



Juvenile salmon (fry stage of their lifecycle) rescued from stranding pools.

Juvenile salmon need aquatic habitat that provides a low and consistent flow with ample vegetative cover in and above the water to help keep the water cool and to hide from predators. This cover also provides food for the young fish to grow. Large tree root wads have been intentionally anchored along the slough to help meet the habitat needs of juvenile salmon.

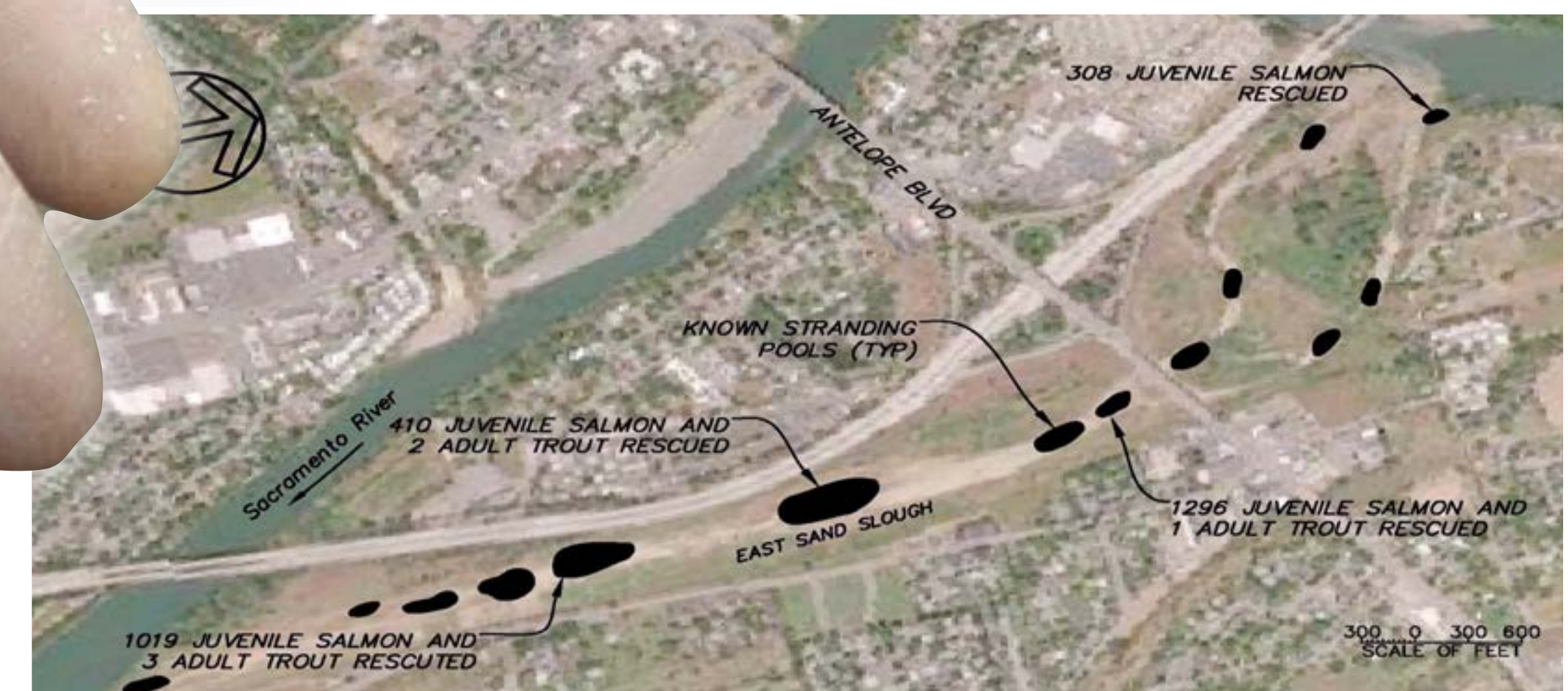
What is a Side Channel?

...AND HOW DOES IT SAFEGUARD SALMON?

- A side channel is a "rest stop" for young salmon on the Sacramento River "highway" as they swim to the ocean
- Side channels offer rearing habitat for juvenile fish to feed and grow in a safe refuge from the swift Sacramento River current



Over 100,000 cubic yards of material from the Slough was excavated to allow water to pass through its entire length.



ABOUT THE EAST SAND SLOUGH SIDE CHANNEL PROJECT...

Challenge: The lower river flow in winter disconnected the East Sand Slough from the river that caused stranding pools (denoted in black on map) and limited access to prime rearing habitat for juveniles. The map above shows a single day rescue effort in 2018 that saved 3,300 juvenile salmonids from the pools.

Solution: Multiple state and federal agencies and local organizations worked together to fix the stranding issue and improve habitat by excavating the Slough. Construction was completed in early 2022 and now the East Sand Slough is a functioning side channel, even during times of lower river flow. It provides nearly 2 miles of restored juvenile salmon habitat reducing the odds of fish stranding, particularly for the endangered, winter-run Chinook Salmon.

