

OUTCOMES MEMORANDUM

TO: Core Working Group

RE: October 26, 2021 Core Working Group Meeting #5

Meeting Attendees

Jacob Katz, Cal Trout
Morgan Kilgour, CDFW
Colin Purdy, CDFW
Bjarni Serup, CDFW
Megan Giglini, CVFPB
Jesus Esparza, DWR
David Pesavento, DWR
Mike Roberts, DWR
Lori Price, DWR
Dane Lowry, Goose Club
Brian Ellrott, NMFS
Julie Rentner, River Partners
Helen Swagerty, River Partners
Rene Henery, Trout Unlimited

Consultant Team

Chris Campbell, cbec
Greg Kamman, cbec
Steve Zeug, Cramer Fish Sciences
Mark Henderson, USGS
Josh Viers, UC Merced
Bruce DiGennaro, Essex Partnership
Terra Alpaugh, Kearns & West
Sharon Hu, Kearns & West

Action Items:

- **Colin Purdy** volunteered to draft sub-bullets to Means Objective 1 to capture the need for hydrologic connectivity.
- **Morgan Kilgour** volunteered to work on language for Means Objective 3 clarifying the interest in increasing riparian habitat and/or better defining “habitat diversity.”
- **Morgan Kilgour** will draft language for an additional means objective around minimizing active management of the floodplain habitat in any design.
- **Project Team** to provide description and timeline for alternatives development and assessment process.
- **CWG members** to provide input on alternatives by December 15.
- **CWG members** to review draft plan sections on existing conditions in the next two weeks (due Nov 9).

Discussion Highlights:

1. Update on CWG and Subteam Activity
 - a. Bruce provided a recap of the August 25 CWG meeting.
 - i. The proposal for this project will be incorporated into the Sutter-Tisdale project.
 - ii. Dos Rios has submitted a proposal to CDFW and DWR which includes agricultural conservation, salmon easements, and site improvements to prolong inundation and allow for volitional passage.

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1. The CDFW, DWR, and NMFS Design Evaluation Team is reviewing this proposal.
- iii. Dos Rios is considering ways to inundate the land earlier and for longer durations.
- iv. The Feather River connection is possible, but elevation and sediment are challenging.
- v. Goose Club has received comments on landscape improvements that can increase inundation in the Sac, Feather, and Butte.
- vi. Cal Trout noted many adult salmon are lost at Tisdale Weir before they can spawn due to the construction at the top of the weir.
- b. Bruce opened discussion on the September 30 Fish subteam meeting.
 - i. CDFW noted that the FEIR for the Tisdale Weir Fish Passage and Rehabilitation Project is available and has implications for this project. The model should include two baselines for current conditions and the new weir.
 1. Currently, when there is overtopping, the fish passage structure will open, i.e., elevation allows for fish passage until the Sacramento River drops below the base elevation.
 2. The frequency and magnitude of floodplain inundation and duration is expected to increase. The magnitude of water will not change substantially, but the frequency of flow into Sutter from Tisdale will double in all water year times.
 3. A reoperation scenario, to open the gate prior to overtopping, is under consideration.
 - ii. Meeting outcomes and discussion topics include:
 1. Adjustment to the fundamental objective to “maintain” agricultural viability and flood conveyance.
 2. Simplifying the conceptual model.
 3. Migration timing, access, rearing, and survival.
 4. Concerns around holding fish in the bypass and delaying outmigration to times that are less favorable.
 5. Holding water to create longer inundation as a different alternative to creating additional flow in the bypass.
 - iii. Trout Unlimited: The subteam also discussed the application of the fish model to understand and evaluate different scenarios (timing and holding fish for downstream impact); the hydrologic threshold for conditions in the river that provide a threshold for releasing fish off of the habitat so that they can expect good downstream conditions.
 - iv. Cal Trout: All scenarios include volitional passage as part of the design. “Release” suggests a mechanism for controlling fish, but in this instance, we are creating favorable habitat for fish to enter and exit of their own

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volition. We are considering control structures, but we are not directing fish by any other means.

