California Sportfishing Protection Alliance

"An Advocate for Fisheries, Habitat and Water Quality"

3536 Rainier Avenue, Stockton, CA 95204

T: 209-464-5067, F: 209-464-1028, E: deltakeep@me.com, W: www.calsport.org

28 July 2014

Mr. Ryan Wulff
National Marine Fisheries Service
650 Capitol Mall, Suite 5-100
Sacramento, CA 95814
BDCP.Comments@noaa.gov

VIA: Electronic Submission
Hardcopy if Requested

RE: Comment Letter No. 1: Bay Delta Conservation Plan and Associated EIR/EIS Related to Habitat Restoration and Conservation Measures

Dear Mr. Wulff,

The California Sportfishing Protection Alliance (CSPA) has reviewed the proposed Bay Delta Conservation Plan and associated Environmental Impact Report/Environmental Impact Statement (hereinafter, BDCP) submits the following comments. Comment Letter No. 1 relates to habitat restoration and conservation measures intended to important habitat. This Comment Letter includes an attached report titled *Overview of Delta Habitat Restoration*, which analyzes recent Delta habitat restoration projects and includes an appendix that compares the "Overview" with the habitat assessment in BDCP Appendix 5E and identifies major flaws in the proposed native fish habitat restoration program. We request that both documents be considered and responded to as a single submittal.

CSPA worked closely with the Environmental Water Caucus (EWC) in developing their comments and incorporates by reference into these comments both submittals by the EWC on all issues related to BDCP. We also incorporate by reference the submittal by Michael Jackson on behalf of CSPA, California Water Impact Network and AquAlliance, as well as the individual comments submitted by AquAlliance. We further incorporate by reference the submittals by the County of San Joaquin, South Delta Water Agency, Central Delta Water Agency, Restore the Delta, Earth Law Center and Friends of the River, insofar as they are consistent with these comments.

Summary Overview

As discussed more fully below, the BDCP conservation measures to improve important aquatic communities and habitats in the Delta Plan Area are wholly inadequate to mitigate for the expected effects of the BDCP. BDCP and its associated EIR/EIS fail because they are predicated upon a series of monstrous and demonstrably false premises. Based upon these premises, they serve up a many-thousand page omelet of distortion and half-truth in order to reach their predetermined conclusion.

BDCP peddles a revisionist thesis that the Delta's fisheries collapsed because of the historical loss of the pre-reclamation mosaic of Delta habitat. It asserts that severely degraded fisheries can be significantly improved by simply restoring habitat. It claims that restoration of physical habitat can successfully serve in lieu of flow and does so based upon a conceptual programmatic level document. It asks one to believe that you can deprive an estuary of more than half of its flow, turn its hydrograph on its head and expect that fisheries that evolved over millennia, under the historical flow regime, will prosper. The stark reality is that no estuarine ecosystem in the world has survived such insult.

The facts are: 1) reclamation of Delta islands was completed by the second-to-third decade of the last century; 2) Delta fisheries remained relatively stable until the advent of the state and federal export projects; 3) there is now more habitat in the Delta than existed eighty years ago; 4) physical habitat restoration projects in the Delta have largely failed; and 5) the estuary's ecological collapse and one-to-two magnitude declines in anadromous and pelagic fisheries and lower trophic communities occurred after the projects began exporting millions of acre-feet of water yearly.

Habitat is more than the spatial extent of acreage: an increase in habitat area doesn't ensure increases in habitat quality or functionality. The amount of freshwater inflow to an estuary is a physical and ecological driver that defines the quality and quantity of estuarine habitat. As the U.S. Fish & Wildlife Service testified during the State Water Resources Control Board's 2010 flow hearing, "flow in the Delta is one of the most important components of ecosystem function."

Habitat requires adequate physical (flow, residence time, variability, etc.) and chemical parameters (salinity, temperature, turbidity, chemical constituents, etc.), as well as the nutrients necessary for primary production to support renewable fisheries. The export projects have radically altered the Delta's hydrodynamics, which has resulted in a loss of critical flows, degraded water quality and reduced primary productivity. The yearly export of phytoplankton biomass is equivalent to more than 30% of net primary production. This altered hydrology has allowed myriad invasive non-native species to become entrenched to the detriment of native communities.

BDCP proponents confidently assume that proposed habitat restoration projects will be successful. The fact is the majority of restoration projects in the more than 222,902 acres of existing "conservation lands" scattered throughout the Delta have failed to achieve their forecasted goals. Many of these project areas are now habitat dominated by assemblages of invasive species that compete with and prey upon native species, including those listed pursuant to state and federal endangered species acts. Proposed restoration projects are unlikely to provide anticipated benefits unless the physical and chemical parameters approximating historical levels (i.e., mid-20th Century conditions) necessary for native species are also reestablished.

The consistent flaw of previous restoration efforts in the Delta has been a failure to adequately meet the habit requirements of native fish. The estuary's native species evolved over many

thousands of years in response to prevailing habitat conditions. Successful restoration of native species requires restoring the conditions under which they evolved and prospered. This entails increasing outflows, mimicking the natural hydrograph, improving water quality, protecting the critical low salinity zone (LSZ) and reducing export of primary productivity. However, these are the essential elements BDCP cannot and will not provide.

The critical need for significantly increased Delta outflow is beyond scientific doubt. The State Water Resources Control Board, in its legislatively mandated 2010 report on needed Delta flows declared, "the best available science suggests that current flows are insufficient to protect public trust resources." Substantial increases in Delta outflow were recommended. The California Department of Fish and Wildlife, in a similar legislatively mandated report on necessary biological objectives and flow criteria, found, "recent Delta flows are insufficient to support native Delta fishes in habitats that now exist in the Delta." The San Francisco Estuary Partnership's 2011 State of San Francisco Bay report observed, "scientists now consider poor freshwater inflow conditions to be one of the major causes for the ongoing declines of fish populations observed in the upper Estuary."

Conservation measure CM1 is essentially a water conveyance project masquerading as a conservation measure. It will reduce outflow and exacerbate already poor Delta hydrological habitat that is essential for key fish species and their critical habitats. While presented as a project level analysis, less than ten percent of engineering and even less of the geotechnical investigation has been completed. Yet project proponents brazenly claim that all potential adverse impacts have been identified.

Conservation measures CM 2-21 are only presented and analyzed at a programmatic level, lack assured funding and are highly unlikely to achieve the predicted results. There are no assurances that proposed habitat protections and enhancements will be able to overcome the long-term detrimental effects of excessive Delta water diversions or the proposed new North Delta conveyance facilities with experimental fish screens. Indeed, the programmatic nature of the conservation measures precludes anyone from identifying the number and extent of impacts to biological resources, water quality, and other beneficial uses; let alone determining whether the conservation measures will effectively mitigate impacts.

The conservation measures applicable to securing a take permit for CM-1 (Water facilities and Operation) include: CM-2 (Yolo Bypass Enhancement), CM-3 (Natural Communities Enhancement), CM-4 (Tidal Marsh Creation/Restoration), CM-5 (Seasonal Floodplain Creation/restoration), CM-6 (Channel Margin Enhancement), CM-7 (Riparian Restoration), CM-10 Non-tidal Marsh Restoration), CM-11 (Natural Community Enhancement) and possibly CM-16 (Non-Physical Fish Barriers). Many of these measures were included as Stage 1 Action Items in the 2000 CalFed Record of Decision but were never implemented or were partially and/or unsuccessfully implemented with unintended adverse consequences. Funding is highly speculative, subject to congressional or legislative authorization or bond passage. Implementation can proceed with or without BDCP and these measures should have been required mitigation for adverse impacts created by operation of the present export facilities.

Conservation measure CM-2 (Yolo Bypass Enhancement), and conservation measures CM-12 (Mercury Enhancement), CM-13 (Invasive Vegetation), CM-14 (Stockton Ship Channel O2), CM-15 (Predatory Fish), CM-16 (Non-Physical Fish Barriers), CM-17 (Illegal Harvest Reduction), CM-18 (Hatchery Management), CM-19 (Urban Stormwater), CM-20 (Invasive Species), CM-21 (Non-Project Diversions) are, for the most part, not dependent on BDCP. In varying degrees, these measures have long been necessary, are already underway, being approved, financed and managed by others. They will likely proceed regardless of whether BDCP's conservation measures are approved. BDCP should not be seeking credit for these ongoing activities.

A number of critically important conservation measures are conspicuously absent in BDCP. While CM-1 focuses on experimental fish screens at the north Delta diversions, it ignores requirements in the CalFed Record of Decision to upgrade the existing inadequate 1950s-era fish screens in the south Delta to current screening criteria. The South Delta Fish Facilities Forum ceased development of the new screens in 2005 after the state and federal contractors said they wouldn't pay for them. Between 2000 and 2011, more than 130 million fish were salvaged at project facilities, many of which were lost during collection, handling, trucking and post-release predation, and more than a billion fish were estimated lost due to high predation in and around the export facilities.

