THE DELTA - PAST, PRESENT AND FUTURE

Current Conditions for Fish Compared with the Bay Delta Conservation Plan (BDCP)

THE PAST…

As part of the largest estuary on the West Coast, the Sacramento-San Joaquin River Delta (Delta) historically was a highly productive biological area. Its vast tidal marshes supported large populations of fish, provided a feeding and resting stop for migrating birds and served as a reliable corridor for fish migrating between the ocean and California's river systems. Over time, however, the Delta has undergone a long and steady degradation. One major change to the historic Delta was the modification and channelization of rivers and sloughs, which decreased access to or destroyed important floodplain rearing habitat. Another was the development of the State and Federal water projects that export water from the South end of the Delta where large pumps have a tremendous effect on flow patterns and Delta outflow.

THE PRESENT…What is wrong with the system we have today?

1) The existing major water diversions are only in the South Delta, and are old and inefficient. They rely on a design developed in the early to mid-20th century.

2) Pumping in the South Delta often changes net flows in the Central and South Delta, causing water to go upstream rather than downstream – meaning the rivers actually flow backwards.

3) Delta outflow has also been diminished over time, decreasing the complex and dynamic low salinity habitat to which native species are adapted, while enhancing conditions for non-native species.

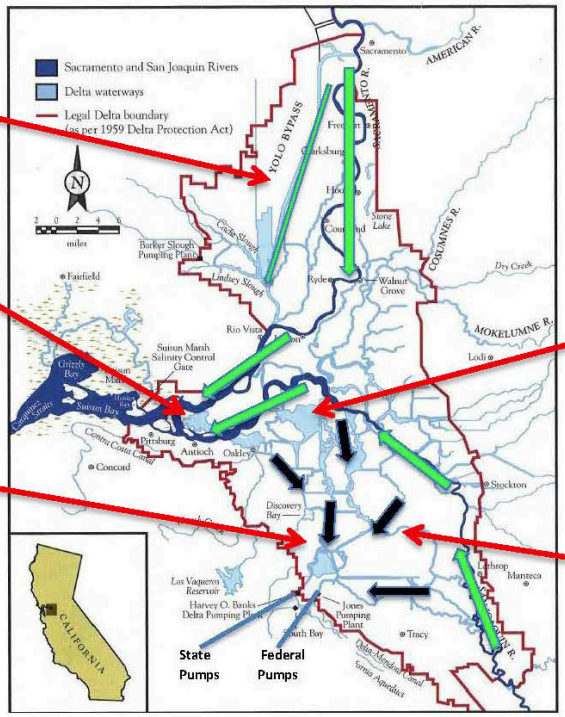
4) The combination of altered flow patterns and outdated fish recovery facilities cause high numbers of fish to get stuck in the Central and South Delta or killed at the export facilities.

5) Because of these factors and numerous other environmental stressors, many fish species are now in severe decline and some are nearing extinction. Continuing on this path will most likely lead to worsening conditions for salmon, smelt and other fish.

Juvenile salmonids have limited to no access to floodplain habitat, which they need for food and rearing.

Reduced freshwater outflow limits key habitat features for pelagic fish such as Delta and longfin smelt.

Rivers actually flow backwards as pumping in the South Delta often changes net flows, causing fish to get trapped or killed at the export facilities.



KEY:

Natural Outflow to Ocean

Reverse flows due to through Delta pumping for water exports

95% of juvenile San Joaquin Chinook and 60% Sacramento River Chinook salmon do not survive the trip through the Delta.

Diversions have a profound effect on the food web for plants and animals, as the tiny plants and animals that would otherwise enrich the estuary are sucked into canals.

THE FUTURE…The BDCP offers potential solutions to the central problems facing the Delta: more habitat and better plumbing and operations.

1) By building new intakes in the North Delta, the BDCP would provide greater operational flexibility, reducing reliance on the South Delta exports.

2) The new intakes in the North Delta would feature state-of-the-art fish screens and low-velocity approaches that would dramatically reduce the number of fish lost each year at the State and Federal water projects.

3) The BDCP would re-establish 65,000 acres of tidal marsh, with a significant portion of that acreage in place before the new intakes become operational. This restoration of habitat will be designed in a way to accommodate rising sea levels.

4) These habitat restoration projects would increase tidal marsh available to native estuarine fishes. These marshes should also help native species by increasing the production of plankton, which form the base of the aquatic food chain.

