

Upper Sacramento River Monitoring Project Work Team Annual Meeting- 2019

Date: Wednesday March 20, 2019

Time: 10:00AM – 4:00PM

Location: Tehema County Department of Education (1135 Lincoln St. Red Bluff CA 96080)

Host Agency: National Marine Fisheries Service

Notes: Lyla Pirkola, NMFS

Mission/Purpose:

The Upper Sacramento River Monitoring Project Work Team mission statement is "To meet on an annual basis to facilitate communication and information exchange among the agencies monitoring Chinook salmon and steelhead in the Upper Sacramento River Basin."

The team traditionally meets in March to coordinate exchange of study plans prior to the upcoming field season. Since its formation, we have extended data sharing to include Green Sturgeon studies and ecological monitoring in the Upper River.

In more recent years, at least half of the annual meeting has focused on informal oral presentations of the results of the monitoring activities conducted in previous years. The annual meeting chair rotates each year among US Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife, National Marine Fishery Service, US Bureau of Reclamation, and the California Department of Water Resources. The year-to-year primary contact for the PWT is James G. Smith - USFWS, Red Bluff Fish and Wildlife Office.

Select Acronyms:

BY	Brood year
CNFH	Coleman National Fish Hatchery
CWT	Coded wire tag
FCS	Fall-run Chinook salmon
LAD	Length-at-date
LCS	Late fall-run Chinook salmon
RST	Rotary Screw Trap
SCS	Spring-run Chinook salmon
STT	Steelhead trout
WCS	Winter-run Chinook salmon

Introductions/attendees:

Name	AGENCY	EMAIL
Alber, Leslie	CDFW	leslie.alber@wildlife.ca.gov
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Warden, Kaitlin	PSMFC	kwarden@psmfc.org

Monitoring Updates (Round Table):

Central Valley Angler Survey Updates (James Lyons, CDFW)

- Total salmon effort ~800,000 angler hours which yielded a harvest of 26,131 salmon Central Valley wide.
 - 25,009 FCS (96%)
 - 16,274 adults
 - 8,735 grilse
 - CWT analysis showed 74% hatchery origin (26% natural)
- In the Upper Sacramento River management zone there were 7,203 FCS harvested.
 - 73% hatchery origin (27% natural)
 - In addition 474 LCS were harvested in the Upper Sacramento Management zone

Red Bluff Juvenile Monitoring Update (Bill Poytress, USFWS)

- 9 GST tagged this season (2018) compared to 50 in 2017.
 - 7/9 made it to the I-80 Bridge.
- Red Bluff Fish and Wildlife Office maintaining the array of acoustic receivers in the Upper Sac.
- Genetic results show chinook designated spring-run based on LAD were genetically WCS up until ~mid-November.
- Upcoming: 2D array using Vemco or JSAT tags for GST habitat analysis.

Butte Creek and Big Chico Creek Monitoring Update (Clint Garman, CDFW)

- Sampling efforts have been limited based on concerns due to Camp Fire.
 - No RST at this time, only side diversion sampling
- BY 2019 adult SCS started entering Butte Creek March 2, 2019
- Reports of SCS observed in Big Chico Creek (Salmon Hole, Upper Bidwell Park)
 - Surveys did not find any SCS
- Upcoming: Chico area acoustic tagging

Tisdale RST Monitoring Update (Presented by Diane Coulon, CDFW)

- 2018-19 is the 9th season of trapping at Tisdale Weir
 - 46 SCS
 - 271 WCS

- Genetics being sampled for LAD

Coleman NFH Update (Presented by Bob Null, USFWS)

- FCS releases, 1.4million in early March, releases will continue until Mid-April
- WCS releases into Battle Creek
 - 185,000 WCS planned to release in March
 - Left ventral fin clip on WCS
 - Some will be acoustically and PIT tagged this year
 - Releases will occur at both Coleman and Butte City for the purposes of a straying experiment
- Please send requests for fish to CNFH early
 - by October, before Oct-Feb spawning period

Side Channel Restoration and Light Study Updates (Mike Berry, DWR)

- Completed ~4miles in total
 - Anderson River Park, Reading Island, and Rio Vista
- East Sand Slough is about 1yr out
- Upcoming:
 - meeting to prioritize ~20 more restoration sites from Keswick to the Feather River
 - 2020 Sundial Bridge light/predator study
- Light study: as little as 1 lumen (L) could cause higher predation
 - Some bridges have up to 35L
 - Looking at bridges on the Sac River, Feather River and Butte Creek

AFRP passage and Marijuana Study Update (Presented by Tricia Bratcher, CDFW)

- Antelope Creek fish passage begins construction in the fall, will address juvenile stranding.
- Passage on the Deer Creek Irrigation District Dam has been funded and construction will start this year- flow dependent.
- Fish passage for Stanford-Vina Dam on Mill Creek is in the design phase
- Data collection ended in December, results will be presented at SRF

Butte Creek AFRP Update (Jim Earley, USFWS)

- Butte Creek post Camp Fire efforts
 - Erosion control was placed after the fire before the first rain
 - Effort between CVPIA, CDFW, and Friends of Butte Creek
 - Upcoming: Sutter Bypass and Butte Creek monitoring on variety of factors including survival, water quality, etc.

Army Corps Update (Robert Chase, USACOE)

- Permits- Letter of Permission (LOP) and Nationwide (NWP) permits may cover maintenance and operation activities, check with the Redding office
- Upcoming: Efforts in Lower Sac for planting and monitoring in leveed area

Clear Creek Update (Charlie Chamberlain and Matt Brown, USFWS)

- Flows and turbidity on Clear Creek have prevented kayak spawning surveys.
- Upcoming:
 - Restoration of the last Clear Creek floodway (phase 3C) which will redirect to the old alignment. Will involve beaver dam analogs and opening up floodplain.
 - ~8,500 tons of gravel at 3 sites
 - Experiment at Page Bar using a wider size distribution of gravel (July/August 2019)
- Clear Creek adult estimate was 29 individuals which is ~1/3 of the ten year average

Glenn-Colusa Irrigation District Dam (Josef L.)

