Meeting Summary

FISH WORK GROUP

Thursday October 10, 2019

CDFW Office, Arcata, CA

Thursday, October 10, 2019: 9:30 AM

Participants

Core members: Kyle DeJuilio (YTFP), Steve Gough (USFWS), Brandt Gutermuth (USBR/TRRP), George Kautsky (HVTFP), Ken Lindke (CDFW, coordinator), Seth Naman (NMFS)

Other participants: Shannon Boyle (USFWS), Oshun O'Rourke (YTFP), Eric Peterson (USBR/TRRP), Shane Quinn (YTFP)

Action Items Derived During the Meeting

Action Item 1: Seth will make the following changes to the proposed juvenile rearing temperature target: 1) change the dates per workgroup discussion (see below), 2) define the mainstem Trinity at the North Fork as the compliance point, and 3) superimpose outmigration timing on the temperature time series figures. Target to be finalized one week prior to the November IDT meeting.

Action Item 2: Kyle will finalize the juvenile food production target one week prior to the November IDT meeting.

Action Items Outstanding from Previous Meetings

Action Item 2 (29 July): juvenile rearing temperature and juvenile food production targets will likely be finalized before the next meeting, but the juvenile physical habitat (flow-to-habitat) target will not be finalized by then.

Action Item 3 (29 July): Kyle will coordinate with the physical work group to incorporate the concepts of proposed target 2.2 from his juvenile food production presentation into targets being developed by the physical work group.

Summary of Meeting by Agenda Item

During the agenda review Kyle requested that we add to the agenda a discussion on agenda items for the next meeting. This was added to the end of the agenda and is summarized below.

Means objectives and targets: juvenile rearing habitat-to-flow relationships

Lindke updated the group on progress since the 29 July meeting, but the target is not completed. He shared figures and a table from a draft habitat report being prepared by USFWS, courtesy of Josh Boyce, that showed flow-to-habitat curves at seven restoration sites where total and optimal presmolt habitat was measured before construction, shortly after construction, and several years after construction. Habitat was physically measured on the ground at each location and time (as opposed to WUA or capacity model outputs). These data may be the only readily available data to assess the long-term habitat gains observed at "successful" restoration sites, which will be used to define a target. Ken also informed the group that the subgroup is actively working on soliciting a list of "successful" sites from the habitat team and will then look for available data on long-term performance.

DeJuilio pointed out that the subgroup needs to define a metric (e.g., WUA or capacity) for the target and suggested the subgroup consider wetted area. He also suggested defining the range of flows to be evaluated for the target and pointed out that physical measurements of habitat are limited to flows that can be safely measured in-stream whereas modeling, such as WUA or capacity can include higher flows. Naman suggested including an expiration date on the definition of "long-term" so that the Program isn't penalized if natural geomorphic processes cause change many years after restoration. This is consistent with the Program objective of restoring natural river processes. Dejuilio listed Lower Junction City, Indian Creek, and Upper Dark Gulch as sites with long-term success.

Means objectives and targets: juvenile rearing habitat food resources

DeJuilio gave a quick recap of the target and progress made since the last meeting. The subgroup realized that the scouring flow necessary for resetting macroinvertebrate succession depends on the location. When it's 6,000 cfs in Junction City, it's lower upstream, and potentially much lower closer to Lewiston Dam. He indicated that the subgroup needs to define a location. Alternatively, the target could be defined in terms of the percent of the 40-mile restoration reach that experienced the minimum scour thresholds, with a target of 100% experiencing a green ranking (see below). A stoplight-like ranking system for the target was proposed that had four categories defined by whether or not scouring flows occurred either 3-18 months or 1.5-3 months prior to peak Chinook Salmon emergence from the gravel, as follows:

18-3 months pre-emergence	3-1.5 months pre-emergence	Rank
N	N	Red
N	Y	Green
Y	N	Yellow
Y	Y	Green

Lindke and Peterson asked if there is a real difference between the two green rankings. DeJuilio responded that the current understanding is that if a scouring event occurs within 3-1.5 months

pre-emergence, it doesn't really matter if scouring events had occurred prior to 3 months. Lindke and Peterson recommended combining those categories. DeJuilio concurred. Conversation then turned to the question of whether ground truthing of the scouring mechanism and macroinvertebrate succession timing is needed in the Trinity. DeJuilio stated that there is a lot of literature supporting the underlying hypotheses of the target. He agreed to compile literature on the subject and evaluate whether ground truthing in the Trinity is necessary. He also agreed to continue working with the physical work group to incorporate concepts from the proposed target 2.2 from the presentation on food production targets from the 29 July Fish work group meeting.