Habitat restoration is an ongoing process. Please respect all posted signs. Your cooperation is appreciated.



Reconnecting the side channel helps restore the local ecosystem by supporting a diverse community of native plants and animals as well as people. The Paskenta Band of Nomlaki Indians and the Mechoopda Indian Tribe of the Chico Rancheria applied Indigenous Traditional Ecological Knowledge (ITEK) to help reestablish the interaction between native flora and fauna within the side channel. Red Bluff High School students joined the effort by seeding, propagating, and planting over 50 native plant species.



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or visit our website: <http://bit.ly/3wqz2W>

PROJECT FUNDER
US Department of Interior, Bureau of Reclamation

PROJECT PARTNERS
U.S. Fish and Wildlife, U.S. Forest Service-Mendocino National Forest, U.S. Department of Interior-Bureau of Reclamation, Pacific State Marine Fisheries Commission, California Department of Fish and Wildlife, California Department of Water Resources, California Department of Transportation, Tehama County Probation Department, California State University Chico-Chico State Enterprises, Resource Conservation District of Tehama County, Tehama County Fish and Wildlife Commission, Sacramento River Forum, Tussing Ecological Services, Colaveras Healthy Impact Product Solutions, Paskenta Band of Nomlaki Indians, Yurok Tribe (Tribe, Construction Corporation, and Fisheries Program), City of Red Bluff, Durango R.V. Park, GrizzlyCorps Rural Climate Fellows, and Red Bluff Union High School.



BUREAU OF RECLAMATION

Why Safeguard Salmon?

- As keystone species, salmon have a direct effect on numerous insects, freshwater and marine fish, predatory birds, bear, seals, orca, and humans.
- Salmon population and health status reflect the condition of drinking, municipal, and irrigation water for millions of Californians.
- The condition of salmon also indicates ecologic, economic, and social well-being locally and regionally.
- Barriers such as dams, water diversions, and habitat degradation are stressors to salmon. Winter-run Chinook Salmon are endangered species due to these and other stressors.



SALMON ARE REMARKABLE!

- Salmon and other salmonid species such as steelhead trout, navigate through waterways across the west, both natural and man-made.
- Salmon are anadromous, meaning that, over the course of their lifetime, they migrate from their freshwater home to the open ocean and back to their freshwater birth site to reproduce.
- Salmon depend on and directly and indirectly contribute to ecosystems throughout their lifetime:

After spawning, adult salmon carcasses serve as food for mammals, birds, and insects that deposit (and defecate) marine-based nutrients enhancing **soil formation** as plant fertilizer. Healthy soils contribute to **flood control** by efficiently absorbing surface water.

Trees that tap nutrient-rich soil can **store carbon** more efficiently helping to **clean the air** of pollutants and provide valuable **wood** for construction.

Local, regional, and international economies rely on fisheries for **food** production, **recreation**, and tourism.

Learning about our natural world and **cultural** values can encourage stewardship to help safeguard salmon.

What can I do to help?



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- Pick up and properly dispose of trash.
- Fix leaking vehicles.
- Purchase salmon to eat from reputable sources.
- Fish with a valid license and follow regulations.
- Keep native plants in their place.
- Learn more about our changing climate and its impact on salmon population.

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The Importance of Place: Why Here? Why Now?

Place and time are vital components for the survival of salmonid species. Sacramento River salmonids include all four runs of Chinook Salmon (spring, fall, late-fall and winter) and steelhead trout. The winter-run Chinook Salmon are listed as an endangered species and are in need of urgent protection. Like all anadromous salmon that migrate to the ocean and back to where they hatched in freshwater, they need the right habitat, in the right place, and at the right time in their lifecycle.

THE EAST SAND SLOUGH IS

THE RIGHT HABITAT

If you build it, they will come...



The Sacramento River is a challenging place for young salmon. They are highly vulnerable to predation and its strong current pushes them downstream before they're big enough to handle more challenges as they migrate to the ocean.

Young salmon need a safe retreat from the swift river flow

before swimming downstream and advancing through the stages of their lifecycle. They need a reliable, shallow waterway with a slow current and vegetation that provides:

- food to grow strong
- structure to hide from predators
- shade that helps keep the water temperature cool

Juvenile Chinook Salmon in the safety of side channel habitat



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Aerial image of the East Sand Slough side channel. Large root wads are intentionally anchored along the Slough for juvenile salmon habitat.

IN THE RIGHT PLACE

Location, location, location!

Culturally, what is now known as Tehama County is the traditional territory of the Paskenta Band of the Nomlaki, southern Yana, and Wintu tribes who offer Indigenous Traditional Ecological Knowledge (ITEK), a system of ecological science and technology developed over 20,000 years by the First Nations.

Geographically, Tehama County is bisected east and west by the Sacramento River. Mountains and foothills capture snow and rain that flow into creeks as part of the Sacramento River watershed. Some of these creeks, as well as those further upstream, offer prime spawning habitat for salmonids to release and fertilize eggs for the next generation to hatch.