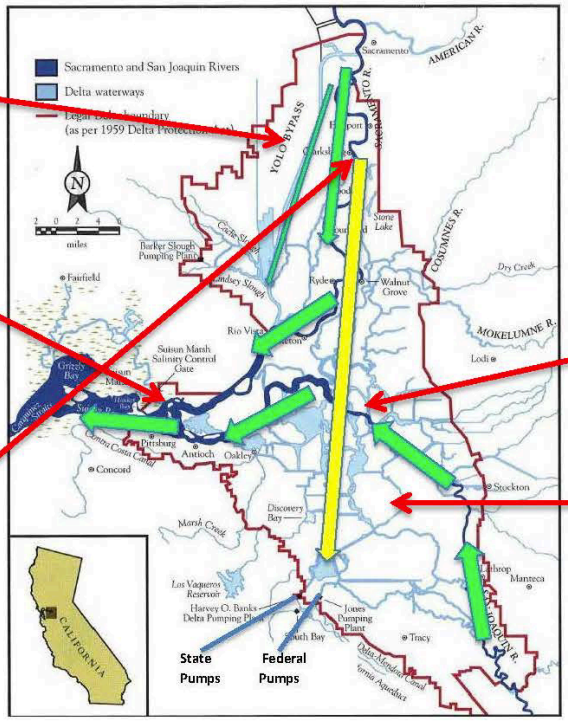
5) The BDCP would provide Delta outflows necessary to support covered fish species and other elements of the native ecosystem, to support recovery of native fishes and long-term restoration of the Delta ecosystem.

6) The BDCP would be implemented under an adaptive management framework that will include a monitoring and research component and science review process to inform future changes and decisions.

Juvenile salmon would have better access to food on the Yolo Bypass floodplain, grow larger, and survive better as they enter the ocean.

Estuary habitat quality and quantity would increase due to improved outflow and habitat restoration

New intakes in the North Delta would feature state-of-the-art fish screens and fish-friendly operations, such as low velocity approaches to protect young fish.



KEY:

Natural Outflow to Ocean

New tunnel underneath Delta for water conveyance

Fewer fish would be lost as less water is pumped through the South Delta.

Plankton accumulation would improve through increased residence time in the Central and South delta, potentially enhancing foodweb support for longfin smelt and delta smelt.

CONCLUSION: A successful BDCP would be better for fish than the Status Quo

This is about a better future for one of California's most critical ecosystems and the way in which we manage our water. Without changes to the way water flows through the Delta, serious impacts will continue to affect both the economy and environment. The State and Federal governments are dedicated to achieving the co-equal goals in California law: "providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem."

STATUS QUO	BDCP
The reliance on south Delta pumps leads to unnatural flow patterns that trap or slow migrating fish and suck into canals the tiny plants and animals that would otherwise enrich the estuary.	The BDCP would build new intakes in the north Delta so that water diversions would no longer have as profound an effect on flow patterns, improving the food web for plants and animals.
Up to 95% of juvenile steelhead and 60% endangered Winter-run Chinook salmon entering the Delta from the Sacramento and San Joaquin River basins never make it out alive.	The combination of new north Delta diversions and more wetland habitat created by BDCP should increase the ability of migrating salmon to get through the Delta on their own.
Two out of every three juvenile salmon that encounter the current export facilities are killed.	Fewer fish would be lost as less water is taken from the South Delta and shifted to new intakes in the North, which will feature state-of-the-art fish screens and fish-friendly operations (low velocity approaches to reduce injuries to young fish).
Nearly one-third of the native fish species in the Delta are considered imperiled, including several runs of salmon, Delta smelt and longfin smelt.	The BDCP would have specific biological goals and objectives that should produce meaningful contributions to the recovery of imperiled species. As the BDCP is implemented, conservation measures will be managed and adjusted to ensure that those objectives are met.
A century of development has diminished Delta outflow and destroyed over 95% of the tidal marsh habitats within the Delta, reducing the ecological functions they once provided.	The BDCP would create 65,000 acres of tidal marsh habitats within the Delta and enhance Delta outflow, restoring the ecological functions they once provided.
Currently there is limited access to floodplain habitat, which provides food for rearing juvenile salmonids.	The BDCP would increase the availability of floodplain habitat, which would increase the growth and survival of juvenile salmonids as they enter the ocean.