Means objectives and targets: juvenile rearing temperature

Naman reported on progress for this target. No changes had been made since the 29 July meeting, but he recommended changing the start date (originally proposed as March) to mid-April or early May because we often see temperatures below 13.5° C in March in local unregulated rivers. Lindke again raised the issue of using a single point of compliance (currently Douglas City) when higher resolution modeling data exists and fish use is expansive. Naman pointed out that point compliance is less of a concern for this target because it is a range. If temps are within the range at a point of compliance, then areas upstream and/or downstream of the compliance point will also be within range. The group then discussed where a compliance point should be for this target and settled on the mainstem Trinity River at North Fork. This location is at the downstream end of the restoration reach and it is co-located with juvenile outmigration data from the Pear Tree screw trap.

Means objectives and targets: harvest fall Chinook Salmon

Quinn and Kautsky reported that no changes had been made to this target, but the target was essentially ready to go at the last meeting. Lindke had provided the recommendation to define the target as a mathematical equation(s) so that it could be adapted if the escapement target is changed in the future. Kautsky agreed to make this change and clean up a few other typos in the write-up.

Means objectives and targets: new subgroups

The following new subgroups were formed:

Objective: reduce brown trout population to decrease predation on and competition with native naturally-produced fish.
Subgroup members: Justin Alvarez (HVTFP), Shane Quinn (YTFP), Shannon Boyle (USFWS)

Objective: Increase naturally produced spring-run Chinook Salmon adult production to the extent necessary to meet or exceed escapement objectives and facilitate **expanded harvest opportunity**.
Subgroup members: George Kautsky (HVTFP), Shane Quinn (YTFP)

Objective: Provide thermal regimes to promote spawning success of spring and fall Chinook Salmon.
Subgroup members: Kyle DeJuilio (YTFP), Steve Gough (USFWS)

Pre-proposals for flow management: who's doing what?

Various folks attending the meeting either volunteered themselves or others from their agencies not in attendance to work on the following fish-related pre-proposals:

#1 Can variation in the timing of juvenile outmigration from the Trinity explain variation in survival and be influenced by water management?
Nick Som (USFWS), Shannon Boyle (USFWS), Oshun O'Rourke (YTFP), and Chris Laskodi (YTFP)

#2 Can flow management tailored to meet temperature targets be an effective tool to reduce pre-spawn mortality and induce pool temperature stratification for adult salmon holding habitat?
Dave Gueman (YTFP) was added to the list of folks determined at the 26 September meeting

#5 Evaluate how the connectivity timing, controlled by flow management, of intermittently connected off-channel habitats impacts fish use and survival.
Taylor Daley was added to the list of folks determined at the 26 September meeting

#6 Apply the S3 model in conjunction with observed fish size data to evaluate assumptions regarding percent maximum consumption and food as a limiting factor for Chinook Salmon juveniles.
Kyle DeJuilio (YTFP), Justin Alvarez (HVTFP), Nick Som (USFWS), Chris Laskodi (YTFP)

#10 Evaluate the impacts of higher discharge winter flows on intergravel water temperatures
Steve Gough and Shannon Boyle said there are existing USFWS reports on intergravel temperatures, so maybe this study is unnecessary. Kyle will follow up with Damon Goodman.

Fish work group annual work plan for Jan-Sept. 2020

The following topics were proposed by various folks in attendance. We anticipate holding meetings in January, April, and July.