There are no conservation measures proposed for San Pablo and San Francisco Bays despite the massive impacts the export projects have had and will have on the Bays. A median of 39% of the estuary's unimpaired runoff is already consumed upstream or diverted. Exports sometimes exceed 50% of inflow. Shifts in the seasonal hydrograph and movement of the low salinity zone (LSZ) upstream have been marked by major declines of native phytoplankton, zooplankton and pelagic fish and huge shifts in biological communities. Construction and operation of CM-1 will intensify these problems. Yet BDCP continues to deny that it has any role in creating or mitigating these impacts.

There are no conservation measures proposed for impacts upstream of the Delta. Despite repeated denials by proponents, construction and operation of CM-1 will necessitate reoperation of upstream reservoirs, with resulting instream impacts. Increased total export capacity, especially in drier years at the north Delta diversion point, opens the door to myriad opportunities to significantly increase water transfers. Water transfers are generally authorized under temporary transfer rules or emergency proclamations and receive little or no environmental analysis. BDCP severs the Delta from the upper and lower segments of the watershed to avoid having to acknowledge or mitigate impacts.

Nor are there any conservation measures proposed for the largest source of pollutant loading to the Delta: discharges from irrigated agriculture. The entire Delta is identified on the 2010 Clean Water Act 303(d) List as impaired and incapable of supporting beneficial uses because of agricultural pollutants. A 2007 Regional Board survey of monitoring data from 313 agricultural sites in the Delta and Central Valley revealed that; toxicity to aquatic life was present at 63% of the sites (50% were toxic to more than one species); pesticides criteria were exceeded at 54% of sites (many for multiple pesticides); metal criteria was violated at 66% of sites; human health standards for bacteria were violated at 87% of sites while more than 87% of the sites exceeded

general parameters (dissolved oxygen, pH, salt, TSS, etc.). By reducing inflow of relatively good quality water (i.e., reducing dilution) and increasing the time for pollutants to interact with the ecosystem, CM-1 will exacerbate existing impacts.

Perhaps the most flagrant omission is the fact that proposed conservation measures do not include protection and enhancement of the most important and affected habitat in the Delta: the low salinity zone (LSZ) and freshwater pelagic habitats of the Delta on which many Delta native fishes including Delta Smelt depend. These habitats are unproductive because they are entrained and exported in drier years and summers of most years at the existing south Delta export facilities and thus lack the necessary residence time, nutrients, and water quality to sustain pelagic fish production.

The West Delta Restoration Opportunity Area (ROA) especially lacks measures to protect important tidal marsh, aquatic shoreline (channel margin), riparian and pelagic open water habitats despite its overall importance and sensitivity to Delta exports. There is no Central Delta ROA and this Delta region's habitat appears to have been largely ignored by BDCP planners for restoration, despite its central location in the area most affected by the North and South Delta exports. Conservation Zone 1 and 2, the center and northern Yolo Bypass, also lack needed measures on non-tidal marsh, riparian, seasonally inundated floodplain and channel margin habitats and are not included in any ROA.

If BDCP proposes to continue massive water supply exports from the Delta, it must propose meaningful measures to replace the millions of acre-feet of pelagic habitat lost each year to the export pumps and prevent native species that depend on that habitat from going extinct. CM1 fails to provide the enhanced outflow that fish agencies, regulators and independent scientists have observed is critical to the restoration of the estuary. Instead BDCP offers less outflow in order to enhance water supply benefits.

Other Summary Points

1. Potential export capacity under CM-1 would increase from the present 11,400 cfs to 15,000 cfs, with the existing array of pumps and the new, "isolated" forebay at Clifton Court. There are no credible measures offered to reduce the millions of acre-feet of pelagic habitat that will be exported from the North and South Delta each year under the BDCP. Increased export of pelagic habitat will exacerbate recent population declines and prevent recovery of pelagic species because of further habitat degradation.
2. CM-1's north Delta fish screens are experimental and will require variances from present fish screen criteria. Screen design was based on laboratory studies and it is unknown if the laboratory studies are representative. Consequently, a number of studies are required to see if the proposed screen design concept will work, will be protective or if the screens can be legally permitted. Half of these studies are proposed post-construction. BDCP rejected requests by NOAA Fisheries and recommendations by the BDCP Fish Facilities Technical Team that construction be phased to see if the first one works before constructing the rest. Delta smelt are present at the diversion point February through June and no screens can prevent

entrainment of eggs and larval Delta smelt, longfin smelt, splittail, striped bass American shad or smaller lamprey ammocoetes.

3. Tidal wetlands are proposed under CM-4 for five ROAs. Three of the five proposed wetlands are Suisun Marsh ROA, Cosumnes/Mokelumne ROA, and Cache Slough ROA. These wetlands will have marginal benefit to key Delta food webs because of isolation from the LSZ and key pelagic habitats. Invasive overbite clams limit food-web production in Suisun Bay and Marsh. Reductions in North and East Delta inflows from proposed North Delta exports would reduce net transport of water and food web contributors from Cache Slough and East Delta. The Cosumnes/Mokelumne ROA will become more isolated from Delta inflows than under present conditions.
4. Suisun Bay LSZ habitat will further deteriorate, as the LSZ moves into the Delta and becomes less productive due to lower Delta outflows predicted under CM-1, especially in drier years. Delta outflow remains the most critical factor in Suisun Bay and the Delta portions of the LSZ nursery areas that are critical to smelt and other pelagic species.
5. CM2 focuses on the Yolo Bypass, Cache Slough, and Sacramento Ship Canal habitats but offers little potential improvement to existing poor water quality conditions (mainly high water temperature and low dissolved oxygen) in these areas, especially during spring and summer when these areas are important salmon and smelt nursery areas. In drier years, spring-summer habitats will suffer from reduced freshwater inflow to Cache Slough from its primary freshwater sources (Miner, Steamboat and Sutter Sloughs) because of the proposed North Delta exports.
6. CM3 lacks focus and actions on West and Central Delta tidal wetland improvements, as large areas of the West Delta tidal wetlands (i.e., West Sherman Island and Big Break) suffer from extensive invasion of non-native submerged aquatic vegetation and deteriorating channel margin habitat (Figure 3.4-27).
7. There is a general lack of focus on the linear shoreline habitats throughout the Delta. Smelt and salmon rearing are far more concentrated in shoreline and nearby open-water habitats than in tidal marshes. CM-6 proposes to restore less than 2% or only twenty of more than seven hundred miles of channel habitat over a thirty-year period.
8. There is a lack of specific restoration strategies regarding habitats, locations, and timing of habitat improvements relative to the needs of each of the listed and soon-to-be-listed native fishes in the Delta
9. There are no credible measures offered to reduce the millions of acre-feet of pelagic habitat that will be exported from the North and South Delta each year under the BDCP.
10. There is no mention of the detailed habitat improvement actions presented in the smelt, salmon, and steelhead state and federal recovery plans.
11. There are repeated references to adaptive management actions that will adjust habitat improvement actions of the BDCP but virtually no details on how adaptive management will actually be implemented or funded. Adaptive management programs have frequently failed throughout the nation, as have decades of adaptive management actions on dozens of failed habitat mitigation projects that were constructed in the Delta.

12. Many of the proposed habitat actions already exist and/or will likely be implemented in the future without the BDCP. These actions should be considered part of the baseline or no-action alternative in the EIR/EIS and not included in BDCP's portfolio of habitat mitigation measures.
13. The proposed restoration projects are insufficient in amount and quality of aquatic habitat to meet the goals and objectives of the BDCP. There is a high degree of uncertainty they will be able to achieve expected goals. Yet, there is no discussion of historical habitat restoration projects, analysis of the results of implementation or why the proposed habitat projects will have different outcomes.
14. CM-1 proposes to operate pursuant to requirements in D-1641 and existing biological opinions. These standards are seriously inadequate as evidenced by the continuing collapse of Delta fisheries. Additionally, the State Water Resources Control Board has failed to take enforcement action against the state and federal projects for thousands of documented violations of D-1641 standards and the fishery agencies have demonstrated a willingness to weaken requirements in the biological opinions at the request of project operators.

The assumptions and conclusions that buttress the BDCP and EIR/EIS conservation strategy and goals are egregiously flawed and technically invalid. Consequently, the analysis of impacts regarding CM1-22 and likelihood of success of the various conservation mitigation measures are seriously deficient and fail to meet minimum CEQA or NEPA standards for environmental review. BDCP must be returned to the drafting table and a new EIR/EIS should be circulated for public review and comment.

Development of the Broad Conservation Goals, Types of Restoration Action Evaluated and Specific Conservation Measures

The BDCP Introduction, Chapter 1, pages 1-2 and 1-3, identifies the broad conservation goals of BDCP's conservancy strategy. The goals are repeated in Chapter 3, Conservation Strategy (3A-2 and 3A-3), which also describes the strategy as being built upon *scientific tenets that reflects the current state of available science* (3A-2, lines 38, 39). Chapter 3, Appendix 3A, page 3A-13, lines 19-32), describes the types of habitat restoration and enhancement actions that were evaluated for inclusion in the conservation strategy. Based upon the evaluation of the *types of habitat restoration and enhancement actions that were evaluated for inclusion in the conservation strategy* and development of the *broad conservation goals,* BDCP offers 22 specific conservation measures to advance the goal of restoring the Delta's ecological functions (Chapter 3, Part 2, Conservation Strategy, 3.4, pages 40-353).