- v. Cramer Fish Sciences: The model includes temperature and physiological restrictions that determine when fish switch from rearing to migrating.
- vi. CDFW: We can create migratory cues for fish passage, but we should keep in mind that volitional passage is an assumption, not a given.
- vii. Trout Unlimited: We are discussing scenarios to activate floodplains at times where fish have a range of choices for making volitional passage and encountering favorable habitat downstream.

2. Objectives and Metrics

a. The CWG discussed refinements to the draft means objectives:

- i. Means Objective 1: CDFW suggested emphasizing the importance of hydrologic connectivity (i.e., entrainment potential and access); there needs to be substantive enough flows that there is attraction for entrainment from both sides in order to achieve the fundamental objective for anadromous fish. [**action item**] Colin Purdy volunteered to draft sub-bullets to Means Objective 1 to capture this need.

1. Cramer Fish Sciences explained that the Salmon Benefits Model looks at the timing of runs based on modeling data. The Fish Team is working on figuring out when the hydrologic connectivity would exist to move fish in from each source (e.g., Butte Creek, Sacramento River, Feather River) and which runs would be present.
2. NMFS suggestion [from chat]: Draft language to consider: "...lower Butte Creek to attract juvenile salmon onto the floodplain and provide access off."
3. CalTrout comment [from chat]: Entrainment as a function of a flow split is only one means of fish entering the inundated habitats and one that is not very well understood especially for the smaller sized fish that typify the vast majority of fall and spring run outmigrants.

ii. Means Objective 2: CDFW asked if there was a reason for distinguishing "zooplankton and invertebrates" rather than just saying "invertebrates."

1. Trout Unlimited said it was intended to recognize the fact that they have different mechanisms for increased production, in that zooplankton require specific duration of inundation, etc.
2. Mark Henderson asked if the habitat suitability model separates out zooplankton and other invertebrates; if not, there is no reason to differentiate them in that they will not be able to evaluate differences in the alternatives' ability to deliver conditions for production.

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- iii. Means Objective 3: CDFW requested that the objective be to “increase riparian habitat” specifically rather than “diversity” more generally.
 - 1. Trout Unlimited suggested keeping “habitat diversity,” but providing subbullets that clarify what is meant by that.
 - 2. **[action item]** Morgan Kilgour volunteered to work on language clarifying the interest in increasing riparian habitat and/or better defining “habitat diversity.”
 - iv. Additional means objective: CDFW suggested an additional means objective to minimize active management of the floodplain habitat (e.g., minimize the use of gates restricting flow of water). **[action item]** Morgan Kilgour volunteered to draft language.
 - 1. Trout Unlimited: Fundamental objective describes a suite of conditions we want to accomplish with floodplain activation; supportive of your comment to the extent that you have two equal scenarios in which one minimizes active management, but also would not want to select an alternative that did a worse job of delivering the fundamental objective even if it had some active management.
 - 2. CDFW: Including a means objective does not preclude consideration of alternatives that do not score well on that objective; however, it ensures that consideration gets considered and discussed.
 - 3. CalTrout (in chat): “pre-decisional selection of alternatives”
 - b. CWG skipped discussion of metrics at this meeting to save time.
3. Conceptual Alternatives
- a. *Conceptual Model*: The facilitator presented a conceptual model of juvenile use of the system that could be used to generate alternatives. I.e., each alternative should consider components that affect: entrance to the bypass, habitat quality, growth, bypass survival, exiting the bypass, and downstream survival.
 - i. Trout Unlimited: Timing related to the exit and downstream survival seems very important.
 - ii. CDFW: Agree that the exit bypass mode is very important; it is crucial that this node consider bidirectional travel (i.e., adults moving up the system as juveniles move out). In previous dry years, there has been significant flow fluctuations associated with diversions (which affects survival, upstream migration, and the ability of downstream diverters to divert), so gaging and monitoring of flows in east and west borrow pits and downstream will be important to ensure that bidirectional flow.
 - 1. Facilitator: this conceptual model does not reflect adult needs and agricultural activity well.

