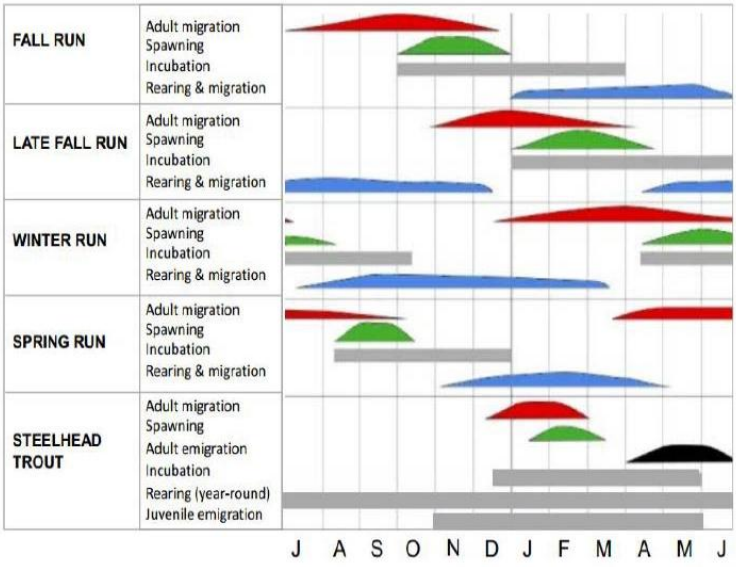
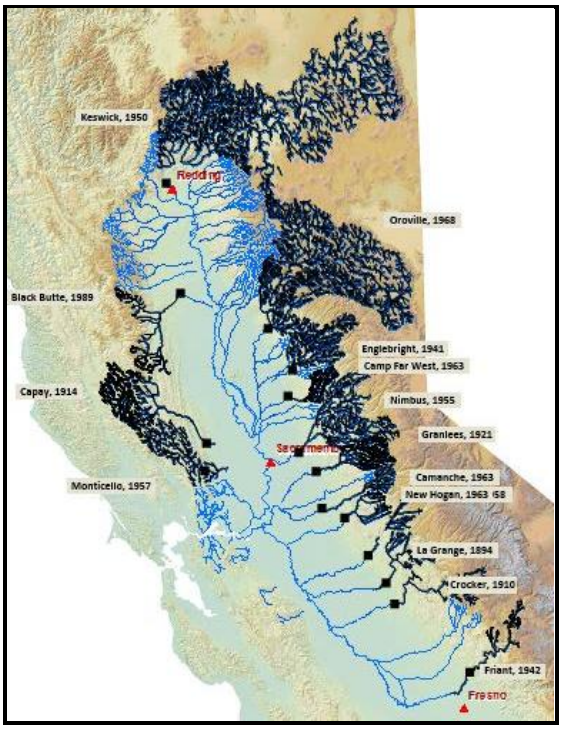
Reintroduction as a Recovery Tool for Central Valley Chinook Salmon and Steelhead.

