



July 29, 2024

Donald Ratcliff  
Field Supervisor / Project Leader  
Bay-Delta Office  
U.S. Fish and Wildlife Service  
650 Capitol Mall, Suite 8-300  
Sacramento, CA 95814

*Submitted electronically*

Dear Mr. Ratcliff:

On behalf of the undersigned organizations, we are writing to provide feedback regarding the draft Biological Opinion (BiOp) and revised proposed action for the reinitiation of consultation on operations of the State Water Project (SWP) and Central Valley Project (CVP) recently released by the U.S. Fish and Wildlife Service (USFWS or Service).

## **I. Introduction and Summary of Concerns with the Proposed Action.**

In 2021 the Biden Administration appropriately reinitiated consultation in order to significantly revise and replace the Trump Administration's highly flawed and insufficiently protective 2019 biological opinions (2019 BiOps). The 2019 BiOps were subject to political interference and scientific misconduct, and violated federal law. In addition, we note that reinitiation of consultation was required as a matter of law because operations of the CVP and SWP have repeatedly exceeded the incidental take limits set in those biological opinions over the past several years, including exceeding the incidental take limit in the 2019 National Marine Fisheries Service (NMFS) BiOp regarding egg to fry survival of winter-run Chinook salmon, and most recently exceeding the incidental take limits in the 2019 NMFS BiOp for salvage of protected steelhead and winter-run Chinook Salmon. 50 C.F.R. § 402.16; *see also* Defenders et al. Letter to BOR, DWR, USFWS, CDFW and NMFS on ITL exceedance March 2024, Attachment 5. Given the alarming declines in the abundance of spring-run Chinook salmon, the complete closure of the salmon fishery in 2023 and 2024 due to low abundance of fall-run Chinook salmon, the Service's listing of Longfin Smelt under the Endangered Species Act (ESA) and its finding that existing regulatory mechanisms are inadequate to prevent extinction of this

species<sup>1</sup>, it is clear that significant changes in water project operations are necessary and appropriate to comply with State and Federal law.

**Based on our initial review, the draft USFWS BiOp fails to make the following changes to the revised Proposed Action (PA) that are necessary to correct the flaws of the 2019 BiOp and comply with the law. We have summarized our ongoing concerns below.**

- The revised Proposed Action fails to provide protective conditions for listed species as required by the federal Endangered Species Act and the California Endangered Species Act.
- The revised Proposed Action fails to provide minimum flows and water temperatures sufficient to comply with state water quality objectives and the terms and conditions of DWR’s and Reclamation’s water rights, and continues to include the use of Temporary Urgency Change Petitions (TUCPs) to violate minimum Bay-Delta water quality objectives.
- The revised Proposed Action fails to include adequate, enforceable requirements regarding Shasta operations, water storage and water temperatures.
- The revised Proposed Action fails to include adequate Delta operational measures, including a San Joaquin river Inflow:Export (I:E) ratio.
- The revised Proposed Action fails to ensure congressionally mandated water supply allocations for wildlife refuges.

Given the short time window to review this draft BiOp and the revised PA, we have attached, and incorporate by reference, more detailed comments previously submitted in the reconsultation process. Please note that while the draft BiOp adopts the new, misleading branding for the Voluntary Agreements, “the Healthy Rivers and Landscapes [HRL]”, we will continue to refer to this critical element of operations under the Proposed Action as the “Voluntary Agreements” (VA or VAs) for ease of reading, consistency and transparency for all involved parties.

## **II. The Draft BiOp Omits Critical Information and Inappropriately Defers Analysis of Certain Actions.**

The draft BiOp fails to provide critical information that would inform the analysis, conclusion, and the ultimate coordinated long-term operations (LTO) of the SWP and CVP.

First and foremost, the draft BiOp fails to address the Service’s jeopardy/no jeopardy or adverse modification/no adverse modification decision on the listed species and associated Critical Habitat (CH), and also leaves placeholders in the document for analysis of other federally listed species such as yellow-legged frog or the Giant Garter Snake. Although the Water

---

<sup>1</sup> See U.S. Fish and Wildlife Service Press Release “U.S. Fish and Wildlife Service Lists Bay-Delta Longfin Smelt as Endangered”, July 29, 2024. The final rule will be published after the filing of these comments in the Federal Register on July 30, 2024, and can be read at <https://www.regulations.gov/> by searching for Docket No. FWS–R8–ES–2022–0082. Unpublished Version can be found at: <https://www.federalregister.gov/d/2024-16380>

Infrastructure Improvements for the Nation Act (WIIN Act) does not require release of a complete draft BiOp, the jeopardy/no jeopardy decision goes to the heart of ESA compliance for the CVP and SWP. *See* 50 C.F.R. § 402.14 (h)(1)(iv); WIIN Act §4004. Without this information, reviewers cannot evaluate the sufficiency of the analysis or proposed actions for listed species. Additionally, if there is a Jeopardy decision, interested parties should be allowed to review and evaluate “reasonable and prudent alternatives” as well. *See* 50 C.F.R. § 402.14 (h)(2).

In this case, based on the best available scientific and commercial information, including the attachments to this comment letter, the Service should conclude that the Proposed Action is likely to jeopardize the continued existence of both Delta Smelt and Longfin Smelt in its final Biological Opinion. Additionally, the Service should also conclude that the Proposed Action is likely to destroy or adversely modify the designated critical habitat for Delta Smelt, namely, the San Francisco Bay-Delta Estuary.

As stated by NMFS in their 2009 Biological Opinion for the CVP/SWP, “The ESA provides that if [the Service] has reached a jeopardy or adverse modification conclusion, it must identify a reasonable and prudent alternative (RPA) to the proposed action that is expected to avoid the likelihood of jeopardy to the species and adverse modification of designated and proposed critical habitat, if such an alternative action can be offered.” *See* NMFS 2009 Biological Opinion for CVP/SWP, p. 2; *see also* 50 C.F.R. 402.14(h)(2). Given the extensive record on this issue, emerging scientific research on Delta Smelt, modeling and analysis of other Alternatives in the BOR’s Biological Assessment and Draft Environmental Impact Statement, and modeling and analysis of combined operations in the DEIR of CDWR’s proposed operations of the SWP (which operates in a coordinated and integrated fashion with the CVP), the undersigned organizations believe the Service is legally required to issue a jeopardy decision and to develop a protective RPA. *See* 50 C.F.R. 402.02 (“*Jeopardize the continued existence of* means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.”)

Finally, the draft BiOp also seems to accept the inappropriate deferral of BOR’s incomplete Drought Toolkit (BA Section 3.12) and potentially forthcoming agreement with water contractors for voluntary reductions of exports in Dry and Critically Dry water years. *See* Draft BiOp p. 89. This inappropriately defers necessary analysis of crucial elements of the LTO that may have significant impacts on the listed species. The agencies are expected to rely on the Drought Toolkit more frequently in the coming years due to the impacts of climate change on water resources in California. Essential information such as “location, extent, overlap with listed species habitat and designated critical habitat, timeframe, and other relevant information” are all missing from this document. *See* Draft BiOp p. 89. Analysis of how the Proposed Action will conserve and protect listed wildlife that are on the brink of extinction requires a complete description of the Drought Toolkit and specific proposed water export reductions. Without a complete description of this essential element of the Proposed Action, it is not possible for the

Service to determine the true impacts of the operations on the species and any needed additional mitigation by Reclamation.

### III. The Draft BiOp Fails to Clarify the Applied Baseline.

The USFWS' applied baseline, which provides the foundation for the analysis of all impacts to listed species, is still unclear in the draft BiOp. The Service must clarify the baseline in the final Biological Opinion. The draft BiOp states the analysis relies on four required components, including,

“(2) the Environmental Baseline, which analyzes the current condition of the species in the Action Area without the consequences to the listed species *caused* by the proposed action, the *factors* responsible for that condition, and the *relationship* of the Action Area to the survival and recovery of the species; . . .”

Draft BiOp p. 28 (emphasis added). The USFWS describes this baseline's expansive scope as including “past and present” water operations and actions. *Id.* The draft BiOp then differentiates references to the modeled baseline. *See* Draft BiOp p. 26. The modeled baseline by BOR in the Proposed Action is the No Action Alternative, which is described by Reclamation as operating the CVP consistent with the 2020 Record of Decision implementing the Proposed Action consulted upon for the now invalid 2019 Biological Opinions. *See* Cooperative Agency DEIS, Appendix E, p. E-34.<sup>2</sup>

First, it is unclear if the same baseline was used across all LTO documents. If BOR's No Action Alternative was used as the baseline for all analyses, the final Biological Opinion should make that clear.

Second, it is still unclear if all elements in the Service's Environmental Baseline were modeled in addition to the modeling analysis done by the BOR in the Proposed Action. If actions in the IOP, such as the additional 100,000 acre-feet (“AF”) of outflow provided in the 2023 IOP, were not modeled by USFWS for this draft BiOp, then it needs to be clarified. The additional explanation should be paired with the Environmental Baseline visual graphic included in the draft BiOp on p. 56.

Finally, the baseline issue is further complicated by the inclusion of the Voluntary Agreements flow proposal in the Proposed Action. The Voluntary Agreements are included as the first two years of operations, also referred to as “pre-adoption period” and incorporated by reference into the draft BiOp. The Voluntary Agreements use the 2019 Biological Opinions as the baseline for their supposed “improved” flow proposal. But according to the State Water Resources Control Board's (State Water Board or SWRCB) analysis in the Bay-Delta Plan Phase II Draft Staff Report, the Voluntary Agreements will only provide marginally improved flow to the Delta in most water years. *See* SWRCB Draft Staff Report pp. 9-45, 9-117, and 9-165.