Below are our specific comments on: A) the *broad conservation goals* of BDCP's conservancy strategy; B) the *types of habitat restoration and enhancement actions that were evaluated for inclusion in the conservation strategy* and C) the specific *conservation measures CM 1-21*.

A. Broad Conservation Goals and Strategy

The Broad Conservation Goals and Strategy are discussed in Chapter 1, pages 1-2 and 1-3; and Appendix 3A, pages 3A-2, lines 38-42 and 3A-3, lines 1-21. Goals 1 through 8

and 11 are applicable to fisheries. They include:

1. ***Increase the quality, availability, spatial diversity, and complexity of aquatic habitat in the Delta.***

   CM1-11, if implemented as proposed, would not lead to increased habitat quality and complexity in a timely manner. The main limitation is the lack of potential improvement to pelagic open water habitat under CM1 and lack of the indirect benefits of the other conservation measures to key LSZ pelagic habitats of the West and Central Delta.

2. ***Create new opportunities to restore the ecological health of the Delta by modifying the water conveyance infrastructure.***

   The potential restore ecological health to the Delta is severely restricted by retention of the south Delta export facilities, especially without upgrading them to state-of-the-art standards and current criteria fish screen criteria. The potential for Delta pelagic and shoreline habitats to improve is restricted by the proposed large fine mesh passive screen intake infrastructure in the North Delta.

3. ***Directly address key ecosystem drivers in addition to freshwater flow patterns rather than manipulation of Delta flow patterns alone.***

   Freshwater flow patterns in the Delta under CM1 remain the critical ecosystem driver in the Delta. Enhanced ecosystem inputs from new margin wetland and floodplain habitats will not be of benefit if they cannot contribute to the pelagic habitats of the West and Central Delta. Under the BDCP proposal both Suisun Marsh and Cache Slough Complex would be more isolated from contributing to the LSZ than under present conditions.

4. ***Improve connectivity among aquatic habitats, facilitate migration and movement of covered fish among habitats, and provide transport flows for the dispersal of planktonic material (organic carbon), phytoplankton, zooplankton, macroinvertebrates, and fish eggs and larvae.***

   The proposed North Delta exports will reduce connectivity and create a serious impediment to migration and movement of salmon, smelt, steelhead, sturgeon, and many other important fish of the Central Valley. The North Delta diversions and continuation of South Delta diversions will entrain vast amounts of biological organisms, nutrients, and other essential elements of Bay-Delta productivity.

5. ***Improve synchrony between environmental cues and conditions and the life history of covered fish and their food resources in the upstream rivers, Delta, and Suisun Bay, including seasonal water temperature gradients, salinity gradients, turbidity, and other environmental cues.***

The proposed North Delta exports and continued significant reliance on South Delta exports will further add to reduced synchrony of natural environmental cues to which native fishes are adapted. Food sources will be reduced, water temperatures will increase, salinities will increase, turbidity will be further reduced, and environmental cues will be further disrupted.

6. ***Reduce sources of mortality, and other stressors, on the covered fish and the aquatic ecosystem in the Delta.***

   Delta smelt have suffered relentlessly from the direct and indirect effects of past and present levels of exports from the Delta. A switch of exports to the North Delta upstream of the main pelagic habitats of the smelt will simply increase the risk of smelt to South Delta exports and further degrade smelt critical habitat in the West, Central, and North Delta, as well as Suisun Bay. The North Delta intakes will add a significant source of mortality to Sacramento Valley listed salmon and steelhead that does not exist today. Continuation of South Delta exports does little to alleviate existing stressors that are related to fish growth, survival, and reproduction. Freshwater Delta inflow from the Sacramento River will decrease and inflow from the San Joaquin River will increase, thus contributing to even warmer water in the Delta from spring through summer and early fall. LSZ pelagic habitat of Delta Smelt would be drawn upstream into the influence of north Delta diversions and screening systems (which do not protect smelt). Pelagic low-salinity cool water Delta habitat would also suffer under new North Delta exports and continuing South Delta exports to the point where at a minimum no benefits would accrue. (Appendix 5B forecasts little if any benefits from reduced entrainment to Delta Smelt from the BDCP.) As for salmon, there will be more opportunity for the populations from the Sacramento River system to interact with the project screen systems than under the present configuration. Finally, continuation of the south Delta exports will maintain most of the present risks to these populations.

7. ***Improve habitat conditions for covered fish in the Delta and downstream in the low salinity zone of the estuary in Suisun Bay through the integration of water operations with physical habitat enhancement and restoration.***

   Major habitat enhancements of the proposed conservation measures are isolated from the LSZ of the estuary. Proposed water operations and infrastructure (including the proposed North Delta export facilities) would further isolate, not integrate, proposed habitat improvements.

11. ***Emphasize natural physical habitat and biological processes to support and maintain species covered by the Plan (i.e., covered species) and their habitat.***

    The biological processes and habitats of the LSZ in the West and Central Delta are virtually ignored in the conservation measures. The natural pelagic habitats so important to Delta fishes are virtually ignored in the BDCP.

B. Types of Habitat Restoration and Enhancement Actions That Were Evaluated for Inclusion in the Conservation Strategy

Appendix 3A, page 3A-13, lines 19-32, identifies the types of habitat restoration and enhancement actions that were evaluated for inclusion in the conservation strategy. They include:

1. ***Restoring intertidal habitat to establish vegetated marshes and associated sloughs to increase habitat diversity and complexity, food production, and in-Delta productivity, and rearing habitat for covered species.***

   Most of the tidal marsh restoration proposed is in Suisun Marsh and Cache Slough/Yolo Bypass. Suisun Marsh restoration will be isolated from the low salinity zone upstream in Delta, and subject to modification by invasive clams found in brackish Bay waters. Much of Suisun Marsh ROA is already restored or in managed freshwater marshes (duck clubs and state wildlife areas). Large areas of the Cache Slough ROA are existing functional pelagic habitats adjoining extensive tidal marshes (e.g., Liberty Island, Little Holland Tract, Prospect Island, Sacramento Ship Channel). The Cache Slough ROA is also largely isolated from the LSZ in the Delta in drier years. Furthermore, tidal marshes contribute little productivity to open water pelagic habitats. Special status fish are far more apt to select shoreline habitats adjacent to pelagic waters than tidal marshes.

2. ***Increasing hydraulic residence time and tidal exchange in the Delta sloughs and channels by changing circulation patterns to increase primary productivity and foodweb support and improve turbidity conditions for delta smelt and longfin smelt.***

   Continued reliance on south Delta exports in drier years and late spring and summer of wetter years will continue stressors on pelagic species and their tidal aquatic habitats. LSZ Any shift in the LSZ upstream toward the North Delta intakes could put added pressures on the smelt populations because the screens will not protect larvae and early juvenile smelt whose habitat includes freshwater tidal pelagic habitats.

3. ***Increasing the amount of functional floodplain habitat to increase the quantity and quality of rearing habitat for salmonids and sturgeon and spawning habitat for Sacramento splittail, and generate food resources for pelagic species.***

   The BDCP holds little promise in providing more floodplain habitats that would be inundated by tidal or flood flows especially in the Yolo Bypass (CM2). More floodplain inundation in the East Delta and Yolo Bypass without improved access in CM2 would not significantly benefit salmon growth, survival, and production from the Delta.

4. ***Providing adequate water quality and quantity within the Delta at appropriate times to help conserve resident native fishes and improve rearing and migration habitats***

for salmon moving through the Delta.

Target water quality objectives in the Delta include cooler waters, keeping the LSZ to the west away from the export facilities in both the North and South Delta, increasing the area of the LSZ, keeping the low-productivity reservoir water out of the Delta, and retention of the higher turbidity, higher productivity, low salinity water within the Delta's pelagic habitat. Retaining a salinity gradient and positive downstream flow through the Delta in winter and spring are necessary to improve salmon survival through the Delta. Such conditions are not provided under CM1 or other conservation measures.

C. Specific BDCP Conservation Measures CM 1-22

The specific BDCP conservation measures are proposed at Chapter 3, Part 2, Conservation Strategy, 3.4, pages 40-353 and include: CM1 (Water Facilities and Operation), CM2 (Yolo Bypass Enhancement), CM3 (Natural Communities Enhancement), CM4 (Tidal Marsh Creation/Restoration), CM5 (Seasonal Floodplain Creation/Restoration), CM-6 (Channel Margin Enhancement), CM7 (Riparian Restoration), CM8 (Grassland Restoration), CM9 (Vernal Pool and Alkali Wetland Restoration), CM10 (Non-Tidal Marsh Restoration), CM11 (Natural Community Enhancement), CM12 (Mercury Enhancement), CM13 (Invasive Vegetation), CM14 (Stockton Ship Channel O2), CM15 (Predatory Fish), CM16 (Non-Physical Fish Barriers), CM17 (Illegal Harvest Reduction), CM18 (Hatchery Management), CM19 (Urban Stormwater), CM20 (Invasive Species), CM21 (Non-Project Diversions), CM22 (Avoidance and Minimization Measures).