Tehama County is positioned to help salmon by providing rearing habitat for fry to grow in the safety of side channels. At river mile marker 246, the East Sand Slough is one of over eight side channels that have been reconnected to the Sacramento River or slated for restoration in Tehama County by 2030.

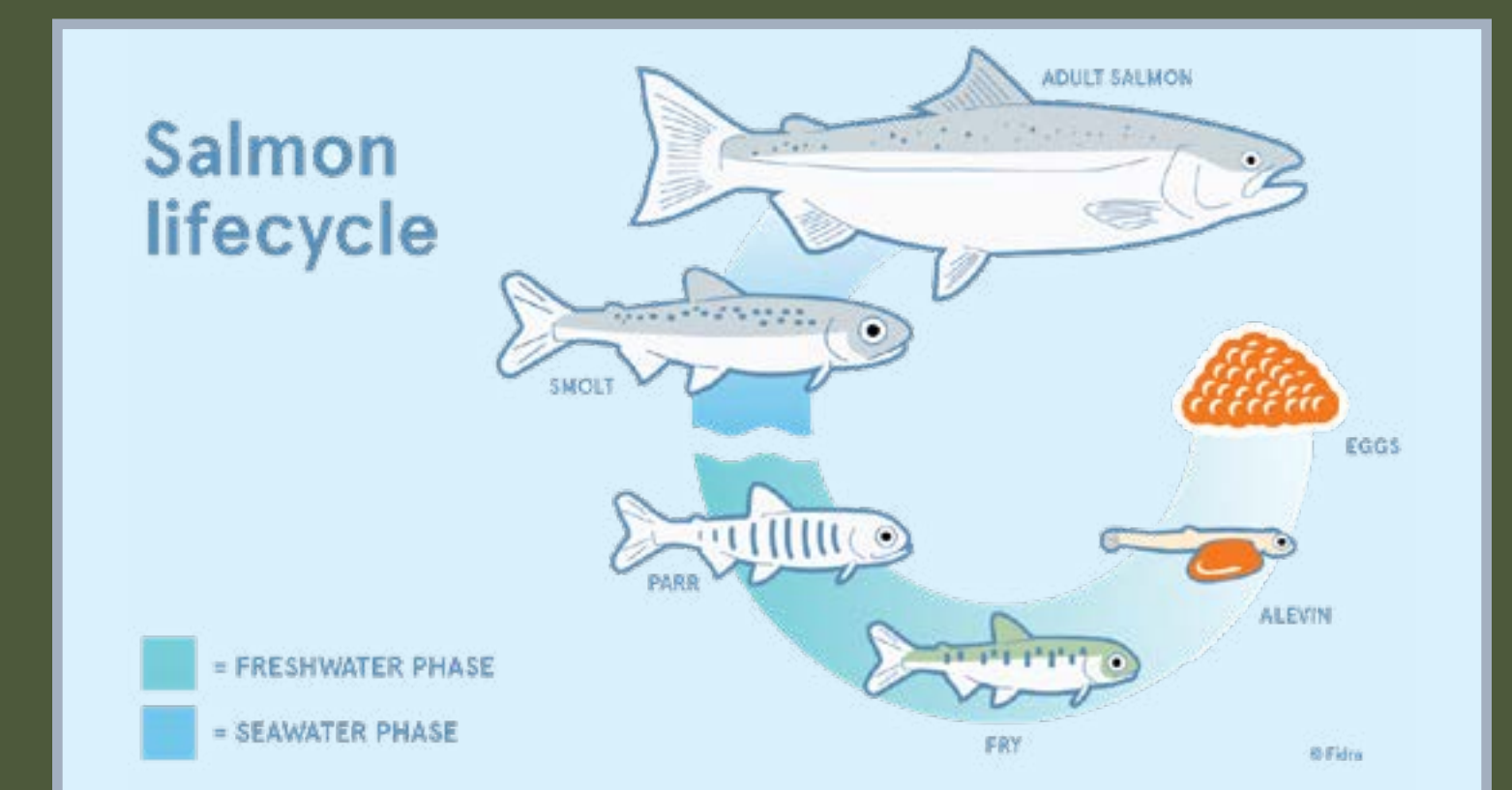


Local Red Bluff High School students learn about ITEK principles while participating in the vegetation restoration effort along the East Sand Slough.

AT THE RIGHT TIME

Timing is everything...

During the summertime, adult winter-run Chinook Salmon migrate from the ocean up the Sacramento river where a majority spawn upstream of Tehama County. These eggs hatch in November and the juvenile salmon begin their journey downstream. By the time they reach this section of the Sacramento River, they are in dire need of side channel "rest stops." The challenge is that the flows in the Sacramento River are reduced significantly during this time. Low flows disconnect the side channel from the river creating stranding pools, as was the case here at the East Sand Slough. Fortunately, this side channel has been reconnected to the Sacramento River, restoring habitat for juvenile salmonids.



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US Department of Interior, Bureau of Reclamation

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