---

<sup>2</sup> Also, for ease of reading and clarity, we would recommend including a short definition of the No Action Alternative in the final USFWS Biological Opinion.

Finally, the USFWS does not clarify how they have treated the differing baselines in their analysis in the draft BiOp.

**Additional information and text explaining the analysis done by the Service as to the scope and actions included by the Service in their applied baseline and what was modeled should be included in the final BiOp.**

Please see attached comments on the Voluntary Agreements as described in the Draft Staff Report for Phase II of the Bay Delta Water Quality Control Plan update, submitted to the State Water Board January 2024, as well as our previous comments on the Proposed Action, for more details. *See* Attachments 1, 2 and 3. We have also included other concerns with the Voluntary Agreements in these comments below.

**IV. The Draft BiOp Improperly Relies on the Proposed Voluntary Agreement Proposal.**

**A. The Voluntary Agreements are not reasonably certain to occur.**

The Voluntary Agreements are not reasonably certain to occur. *See, e.g., Nat'l Wildlife Fed'n, v. Nat'l Marine Fisheries Serv.*, 524 F.3d 917, 936 & n.17 (9th Cir. 2008). The VA proposal has been in development for more than a decade and proponents have still not produced a complete proposal as of July 2024. *See* Voluntary Agreement Timeline, Attachment 4. Given this track record, there is no reason to assume that the VA effort will ever actually produce a complete package. Missing elements include, but are not limited to, a final Funding Agreement, enforcement agreements, and technical details such as “which reservoirs may be reoperated, which fields will be fallowed, when reservoirs can refill, and when groundwater substitution will occur, have not been fully specified.” *See* SWRCB Draft Staff Report at p. G3a-1. Therefore, reliance on the VA proposal is unlawful, jeopardizing years of collaboration and collective work by all agencies involved in the LTO process.

Further, it is not certain that the State Water Board will approve the VA proposal. The proposed Bay-Delta VA is more complicated than any previous “block of water” effort anywhere in the nation. The attached *Building Blocks* white paper documents significant challenges that have faced 18 other efforts to create environmental blocks of water – most of which are located in California.<sup>3</sup> The VA proposal is broader in geographic scope, broader in terms of the species and beneficial uses it would address, and broader in terms of the complexity of the water management systems involved. Yet, despite the fact that all previous environmental block of water efforts in California were far less complex, all of those efforts encountered major implementation challenges.

---

<sup>3</sup> *Building Blocks – Tools and Lessons for Designing a Block of Water for the Environment*. Barry Nelson, Defenders of Wildlife. June 2022.

The problems faced by previous environmental blocks of water included a failure to purchase anticipated environmental water, accounting issues related to the program's environmental baseline, unanticipated impacts caused by changes in project operations and more. All of these problems apply to the Bay-Delta VA proposal, making the anticipated VA environmental flows even less likely to occur.

The VA proposal also contains numerous additional flaws that reduce the likelihood of anticipated environmental flows:

- The VA accounting proposal clearly allows future increases in demand, or the development of new storage or conveyance facilities, to reduce environmental water over time. This problem is exacerbated by the fact that the VAs would provide no protection for current environmental flows that are greater than current regulatory minimums. Future water diversions could capture these unregulated flows, effectively reducing environmental flows and harming listed species.
- Given the current focus on wet season diversions to recharge groundwater basins, this flaw in the VA accounting proposal could allow anticipated environmental water to be reduced significantly during the term of the final Biological Opinion.
- The flows promised in the American River VA could be provided in as few as 3 of the 8 years of the VA's initial term. In no case would VA environmental flows be provided in more than 6 of the 8 years.
- The Proposed Action does not exclude the use of Temporary Urgency Change Petitions (TUCPs) and Temporary Urgency Change Orders during future droughts. *See PA p. 107.* The VA proposal contemplates continued use of TUCPs. Approval of these TUCPs have allowed State Water Board flow requirements to be waived. This is particularly important, given the impacts on Delta Smelt and other listed species during droughts. TUCPs in the future would reduce environmental flows to a level below that assumed in the Proposed Action. As a result, the total environmental flows in the VA package, including existing regulatory flow requirements, are unlikely to occur.
- Finally, the VA proposal has no adequate enforcement mechanism, in the likely event that it fails to produce anticipated environmental water. For example, the VAs do not require annual, much less real-time or seasonal, accounting of flows – so there is no way to ensure that the pledged water arrives as promised or when it is needed by imperiled fish and wildlife.

For all of these reasons, even if the State Water Board were to approve the VAs, the amount of environmental water that is described in the VA proposal – and which is uncritically repeated in the Proposed Action – is not reasonably certain to occur. The inadequacy of the amount of VA water is addressed in the following section.

**B. The VAs are inconsistent with tribal consultation requirements and Executive Orders regarding environmental justice and tribal issues.**

Tribal consultation is a formal, two-way government-to-government dialogue between federal agencies and Tribes. Consultation is required before the Federal agency makes decisions.<sup>4</sup> Consultation requires that “information obtained from Tribes be given meaningful consideration, and agencies should strive for consensus with Tribes or a mutually desired outcome.”<sup>5</sup> Federal agencies are required to “undertake an analysis as early as possible to determine whether Tribal consultation is required.”<sup>6</sup>

Further, Executive Order 12898, regarding environmental justice, states “to the greatest extent practicable and permitted by law... each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.”<sup>7</sup> That order further requires agency environmental justice strategies to include “ensure greater public participation.”<sup>8</sup>

As discussed in the attached VA Fact Sheet, VA discussions began in 2011. Those discussions consistently excluded tribal and environmental justice communities. Bureau of Reclamation Regional Director Ernest Contant signed the VA Memorandum of Understanding (MOU) on March 29, 2022. Yet at no time during the 11 years prior to signing the MOU did BOR initiate formal consultation with the many Tribes that could be harmed by the VAs or seriously engage with environmental justice representatives.<sup>9</sup>

The interest in Bay-Delta water management and environmental issues among tribal and environmental justice communities is well known, and highlighted by their December 16, 2022 civil rights petition to the US EPA.<sup>10</sup> In summary, the Petition notes that the VA negotiations produced dangerously inadequate water quality standards that disregard the needs of Delta ecosystems, native fish and wildlife species, and communities. The current VA framework, as incorporated into this draft BiOp, would increase annual outflows by only 500,000 acre feet per year above the D-1641 baseline, far less than the 1.3 million acre feet proposed in the 2017

---

<sup>4</sup> Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 16, 1994. <https://www.federalregister.gov/documents/1994/02/16/94-3685/federal-actions-to-address-environmental-justice-in-minority-populations-and-low-income-populations>

<sup>5</sup> Memorandum on Uniform Standards for Tribal Consultations, November 30 2022. Available at : <https://www.whitehouse.gov/briefing-room/presidential-actions/2022/11/30/memorandum-on-uniform-standards-for-tribal-consultation/>

<sup>6</sup> *Id.*

<sup>7</sup> Executive Order 12898

<sup>8</sup> *Id.*

<sup>9</sup> See, Readout: Engagement on Development of White House Indigenous Knowledge Effort, June 27, 2022. (Listening sessions with Tribes produced several themes including “the importance of early engagement and full participation of Tribal Nations and Native communities in Federal policy decisions.”) <https://www.whitehouse.gov/ostp/news-updates/2022/06/27/readout-ostp-and-ceq-initial-engagement-on-white-house-indigenous-knowledge-effort/>

<sup>10</sup> <https://www.restorethedelta.org/wp-content/uploads/2022-12-16-Bay-Delta-Complaint-and-Petition.pdf>

voluntary agreements and only a fraction of the additional flow requirements that the Board has itself concluded are necessary to protect public trust uses. Furthermore, the VA framework attempts to offset the shortcomings of these flow commitments with certain non-flow habitat restoration commitments. However, the habitat restoration projects themselves will also not survive without sufficient water at the right times and quantities in the system. The Petition goes on to emphasize that these non-flow commitments cannot substitute for instream flows adequate to support resident fish populations and fish migration and rearing, reduce the incidence of harmful algal blooms, restore aesthetics and recreational opportunities, and support other public trust uses.

Although this Petition targets the State Water Resources Control Board, not the Bureau of Reclamation, it highlights the interests of Tribal and environmental justice leaders in Bay-Delta issues as well as the many impacts that Bay-Delta water management decisions have on Tribal and environmental justice communities, specifically disadvantaged communities of color affected by low flows and the resulting ecological harms.<sup>11</sup> The BOR is aware of the Tribal and environmental justice implications of the VA process, yet chose to ignore those implications and their federal Tribal and environmental justice responsibilities.

### **C. The Voluntary Agreements fail to provide adequate environmental flows.**

The Proposed Action includes no provisions to require increased Delta outflow in the winter months, and it relies on interim actions by DWR and BOR, based on the proposed VAs, to allegedly contribute to Delta outflow in the spring. Reliance on the proposed VAs is highly problematic for the listed fish species (all of which suffer from reduced river flows into and through the Delta) because even if it were fully implemented, the VA fails to provide anything even remotely close to adequate Delta outflows, based on the best available scientific evidence.