General Overview of Conservation Measures

The amount of freshwater inflow to an estuary is a physical and ecological driver that defines the quality and quantity of estuarine habitat (Jassby et al. 1995; Kimmerer 2002; 2004 Feyrer et al. 2008, 2010; Moyle and Bennett, 2008; Moyle et al., 2010).

Before construction of most of the major dams on the estuary's tributary rivers (1930-43) an average of 82% of estimated unimpaired flow reached San Francisco Bay. By the 1980's, the percentage had decreased significantly to 60%. The averaged for the 2000s is 49%.

BDCP conservation measures applicable to securing a take permit for CM1 (Water facilities and Operation) include CM2 (Yolo Bypass Enhancement), CM3 (Natural Communities Enhancement), CM4 (Tidal Marsh Creation/Restoration), CM5 (Seasonal Floodplain Creation/restoration), CM6 (Channel Margin Enhancement), CM7 (Riparian Restoration), CM10 Non-Tidal Marsh Restoration) and CM11 (Natural Community Enhancement).

Salmon, steelhead, sturgeon, splittail, striped bass, and other important native and non-native migratory Central Valley fishes significantly depend on the Delta for spawning,

young rearing, or residence during all or parts of their life cycles. Altered habitats and hydrology have greatly hindered native fish communities and favored non-native invasive plants, clams and less nutritional primary producers and predatory and competitive fishes.

Unfortunately, only CM1 has received a project level evaluation and even that evaluation is sadly lacking in specific and necessary details. The lack of project level analysis and disclosure in the other conservation measures effectively piecemeals the project and defers mitigation and assurances in violation of HCP/NCCP permitting requirements. All components should receive the same level of detail.

Of these, CM1 is misleadingly described as a conservation measure. CM1 provides for the construction and operation of new north Delta water conveyance facilities to bring water from the Sacramento River to the existing water export pumping plants in the south Delta, as well as for the operation of the existing south Delta export facilities. Diversion of Sacramento River inflow under the Delta to facilitate the increased export of water cannot be justified as a conservation measure. Nor can it qualify as a HCP or NCCP conservation measure addressing compliance with state and federal endangered species acts.

Further, there is no discussion in either the BDCP or EIR/S as to how conservation measures CM 2-21, which are predicated on uncertain public funding, which may or may not be implemented, which are unlikely to be fully successful and which are only analyzed to a programmatic level of analysis can be employed to mitigate for the impacts of a massive water diversion project that has been analyzed (if inadequately) to a project level of detail. Conservation measures CM 2-21 will need to be analyzed to a project level of detail and funding and implementation will need to be assured in order to qualify for consideration in an HCP or NCCP.

Conservation measures CM 2-21 together comprise a stand-alone publicly funded project to restore the Delta's ecosystem and is not dependent on CM1. In fact, conservation measure CM2 and conservation measures CM 12-21 are not dependent on BDCP and are already underway and, in varying degrees, being approved, financed and managed by others. They will proceed regardless of whether BDCP is approved or not. BDCP should not be seeking credit for these ongoing activities that are not dependent on BDCP or CM1. That said, it should be noted that historical efforts similar to CM 12-21 have already failed to achieve their envisioned or desired results. For that matter, BDCP should not be seeking credit for conservation measures CM 3-11, which will be funded by the public purse and are also not dependent on BDCP or CM1.

Most importantly, none of the conservation measures CM 2-21 are will be as successful as predicted in the BDCP and EIR/S. For example, historical habitat restoration efforts in the Delta have had questionable benefits and frequently provided habitat for undesirable non-native species, predators and noxious vegetation. Numerous commentators have remarked that excessive diversions of water have changed the hydrology of the estuary into something resembling an Arkansas lake. Creating more "Arkansas lake" habitat will not restore the natural ecological processes that supported myriad native species over

millennia. Flow and appropriate salinity levels are major components of pelagic estuarine habitat.

None of the conservation measures address the effects of increased Delta exports on the habitat and aquatic species of San Francisco or San Pablo Bays. This is a glaring omission, as numerous studies have documented the effects of Delta outflow on the circulation, water quality and productivity of San Francisco and San Pablo Bays and further reductions in outflow will exacerbate present adverse impacts caused by excessive upstream diversions.[1] Overall net outflow to San Francisco and San Pablo Bays will decrease under BDCP. The major water supply benefits of the tunnels come in wetter years when freshwater flushes the Bays.

The uncertainty of success of proposed habitat restoration efforts are lavishly documented in comments by the Delta Science Program's Independent Review Panel report on the BDCP Effects Analysis, the Delta Independent Science Board's review of the draft EIR/EIS for BDCP, the Independent Panel Review of BDCP sponsored by American Rivers and the Nature Conservancy, the March 2014 comments submitted by the Pacific Fishery Management Council, the February 2014 comments by the California Advisory Committee on Salmon and Steelhead Trout, as well as numerous earlier comments by the National Research Council on adaptive management and the effects analysis, the red flag and progress comments by the National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. EPA, U.S. Corps of Engineers and comments on the EIR/EIS by the State Water Resources Control Board.

The underlying assumptions of habitat restoration are further brought into question by the evaluation of BDCP modeling by MBK Engineers in their presentation before the Delta Stewardship Council, which identified a number of flaws including the use of outdated models, the failure to accurately model climate change, the faulty assumptions of actual reservoir operations, the overrepresentation of outflow and underrepresentation of exports. The failure of BDCP models to accurately reflect anticipated changes in CVP and SWP operations with BDCP bring into serious question the assumptions of habitat restoration.

BDCP modeling demonstrates that, under the proposed alternative, Delta outflow will decrease, exports will increase, X2 will migrate eastward, residence time and pollutant concentration will increase throughout the Delta, salinity levels and violations of present fish and agricultural salinity standards will increase, survival rates of winter-run, spring-run and Sacramento and San Joaquin fall-run salmon smolts will decrease, and concentrations of mercury and selenium in bass and sturgeon will increase.

Comments on Specific Conservation Measures

1. CM1, Water Facilities and Operation, Pages 3.4.1 – 3.4-39.

[1] Cloern, J. E., and A. D. Jassby (2012), Drivers of change in estuarine-coastal ecosystems: Discoveries from four

CM1 is essentially a water conveyance project masquerading as a conservation measure. It will reduce outflow and exacerbate already poor Delta hydrological habitat that is essential for key fish species and their critical habitats. By reducing outflow to San Francisco and San Pablo Bays and drawing X2 further eastward, CM-1 will increase the habitat expanse of *Potamocorbula amurensis*, the saltwater clam that invaded the estuary in the 1980s to the detriment of primary and secondary productivity and fish production. Higher salinities and reduced outflow will also expand the habitat of an array of invasive aquatic vegetation that has expanded throughout the Delta and established itself in recent habitat restoration areas. Invasive aquatic vegetation has reduced productivity and provided habitat for an assortment of non-native predatory fish species. CM1 will increase residence time and will exacerbate already poor water quality conditions and significantly increase the frequency of violations of water quality standards established to protect fish and other beneficial uses of water.

Existing water exports from the south Delta have altered Delta hydrology, degraded water quality, expanded the range of invasive species, reduced plankton productivity, exported primary production, decreased suspended sediment and entrained vast numbers of fish. According to the California Department of Fish and Wildlife's Fall Midwater Trawls, between 1967 (the beginning of SWP exports) and 2013, population abundance indices of striped bass, Delta smelt, longfin smelt, American shad, splittail and threadfin shad have declined 99.6, 95.6, 99.8, 90.9, 98.5 and 97.8%, respectively. During the same period, the Summer Townet Survey reveals that abundance indices for striped bass and Delta smelt declined 98.2 and 94.2%, respectively. Native lower trophic orders and populations of wild winter-run and spring-run Chinook salmon show similar orders of magnitude declines.

The majority of Delta exports will continue to come from the south Delta export facilities. During dry years, south Delta exports will significantly exceed north Delta exports. Yet there is no conservation measure to upgrade the existing 1950s-technology fish screens at south Delta facilities to state-of-the-art screens, as required by the CalFed Record of Decision. It is highly uncertain whether or not the proposed new fish screens in the north Delta will work as envisioned. The new screens will require a variance from present National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (DFW) fish screen requirements. BDPC has rejected the recommendations of the NMFS and the Fish Facilities Technical Team to phase in installation of the new screens to see if they work or can be legally permitted.

The assessment models in the CM1 proposed operations include the existing restrictions including operational criteria prescribed in the two OCAP biological opinions and the state's D-1641 water quality standards. However, these are the same restrictions and operating criteria that contributed to many of the present problems, including the Pelagic Organism Decline (POD).

