

RESTORING ESTUARIES FOR HEALTHY SALMON: THE TEN MILE RIVER ESTUARY RESTORATION PROJECT

SALMON AT RISK

Throughout California, wild salmon are disappearing — as are the jobs and ways of life that depend on them. The Nature Conservancy is leading the way toward changing the fate of salmon by developing innovative strategies that will address these threats and enable populations to recover to sustainable and fishable abundance. Working with our partners, we want to ensure that salmon continue to have the geographic range and genetic diversity that they need to thrive, particularly in the face of increasing threats from human impacts and a changing climate.

FINDING AND REPAIRING THE MISSING LINK

Salmon have a particularly complex life cycle that exposes them to numerous threats. They hatch in headwaters, some of which are hundreds of miles from the ocean, grow as juveniles in the main stems of rivers, migrate to estuaries¹ where they continue to grow and prepare for the next stage, at which they migrate into the ocean. They spend as much as 80 percent of their lives at sea, and then journey back to their natal streams, where they spawn and die.

Recent scientific findings have revealed that healthy estuaries are critical to the production of more and stronger juvenile salmon entering the ocean. These fish are more likely to survive their perilous time at sea and return to perpetuate the cycle. What's fascinating about this work is the fact that, when used in concert with the restoration of habitat across the other life stages, estuary and floodplain restoration can increase salmon numbers quickly and dramatically. Finding where this missing link can be repaired can unlock the accumulated benefits of years of habitat restoration in the main stem and headwater streams.

ESTUARIES

Nowhere are the threats to salmon more acute than in California's estuaries. The state has lost over 90 percent of its coastal wetlands to development and other land uses, and many of the estuaries that remain free of significant development have nevertheless been affected by cattle grazing and timber harvests. In addition to being harmed by coastal development and agriculture, estuaries are where excessive sediments and nutrients from upstream sources are concentrated. Estuaries will also be the first natural features to be affected by climate-driven sea level rise, further adding to the complexity of the challenge. As California's population grows over the next century, pressure on the state's estuaries will only increase. On the other hand, restoring estuaries for the benefit of both juvenile and adult salmon unlocks the potential of an entire watershed and can increase its salmon productivity by as much as several hundred percent.

Adequate flows, good water quality, sufficient cover, complex habitats, and plentiful food within the estuaries and floodplain are all very important factors in the survival of salmon. Estuaries function as nurseries with rich foraging opportunities that enable juveniles to grow to sufficient size and become acclimated to salt water before they head out to sea.

¹ The wide lower portion of a river where its current is met by sea or ocean tides.

We think that estuary restoration is not only a good investment, but also a crucial and critically endangered component of the salmon life cycle. It is, however, not an easy task. Restoring estuary function is a complex technical undertaking requiring contributions from experts in numerous fields, and the estuarine stage of the salmon life cycle is not nearly as well understood as the freshwater stages.

Many of the key threats to estuaries are regional in scope and span the land-sea interface — for example, forestry, agriculture, and land use policies; population and development pressures; inadequate public land management; and land-based pollution. Conservation opportunities, stakeholders, projects, and policies have been traditionally associated with either land or marine systems, but rarely both. The Conservancy’s innovative approach is to integrate land-based and ocean conservation when appropriate, as in the Ten Mile River Project.

THE TEN MILE RIVER ESTUARY RESTORATION PROJECT

One of the places where we propose to demonstrate how to help salmon populations recover is the Ten Mile River in northern Mendocino County. This small river’s 120-square-mile watershed is home not just to a high-priority run of endangered coho salmon and other important native species, but also to family ranchers, family foresters, and an industrial timber company. Much of the watershed is the property of a small number of large landowners, which makes working with the landowners more efficient than if the area were divided into many smaller parcels.

Our previous engagements in salmon recovery with ranchers and timber companies show how powerful the insights, experience, and credibility generated by on-the-ground projects can be in removing salmon life-cycle bottlenecks. By working with ranchers, family forest owners, and timber companies, we will demonstrate how salmon recovery is not only compatible with but can even enhance the economic viability of local communities.

In brief, the Ten Mile River is an ideal place to test solutions that benefit both salmon and California’s rural economies and that are relevant to California’s other estuaries.

EARLY SUCCESSES

We have recorded some early successes in our Ten Mile River Project:

- We secured \$1 million from the U.S. Fish and Wildlife Service (in partnership with the State Coastal Conservancy) and \$3.5 million from the California Wildlife Conservation Board for the first Conservancy-led conservation easements in the watershed.
- We secured a government funding commitment of more than \$300,000 for restoration.
- We closed the first conservation easement (872-acres) in the watershed in the summer of 2014.
- We launched a partnership with the third-largest timber company on the North Coast to implement salmon life-cycle monitoring, including in the Ten Mile River’s estuary.