In fact, NMFS has determined that “(t)he flow commitments identified in the VA Term Sheet would not provide a significant divergence in average flow relative to the baseline.” NMFS also stated that “[W]e are highly uncertain that the VAs as currently proposed will provide for the reasonable protection of fish and wildlife beneficial uses.”<sup>12</sup> The U.S. Environmental Protection Agency has also concluded that “VA flow assets provide only minimal benefits,” and that “EPA is concerned that the total volume and timing of Delta inflow and outflow provided under the proposed VA alternative relative to baseline is not large enough to adequately restore and protect aquatic ecosystems.” Finally, the EPA concluded that “(D)uring critical dry years the proposed VA alternative will result in a decrease of flows from baseline.”<sup>13</sup> The draft BiOp reaches a

---

<sup>11</sup> See, Memorandum on Guidance for Federal Departments and Agencies on Indigenous Knowledge, November 30, 2022. (Guidance “intended to promote and enable a Government-wide effort to improve the recognition and inclusion of Indigenous Knowledge. It reaffirms that Agencies should recognize and...apply Indigenous Knowledge in decision making, research, and policies across the Federal Government.”) Available at: <https://www.whitehouse.gov/wp-content/uploads/2022/12/OSTP-CEQ-IK-Guidance.pdf>

<sup>12</sup> Cathy Marcinkevage, Assistant Regional Administrator, National Marine Fisheries Service to the State Water Resources Control Board, Jan. 19, 2024.

<sup>13</sup> Thomas Torres, Director, Water Division, EPA Region 9 to State Water Resources Control Board, Jan. 19, 2024.



similar conclusion – stating that “whether the HRL program is implemented or not the effects of the [Proposed Action] will be approximately the same as the NAA.” *See* Draft BiOp p. 91.

**D. The revised Proposed Action’s description of the Voluntary Agreement proposal for Delta inflows is misleading.**

The Proposed Action states that “if the HRL program is fully implemented, the Delta could receive an average of 150 TAF, 825 TAF, 751 TAF, 826 TAF and 155 TAF in wet, above-normal, below-normal, dry and critical year types.” *See* PA pp. 91, 129 and 199. However, the State Water Board’s analysis indicates that the VAs are likely to result in *lower* Delta outflows than would have occurred under that agency’s baseline, which incorporates the 2008/2009 Biological Opinion RPAs rather than the invalid 2019 BiOp. *See* SWRCB Phase II Bay Delta Plan Draft Staff Report. As discussed more below, the VAs could decrease environmental flows during critical dry years, particularly relative to the current the 2024 Interim Operations Plan, which is being implemented at the direction of the federal court. Thus, the Proposed Action’s portrayal of potential flow improvements under the VA proposal is misleading.

**E. The revised Proposed Action appears to incorrectly assume that all anticipated Voluntary Agreement environmental flows would benefit listed species.**

The draft BiOp states that the VA science plan “outlines a framework for assessment variables to determine how to deploy the proposed outflow to maximize benefits to target species, including Delta smelt.” *See* Draft BiOp pp. 117 and 220. Yet the VA proposal appears to “count” as a VA contribution to flow water that is not diverted due to causes that are unrelated to environmental protection – such as regular or unscheduled maintenance, pump/canal/storage capacity limitations, or lack of demand; even if it provides an environmental benefit (and there is no requirement that it must), flows bypassed under these circumstances are a significant portion of current Delta outflows (Reis et al. 2019) and would not be additive to the baseline. The assumption implicit in the revised Proposed Action and draft BiOp – that all of the anticipated VA water would be managed to achieve maximum benefits for listed species – is not a reasonable assumption.

**F. The approach included in the revised Proposed Action and the draft BiOp are likely to be in place for only two years.**

The Proposed Action states that the VA process is incomplete and that “[b]ecause specific details regarding accounting, governance and other HRL program element are likely to change as they are further refined, the Service cannot analyze the specific details of where, when and how the listed species and critical habitat are likely to be affected.” *See* PA p. 26. We agree. Nevertheless, the Proposed Action includes an “early implementation” proposal for the VAs, including two years of export reductions by the CVP and SWP. *See* PA p. 26. If, by the end of this period, the VAs are approved by the State Water Board, “the federal action agency will request subsequent consultation including details about how coordinated operations will be implemented to comply with the WQCP including the HRL program.” *See* PA p. 27.

Additionally, the Proposed Action does not address what will happen at the end of the two-year early implementation period in the likely event that the VAs are not complete and approved by the State Water Board. The Proposed Action overlooks the fact that the VA process has already been underway for 13 years, yet it still has not resulted in a complete proposal. Further, the VA process has failed to meet at least 8 self-imposed deadlines during this period. *See VA Timeline Fact Sheet, Attachment 4.* Given this record, it is likely that the VA process will continue to struggle - intentionally or not - to produce a complete package.

In the event that the State Water Board has not approved the VAs as a part of an update to the Bay-Delta Water Quality Control Plan, the initial two-year CVP and SWP Delta export reductions would end. The Proposed Action and the Draft BiOp do not address in a clear and comprehensive manner what would happen in this likely eventuality. In this case, it appears likely that a significant component of the Proposed Action would expire, without a clear and comprehensive replacement.

This scenario suggests that it is possible, perhaps likely, that the current approach in the Proposed Action and the draft BiOp would expire after two years. This may lead to yet another multi-year reconsultation period, during which time listed species would suffer from the lack of a comprehensive, scientifically based and legally sufficient long-term Biological Opinion. This could unnecessarily allow listed species to continue to decline, possibly including extinction. This risk is made clear in the Proposed Action itself, which states that “there was no information provided in the BA about how or if additional water would be needed to be made available to support the spring Delta outflow action.” *See Draft BiOp at p. 220.*

**We strongly recommend that the final Biological Opinion be revised to provide an RPA that do not rely on the Voluntary Agreements. An RPA must instead rely on the best available science regarding flows that are protective of federally listed species. Alternative 3 in the BOR’s Biological Assessment and Draft Environmental Impact Statement provides the best starting place for such an RPA.**

#### **V. The Draft BiOp Fails to Protect Delta Smelt, Longfin Smelt and Other Species.**

As written, the draft USFWS BiOp and revised Proposed Action fail to protect Delta Smelt, Longfin Smelt and other aquatic species. The draft BiOp thoroughly details the severe and depressing decline of Delta Smelt and Longfin Smelt, especially since the 2019 Biological Opinions. Yet the corresponding conclusions on the Proposed Action’s impacts are inconsistent with and contradictory to the analysis of species status and trends, are unsubstantiated, and require additional explanation and analysis.

##### **A. The draft BiOp is inconsistent throughout its analysis of various flow actions and Delta Smelt’s and Longfin Smelt’s need for additional flow.**

The revised Proposed Action still proposes inadequate flows for Delta Smelt, Longfin Smelt, and other aquatic species. *See Attachment 1 for more details.* Despite the voluminous scientific evidence demonstrating the need to significantly increase Delta outflow in the winter

and spring months, and despite the broad acknowledgement that existing requirements (e.g., the 2019 BiOp, 2020 CESA ITP, and water quality regulations) are inadequate to protect endangered species, the draft BiOp does not include Delta outflows in the winter and spring months that are necessary and adequate to prevent extinction, according to the best available science.

Additionally, the draft BiOp continues the Proposed Action's improper reliance on the Voluntary Agreements to allegedly contribute some modicum of flow (far less than needed) to Delta outflow in the spring and DWR's "additional outflow". See Draft BiOp Actions 3.7.5 Spring Delta Outflow; 3.7.10 Delta Smelt Supplementation, pp. 25-26.

The draft BiOp states,

"For the first two years (Healthy Rivers and Landscapes [HRL] pre-adoption period) of LTO implementation (or until and if the HRL program is incorporated into the Water Quality Control Plan (WQCP), whichever comes first), Reclamation and DWR propose to implement the CVP and SWP foregone exports portion of the March 2022 Memorandum of Understanding signed by the HRL parties (Table 12 of BA Section 3.7.5). Thereafter, Reclamation and DWR proposed to operate consistent with the HRL only if the parties execute the agreements associated with the HRL and the SWRCB incorporates the HRL is proposed into their WQCP. In its application for an incidental take permit for LTO under the California Endangered Species Act, DWR proposes *to implement additional outflow* beyond the first two years of ITP implementation even if the HRL plan is not implemented before the pre-adoption period ends. DWR's post-early implementation proposal is included in the PA for this consultation; *however, it was not modeled under Alternative 2 version 2*. Because DWR's proposal is *reasonably certain* to occur and is part of coordinated operations, our analysis addresses this action in a qualitative manner."

Draft BiOp pp. 25-26 (emphasis added).

The USFWS should explicitly state here that Delta Smelt and Longfin Smelt require additional outflow, especially given the dire status of both Delta Smelt and Longfin Smelt populations. The draft BiOp briefly acknowledges the current flow regime (and what is proposed in the Proposed Action) is inadequate, stating that "[a]t face value, whether the HRL program is implemented or not, CalSim 3 modeling suggests the statistical distributions of Delta outflow in the spring months would remain very similar to the [No Action Alternative] [Figure]." See Draft BiOp p. 91. Despite this acknowledgment, and despite the fact that, as recently as 2022, the Service declared existing regulatory mechanisms inadequate to prevent further decline of Longfin Smelt, the Service does not require additional flow from the Proposed Action, and instead relies on the Bureau and DWR's promises to "backstop" the Voluntary Agreements. See Draft BiOp p. 91 and p. 129; DWR's ITP application Section 3.3.3.2. Overall, due to a lack of adequate environmental flow and improper reliance on the VAs, this draft BiOp is unlikely to protect Delta Smelt or Longfin Smelt populations.

