Robust Salmon Populations

Projects and strategies noted below focus on supporting native fish during freshwater lifecycle stages including spawning, egg incubation, outward migration and rearing opportunities.

Source Water Protection

Spawning Gravels & Refugia

Modernizing Hatcheries

Temperature Management

Pulse Flows

Fish Rest Stops

Fish Passage

Floodplain Reactivation

Putah Creek Enhancements

Sacramento River Winter-Run Chinook Salmon Action Plan (WRAP)

McCloud River Reintroduction

Thiamine Treatment

Battle Creek Enhancements

Butte Creek Enhancements

Yuba River Enhancements

Feather River Enhancements

American River Enhancements

Mokelumne River Enhancements



Waterfowl & Shorebirds

Rely on Floodplain Habitats to Complete their Journeys from the Arctic to Central America

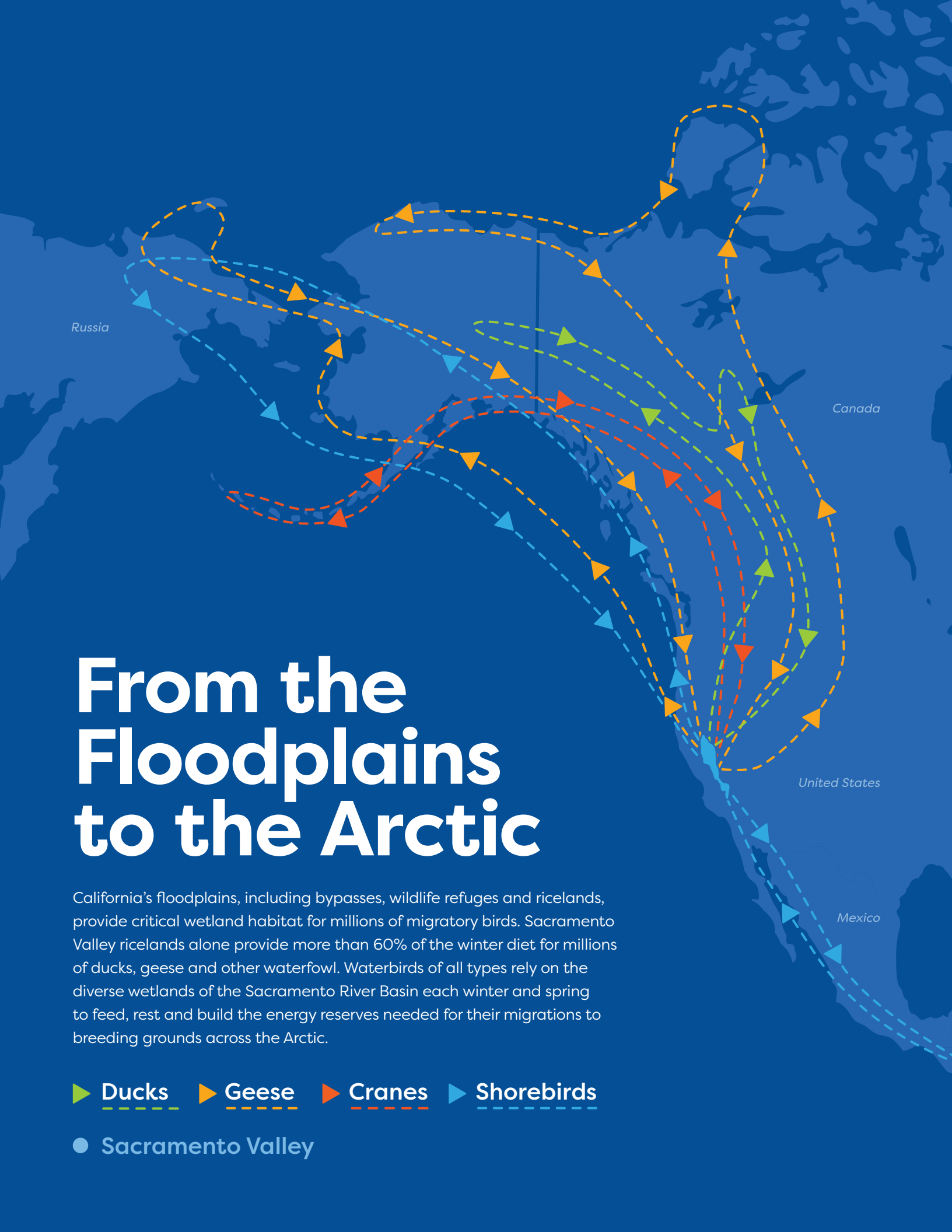
The Sacramento River Basin is a critical stopover site along the Pacific Flyway for waterfowl and shorebirds. These wetland habitats supply abundant food resources such as aquatic invertebrates and seeds that sustain birds during their long migrations

By supporting natural floodplain processes and strategically managing water on working landscapes, these efforts help ensure that migrating shorebirds and waterfowl have the feeding and resting areas they depend upon, strengthening one of the most significant bird migration corridors in the Western Hemisphere.



4 million waterfowl and up to 350,000 shorebirds rely on the bypasses, refuges and ricelands to rest and feed each winter.



A map of North America and the Arctic region showing migration routes for four types of birds: Ducks (green), Geese (orange), Cranes (red), and Shorebirds (blue). All routes originate from a central point in the Sacramento Valley, California, marked with a blue dot. The routes are represented by dashed lines with arrows indicating the direction of travel. Ducks migrate north and east towards the Arctic. Geese migrate north and west towards the Arctic. Cranes migrate north and west towards the Arctic. Shorebirds migrate south and west towards the Pacific coast. The map includes labels for Russia, Canada, United States, and Mexico.

From the Floodplains to the Arctic

California's floodplains, including bypasses, wildlife refuges and ricelands, provide critical wetland habitat for millions of migratory birds. Sacramento Valley ricelands alone provide more than 60% of the winter diet for millions of ducks, geese and other waterfowl. Waterbirds of all types rely on the diverse wetlands of the Sacramento River Basin each winter and spring to feed, rest and build the energy reserves needed for their migrations to breeding grounds across the Arctic.

► Ducks ► Geese ► Cranes ► Shorebirds

● Sacramento Valley

Supporting Birds

Through a Holistic Approach to create Healthy Rivers and Landscapes

By continuing to invest and manage working lands, wildlife refuges and private wetland areas together, we can ensure millions of migratory shorebirds and waterfowl have access to a abundant and diverse set of habitats.

Approximately One Billion Birds annually migrate through the Sacramento Valley



350k
Shorebirds



4 Million
Waterfowl

Critical Wintering Bird Habitat Along the Pacific Flyway.

-  Ricelands
-  Private Wetland Areas
-  National & State Wildlife Refuges



Sacramento River





FLOODPLAIN FORWARD



The Floodplain Forward Coalition

A 35-member organization representing landowners, irrigation districts, higher education, and conservation groups. The coalition, and the collaborative model of dynamic conservation, has resulted in farms, refuges, and managed wetlands providing essential habitat for waterfowl and shorebirds as well as food production for endangered commercial fish species.



The Nigiri Project
CAL MARSH & FARM VENTURES

Conaway
PRESERVATION GROUP

LUNDBERG
FAMILY FARMS



River Garden Farms



California Rice
It's in our Nature



Sutter Mutual
Water Company





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