- Continue development of targets
- Review flow-management pre-proposals
- Provide flow work group with fish-centric priorities for upcoming 2020 flow scheduling
- Review and discuss synthesis reports recently submitted for peer review, receive presentations from PIs

- Receive presentation(s) from guest speaker(s), including for relevant topics outside of the Trinity River
- Evaluate compatibility among various temperature targets for juveniles and adults. Develop new juvenile outmigration temperature target(s) if warranted
- Organize and participate in a field visit, e.g., a group snorkel dive
- Future management of Hamilton ponds
- Provide comments to Design work group on construction site designs (e.g., Oregon Gulch and Sky Ranch 60% design reports)
- Discuss and make decision on a fish habitat method (e.g., WUA, capacity, wetted area) to be used across the Program. Receive presentations if necessary.

Changes to Program management actions in the context of adaptive management

The following examples of changes to management actions due to some learning within the Program were discussed:

- The fish work group recommended eliminating ramp down rate restrictions from November to mid-April because they were premised on a perceived diurnal effect of fish getting stranded behind riparian berms. This type of stranding no longer seems to be an issue, and the diurnal effect seems to have been ill conceived. Changes in flow releases propagate downstream so nighttime restrictions could result in the opposite of the desired effect if you get far enough downstream. The recommendation was adopted by the TMC.
- The hydrograph in 2017 was designed to have two high peaks to provide two opportunities to engage off channel habitat and increase thermal diversity. This hydrograph was implemented and the effects on temperature were monitored. This led to additional monitoring in 2019 and a pre-proposal will be submitted to formally study the benefits of thermal diversity on fish growth.
- Gravel augmentation volumes were reduced considerably from what was proposed in the ROD
- Diurnal flow variability was included in the 2019 hydrograph to better mimic natural flow variability.
- Large wood design changed to locate LWD structures at the upstream opening of constructed side channels instead of the downstream end.
- The 2,000 cfs bench intended to provide suitable temperatures for juvenile salmonids, as prescribed in the ROD, was changed to the riparian recession to promote establishment and succession of riparian plant communities
- The ramp-down rate of the riparian recession was slowed down to coincide with the rate of willow and cottonwood root growth
- The benches at peak flow prescribed in the ROD were changed to short duration peaks. The assumption underlying benches at peak flow was that geomorphic work would continue at the same rate for the duration of the peak flow, but that assumption was false.

- Early restoration designs targeted 6,000 cfs for floodplain inundation, but the target flow has been reduced since. Current designs target floodplain inundation at flows ranging from 2,000-4,500 cfs.
- Floodplains used to be built with the same slopes as the mainstem channel in the longitudinal direction. Now floodplains are built at a lower angle such that the downstream end is at a higher elevation relative to the water surface elevation than the upstream end of the floodplain.
- Past designs lowered point bars and vegetation adjacent to deep pools, which caused some pools to fill due to slower water velocities spread across a wider channel. Now, constrictions caused by point bars and vegetation are maintained to maintain deep pool habitat.
- Early restoration efforts assumed that riparian vegetation below the 6,000 cfs elevation would reestablish itself, which didn't occur. Planting below 6,000 cfs started and was refined in subsequent years to include watering and soil augmentation where needed.
- Lowden – First example of intentional dynamic construction in which channel widening was hypothesized to augment/grow an existing median bar, instead of constructing the bar.
- Contrary to maximum flows prescribed in the ROD for dry water years, a 10,000 cfs peak was released in one dry year after several successive dry years without a 10,000 cfs scouring peak flow. People were concerned that willows would become too established, making them no longer vulnerable to scour at maximum flow releases.

Agenda items for next meeting

- Objectives/targets: spring Chinook Salmon harvest and controlling the brown trout population
- Review fish-centric flow-management pre-proposals listed above
- Provide flow work group with fish-centric priorities for 2020 flow scheduling
- Receive presentations on and have discussions on fish-centric synthesis reports that have been submitted for peer review by the time of the meeting
- Receive presentation from Kyle Hopkins on monitoring effort for thermal diversity and fish use of off-channel features.

4:00 PM Adjourn