## **i. Delta Smelt**

The draft BiOp provides no evidence that its Summer-Fall Habitat Action will “help mitigate low summer-fall survival” of Delta Smelt. *See* Draft BiOp p. 99. The draft BiOp states: “Based on our analysis of the Proposed Action and its predicted effects we conclude: 1. Contemporary life cycle modeling supports the hypothesis that high summer outflow can contribute to beneficial effects but *does not support the hypothesis that variation in fall outflow does*. Life cycle models suggest that absent supplementation, delta smelt would continue to decline at rates similar to those predicted from the 2019 Proposed Action (NAA). However, one model predicts a much steeper rate of decline and was unresponsive to small variations in proposed project operations. 2. The Proposed Action for June through October does not appear to meaningfully differ from a 2019 operation except in the driest June scenarios. 3. Delta smelt will gain a foraging benefit from the use of the SMSCG to lower salinity in Suisun Marsh. This benefit will be unlikely prior to at least September in Dry years when the Beldon’s Landing salinity target is 6 PSU. 4. The anticipated foraging benefits from SMSCG operations could be partly offset by entrainment onto managed wetlands, particularly during fall flood up. 5. *The Fall X2 action is not anticipated to have observable effects on delta smelt survival*. 6. *Since there may be circumstances when measurable benefits could be achieved with outflow augmentations, adaptive experimentation regarding flow pulses in the summer or fall could be helpful.*”

Draft BiOp pp. 101-102 (emphasis added).

On its face, this passage indicates that the Proposed Action is not adequate to prevent extinction of Delta Smelt, especially given flawed assumptions made in the Proposed Action (failure to model TUCPs, reliance on the uncertain VAs, etc.) described above. It is possible to manage combined operations of the CVP and SWP such that Delta Smelt are likely to benefit and experience positive population growth. In fact, the Cooperating Agency draft EIS states:

“Alternative 3 is expected to have beneficial effects on [Delta Smelt] adults and juveniles resulting from decreased entrainment, and beneficial to negligible effects to larvae resulting from decreased to negligible change in entrainment. For food availability, there are expected positive effects on larvae and minor positive effects to juveniles. For population abundance, there is an expected positive effect on the population growth rate.”

*See* BOR Cooperating Agency DEIS at p. 12-35.

### **1. Summer Habitat**

The Service must define what it means by “summer outflows”. During the draft BiOp’s description of the “summer-fall habitat action”, it refers to “Summer Flow Results” in the Table

on page 94 without defining the term.<sup>14</sup> Then it refers to July-August flows (at pp. 96-97), July-October flows (at p. 96), June and July flows (at p. 98), July-October flows (p. 96), June-October (p. 96), etc.

Delta outflow from June-August (“summer outflow”) is known to correlate positively with survival of post-larval Delta Smelt (Polansky et al. 2021). We are concerned that proposed combined operations of the CVP/SWP will result in reduced summer outflows that will further harm Delta Smelt. According to modeling of combined CVP/SWP operations in the SWP LTO DEIR, summer outflows will be reduced in July and August of most years. Delta outflows during the Jun-Aug period will be reduced by CVP/SWP operations in all water year types. (*see* below; SWP LTO DEIR Table 4B-2-10-1c, App 4b Attch 2 at p. 162). According to the Service’s Delta Smelt LCM, Delta Smelt post-larval survival should be expected to decline due to reductions in summer outflow.

**Table 4B-2-10-1c. Delta Outflow, Proposed Project 021624 minus Baseline Conditions 072623, Monthly Outflow (cfs)**

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>10% Exceedance</b>	-156	-269	212	466	2,845	487	853	-527	-9	-553	-859	744
<b>20% Exceedance</b>	156	14	25	253	-844	-481	-885	-1,084	534	-537	-434	156
<b>30% Exceedance</b>	0	56	11	555	-328	467	-875	-885	495	0	-402	25
<b>40% Exceedance</b>	94	45	122	18	331	-167	-544	-1,958	691	-239	-418	576
<b>50% Exceedance</b>	-42	-73	-417	370	602	1,034	231	-1,286	483	-326	-513	372
<b>60% Exceedance</b>	68	-69	121	118	62	1,073	420	-1,080	0	0	-33	37
<b>70% Exceedance</b>	0	-66	166	357	52	378	-334	-624	165	-281	-426	238
<b>80% Exceedance</b>	0	0	116	-165	1,003	731	293	-52	61	0	0	0
<b>90% Exceedance</b>	0	0	-51	202	530	-34	-103	-110	0	0	0	0
<b>Full Simulation Period Average<sup>a</sup></b>	40	-6	21	216	191	305	-128	-799	230	-148	-333	108
<b>Wet Water Years (30%)</b>	69	-21	-30	222	-82	-131	-237	-1,404	301	-80	-380	-136
<b>Above Normal Water Years (11%)</b>	85	126	-230	171	292	462	-392	-932	462	-418	-776	817
<b>Below Normal Water Years (21%)</b>	-3	-118	117	236	21	772	-105	-1,084	383	-200	-259	123
<b>Dry Water Years (22%)</b>	35	24	-12	27	507	615	145	-66	38	-163	-349	151
<b>Critical Water Years (16%)</b>	18	40	211	469	422	-25	-144	-203	0	0	-17	0

<sup>a</sup> Based on the 100-year simulation period.

\* All scenarios are simulated at current climate condition and 0 cm sea level rise.

\* Water Year Types defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

\* Water Year Types results are displayed with water year - year type sorting.

## 2. Fall Habitat

The draft BiOp’s fall outflow action is not expected to benefit the species. The Service describes the Fall X2 action as:

“...a ‘pulse flow’ in September of Wet and Above-Normal water years that carries over into October .... As proposed, the pulse of freshwater would maintain a 30-day average X2 at 80 km in both months. The Fall X2 action was originally in the Service’s 2008 Reasonable and Prudent Alternative (Service 2008) and was motivated by concerns about proposed ‘flatlining’ of habitat suitability in the autumn (Feyrer et al. 2011, p. 124 and their Fig. 5). The modeled Delta outflows for September and October are about the same in the Proposed Action as the NAA (i.e., within the CalSim 3 error) so there is no proposed change from baseline ...

<sup>14</sup> This Table should be numbered and captioned. Also, the Table currently presents results from complicated modeling papers without any context needed for interpretation -- the entries should be presented in a way that is interpretable to the average reader.

Currently proposed outflows in September and October are lower than what they were in the 1970s through 1990s (Feyrer et al. 2011, their Fig. 2), but they are higher than what occurred naturally ....”

See Draft BiOp at pp. 101-102.

This is very different than Action 4 of the USFWS 2008 BiOp (at p. 369; “Estuarine Habitat During Fall”), which is described as:

“... provide sufficient Delta outflow to maintain average X2 for September and October no greater (more eastward) than 74 km in the fall following wet years and 81km in the fall following above normal years. The monthly average X2 must be maintained at or seaward of these values for each individual month and not averaged over the two month period. In November, the inflow to CVP/SWP reservoirs in the Sacramento Basin will be added to reservoir releases to provide an added increment of Delta inflow and to augment Delta outflow up to the fall target.”

The timing of the USFWS 2008 BiOp’s fall estuarine habitat action was listed as September 1 to November 30. For purposes of the Delta Smelt LCM, Polansky et al. (2021) define “fall” as September through November. The Service should provide a reasoned explanation of the scientific and management basis, if any, for modifying the fall habitat action, including reducing the required Delta outflow (increasing X2) in wet years and truncating the seasonal period of this action.

The draft BiOp acknowledges that its Fall X2 action will not change status quo conditions that are exacerbating the danger of extinction for this extremely imperiled fish. Moreover, we are concerned that even the diminished Fall X2 action described in the draft BiOp will not occur under proposed CVP/SWP operations. According to modeling for the SWP LTO (*see above*), Delta outflow during these months will be lower under modeled combined operations of the CVP/SWP than under the baseline in Wet years (which are 30% of years).

The inclusion of the fall outflow/Fall X2 action is not consistent with the draft BiOp’s statement: “In contrast, statistical importance of Delta outflow (and corollaries) on delta smelt survival in the fall is not visible in the best information we now have available to us.” See Draft BiOp at 94. This statement is inaccurate and we recommend striking it. Polansky et al. (2021) report results from the Service’s Delta Smelt LCM:

“Using the results from the global model fit with external estimates of observation error CV plugged in, and selecting (somewhat arbitrarily) a 0.80 value as the lower limit for which evidence, the posterior distribution probability that the coefficient is above (below) zero when the expected effect of a covariate is positive (negative), is considered substantial enough to report on here, the following relationships were observed: (a) recruitment was most influenced by temperature, the approximate location of the 2-ppt isohaline during the previous

fall, and adult food (note also the export-inflow ratio had high evidence of support based on the models summarized in Table C.2)...”

Polansky et al. (2021 at p. 358) (emphasis added).

These results argue for maintaining the September through November timing and X2 targets  $\leq 74$ km in Wet years and  $\leq 80$ km in Above Normal years and potentially developing targets for other water year types beyond “Wet” and “Above Normal”. In addition to lower values of X2, increased freshwater flows into the Delta during October and November are consistent with lower temperatures (Bashevkin and Mahrđja 2022) and increased transport of *Pseudodiaptomus forbesi* – a key Delta Smelt prey species– from fresh/very low salinity waters to the low salinity zone inhabited by juvenile Delta Smelt (Hassrick et al. 2023; Kimmerer et al. 2018). These positive effects on Delta Smelt habitat in the low salinity zone are increasingly apparent as low salinity habitat moves further to the west, and X2 is less than 80km (see e.g., Hassrick et al. 2023 at Figure 3). The Service should provide a reasoned explanation, supported by the best available science, for constraining the fall habitat action to only above normal and wet years, limiting the timing of the fall habitat action to September, and restricting it to maintenance of X2 at 80 Km.

The claim that these flows are “higher than what would occur naturally” is irrelevant, and we recommend striking this phrase. See Draft BiOp p. 102. ESA protections are not limited to actions that would occur naturally (e.g., Delta Smelt Supplementation is also not something that would “occur naturally”). The document acknowledges that Delta outflows in the summer and fall are less than they have been in previous decades and are very often managed by Reclamation and DWR to maintain a “salinity barrier” that enables continued export of water from the Delta.