A fundamental problem with CM1 is that it does not enhance Delta outflow, but rather decreases outflow to enhance exports. Outflow is the common denominator of many intertwined processes and influences distribution, condition and abundance of numerous species.[2] The failure to increase outflow will likely undermine any improvements that may occur with other conservation measures.

BDCP is pregnant with uncertainty, as evidenced by comments by the Delta Science Program's Independent Review Panel report on the BDCP Effects Analysis, the Delta Independent Science Board's review of the draft EIR/EIS for BDCP, the Independent Panel Review of BDCP sponsored by American Rivers and the Nature Conservancy, as well as numerous earlier comments by the National Research Council on adaptive management and the effects analysis, the red flag and progress comments by the National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. EPA, U.S. Corps of Engineers and comments on the EIR/EIS by the State Water Resources Control Board.

Failing to acknowledge the enormous uncertainties inherent in CM-1 construction and operation and waiting to address uncertainty until sometime later through a vague undefined decision tree and adaptive management process is unacceptable. If is all the more unacceptable because all four decision tree operational alternatives will lead to reduced outflow in the long-term.

Existing water export operations by BDCP project proponents have frequently violated promulgated water quality and flow standards established to protect fisheries and other beneficial uses. These include, San Joaquin River and south and west Delta salinity objectives protective of agriculture, Delta and Suisun Marsh salinity objectives protective of fish and wildlife, Delta outflow objectives, Sacramento and San Joaquin River flow objectives and objectives limiting exports and establishing inflow/export ratios. The State Water Resources Control Board has never taken enforcement action for thousands of documented violations of these water quality standards. There is no discussion or assurances in BDCP regarding compliance with water quality violations or how or whether CM-1 will comply with water quality standards in the future.

Discharges from irrigated agriculture, the largest source of pollutant loading to the Central Valley, the Delta and critical smelt and salmon habitat areas, are completely ignored. Forty-two years after passage of the federal Clean Water Act and forty-five

---

[2] "*Outflow is thus the common denominator among the multitude of intertwined processes. In recognizing this, the Panel is unified in agreeing that the distribution, condition, or abundance of some estuarine organisms are statistically related to outflow and X2 because these two indicators reflect underlying physical and ecological processes that more directly affect the estuarine organisms. In statistical terminology, a number of important ecological factors "co-vary" with outflow and X2 and are more proximal influences on organism distribution, condition, and abundance. For example, some biotic indices may correlate with X2 because their distributions are driven by properties (for example salinity) that co-vary with X2, or because seasonal trends in X2 happen to coincide with inherent reproductive seasonality*." (Workshop on Delta Outflows and Related Stressors Panel Summary Report, May 2014)

years following enactment of California's Porter-Cologne Water Quality Control Act, the State and Regional Water Boards cannot document any reduction in the total mass loading of pollutants from irrigated agriculture and municipal stormwater discharges. For that matter, they cannot document any reduction in the total mass loading of pollutants from municipal and industrial wastewater facilities.

The entire Delta is identified on the 2010 Clean Water Act 303(d) List as impaired and incapable of supporting beneficial uses because of agricultural pollutants. A 2007 Regional Board survey of monitoring data from 313 agricultural sites in the Delta and Central Valley revealed that; toxicity to aquatic life was present at 63% of the sites (50% were toxic to more than one species); pesticides criteria were exceeded at 54% of sites (many for multiple pesticides); metal criteria was violated at 66% of sites; human health standards for bacteria were violated at 87% of sites and more than 87% of the sites exceeded general parameters (dissolved oxygen, pH, salt, TSS, etc.). By reducing inflow of relatively good quality water (i.e., reducing dilution) and increasing the time for pollutants to interact with the ecosystem, CM-1 will exacerbate existing impacts.

Nothing in BDCP and CM1 and associated conservation measures demonstrates or provides assurances that CM1, in conjunction with continued south Delta exports, will alleviate present downward trends, let alone reverse these trends and begin restoration of the Delta ecosystem to meet the requirements of an HCP or NCCP.

2. CM2 Yolo Bypass Fisheries Enhancement, Pages 3.4-40 – 3.4-66.

CM2 is designed to mitigate a long list of identified problems on the Yolo Bypass and Cache Slough that were, in significant measure, created by flood control system projects. The flood control system should mitigate these problems. In any case, a number of these valuable and important activities are already underway, are being financed and managed by others and can move forward with or without CM-1. BDCP should not be latching on to ongoing projects or taking credit for them.

CM-2 is only analyzed at a programmatic level. Many of the proposed projects are highly speculative, may or may not be implemented and have uncertain likelihood of being funded. They cannot comply with HCP or NCCP requirements unless they can demonstrate adequate assurances of funding and implementation.

There is no ROA for 30 miles of the central tidal Bypass and non-tidal northern Bypass where tidal and non-tidal wetlands and seasonal inundated habitat could be added with benefits to young salmon that would be passing into the Bypass via the Fremont Weir. Nor are there proposals to address the many water diversions in the Bypass that entrain salmon and smelt. Many of the diversions in the south end have unscreened tide gates.

The Ship Channel that runs for over 20 miles along the east side of the lower Bypass and the Tule Canal that runs within the east side of the Bypass are important smelt

spawning and early rearing habitats, yet they suffer from poor habitat and water quality conditions. The BDCP fails to address these issues. The entire Bypass, Cache Slough, and the Ship Channel suffer poor water quality from stormwater and agricultural return-flow discharges in winter, spring, and summer that degrade the smelt and salmon habitats. The Bypass also receives significant methylmercury loading that bioconcentrates in fish tissue. These issues have long been known and amply documented but existing regulatory programs have failed to achieve anticipated results. Failure to ensure that these problems are adequately addressed increases the likelihood that many of the CM2 improvements may be wasted or may even be detrimental to overall fish survival and production because fish can be diverted from the Sacramento River into marginal habitat in the ROA.

3. CM3, Natural Communities Protection and Restoration, Pages 3.4-66 – 3.4-115.

CM-3 proposes to provide a mechanism and guidance to establish a reserve system by acquiring lands for protection and restoration to meet biological goals and objectives addressed under the BDCP. However, no specific properties have been identified for acquisition in the BDCP, although Restoration Opportunity Areas (ROAs) have been identified. Goals for establishing habitat include: 27,000 acres of tidal perennial aquatic; 932 acres of tidal mudflat; 6,000 acres of tidal brackish emergent wetland; 24,000 acres of tidal freshwater emergent wetland; 4,300 acres of valley/foothill riparian; 100 acres of non-tidal perennial aquatic; 670 acres of non-tidal freshwater perennial emergent wetland; and unknown acres of other seasonal wetland.

CM-3 is essentially a conceptual wish list. It has only been analyzed to a programmatic level. Specific properties have not been identified and specific plans have not been developed. Potential adverse impacts and possible mitigation measures have not been identified or analyzed. If implementation proceeds, it will lag far behind the construction of CM-1. Funding is not assured and is dependent on future state and federal authorizations. Given the lack of success of numerous previous habitat restoration projects in the Delta, implementation is unlikely to achieve the 100% success rate envisioned by BDCP. Examples of previous restoration projects that failed to meet their objectives include: Decker Island, McCormick Williamson Tract, West Sherman Island, Little Holland Tract, Prospect Island, Kimball Island, Winters Island, Chipps Island, Montezuma Island, Mildred Island, Franks Tract, Big Break, Antioch Point, Donlon Island and Hog Island. Many of these projects are already mitigation sites for Corps dredging and levee projects, DWR water projects (Four Pumps Program, Delta Levees Program, Delta Barriers Program, etc.) or required in the various biological opinions.

Habitat restoration is not simply acres of new terrain or physical structure. Habitat is the quantity and quality of water flowing through terrain. Open water habitat is critically important, especially for pelagic species, but largely ignored in BDCP's conservation measures. It is highly unlikely that conservation measures CM 2-11 can mitigate for the significant reduction in the inflow of relatively good quality water to the estuary caused by the diversion of Sacramento water through tunnels under the

Delta. As previously noted, BDCP modeling demonstrates that those inflow reductions will: decrease outflow; move X2 and the LSZ's crucial habitat for pelagic species eastward; increase the concentration of pollutants and the residence time for pollutants to interact with the ecosystem; reduce smolt survival rates for winter-run, spring-run and Sacramento and San Joaquin fall-run salmon and increase the bioconcentration of mercury and selenium in fish tissue.

Statements of Overriding Consideration for Significant and Adverse Impacts may be approved by a lead agency, pursuant to CEQA. However, such overriding considerations have no place in a Section 7 consultation for an HCP or NCCP, especially when they would not occur in the absence of the project and where adverse impacts affect listed species.

