BDCP and Fish Population Losses at the Pumps: peripheral tunnels will not eliminate massive fish kills at export facilities

Proponents of the Bay Delta Conservation Plan (BDCP) and its peripheral tunnels suggest that only by diverting water from the Sacramento River can the Delta be restored because of immense fishery losses at the South Delta export pumps. This is simply ***incorrect! Fish losses could even increase*** *with the addition of a North Delta diversion point.*

Water exports from the Delta are lethal to fish.

Between 2000 and 2011, more than 130 million fish have been salvaged at the State and Federal Project water export facilities in the South Delta.[1] Actual losses are far higher. For example, recent estimates indicate that 5-10 times more fish are lost than are salvaged, largely due to the high predation losses in and around water project facilities.[2] Additionally, the fish screens are unable to physically screen eggs and larval life stages of fish from diversion pumps.[3] The losses of eggs and larval stages of fish, as well as the enormous losses of zooplankton and phytoplankton that comprise the base of the aquatic food chain go publically unacknowledged and uncounted.

Diversion from the South Delta will remain essential.

Because of flow requirements and biological constraints affecting diversions from the Sacramento River, exports from the South Delta pumps will remain a significant percentage of total water exports. BDCP currently estimates that 50% of State and Federal Project exports would come from the existing South Delta diversion facilities in average water years and as much as 75-84% in dry and critical water years.[4] In fact, BDCP modeling suggests that exports and fish entrainment from South Delta diversions could potentially increase in certain water year types and for critical life stages of certain species.[5]

South Delta export fish screens are ineffective and obsolete.

The present South Delta fish screens are based upon 1950's technology and massive fish losses have been documented for more than 30 years. Only about 11-18% of salmon or steelhead entrained in Clifton Court Forebay survive. Based upon numerous studies by DFG, DWR and academic researchers, 75% of fish entering Clifton Court Forebay are lost to predation, 20-30% of survivors are lost at the salvage facility louvers, 1-12% of salvaged fish are lost during handling and trucking plus an additional 12-32% lost to post-release predation.[6] As related above, losses to other species, such as Delta smelt or the egg and larval stages of pelagic species and salmon fry, are believed to be much higher. For example, some species, like Delta smelt, cannot survive salvage transport and the losses approach 100%.

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New South Delta fish screens are both needed and feasible.

DWR's *Delta Risk Management Strategy (DRMS) Phase 2 Report* found that the South Delta pumping facilities could be successfully screened by multiple in-canal vee-type screens of about 2,500 cfs capacity in each module. These new state-of-the-art South Delta screens, placed at the entrance to Clifton Court Forebay, would eliminate the 75% predation in the Forebay and successfully protect fish longer than about 25 mm in length.[7] While new screens would be expensive, still require transport of salvaged fish, not totally resolve debris removal issues or eliminate all fish entrainment, they would dramatically reduce the appalling fish losses that occur at present.[8]

BDCP ignores the need for new fish screens in the South Delta.

The *CALFED Bay-Delta Program Programmatic Record of Decision* and associated Biological Opinions required the construction of new state-of-the-art fish screens at existing South Delta export facilities in 2000.[9] A funding plan was to be completed by early 2003, facilities design completed by the middle of 2004 and operations and performance testing to begin by the middle of 2006.[10] However, the explicit commitment to constructs new screens was put on hold in 2003 after the State and Federal Project Contractors indicated that they would not pay for them. New South Delta screens are not included as part of the BDCP. As BDCP will continue to rely on the South Delta pumps for a substantial percentage of project exports, new screens must be required to mitigate for project impacts.

Proposed fish screens on the Sacramento River are problematical.

Contrary to assurances of BDCP proponents, it is uncertain whether the fish screens for the proposed new North Delta diversion will actually work. It is important to note that nearly the entire population of several anadromous species (Sacramento basin salmonids and green sturgeon) must navigate past the proposed diversions to complete their life cycles. The 2011 *BDCP Fish Facilities Technical Team Technical Memorandum* observed that, "There is a high level of uncertainty as to the type and magnitude of impacts that these new diversions will have on covered fish species that occur within the proposed diversion reach."[11]

The proposed screens are experimental and have never been employed anywhere else. Their size (multiple, very large and in close proximity), type (on-bank flat plate) and tidally influenced location make it almost impossible to conform to existing screening criteria.[12] Even with a required variance from existing DFG and NMFS fish screening criteria, enormous uncertainties will remain, which is why the technical team suggested phased construction to see if the first one works before constructing the rest.[13] Part of the problem is that Delta smelt are present at the diversion points during the months of February through June and no screens can prevent entrainment of larval delta smelt, longfin smelt, Sacramento splittail and smaller lamprey ammocoetes.[14]

Indeed, some 22 studies are required to determine if the proposed screen design concept will work, will be protective or if the screens can be legally permitted.[15] Half of these

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studies are proposed post-construction. Waiting until after construction and the expenditure of billions of dollars to see if these experimental new concept fish screens will work cannot be reassuring.

BDCP may lead to increased fish losses for certain species.