### **3. Tidal Habitat Restoration**

We are concerned that the draft BiOp targets only completion of the 8,000 acres of shallow water “habitat” previously required in the 2008 BiOp. We believe the Service should require additional acres of tidal marsh restoration – with restoration placement and design informed by the best available science – distributed throughout existing *and former* Delta Smelt habitat. Previous requirements for shallow water environment (“habitat”) restoration have not resulted in stabilization or recovery of the Delta Smelt population and there is no evidence that the remaining required acreage will be sufficient to mitigate for harm caused by the Proposed Action. Recent modeling efforts indicate that the effect of “habitat” restoration actions on Delta Smelt population growth rate is only when restoration activities occur at a much larger spatial scale than envisioned by the draft BiOp and previous USFWS biological opinions for Delta Smelt. See CSAMP Delta Smelt Structured Decision-making Model (“Compass 2024”) at pp. 25-27.

We are also concerned that the draft BiOp relies on previously required “habitat” actions to protect the species because multiple generations of Delta Smelt are likely to pass before these restoration actions are completed. As described in the SWP ITP DEIR (at p. 2-37), eleven Delta Smelt habitat projects – all located in the “northern arc of the upper estuary” are in different phases of completion: less than half the required restoration acreage has been constructed, 3,490 acres or under construction now, and 1,322 acres are still in the planning phase. The long time

frame required for implementation of this action is one of several key uncertainties regarding the efficacy of “habitat” restoration as a counterbalance to harms generated by CVP/SWP operations (Compass 2024 at p. 28 & pp. 30-31).

Furthermore, we are concerned that the draft BiOp misrepresents the function and effect of shallow water environments on Delta Smelt foraging success. Whereas Hammock et al. (2019) found that Delta Smelt foraging was more successful in the vicinity of shallow water marshes, they also determined that the increased predation success was *not* because food was more abundant in the vicinity of the marshes. Rather, these researchers hypothesized that Delta Smelt foraging behavior made them more effective predators in the vicinity of tidal marshes. Thus, the trophic benefits for Delta Smelt of shallow water environments like restored tidal wetlands are expected to be highly localized (and may be outweighed by negative effects of the same environments, such as the habitat they provide for predators of Delta Smelt). These findings suggest that the spatial distribution of habitat restoration projects is at least as important as the acreage of such projects.

The Service should strike references to the hypothesis that restoration of shallow water environments will subsidize the estuary’s pelagic prey base. In general, the proposition that restored tidal marshes can supplement food supplies for fish in pelagic waters of the Delta and Suisun Bay has little or no support. For example, Yelton et al. (2022 at p. 1743) conclude: “...there is little evidence of persistent subsidies of zooplankton from tidal wetlands to open water...” (*see also* Herbold et al. 2014 and Kimmerer and Rose 2018). Hartmann et al. (2022) similarly found lower abundances of zooplankton in shallow water, in contradiction to the conceptual model that restoring shallow tidal wetlands will increase food supplies for imperiled fishes. Statements in the draft BiOp, like those at p. 107, (“Tidal exchange of water between wetlands and surrounding channels is expected to distribute primary and secondary production from the wetlands to adjacent pelagic habitats where delta smelt occur and provide access to resulting prey production and transport”) are misleading and/or incorrect. Again, there is little or no evidence that restored shallow water environments increase food supply in pelagic waters; it is more likely that zooplankton are more susceptible to predation by Delta Smelt in waters adjacent to tidal marshes.

On the other hand, the draft BiOp should emphasize that the density and distribution (i.e., the availability) of key prey items for Delta Smelt respond strongly and positively to increased freshwater Delta outflow during the winter-spring (Kimmerer 2002; Hennessy and Burris 2017a,b) and summer-fall (Hennessy and Burris 2017a,b; Kimmerer et al. 2018; Hassrick et al. 2023).

#### **4. CSAMP Delta Smelt Study**

As the draft BiOp acknowledges, scientific evidence emerging over the past few years strongly suggests that enhanced summer Delta outflow is likely to provide substantial benefits for Delta Smelt, and that these benefits may exceed those associated with current management of fall Delta outflow. However, the draft BiOp errs in concluding that fall outflow has no beneficial effects for Delta Smelt (*see above*).



The importance of enhanced outflows is borne out by the results of one of the most intensive Delta Smelt modeling exercises to date. Along with many other parties, USFWS is a participant in the Delta Smelt Strategic Decision Model (DS SDM) process sponsored by the Collaborative Science and Adaptive Management Program. Over the last four years the DS SDM analysis has utilized multiple Delta Smelt life cycle models to predict population responses to different management scenarios. More model runs were conducted assessing sensitivity to different flow actions than with any other driver affecting Delta Smelt population viability. The results supported the finding that enhancing summer outflow will substantially benefit Delta Smelt. But they also showed positive population growth when fall outflow was set to month-specific locations < 80km in W and AN years. The results were equally informative in showing that Delta smelt populations would have experienced a faster decline than observed historically over the 1994-2014 period if fall outflow had been set to month-specific locations > 80 km in W and AN years. *See* Compass 2024, Section 3.2, pp. 21-25. This latter result suggests that while fall outflows may contribute less than summer to positive population growth and recovery, they may also be essential to maintaining critical habitat and preventing extinction of the species.

**Based on these results and the science describe above, we recommend revision of the Draft BiOp to require fall Delta outflows sufficient to maintain X2 targets  $\leq 74$ km in Wet years and  $\leq 80$ km in Above Normal years from September through November, and consideration of targets for fall X2 in other water year types. Additionally, if the Service cannot provide a reasoned explanation based on the best available science for constraining the fall habitat action to only above normal and wet years, limiting the timing of the fall habitat action to September, and restricting it to maintenance of X2 at 80 Km, then it should instead require Action 4 of the USFWS 2008 BiOp as part of the RPA.**

## ii. Longfin Smelt

Operations that result in long-term negative outcomes Longfin Smelt are inconsistent with conservation and restoration of a population that has a high probability of extirpation in the very near future (USFWS 2022). The Service recently observed that Bay-Delta Longfin Smelt DPS "...has plausibly been declining for over 50 years and that decline is presently at circa 3–4 orders of magnitude" (USFWS 2022a at p. 37). In its recent draft listing decision, USFWS identified existing regulatory mechanisms, including the 2019 Biological Opinions, 2020 CESA ITP, and existing water quality requirements, as inadequate to prevent further decline of Longfin Smelt (Federal Register Vol. 87, No. 194 (Friday, October 7, 2022) at pp. 60957-60974). Therefore, any alternative that does not improve conditions relative to the status quo for the San Francisco Bay estuary's Longfin Smelt population is inconsistent with the requirements of the ESA.

The Service should be guided by the best available science regarding the effect of Delta outflows on Longfin Smelt population dynamics, and should not ignore the high level of uncertainty regarding the effect of restoring shallow water environments ("habitat") on the Longfin Smelt population dynamics. *See* USFWS 2022 (and sources cited therein). Furthermore,

rather than dismiss and/or ignore large projected changes in mortality of Longfin Smelt juveniles and larvae as a result of entrainment at the CVP/SWP export facilities, the draft should integrate those effects (at least qualitatively) with the expected effects on the population from changes in Delta outflow.

**The draft BiOp’s analyses and conclusions regarding Longfin Smelt are internally inconsistent and misinformed. We recommend the Service reject the Longfin Smelt population modeling results from Reclamation, as presented in the draft BiOp, as they are highly likely to be erroneous and Reclamation’s presentation and interpretation of these results is misleading and flawed. Instead, based on the extensive scientific record and analyses performed for numerous regulatory proceedings, we recommend the Service require  $\geq 65$  percent of unimpaired flow during December through May, whenever such flow would not impair coldwater pool at Shasta, Oroville, and Folsom reservoirs respectively.**

### **1. Spring Delta Outflow**

Strong, durable, statistically significant correlations between winter-spring Delta outflow and the change in Longfin Smelt abundance indices are well documented (Nobriga and Rosenfield 2016; SWRCB 2017; and see USFWS 2022 for additional references). Indeed, the draft BiOp reports: “It has been recognized for more than 40 years that the abundance of longfin smelt increases as a function of wet season Delta outflow or its corollary, X2 (Stevens and Miller 1983, their Table 8; Jassby et al. 1995, their Fig. 5; Thomson et al. 2010, their Fig. 6).” See Draft BiOp p. 199. Thus, it is surprising and concerning that the draft BiOp attempts to minimize the effect of Delta outflow on Longfin Smelt abundance, citing “Appendix J Spring Delta Outflow, Attachment J. Longfin Smelt Outflow”.<sup>15</sup> The draft BiOp describes as “circular” the outcome that Longfin Smelt abundance will increase under management regimes that produce higher Delta outflows because the model employed includes Delta outflow as a continuous predictor. See Draft BiOp p. 201. This is not circular reasoning. Higher abundance is predicted for management regimes with increased Delta outflow *because the best available science consistently demonstrates that Delta outflow is the only reliable predictor of Delta Smelt abundance*. Thus, alternative scenarios that differ only in Delta outflow *will* produce different estimates of future Longfin Smelt abundance – this outcome simply reflects the best available science.

We are concerned with the Service’s interpretation that the real and very large differences in Longfin Smelt abundance that result from different operational alternatives are “small” relative to the large variation in predicted abundance. We are not able to study the modeling that resulted in the figure on page 200 of the draft BiOp (reproduced below); however, it looks remarkably similar to DWR’s presentation of results in their 2019 DEIR for SWP LTO, which were the product of misapplication of a model (developed by Nobriga and Rosenfield 2016) and extremely misleading presentation. We are very concerned that the draft BiOp presents this

---

<sup>15</sup> We have not been able to review this appendix.