The West Delta ROA contains virtually all the dry year spring-summer-fall critical habitats of the Delta Smelt and much of the winter-spring habitat of rearing salmon in the Delta. These large pelagic habitat units and many miles of shorelines and shoals of the West Delta are critical to the success of these species as well as the BDCP. BDCP documents describe the West Delta as an integral part of the "North Delta Arc of Native Fishes" (Figure 1). Yet, inexplicably, the West Delta ROA is virtually ignored in CM3 and other conservation measures. Over 50 miles of shoreline, half of which is un-leveed and "natural," are completely ignored, as are thousands of acres of important pelagic open-water habitat of the West Delta. These are critical areas heavily used by salmon and smelt in the Delta, especially in dry years when populations are highly stressed by low Delta outflow. In these drier years, the West Delta is especially critical habitat, given the high salinities of Suisun Marsh and the Bay and the fact that the Cache Slough complex in the north Delta is subject to lethal temperatures. At such times the LSZ lies almost entirely within the West Delta. The remaining LSZ habitat is completely ignored, as it is in the Central Delta and does not have an ROA.

The LSZ is supposed to be the most productive and prolific area of an estuary. However, as BDCP acknowledges in Chapter 5 Effects Analysis, primary production in the West Delta ROA is currently the second lowest of the ROAs. BDCP models predict that production will increase but will remain lower than the average of the other ROAs. The BDCP states: "*Tidal habitat restoration in the West Delta ROA could increase local food production for rearing salmonids and splittail*," but virtually no tidal habitat restoration is proposed here. Of course, tidal habitat is already extensive in the western Delta, as virtually the entire area is tidal habitat. Primary productivity does not suffer from lack of tidal habitat. Poor productivity or primary production is a result of the radically altered hydrodynamics, low quality inputs and the export of phytoplankton biomass equivalent to 30% of Delta primary production (Cloern and Jassby, 2012) by the state and federal projects.

Excessive Delta exports literally vacuum the critical LSZ pelagic habitat to the central and south Delta for export to southern California. This important habitat area needs more nutrients, longer residence times, more productive inputs from adjacent ROAs,

and, most critically, less export of its primary production to southern California. High inflows of unproductive "blue" reservoir water during the summer from the Sacramento River, coupled with negative flows in the lower San Joaquin River, draw critical habitat toward the South Delta export facilities. This reduces residence time for primary production and exports critical pelagic habitat. Summer temperatures frequently exceed levels lethal to Delta smelt. Pelagic habitat remaining in the western Delta, during the summer, is largely comprised of unproductive reservoir water feeding the exports.

The new North Delta export facility in CM1 will exacerbate these hydrodynamic problems by reducing lower Sacramento River inflows, increasing reverse flow above Georgiana Slough, altering DCC operations and providing another, closer outlet for LSZ export. Enhancing the pelagic habitat and plankton community of the West Delta ROA would require managing and restoring natural Delta hydrodynamics. Because it fails to manage and restore Delta hydrodynamics, CM-3 cannot mitigate the adverse impacts of CM-1.

4. CM4, Tidal Natural Communities Restoration, Pages 3.4-116 – 3.4-144.

Open water or pelagic habitat is largely missing from the tidal habitat discussion in CM4, as it is in CM3. Open water habitat in the Delta is the key habitat of smelt and other pelagic fishes and clearly part of the Tidal Perennial Aquatic Habitat Community. But CM4 ignores open water habitat and primarily focuses on emergent wetland restoration in the Suisun Marsh and Cache Slough areas. It essentially ignores the potential habitat in the west and central Delta that is critical for salmon and pelagic species in drier years, when threats to salmon and smelt are most severe. In these drier years, the Suisun Marsh and Cache Slough ROAs are less important because the LSZ moves into the west Delta away from Suisun Marsh, while high temperatures and low inflow impact Cache Slough. Implementation of CM1 will exacerbate these impacts.

As one example of misplaced priorities, the entire six miles of shoreline along the north shore of the lower Sacramento River from Collinsville to Rio Vista is un-leveed and bordered by major smelt spawning shoal habitats. Salmon, smelt, splittail and other native fishes often dominate fish catches in this area and smelt surveys have their highest catches in these areas. Unfortunately, adjacent pastures, non-native Arundo riparian shoreline communities and dredging are adversely impacting this area.

Other locations identified in the west Delta ROA for restoration include relatively small acreage in Seventeen Mile Slough, Decker Island, areas around Three-Mile Slough and Big Break. However, potential benefits are undermined by continuation of south Delta exports, which draw water from these areas.

CM4 should serve as a cautionary tale concerning expectations of habitat restoration. This area abounds in failed habitat projects including Decker Island, Big Break,

Kimble Island, PG&E mitigation project near Collinsville, Chips Island, Winter Island and areas of Sherman Island. These areas have become prime habitat for invasive species, noxious weeds and predators. As previously observed, restoring habitat is more than merely acquiring acreage: it requires meeting the physical and chemical parameters under which native species evolved for millennia.

Implementation of CM1 will likely adversely impact the time and space array of quality pelagic habitat in the Delta. In other words, it will likely decrease the amount of quality Delta smelt habitat.

For climate change and sea-level rise comment, please see ISB comments B-52

5. CM5, Seasonally Inundated Floodplain Restoration, 3.4-145 – 3.4-154.

There are several references to seasonal habitat in the Conservation Strategy, Part 1 and 2 of Chapter 3. Other than the potential opportunities for creation and restoration of habitat in the Yolo Bypass/Cache Slough area provide in CM-2, most of which will proceed regardless of CM-1: and in the south Delta, where seasonal floodplain could be incorporated in a bypass on the San Joaquin, there is limited opportunity to enhance floodplain habitat that would seasonally inundate during high flows in most of the Delta. Conceptually, areas such as east-side floodplains and margins of the Delta could provide habitat for salmon rearing and potentially increase Delta productivity. However, with the continued winter-spring closure of the Delta Cross Channel, benefits from the east Delta would likely be minimal, as this water moves directly to the South Delta export pumps when the DCC is closed.

6. CM6, Channel Margin Enhancement, 3.4-155 – 3.4-161.

Channel margin enhancement is the poster-child of BDCP's public relations efforts. Parts 1 & 2 of the Conservation Strategy, as well as the Executive Summary, effusively discuss the virtues of channel margin enhancement to benefit a wide variety of species. Indeed, there are hundreds of miles of channel margin habitat that could be enhanced to the benefit of all Delta native fishes including salmon and smelt. While salmon sometimes use tidal marshes for rearing, salmon, smelt, and other native fishes predominantly use the channel shorelines and shoals adjacent to Delta pelagic habitats.

However, under CM6 only twenty miles of channel margin habitat restoration will occur over thirty-year period. Fifteen miles of restoration will be split between the Sacramento River, Steamboat Slough and Sutter Slough and five miles on the San Joaquin River. The west Delta ROA is ignored, although it would greatly benefit from channel margin enhancement. Of course, like all of the proposed habitat restoration proposals in BDCP, channel margin enhancement is a conceptual wish list: there has been no project level analysis. No specific properties have been identified, no specific plans have been developed, no specific mitigation has been proposed and no assured funding has been identified.

7. CM7, Riparian Natural Community Restoration, 3.4-162 – 3.4-175.

In addition to the riparian habitat of CM6 channel margins, there is also a need to restore large-block riparian communities especially in areas subject to seasonal inundation. The best opportunities for these are in the Yolo Bypass, the Cosumnes/Mokelumne floodplain, and the lower San Joaquin floodplains. The BDCP goes far to state that the Yolo Bypass and Cache Slough complexes are precluded from such restoration by flood control needs. However, it was little more than a decade ago that these areas were in agricultural production protected by levees (e.g., Liberty, Little Holland, Prospect, etc.). Riparian floodplain habitats are simply not a threat to the flood control capacity of these areas that were recently not part of the floodplain at all except possibly in very large floods. Riparian floodplain forest habitats were once a major component of the regional Delta habitat array used by native fishes, especially salmon, and should be restored as much as possible.

10. CM-10, Nontidal Marsh Restoration, 3.4-193 – 3.4-201.

Nontidal marsh restoration is primarily for the benefit of the giant garter snake and greater sandhill crane. Nontidal marsh restoration could also be of benefit to salmon and other native fishes in areas upstream of the Delta such as the upper Yolo Bypass. However, fish are virtually ignored in CM10. Such marshes could also potentially contribute to Delta productivity through the transfer of organic carbon in the form of live and dead organisms and detritus, as well as inorganic nutrients and sediment.

Over 20 miles of the upper Yolo Bypass are not included in the proposed BDCP habitat restoration mosaic. Despite providing for annual streamflow and passage at the Fremont Weir, there is no provision for habitat in the entire upper Bypass that could take advantage of inundation with the new flow. It has been clearly demonstrated that such habitat greatly increase the growth and survival of salmon compared to the adjacent leveed Sacramento River. As compared to open agricultural fields, marshes in such nontidal areas offer significant habitat advantages for native fish spawning, rearing, and migrating. These advantages include increased cover from currents and predatory birds. The same potential occurs upstream of the Delta on other Delta tributaries including the San Joaquin River and its tributaries; this potential is not covered in the CM-10.