South Delta: According to the draft BDCP Effects Analysis' Summary of Effects of BDCP on Entrainment of Covered Fish Species, South Delta export facilities could potentially increase entrainment of:

- Juvenile steelhead in dry and critical dry years,
- Juvenile Winter-run Chinook salmon in above normal & below normal years,
- Juvenile Fall-run Chinook salmon in all below normal & dry years and Fall-run smolts in all years,
- Juvenile late fall-run Chinook salmon in dry and critical dry years,
- Juvenile Longfin smelt in above normal, below normal, and dry years and adults in critical dry years,
- Juvenile Sacramento splittail in all years.[16]

North Delta: The BDCP Effects Analysis evaluation of entrainment at the proposed North Delta Pumps was cursory, speculative with many identified uncertainties, as feasibility studies and design work have not been conducted and operational criteria not been established. However, it is clear from the discussion, on pages B.6-191 through B.6-214 of the entrainment analysis, that additional fish loss from entrainment, predation, impingement and screen contact will obviously occur.[17] For some life stages of some species, the additional numbers could be substantial but assessment of the extent of those impacts would have to wait for post project monitoring.

Conclusion

Regardless of what happens in BDCP, the State and Federal Projects will continue to significantly rely on South Delta diversion facilities for water exports. Consequently, massive fish losses at the South Delta diversions will continue to occur. New state-of-the-art fish screens in the South Delta are necessary to mitigate for past and future project impacts. Construction of North Delta diversions should not be initiated until it can be established that the proposed experimental fish screens are feasible, protective and legally permittable pursuant to the Endangered Species Act.

If the history of the Delta tells us anything, it's that past agency assurances that projects to divert water from the estuary would be beneficial or benign were grievously wrong: virtually all of them exacerbated conditions to the point where Delta fisheries are on life support. The harsh reality is that no estuary in the world has survived the diversion of more than half its flow and the extreme modification of its hydrograph (i.e., peak flows shifted from winter to summer). Speculative promises of mitigation and accountability can no longer be sufficient to justify the construction of major water projects.

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Note: The information contained in this fact sheet is current as of February 2013. Information regarding North Delta fish screens and entrainment projections are derived from public BDCP documents. BDCP has announced that new administrative drafts are scheduled for release during March 2013. Consequently, the information and conclusions in this fact sheet are subject to change with the release of new information.

The California Sportfishing Protection Alliance is a non-profit public benefit conservation and research organization established in 1983 for the purpose of conserving, restoring and enhancing the state's water quality, wildlife and fishery resources and their aquatic ecosystems and associated riparian habitats.

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[1] California Department of Fish and Game annual salvage reports for the State Water Project and Central Valley Project's fish facilities.

[2] Larry Walker Associates. A Review of Delta Fish Population Losses from Pumping Operations in the Sacramento-San Joaquin River Delta. January 2010. P. 2. http://www.srcsd.com/pdf/dd/fishlosses.pdf

[3] DWR. Delta Risk Management Strategy, final Phase 2 Report, Risk Report, Section 15, Building Block 3.3: Install Fish Screens. June 2011. P. 15-18.

[4] NRDC. A Portfolio-Based BDCP Conceptual Alternative. February 2013. http://switchboard.nrdc.org/blogs/bnelson/Portfolio%20Based%20BDCP%20Conceptual%20Alternative%201-16-13%20V2.pdf
ICF International. BDCP Effects Analysis, Appendix 5.B, Entrainment, Administrative Draft Bay Delta Conservation Plan. March 2012. P. B.0-8. http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/BDCP_Effects_Analysis_-_Appendix_5_B_Entrainment_3-30-2012.sflb.ashx

[5] ICF International. BDCP Effect Analysis, Appendix 5.B, Entrainment, Administrative Draft Bay Delta Conservation Plan. March 2012. PP. B.0-4 – B.0-11.

[6] Larry Walker Associates. A Review of Delta Fish Population Losses from Pumping Operations in the Sacramento-San Joaquin River Delta. January 2010. P. 2.

[7] DWR. Delta Risk Management Strategy, final Phase 2 Report, Risk Report, Section 15, Building Block 3.3: Install Fish Screens. June 2011. P. 15-18.

[8] Id. 15.5.2.1 Conclusion at p. 15-19 – 15-20.

[9] CalFed. Programmatic Record of Decision. August 2000. P. 49. Including Attachment 6A, U.S. Fish and Wildlife, Programmatic Endangered Species Act Section 7 Biological Opinion, P. 36 and Attachment 6B, National Marine Fisheries Service, Programmatic Endangered Species Act Section 7 Biological Opinion, P. 27. http://www.calwater.ca.gov/content/Documents/ROD.pdf

[10] Larry Walker Associates. A Review of Delta Fish Population Losses from Pumping Operations in the Sacramento-San Joaquin River Delta. January 2010. P. 18.

[11] BDCP Fish Facilities Technical Team. Technical Memorandum Final. July 2011. P. 33.

[12] Id. PP. 22, 23.

[13] Id. PP. 35, 36.

[14] ICF International. BDCP Effects Analysis, Entrainment, Appendix 5.B, Entrainment, Administrative Draft Bay Delta Conservation Plan. March 2012. P. B.0-12.

[15] BDCP Fish Facilities Technical Team. Technical Memorandum Final. July 2011. PP. 37-40.

[16] ICF International. BDCP Effects Analysis, Entrainment, Appendix 5.B, Entrainment, Administrative Draft Bay Delta Conservation Plan. March 2012. PP. B.7-2 – B.7-4.

[17] Id. PP. B.6-191 through B.6-214.

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