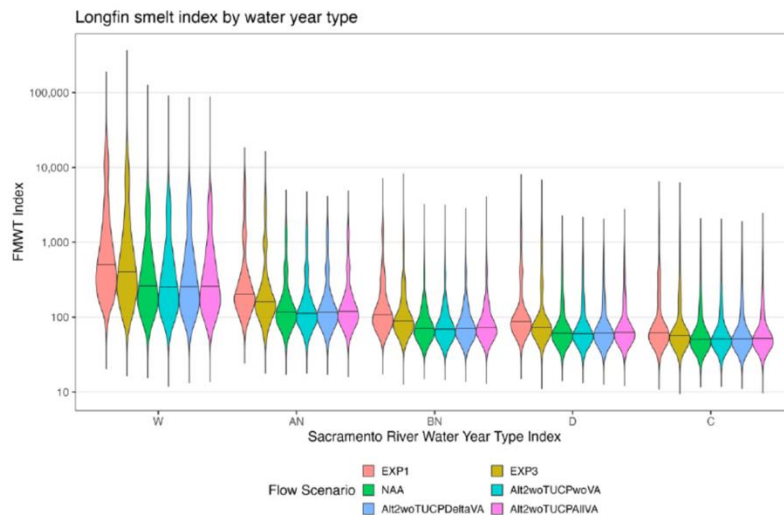
figure because it misrepresents what is known about Longfin Smelt biology and fails to apply basic concepts of alternative comparison. Our concerns include:

- a) The figure below obscures very large differences in median outcome for the different alternatives. Representing abundance on a log scale tends to hide the magnitude of differences between the alternatives. An informative presentation of these results would plot the median results (the horizontal line in each “violin” plot) on a non-log transformed y-axis. Doing so would likely reveal that the higher outflow alternatives result in substantially higher Longfin Smelt populations on average.
- b) The figure represents high flow alternatives in a misleading manner. “Wet” years and alternatives with greater Delta outflow are plotted on the left of the x-axis and drier years and drier alternatives toward the right of the x-axis. This is the opposite of the traditional representation of magnitude on an x-axis; typically, x-values increase as one moves to the right on the x-axis. The draft BiOp’s presentation creates the erroneous impression of declining abundance as flows increase.
- c) Variation in Longfin Smelt abundance in each water year type is highly exaggerated because:
  1. The water year types themselves represent tremendous variation in Delta outflow (i.e., there are large differences in Delta outflow between the wettest and driest years within any one year type), and this translates to large variation in abundance of Longfin Smelt expected to result from different years within a year type. There is no reason to plot these results within year type when the predictor variable (Delta outflow) is continuous.
  2. It is highly likely (given the similarity with DWR’s previous analysis) that the variation in Longfin Smelt abundance shown in the water year types reflects variation from across the Longfin Smelt time series (e.g., the figure combines results from “wet” years early in the time series with “wet” years late in the time series). Given that there is an as yet unexplained time trend of decline in Longfin Smelt abundance beyond the effect of Delta outflow (Nobriga and Rosenfield 2016), this practice adds variance to the results that has nothing to do with “prediction uncertainty” or the operational alternatives being studied.
  3. It is highly likely (given the similarity with DWR’s previous analysis,) that the variation shown in predicted Longfin Smelt abundance reflects randomization of variables that are not related to the alternative (e.g., prior abundance, survival, recruitment of larvae, etc.). Nobriga and Rosenfield (2016) randomized such inputs to maximize variation within *conceptual alternatives* in order to increase certainty that any differences detected between those conceptual alternatives were real. But the task here is to compare *operational alternatives* and to determine which of those alternatives produces better outcomes for listed species; thus, varying inputs that have nothing to do with operations obscures the effect of the operational alternatives. This is exactly what a comparison of alternatives should seek to avoid.

Because Reclamation’s model relies on Delta outflow as an input, alternatives with higher outflow will have higher Longfin Smelt abundance than alternatives with lower winter-spring Delta outflow. This result will be invariant unless there are other variables in the model that are affected by the alternatives. Again, this is not a “circular” outcome – it results from the fact that Delta outflow is the only *known* variable that affects Longfin Smelt abundance<sup>16</sup> and the only variable that is altered by project alternatives. A proper comparison of Reclamation’s modeled alternatives would show the average annual *difference* (measured in each year) between alternatives in projected Longfin Smelt population abundance as a function of Delta outflow. Delta outflow would be represented as a continuous variable on the x-axis (instead of categorical water year types).

Confounding variation that has nothing to do with project alternatives (e.g., lumping together years that vary substantially in Delta outflow (e.g., within year types); incorporating variance due to time trends in abundance that are unrelated to flow; randomization of non-flow variables) with variation *caused by the project alternatives themselves* is statistical malpractice.

**We ask that the Service share with us the model and methods used to generate the figure below and to reconsider how it interprets the very large differences shown in that figure in predicted outcomes of different management alternatives.**



The Service should reject Reclamation’s Longfin Smelt abundance model for the reasons described above. However, if Reclamation’s model is retained, then we note that it projects a decline in Longfin Smelt abundance for the Alternative 2 variants relative to the No Action Alternative. See Draft BiOp p. 202. The fact that the difference among alternatives modeled appears “small” is not relevant (especially because the model is described as “hyper-stable” and

<sup>16</sup> There are other factors affecting abundance, but the driving or correlative variables are not known.

“unrealistic”). Furthermore, Reclamation’s model projects declines in Longfin Smelt abundance under Alternative 2 variants without even accounting for the increase in larval and juvenile Longfin Smelt entrainment described below.<sup>17</sup>

The draft BiOp should acknowledge the finding in the State Water Board’s recent Draft Staff Report that the proposed VA will continue or even accelerate the decline of the Bay-Delta’s endangered Longfin Smelt population. The frequency of seasonal flows that promote Longfin Smelt population growth is projected to decline under the VAs relative to the State Water Board’s baseline. *See* SWRCB Draft Staff Report Table 9.6-4 at 9-80. Furthermore, the VAs are likely to eliminate conditions that currently produce the highest population growth rates because the VAs are expected to result in lower winter-spring flows during the Wet year-type relative to conditions under the State Water Board’s baseline or the 2008/2009 biological opinions. *See* SWRCB Draft Staff Report Tables 9.5-40, 9.5-41. Because the flow-productivity and flow-abundance relationships are log-log linear (Rosenfield and Baxter 2007; SWRCB 2017), flows in Wet years are critically important to the population; high productivity during these years provides some buffer against extirpation in subsequent years with low Delta outflows. We emphasize that the current flow regime is associated with the long-term and catastrophic decline of Longfin Smelt. Decreasing the frequency of flows that promote any population growth by truncating the higher end of the winter-spring Delta outflow (and Longfin Smelt population growth) spectrum is not consistent with protecting the species or maintaining opportunities for its future recovery.

Although we appreciate the Service’s investigation of the frequency of years with population growth vs. decline among different Alternative 2 variants, in the context of a net population decline, the draft BiOp’s conclusion that the “HRL”/VA program will provide incremental benefits to the Longfin Smelt population over the NAA is not relevant.

## **2. Entrainment of Larval and Juvenile Life Stages**

The draft BiOp’s reliance on Kimmerer and Gross (2022) to interpret the effect of larval and juvenile entrainment mortality on overall population dynamics is inappropriate. Kimmerer and Gross (2022) underestimate the potential population impact of larval and juvenile entrainment in several ways.<sup>18</sup> Most importantly, this research studied larval Longfin Smelt exposure to entrainment based on data from 2009-2020; flow and export conditions in the Delta were driven by the 2008/2009 federal biological opinions in all but one of those years. But those rules have now changed in ways that should be expected to increase entrainment-related mortality of Longfin Smelt.

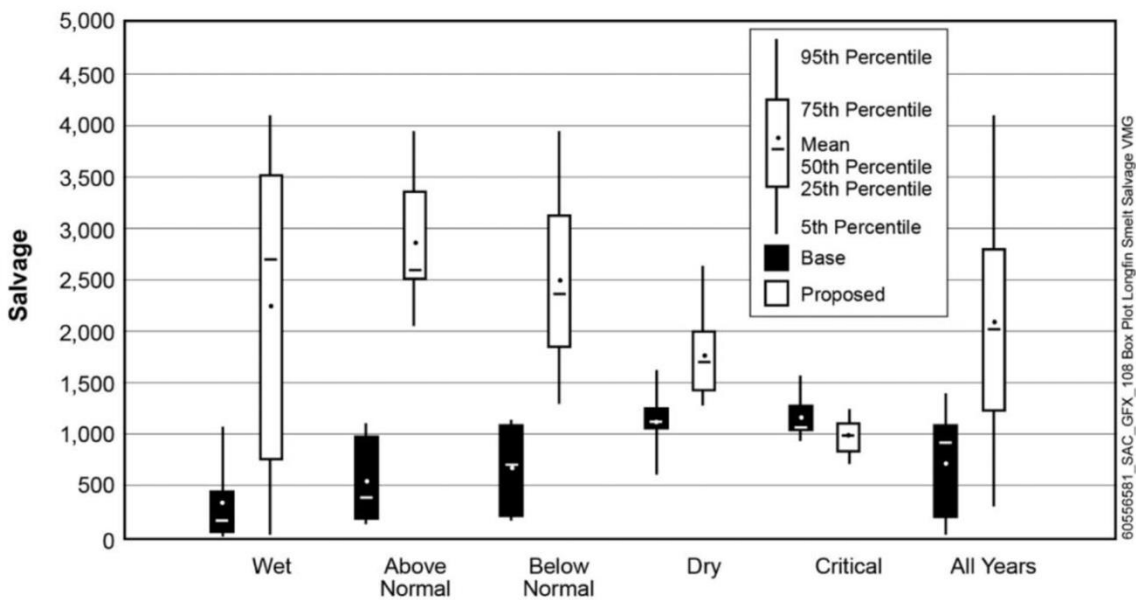
---

<sup>17</sup> We know of no model that integrates changes in patterns of Longfin Smelt entrainment with overall population dynamics, but this does not mean that juvenile and larval entrainment have no effect on the adult population. Indeed, at some level, increased entrainment mortality of early Longfin Smelt life stages must impact overall population abundance and productivity – the Service must acknowledge this fact in its evaluation of proposed alternatives.