Salmonid run timing in California's Central Valley

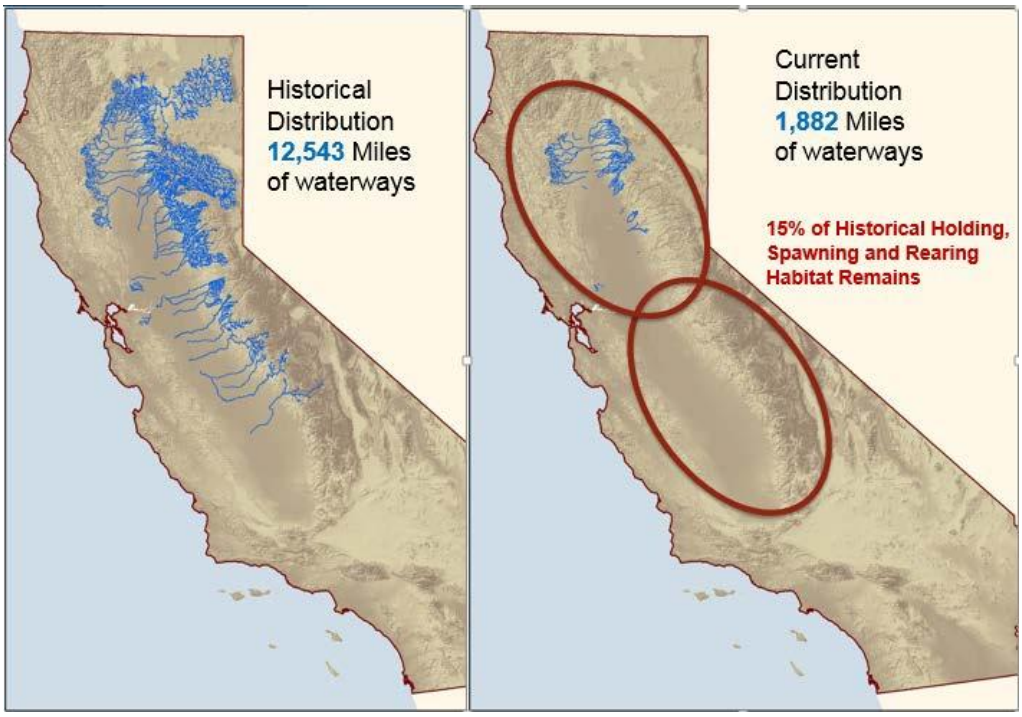


Historically accessible salmonid habitats in California's Central Valley (in blue and black) and lost upstream habitat (in black) following construction of impassible dams (black squares).

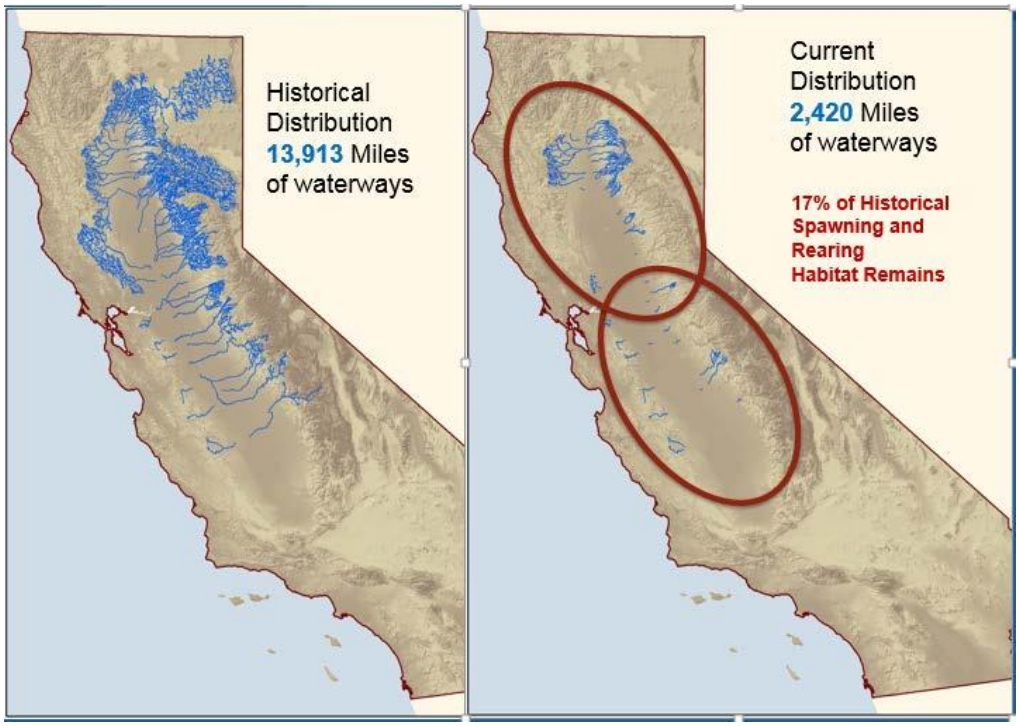


Much of the remaining anadromous habitat (in blue) is migration habitat and not suitable for spawning, holding, or rearing.