11. CM11, Natural Community Enhancement and Management, 3.4-202 – 3.4-256.

CM11 is essentially a conceptual hodgepodge of how the conceptual programmatic habitat restoration projects will be managed in accordance to achieve natural community goals and objectives. What is missing is a serious discussion of why previous restoration projects and management of habitat have utterly failed to reverse the downward spiral of native species in the estuary. Nor, is there any discussion of how the implementation of BDCP conservation measures will be different: why BDCP results are likely to be more successful. If the reviewer of these comments

disagrees with this observation, he or she should provide specific replies on how these proposed efforts will be different from historical or present programs and why a different outcome can be expected.

12. CM12, Methylmercury Management, 3.4-257 – 3.4-264.

The section on Methylmercury Management was completely rewritten following the November 2010 preliminary administrative draft, because the 2010 draft lacked a lacked a clear statement of the problem and specific actions that would help to alleviate it. Those items remain lacking in substance in the current draft. The section leaves out extensive past and present work of the USGS and universities on methylmercury in the Delta and in upstream watershed habitats and ongoing source control programs. The risks from methylmercury in tidal wetlands by ROA are not assessed in the HCP. Instead CM12, as in other CMs with high uncertainty, only offers adaptive management and monitoring to account for the complexities of the system "to ensure that measures implemented at the project scale through CM12 do not conflict with goals for restoration site ecological function." (P. 3.4-264).

13. CM13, Invasive Aquatic Vegetation Control, 3.4-266 – 3.4-284.

The measure is focused on ongoing and emerging risks posed by invasive aquatic vegetation throughout the Plan Area and builds heavily on the existing state program, managed by the California Department of Boating and Waterways, to continue aquatic vegetation control using chemical methods. Despite the recognized "major concern with the use of herbicides over large areas and the potential for toxic effects" (p. 3.4-273), the program focuses on this costly and ecologically degrading process instead of the root problem. The root of IAV problems are species-and-location specific but have an over-riding theme of disturbed physical habitats and lack of flow.

The huge areas of the West and Central Delta infested with Egeria including Franks Tract, Big Break, and West Sherman are large breached formerly-reclaimed islands that lack circulation and turbidity that normally limit such rooted invasive plants. All the shallow margins of these areas are infested (see Figures 3.4-27, 28) and their adjoining vast pelagic habitats suffer terribly. Rooted invasives like Egeria collect suspended plankton and sediment thus reducing turbidity, and compete for nutrients with pelagic phytoplankton.

The root cause of the predominance of invasive vegetation in these critical areas is lack of primary plankton productivity in the pelagic foodweb; this in turn is caused by exports and high inflows of reservoir water to meet export demand, in combination with the unnatural physical state of deep breached former leveed agricultural islands. Another example of a disturbed habitat is Seventeen Mile Slough (connecting to the San Joaquin River and Three Mile Slough in the Central Delta). It is infested with water hyacinth because its circulation was cut off by a road-crossing blockage at its east end. Boating and Waterway treatments result in seventeen miles

of channel clogged with dead water hyacinth (and dead habitat). The appropriate treatment is restoration of tidal circulation by removing the barrier at the east end of the slough and the removal of dead hyacinth. Control of extensive IAV infestations of backwater habitat also requires a reduction in water depth so that native tules can recover.

14. CM14, Stockton Ship Channel Dissolved Oxygen Levels, 3.4-285 – 3.4-292.

Comments regarding CM-14 can be found in CSPA's Comment Letter No. 2: Bay Delta Conservation Plan and Associated EIR/EIS Related to Water Quality and in the technical comments prepared by Dr. G. Fred Lee that are attached to those comments.

15. CM15, Localized Reduction of Predatory Fishes, 3.4-293 – 3.4-312.

Like many of the CMs, CM15 Localized Reduction of Predatory Fishes was completely rewritten following the November 2010 preliminary administrative draft. The current version of this measure claims to have been developed with extensive input from fish agency staff and claims to be focused on research and adaptive management to better understand the role of fish predation as a driver of covered fish species distribution, behavior, survival/abundance, and population status in the Plan Area.

Despite the staff effort to improve this measure, BDCP again proposes to rely on research and monitoring to address this long-standing problem brought about by the associated habitat effects of exports and the high Delta inflows of reservoir water to meet export demand. The real problem is that the state and federal exports have created habitat conditions that favor non-native predators over native species. The Delta is, in many respects, like an "Arkansas lake" full of "Arkansas" predator fish; such as largemouth bass, bluegill, crappie, and channel catfish.

The only control of this problem is to restore and replicate the natural Delta habitats under which native species evolved over thousands years and to remove, alter, or isolate habitats that favor non-native predators. No measure of predator removal will resolve this problem.

The measure proposes a limited suite of initial implementation actions with substantial investments in research prior to developing a full field implementation of the measure. In reality, Delta scientists already know why these species occur and how to control them. Predator removal at "hotspots" has been on-going for decades. However, fishermen and scientists have noted the futility of this approach as a predator removal action.

16. CM-16, Nonphysical Fish Barriers, 3.4-313 – 3.4-317.

The Nonphysical Fish Barriers program is still in the experimental stage after several decades of research, monitoring, and adaptive management. It remains focused on

increasing the survival of juvenile covered fishes (primarily salmonids) by discouraging them from entering channels known to result in higher mortality than other viable migration routes. The efforts have focused on prime cross-Delta channels that carry juvenile salmon to South Delta export fish salvage facilities.

Such efforts recognize the serious nature of such non-natural migratory behavior, but ignore the real cause of the problem and past/present lack of treatment. First, exports and associated altered Delta hydrology cause the problem. Ineffective salvage facilities in the South Delta fail to treat the problem. Closure of barriers such as the Delta Cross Channel and Head of Old River Barrier simple make the problem worse. Research has shown such barriers (e.g., bubble "screens") are ineffective and may even attract predators. Even if they were effective, there are presently no accurate methods to quantify improved survival.

17. CM-17, Illegal Harvest Reduction, 3.4-318 – 3.4-321.

CM17 Illegal Harvest Reduction is focused on increasing the enforcement of fishing regulations in the Delta and bays with the goal of reducing illegal harvest of covered salmonids and sturgeon (and non-native predatory sportfish). The CM focuses on the lack of game wardens to "police" the problem. Such harvest is "illegal" under state laws and adequate enforcement should be the responsibility of the State not the BDCP. Furthermore the BDCP should not take credit for any effort for the State policing its problem. There is nothing in the EIR/EIS to indicate that this CM will be different than present programs or be more effective in addressing the issue.

18. CM-18, Conservation Hatcheries, 3.4-322 – 3.4-325.

CM18 Conservation Hatcheries was completely rewritten following the November 2010 preliminary administrative draft. The current version of this measure was developed with extensive input from USFWS staff familiar with the existing and proposed Delta and longfin smelt conservation hatchery programs. The CM is focused on providing refugial hatchery populations and fish suitable for use in research actions. The Delta smelt population is noted as continuing to decline and at high risk of extinction in its present population state, and thus would seem to benefit from a conservation hatchery funded by BDCP. This whole conservation hatchery seems to come from a sense of desperation, yet the BDCP offers no real actions that would improve the plight of the wild Delta smelt population or its critical habitats.

The BDCP admits entrainment and salvage losses would not decline, and that the habitat improvements proposed would provide minimal if any benefit to the smelt population. The BDCP fails to focus on specific improvements to crucial LSZ habitat area and the proposed new North Delta diversion is likely to move it further upstream into more unsuitable areas. What is the point of stocking hatchery smelt if BDCP provides less favorable habitat conditions for them.

The history of trying to maintain or restore salmonid populations with hatcheries is fraught with problems that exemplify problems likely to confront a similar approach to smelt or other species. Stocking smelt not accustomed to natural habitat and predators may cause more predators to seek out wild smelt. Wild smelt may inbreed with inferior hatchery smelt. Key genetic information could be altered or even lost in the wild population from breeding with hatchery smelt. Collecting wild smelt for the conservation hatchery has its own effects. Simply breeding the captive population could have serious consequence to the genetic state of the captive stock that could be a threat to the wild population.

19. CM-19, Urban Stormwater Treatment, 3.4-326 – 3.4-332.

Nearly the entire Delta aquatic habitat array is surrounded by agricultural and urban basins protected by levees. All of these basins route storm and/or agricultural return water back to Delta waters via hundreds of large and small pumping plants. Damage to the water quality of Delta habitats from this process is immense. The Cache Slough, Yolo Bypass, and Ship Channel habitats of the Cache Slough ROA are especially influenced by such blatant water pollution. An argument could be made that some pollution is good and contributes to productivity and high turbidity so much welcomed in the Delta pelagic habitats, but too much pollution is pollution. Many of these "stormwater" inputs are "allowed" under state waiver programs for small stormwater and agricultural systems, and violations of Basin Standards occur. High water temperature, low dissolved oxygen, and excessive salts and chemicals degrade many important rearing habitats including nearly 40 miles of the Tule Canal in the Yolo Bypass and 20 miles of the Ship Channel, areas heavily used by smelt for spawning and early rearing. Warning signs not to eat the fish are found throughout these areas. Heavy spring inputs of such pollution threaten the survival of salmon, smelt, and other Delta native fishes. Water quality protection and enhancement should be an important part of the BDCP habitat restoration program.