<sup>18</sup> Kimmerer and Gross underestimate the exposure of larval Longfin Smelt to entrainment in various ways. For example, they assumed that larval Longfin Smelt were only susceptible to entrainment for approximately 7-13 days post hatching, but otolith data reveal that larval many Longfin Smelt remain in low salinity habitats, which are often within the area affected by water exports, for 100-150 days (Lewis et al. 2019 at p. 9 and at pp. 48-83 of the PDF).

Furthermore, Kimmerer and Gross estimated direct entrainment only during January-March, but larvae remain in the upper estuary through at least May (SWRCB 2010 Table 2 at p. 45; CDFW 2010) and likely into June (Rosenfield 2010; Lewis et al. 2019 at p. 9 and p. 28 of the PDF). The difference in timing is important because (a) it extends the window/opportunity for entrainment, (b) the salinity field moves east as the spring progresses because outflows tend to decline during these months, increasing X2 and likely drawing rearing larvae closer to the export facilities, and (c) OMR flows become significantly more negative during April and May, increasing the exposure of larval Longfin Smelt to entrainment-mortality at the CVP/SWP export pumps.

Recent revisions to the operation of the SWP (DWR 2019) allow for increased water exports in every year relative to the baseline operations under the 2008/2009 biological opinions, including in every April and every May, relative to conditions analyzed by Kimmerer and Gross (DWR 2019 Figs. 4.4-24 at p. 4-147 and at pp. 4-15 thru 4-16; DWR 2019c Table 3.1 at p. 284 of the PDF). This increase in exports, and the increasingly negative Old and Middle River flows (OMR) flows that result, were projected to cause very large increases in juvenile Longfin Smelt entrainment (*e.g.*, DWR 2019 at Figure 4.4.-56, *see below*) and are expected to produce massive increases in particles that are proxies for smelt entrainment during April and May (DWR 2019 Table 4.4-8a at 4-173).

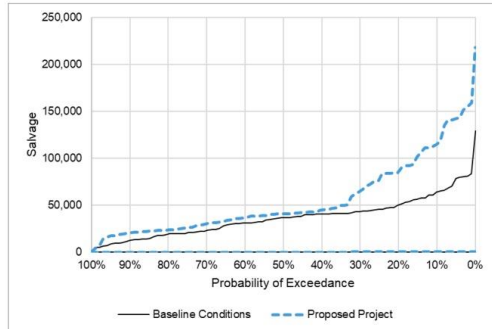


Note: Plot only includes mean responses and does not consider model uncertainty.

**Figure 4.4-56. Box Plot of Longfin Smelt April-May Salvage, from the Regression Including Mean Old and Middle River Flows (Grimaldo et al. 2009), Grouped by Water Year Type**

On top of these impacts (which are now the baseline for proposed reoperation of the CVP and SWP), even more negative OMR flows during April and May are expected to result from proposed CVP/SWP combined operations (SWP 2024 ITP DEIR at Figure 6-52, *see below*) and additional, very large increases in juvenile entrainment will result (SWP ITP DEIR at Table 6-22,

see below); larval entrainment during April and May should also be expected to increase under proposed CVP/SWP combined operations.



Note: Data are sorted by upper 95% limit, with 95% prediction intervals shown.

Figure 6-52. Exceedance Plot of Longfin Smelt April–May Salvage Prediction Interval, Based on the Analysis using the Salvage-Old and Middle River Flow Regression Developed by Grimaldo et al. (2009a)

Table 6-22. Mean Annual Longfin Smelt April–May Salvage, from the Regression Including Mean Old and Middle River Flows (Grimaldo et al. 2009a) and Differences between the Scenarios (Proposed Project minus Baseline Conditions) Expressed as a Percentage Difference (parentheses), Grouped By Water Year Type

Water Year Type	Baseline Conditions	Proposed Project
Wet	1,072.5	1,853.4 (72.8%)
Above Normal	935.7	1,625.9 (73.8%)
Below Normal	396.4	582.1 (46.8%)
Dry	635.1	688.6 (8.4%)
Critically Dry	695.1	771.9 (11.0%)

Note: Table only includes mean responses and does not consider model uncertainty (see Figure 6-52 for 95% prediction intervals)

Furthermore, Old and Middle River flow rates are projected to become much more negative under the VAs relative to the 2008/2009 Biological Opinion and the Board’s baseline during April and May (SWRCB Draft Staff Report Appendix G3a Figure G3a-36 at p. G3a-113), the two months in which juvenile Longfin Smelt are most vulnerable to entrainment and death in the infrastructure of the CVP/SWP export facilities (Grimaldo et al. 2009). Thus, the impact of entrainment and salvage on Longfin Smelt is likely to increase under the VAs.

Moreover, all of these modeling results are likely to underestimate the impact of combined CVP/SWP operations on negative OMR and resulting Longfin Smelt juvenile entrainment because the modeling described above does not account for waiver of environmental standards via temporary urgency change orders during Critically Dry and other years.

For all the reasons above, the draft BiOp’s reliance on Kimmerer and Gross (2022) is entirely inappropriate. In particular, the statement quoted at draft BiOp p. 191 is erroneous even within the context of the Kimmerer and Gross manuscript (the quote is from Kimmerer and Gross p. 2742). Their paper studied the effect of direct larval and juvenile entrainment of Longfin Smelt into the CVP/SWP water export infrastructure. But this is, by far, not the only effect of CVP/SWP operations on Longfin Smelt population biology. Indeed, it is well documented that winter-spring Delta outflow is the most important single variable driving Longfin Smelt abundance. See, e.g., Draft BiOp at p. 199. Kimmerer and Gross did not study the effect of CVP/SWP exports on Delta outflow, or the likely impact of exports on Longfin Smelt abundance via the strong correlation with Delta outflow. The conclusion quoted in the draft BiOp is without basis and the Service should strike it from the final BiOp.

### 3. Tidal Habitat Restoration

There is no evidence that Longfin Smelt are limited by the availability of shallow water environments. USFWS (2022 at p. 56) summarized the empirical support for loss of shallow water environments as a driver of Longfin Smelt decline this way:

“The loss of tidal marsh habitats may have hampered [Longfin Smelt] productivity, but to date, there are no indications that restoration has been sufficient to stem the decline. Therefore, we cannot conclude whether or not the species has lost resilience due to landscape changes that occurred in the 19th and 20th centuries.”

Longfin Smelt occupancy of and recruitment in the restored shallow marsh habitats in southernmost San Francisco Bay appears to be dependent on seasonal hydrology across the region. Lewis et al. (2019 at pp. 44-45 of the PDF) observed successful recruitment of Longfin Smelt larvae in these marshes only in years of locally high freshwater flow into the Bay. During other years, adult Longfin Smelt returning to and spawning in the vicinity of the South Bay Salt Ponds may have represented an ecological sink. And, regarding their detections of substantial numbers of Longfin Smelt west of Suisun Bay, which occurred primarily during the wet years 2017 and 2019 (and, for restored South Bay salt ponds, only during those two years), they state: “... it is valuable to consider whether, with high Delta outflows, it is feasible and probable that larval and juvenile Longfin Smelt found in high numbers in San Pablo Bay, and even Lower South San Francisco Bay, could have been transported from Delta and Suisun Bay spawning sites by currents, tides, and winds” (Lewis et al. 2019 at p. 7 of the PDF).

Furthermore, there is only scant evidence that Longfin Smelt are limited by food production in the estuary. Kimmerer (2002) suggested that a step-decline in Longfin Smelt abundance may have occurred due to grazing of primary productivity by the invasive Amur Clam (*Corbula amurensis*), but this was based only on the observation that Longfin Smelt abundance indices were lower for any given flow after the clam invaded than before the invasion. No other years were investigated as markers of a Longfin Smelt step-decline by Kimmerer (2002), nor was the possibility of a continuous decline in juvenile survival, such as that documented by Nobriga and Rosenfield (2016). We are aware of no study subsequent to Kimmerer (2002) showing a significant positive relationship between Longfin Smelt population size and measures of food availability (Thomson et al. 2010). In fact, MacNally et al. (2010) found a weak, but significant, negative association between Longfin Smelt abundance and their calanoid copepod prey, as compared to a very strong association with spring X2. As described above, there is little or no evidence that meaningful quantities of the prey eaten by Longfin Smelt is exported from restored tidal marshes to the estuarine pelagic zone.

**We recommend that the Service revise and reframe text that implies that tidal marsh restoration will increase food supplies for Longfin Smelt in the pelagic zone (where they live most of their lives) or that such an increase would lead to increases in population abundance or productivity, e.g., see Draft BiOp pp. 208-209.**

## **VI. The Draft BiOp Properly Excludes Certain Actions and Applies the Framework Programmatic Consultation Approach to Certain Actions.**

We would also like to briefly acknowledge and thank the USFWS for a few elements in the draft BiOp.