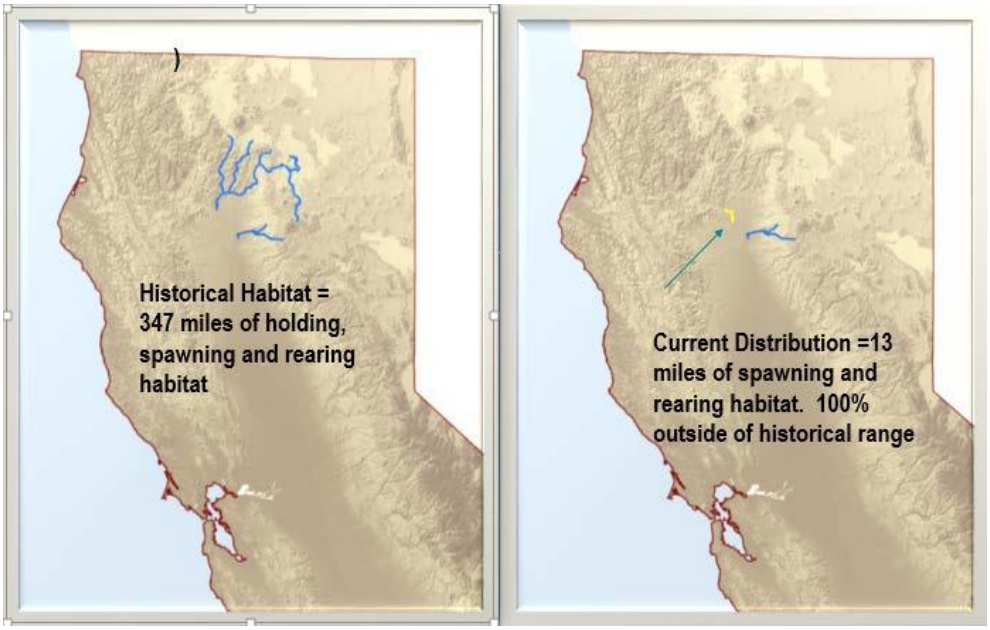
Spring-run Chinook salmon (ESA threatened) – historical vs current habitat estimate.



Steelhead (ESA threatened) – historical vs current habitat estimate.



Winter-run Chinook salmon (ESA Endangered) – historical vs. current habitat estimate.



Some Key Points:

- All three ESA listed species are blocked from access to significant portion or their historical high elevation, cold water spawning and rearing habitats – a critical component in their life histories.
- Lack of access to these habitats is one key factor resulting in the decline of all three species.
- The recovery scenario in NMFS's 2014 Central Valley Recovery Plan specifically requires reintroduction into a discrete subset of historical, but currently unoccupied habitats in order to delist these species.
- No fish passage programs above large rim dams exist in California's Central Valley.
- According to the NMFS 2014 Recovery Plan for Central Valley salmonids, without reintroduction, efforts such as ongoing habitat improvements, water operations, commercial and recreational fishing management restrictions, and hatchery operations are not likely sufficient to recover these listed species.
- Significant portions of above-dam historical habitats are in Federal ownership (primarily US Forest Service) where instream habitats are generally more suitable than existing habitats on the valley floor.
- Management of these species below dams results in major constraints to water delivery and supply in California.
- Warming climate, increased drought frequencies, etc. will continue to place these species at risk as well as further constrain water supplies. Reintroduction may ultimately result in increased regulatory flexibility compared to current management scenarios.
- Reintroduction in California's Central Valley will require trap and haul operations. Trap and haul is a standard fishery management practice in the Pacific Northwest, used at ≈ 18 facilities.
- NMFS is working to provide regulatory relief to all potentially affected landowners and other user groups through nonessential experimental population designations (ESA section 10(j)) where reintroduction is proposed (above Shasta Dam and above Englebright Dam on the Yuba River).