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2. CDFW: think it is a good simple juvenile conceptual model. Will need to discuss what falls into different boxes (e.g., timing, duration, predation).
- b. *Proposed Alternatives*: only Goose Club has proposed alternatives thus far; CDFW has proposed things that should be considered in any design. River Partners walked through Goose Club's alternatives; the first two options focus on opportunities to increase access to the bypass for Feather River Fish and require careful consideration of where sediment typically lands and the permitting challenges associated with removing it. The numbers below refer to the numbers on the annotated Goose Club map (provided at the bottom of the summary)
- i. #2,3: Create connectivity above Nelson Rock Weir to the north end of the floodplain. Big question is the ability to make that connection upstream cost-effectively. It would require work upstream and in-channel habitat restoration work. Improvements at that location would have co-benefits by creating infrastructure that could move water and juveniles from the borrow pit, which is currently highly channelized, to the floodplain.
 1. CalTrout: it would require a lot of dirt work and sediment is likely to redeposit there in high water conditions.
 2. River Partners: FMA does not feel like sediment is constricting conveyance, which suggests we could change roughness and not impact flood conveyance significantly.
 3. CDFW: this is a great area for creative solutions: the levees are set far back from the main channel so there is a large area of potential habitat that could be accessed at a range of flows. The reason there is not more habitat diversity is that they bench is so high, it does not inundate frequently. There is a lot of sediment to deal with but great potential.
 4. USGS: Should the means objectives include a cost consideration?
 - a. Facilitator: cost could be considered even if there is not a specific objective.
 - b. Trout Unlimited: Maybe include a means objective to minimize costs, which could be helpful in comparing alternatives of equal benefit.
 - c. River Partners: Suggested language: "minimize capital and long-term O&M costs."
 - ii. #4A, B, C: Make improvements for entrainment where the Feather has jumped out of the bank and carved channels in the past by bringing down the connection, so that it can be accessed a somewhat lower flows; activation of the floodplain could be achieved without the additional costs of recontouring. The northern connection could be used more often, but this could be used at high flows.

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- iii. Create more habitat adjacent to Butte Creek.
 - iv. #1: Around the West Borrow Pit, increase connectivity between Butte Creek and floodplain by breaking down existing infrastructure (berms). This could be done by making passive breaches in the berms and allowing the lowest part of the property to flood more frequently (a fairly low cost option), or by creating a controlled structure to allow volitional passage (higher cost and harder to permit). Agricultural users would need to be compensated.
 - 1. CDFW: This concept will influence Butte Creek fish and potentially fish coming from the Sacramento River side, but until there is an access point for Feather River fish, it will have limited benefit for them.
 - 2. Facilitator: a final concept might need to include multiple pieces in order to achieve the objective of multiple access points.
 - v. Any Goose Club concept would need to complement concepts proposed by Dos Rios given the interactions between the properties.
 - c. *Next Steps*: The CWG needs to flesh out the list of alternatives and then will begin measuring them against the objectives. The SDM process will assess alternatives for a quantitative perspective. At this point, want on-the -ground perspective on why ideas might be good or bad or aspects that might have been overlooked.
 - i. Trout Unlimited request a better understanding of the alternatives development and assessment process. [**ACTION ITEM**]
 - ii. The deadline for providing alternatives is December 15.
4. Draft Plan Sections
- a. The Project Team asked CWG members to review draft plan sections on existing conditions in the next two weeks (~Nov 9). [**ACTION ITEM**]
5. Future Meetings Dates
- a. There is a workshop on alternatives scheduled for November. They may need to adjust that agenda to report on progress rather than present alternatives.