First, the draft BiOp clearly distinguishes revised actions for inclusion or exclusion in the scope of the analysis from the 2019 BiOps at the beginning of the document. This makes comprehension, review and coordination more transparent.

Second, we support the exclusion of certain actions, such as the proposed Shasta Dam raise operations. It is proper to exclude this highly concerning and problematic project from both the USFWS' analysis and the LTO process overall, especially because it is unlikely to move forward at this time given significant legal and funding challenges.

Additionally, we agree that the USFWS properly considered the Delta Conveyance Project and the proposed Sites Reservoir at a "Framework Consultation" approach, requiring those projects to undergo further ESA review at a later date. This is appropriate given the technical complexity of these proposed projects and the potential substantial impacts they are likely to have on the Delta if approved. *See* Draft BiOp p. 107.

Finally, we support additional coordination between the five agencies responsible for operational decisions and protecting ESA-listed species and habitat, the USFWS, NMFS, BOR, DWR and CDFW. Given the dire state of the Bay-Delta Estuary, the complexity of water operations and the ongoing impacts from climate change, additional coordination and sharing of information is critical to the survival of the ecosystem and all imperiled wildlife.

## **VII. Conclusion**

The undersigned organizations appreciate the Service's efforts to-date to address the impacts of the SWP / CVP on listed species. However, the draft BiOp needs important clarifications and revisions.

In addition to the changes requested in the Proposed Action comment letters, we request the Service modify the BiOp by:

- Including missing critical information such as impacts to Giant Garter Snake,
- Analyzing components of the Proposed Actions such as the Drought Toolkit,
- Clarifying the applied baseline and what actions were modeled,
- Rejecting the BOR's reliance on the Voluntary Agreements, and
- Strengthening flow requirements to be protective of Delta Smelt and Longfin Smelt.

Thank you for consideration of our views.

Sincerely,



Gary Bobker  
Senior Policy Director  
Friends of the River  
[gary@friendsoftheriver.org](mailto:gary@friendsoftheriver.org)



Regina Chichizola  
Executive Director  
Save California Salmon  
[regina@californiasalmon.org](mailto:regina@californiasalmon.org)



Scott Artis  
Executive Director  
Golden State Salmon Association  
[scott@goldenstatesalmon.org](mailto:scott@goldenstatesalmon.org)



Barbara Barrigan-Parrilla  
Executive Director  
Restore the Delta  
[barbara@restorethedelta.org](mailto:barbara@restorethedelta.org)



Chris Shutes  
Executive Director  
California Sportfishing Protection Alliance  
[blancapaloma@msn.com](mailto:blancapaloma@msn.com)

CC: Karl Stock, Regional Director, U.S. Bureau of Reclamation  
Dave Mooney, Bay-Delta Office Area Manager, U.S. Bureau of Reclamation  
Jennifer Quan, Regional Administrator, National Marine Fisheries Service  
Karla Nemeth, Executive Director, California Department of Water Resources  
Lenny Grimaldo, Assistant Environmental Director, California Department of Water Resources  
Paul Souza, Regional Director, Pacific Southwest Region, U.S. Fish and Wildlife Service

Attachments:

1. NGO LTO Draft Proposed Action Comment Letter Part 1 – July 2023
2. NGO LTO Draft Proposed Action Comment Letter Part 2 – August 2023
3. NGO Bay Delta Plan Phase II Draft Staff Report Comments – January 2024
4. Voluntary Agreement Timeline Fact Sheet – July 2024
5. Defenders et al. Letter to Agencies on ITL Exceedance – April 2024

### Literature Cited

Bashevkin, S.M. and B. Mahardja. 2022. Seasonally variable relationships between surface water temperature and inflow in the upper San Francisco Estuary. *Limnology and Oceanography* 67(3)  
DOI: 10.1002/lno.12027

California Department of Water Resources. 2019. Final Environmental Impact Report for Long-Term Operation of the California State Water Project, Application, Volume 2, Appendix A. Available at: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Files/Deliv-42DEIRv1-112119-Volume-II-Appendices\\_a\\_y19.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Files/Deliv-42DEIRv1-112119-Volume-II-Appendices_a_y19.pdf)

California Department of Water Resources. 2019. Final Environmental Impact Report for Long-Term Operation of the California State Water Project, Part III Revisions to the DEIR.docx. Available at: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Files/FEIR-Long-Term-Ops/Revisions-to-the-DEIR/\\_Part-III-Revisions-to-the-DEIR.docx](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Files/FEIR-Long-Term-Ops/Revisions-to-the-DEIR/_Part-III-Revisions-to-the-DEIR.docx)

Compass Resource Management. 2024. CSAMP Delta smelt structured decision making - Round 1 evaluation report. Prepared for Collaborative Science and Adaptive Management Program by Brian Crawford and Sally, Compass Resource Management, in collaboration with CSAMP Delta Smelt Technical Working Group. June 6, 2024 - Draft Version 3.0.

Hammock, B.G., Hartman, R., Slater, S.B. et al. 2019a. Tidal Wetlands Associated with Foraging Success of Delta Smelt. *Estuaries and Coasts* 42, 857–867 (2019).  
<https://doi.org/10.1007/s12237-019-00521-5>

Hartman, R, M. Avila, A. Barros, C. Bowles, D. Ellis, T. Tempel, S. Sherman. 2022. I’m Not that Shallow – Different Zooplankton Abundance But Similar Community Composition Between Habitats in the San Francisco Estuary. *San Francisco Estuary and Watershed Science*, 20(3) .  
<https://escholarship.org/uc/item/7t79h22f>

Hassrick, J.L., Korman, J., Kimmerer, W.J. et al. 2023. Freshwater flow affects subsidies of a copepod (*Pseudodiaptomus forbesi*) to low-salinity food webs in the Upper San Francisco Estuary. *Estuaries and Coasts* 46, 450–462. <https://doi.org/10.1007/s12237-022-01142-1>

Hennessy, A. and Z. Burris. 2017a. Preliminary analysis of current relationships between zooplankton abundance and freshwater outflow in the upper San Francisco Estuary. California Department of Fish and Wildlife Memorandum to: Stephen Louie, Senior Environmental Scientist, CDFW. Dated: 2/21/2017.

Hennessy, A. and Z. Burris. 2017b. Preliminary analysis of recent relationships between zooplankton densities and freshwater outflow in the upper San Francisco Estuary. Presentation to Estuarine Ecology Team (EET), April 20, 2017.

Herbold, B., D.M. Baltz, L. Brown, R. Grossinger, W. Kimmerer, P. Lehman, C.S. Simenstad, C. Wilcox, and M. Nobriga. 2014. The role of tidal marsh restoration in fish management in the San Francisco Estuary. *San Francisco Estuary and Watershed Science* 12 (1).

<https://doi.org/10.15447/sfew.2014v12iss1art1>

Kimmerer, W. J. 2002. Effects of freshwater flow on abundance of estuarine organisms: Physical effects or trophic linkages? *Marine Ecology Progress Series* 243:39–55.

Kimmerer, W.J., Ignoffo, T.R., Kayfetz, K.R. et al. 2018. Effects of freshwater flow and phytoplankton biomass on growth, reproduction, and spatial subsidies of the estuarine copepod *Pseudodiaptomus forbesi*. *Hydrobiologia* 807:113–130. <https://doi.org/10.1007/s10750-017-3385-y>

Lewis L, A. Barros, M. Willmes, C. Denney, C. Parker, M. Bisson, J. Hobbs, A. Finger, G. Auringer, A. Benjamin. 2019. Interdisciplinary Studies on Longfin Smelt in the San Francisco Estuary. 2018-19 Annual Report for DWR Contract # 4600011196. October 2019 DOI: 10.13140/RG.2.2.12944.33280

Lewis, L.S., M. Willmes, A. Barros, P.K. Crain, and J.A. Hobbs. 2020. Newly discovered spawning and recruitment of threatened Longfin Smelt in restored and underexplored tidal wetlands. *Ecology* 00(00):e02868. 10.1002/ecy.2868

Nobriga, M. and J. Rosenfield. 2016. Population dynamics of longfin smelt in the San Francisco Estuary. Disaggregation forces driving long term decline of an estuarine forage fish. *Transactions of the American Fisheries Society* 145(1):44–58.

Polansky L., Newman K.B., Mitchell L. 2021. Improving inference for nonlinear state-space models of animal population dynamics given biased sequential life stage data. *Biometrics* 77:352–361. <https://doi.org/10.1111/biom.13267> [Including appendices available at: <https://doi.org/10.1111/biom.13267>

[SWRCB 2017]. State Water Resources Control Board. 2017. Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows. California Environmental Protection Agency, Sacramento, CA. Available at: [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/california\\_waterfix/exhibits/docs/PCFFA&IGFR/part2/pcffa\\_168.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/PCFFA&IGFR/part2/pcffa_168.pdf)

[USFWS 2022a]. U.S. Fish and Wildlife Service. 2022a. Species Status Assessment for the San Francisco Bay-Delta Distinct Population Segment of the Longfin Smelt. Prepared by: E. Chen V. Tobias, M. Eakin J. Hobbs A. Roessler; Edited by: S. Detwiler & M. Nobriga. <https://ecos.fws.gov/ServCat/DownloadFile/223002>

*NGO comments on draft USFWS Biological Opinion for the long-term coordinated CVP/SWP operations*  
*July 29, 2024*

Yelton, R., A.M. Slaughter, W.J. Kimmerer. 2022. Diel Behaviors of zooplankton interact with tidal patterns to drive spatial subsidies in the northern San Francisco Estuary. *Estuaries and Coasts* 45:1728–1748. <https://doi.org/10.1007/s12237-021-01036-8>