21. CM-21, Non-project Diversions, 3.4-339 – 3.4-344.

In fall 2011, DWR directed that the BDCP include screening of non-project water diversions as a conservation measure. There are literally thousands of such diversions in the Delta, with many in prime rearing habitats of Delta smelt. The largest would include Delta power plants owned by Mirant and built by PG&E located at Antioch and Pittsburg right in the heart of the smelt distribution range. (Note: the BDCP attempts to include these plants in the BDCP HCP, despite the projects having their own approved HCP.)

Though technically screened, the screens on these fossil fuel burning plants' cooling water intakes have a mesh too large to keep out larval smelt. Larger smelt are at great risk to screen impingement mortality if caught by inflows. "Remediation of these non-project diversions could eliminate or reduce this entrainment or impingement, and improve Delta ecosystem health by reducing the diversion of plankton and other nutritional resources, thereby benefiting all covered fishes" (p.

3.4-339). (Note: unlike project diversions these power plant diversions are not consumptive and pass water, albeit too warm for smelt, back to the Delta.)

Thousands of smaller agricultural and duck club intakes are unscreened in Suisun Marsh, Delta, and Yolo Bypass. Total Delta unscreened diversion volume likely equals several thousand cfs and potentially causes entrainment and impingement losses. While the CM21 focuses on screening remediation at diversion intakes it includes, "[e]liminating those non-project diversions with the greatest risk of entrainment to delta smelt." This would involve extremely costly land and/or water purchases/leases and involve the loss of high-valued, productive agricultural lands. Such an approach ignores the "…diversions with the greatest risk of entrainment to delta smelt:" the state and federal project pumps.

22. CM-22. Avoidance and Minimization Measures, 3.4-345 – 3.4-353.

CM22 Avoidance and Minimization Measures was not previously identified as a potential conservation measure, but was designated to recognize that there are many avoidance and minimization measures to reduce the risk of incidental take that must be implemented in the course of implementing conservation actions, including construction of water facilities and construction of natural community restoration sites. Of special note is the inclusion of the effects of water facilities (tunnel intakes) and Adaptive Management and Monitoring in this conservation measure. Within the BDCP process these two subjects are far too important to be buried in CM22. These are fundamental elements of the BDCP process that should be assessed and described in detail in their own stand alone sections of the BDCP.

The BDCP conservation measures are essentially the proposed mitigation for the tunnels, continued operation of South Delta exports, and their associated effects on Bay-Delta hydrology. There is little mention in the BDCP plan or EIR/EIS of Avoidance and Minimization Measures for the proposed North Delta tunnel intakes or for the continued operation of South Delta intakes, or for their effects on Bay-Delta hydrology under operating criteria limits of D-1641 water quality standards or present biological opinions. One of the most critical topics that must be addressed is how the two diversions would avoid and minimize effects on Delta smelt in dry and critical years.

Concluding Observations

The Public Policy Institute of California published a June 2012 report titled, *Where the Wild Things Aren't, Making the Delta a Better Place for Native Species.* The report[3] promotes a "*Reconciled Delta - a coherent, robust, and dynamic portfolio of habitats and flows that support desired ecosystem functions and conditions.*"

Despite a relatively negative prognosis for the future of the Delta, these authors state,

[3] http://www.ppic.org/main/publication.asp?i=1053

> "*physical habitats and flows can be managed, where possible, to provide conditions that native estuarine species need at different stages in their lives…. In our vision for a reconciled Delta ecosystem, habitats in different parts of the Delta would be specialized to foster improved conditions for native fishes. All forms of habitat cannot be at all locations, so we propose a strategy in which different habitat types are available and connected to support each desirable species at the appropriate season, taking advantage of existing ecological differences among different regions of the Delta. Area specialization can provide the ecosystem diversity and variability that native fishes (and other organisms) need, while supporting continued human uses of Delta land and waters.*"

These statements portray the basic problem with the BDCP: it lacks specifics as to habitats, flows, and timing to meet the needs of the target native fishes in the Delta. Specifically BDCP needs to identify the critical areas in the Delta for anadromous and pelagic species and then analyze and discuss the problems with these habitat areas. Only then, can it develop and propose specific, effective and implementable measures to improve habitats and fish populations.

The complete lack of discussion of pelagic habitat and the LSZ of the Delta estuary is an illustrative example of what is missing from BDCP. It is as if BDCP forgot the purpose of habitat conservation plans and why its proponents are proposing one. The purpose of HCPs should be to increase the likelihood that listed species will survive recovery, consistent with the purposes of state and federal endangered species acts.

If BDCP proposes to continue massive water supply exports from the Delta, it must propose meaningful measures to replace the millions of acre-feet of pelagic habitat lost each year to the export pumps and prevent native species that depend on that habitat from going extinct. CM1 fails to provide the enhanced outflow that fish agencies, regulators and independent scientists have observed is critical to the restoration of the estuary. Instead BDCP offers less outflow in order to enhance water supply benefits.

If we have learned one thing, over the past several decades in the Bay-Delta, it is that regime shifts and population crashes occur in drier years. Yet we continue to relax standards in dry years and focus protection in wetter years. The smelt population has yet to recover from 1981. Striped bass have yet to recover from 1987-1992. We killed modest smelt recoveries in 2001-2002, 2007-2009, and 2012-2014. BDCP will increase problems in dry years because the plan retains large south Delta exports during these years. A start toward recovery of Delta smelt would be a realistic plan to save what little habitat occurs in dry years when the LSZ pelagic habitat lies within the west and central Delta. That measure should be addressed in CM1 and not reside in conceptual and uncertain programmatic measures to be implemented sometime in the future. Determining how the system should work after the infrastructure is constructed and operating is a recipe for further disaster.

BDCP highlights the importance of Cache Slough ROA to target species especially delta smelt. It fails to mention the importance of tidal freshwater inputs from the areas major freshwater sources: Sutter and Steamboat sloughs. It fails to mention key stressors like warm

water, agricultural diversions and waste discharges, North Bay Aqueduct exports, and lack of dry year flows (importance of Fremont Weir notch), etc. Likewise, it fails to discuss key stressors in the Sacramento Ship Channel, such as, propeller entrainment from cargo ships and how the channel gets its freshwater inflow. The gates at the upper entry to the Sacramento Ship Channel are rusted shut. Consequently, a high percentage of freshwater inflow comes from West Sacramento's storm-sewer system and local agricultural drainage.

BDCP fails to recognize the importance of outflow in maintaining location, productivity, and water quality of the LSZ, especially through the summer. It retains the illusion, expressed in the USFWS biological opinions that smelt are not in the Delta during summer because they, X2 and the LSZ are in Suisun Bay. The fact is that, under modern hydrodynamic conditions in the Delta, the LSZ and X2 are in the Delta most summers, especially in drier years.

BDCP equally fails to realistically discuss Suisun Marsh and its main channel, Montezuma Slough. Little discussion is provided regarding the role, or potential use, of the Salinity Control Structure at the upper end of Montezuma Slough, how important maintaining freshwater inflow and low salinity is to the ecology of the slough and marsh, or how important this area is, or could be, to the production of nearly all the native Bay-Delta fish. Lack of Delta outflow in spring and summer of drier years results in the loss of this important nursery and the production of many of its native fishes each year. This critical habitat loss, following expansion of Delta exports in the 1970's, was a major factor in the decline of many native and non-native Bay-Delta fish. Coupled with the massive degradation of Delta pelagic habitats, there is little fish production capacity left in the Bay-Delta's open waters.

BDCP not only fails to address these fundamental problems, it actually proposes to exacerbate these problems with additional outflow reductions, introduction of a massive new diversion on the lower Sacramento River, higher exports, and further degradation of the LSZ pelagic habitats.

In the final analysis, BDCP is not a program intended to restore habitat and fisheries: it is simply a project to maximize the export of water from the Delta. More insidiously, it proposes to do so by diverting 2.5 MAF of freshwater inflow via tunnels under a Delta that is already grievously suffering from a lack of freshwater flow. The other conservation measures are simply window dressing: conceptual in nature, lacking in specific details, analyzed at a programmatic level, facing uncertain public funding, and highly unlikely to achieve the unrealistically predicted results. BDCP is not restoration; it is a death sentence for an estuary.

The assumptions and conclusions that buttress the BDCP and EIR/EIS conservation strategy and goals are egregiously flawed and technically invalid. Consequently, the analysis of impacts regarding CM1-22 and likelihood of success of the various conservation mitigation measures are deficient and fail to meet minimum CEQA or NEPA standards for environmental review. BDCP must be returned to the drafting table and a new EIR/EIS should be circulated for public review and comment.

Thank you for considering these comments. If you have questions or require clarification, please don't hesitate to contact us.

Sincerely,

Bill Jennings, Executive Director
California Sportfishing Protection Alliance

Attachment: Overview of Delta Habitat Restoration