- 2018 RST sampled 249 days
 - 278 SCS
 - 882 WCS
 - 49 STT
 - 1 GST

PRESENTATIONS

Upper Sacramento River Basin Salmon and Steelhead Escapement Updates (Doug Killam, CDFW)

- LCS 2017-2018
 - 1193 total, 1128 adults (96%); 87% natural origin
- WCS 2018
 - 2638 total, 1885 adults (71%); 17% natural origin
- FCS 2018
 - 9435 total, 4686 adults (50%); 78% natural origin
- Tributaries – 2018 Escapement Monitoring:
 - Clear Creek → 8547 FCS; 20% hatchery
 - Cow Creek → 1164 FCS; 49% hatchery
 - Bear Creek → 34 FCS; 0% hatchery
 - Cottonwood Creek → 450 FCS; 55% hatchery
 - Battle Creek → video station: 24,219 (pending CNFH review) ~10,000 in creek
 - Antelope Creek → 0 FCS, 1 SCS (used VAKI counter)
 - Mill Creek → 152 SCS; 611 FCS
 - Deer Creek → 159 SCS; 124 FCS
- FCS escapement by watershed
 - 44% Upper Sac
 - 37% Feather
 - 19% American

Sacramento River Redd Dewatering and Juvenile Stranding Project Annual Summary (Stephanie Serritello, PSMFC)

- WCS:
 - 31 redds marked, 1 dewatered
 - 7,700 WCS juveniles rescued after flow drops
 - Female spawn timing was later than the 2000-2017 average
- FCS
 - 407 redds, 202 dewatered
 - RM 288-295 had a majority of redds dewatered
- LCS
 - 36 redds, 0 dewatered (majority of redds above ACID)
- Juvenile Salvage
 - 2017-2018: 8558 juveniles
 - 2018-2019: 8843 juveniles to date
- [Story map on Calfish](#)
- Genetics: caudal clips were taken 2018-2019 from 4 WCS and 29 LCS (LAD)

Sacramento River Habitat Restoration Monitoring (Mike Memeo, PSMFC)

- Monitoring using snorkel/sein, red surveys, side channel mapping, and condition of fish inside v outside of side channels
- 16 total sites to be monitored
 - 5 completed
 - 5 control
 - 6 pre-project
- Initial findings:
 - Fry: ~99% <2ft/sec, ~90%<0.8ft/sec
 - Juveniles: ~90%<2ft/sec
- This data informs design/engineer team on what hydrology is preferred
- Side channels have already demonstrated use by yearlings and out migrating fry.

VAKI River Watcher Use in the Upper Sacramento River (Brian Krempasky, PSMFC)

- What is VAKI? An instream aluminum tunnel with an underwater camera, glass viewing window, downstream scanner and display above the high water mark
 - Objects > 40mm trigger video
- VAKI is in place in the fish ladder on Antelope Creek and in 2 fish ladders on Deer Creek
- It was found helpful to use pickets to guide fish into the VAKI and to use metal screen to limit disturbance of water (i.e.: false readings) within the tunnel.

Upper Sacramento Steelhead Monitoring (Tom Clifford, PSMFC)

- 4th monitoring season
- Objectives:
 - PIT arrays in Upper Sac
 - Video, DIDSON, VAKI, etc. for monitoring in tributaries
 - RST in tributaries for PIT tagging
- RSTs in Deer and Mill Creek have been effective for STT smolt tagging
- Resistance board weirs provide late season opportunities for STT monitoring
- Future objectives:
 - Identify spatial distribution
 - Genetic tissue sampling to determine anadromy
 - Evaluate monitoring, research and management goals
 - Redd surveys

Clear Creek Spring Pulse Flow Monitoring Update (Charlie Chamberlain, USFWS)

- Pulse flows mandated (~600cfs) in Clear Creek for temperature requirements and to attract SCS
- Snorkel surveys are done pre/post pulse
 - An upstream shift is usually seen after pulse
 - Analysis is based on distribution rather than individuals, new fish entering the creek may skew numbers
 - Plans to shift from August snorkel surveys to video monitoring soon
- 2019: 700cfs in May; 500cfs in June
- Thermal gradient may have an influence in pushing fish upstream

- 2018 analysis did not detect significance

Temperature and Discharge Predictors to Egg to Fry survival for Spring-run Chinook Salmon Spawning in Clear Creek (Sam Provens, USFWS)

- Model for temperature and discharge influence on SCS egg to fry survival
- Utilized data from
 - Redd surveys (snorkel)
 - Juvenile outmigration (RST)
 - Temperature and discharge from loggers and USGS
- 4 models were compared...
 - Replication of the Martin 2016 temperature dependent mortality model
 - Discharge mortality
 - Thermal sensitivity
 - Discharge and thermal sensitivity
- The fourth, temperature and discharge better describes mortality
- Temperature at a redd site could better predict survival compared to downstream control

Central Valley Spring-run Chinook Salmon Life-Cycle Model (Flora Cordoleani, SWFSC)

- Model uses data from Butte, Mill and Deer Creeks from 1990-2017.
- Applicable in understanding population dynamics, environmental factors and to predict the impacts of management decisions.
- Model identifies 7 regions used by SCS and 70 different model parameters
 - Parameters differ slightly between Butte Creek and Mill/Deer Creek
- Three main factors identified
 - Influence of summer stream temperatures
 - Influence of Delta rearing capacity
 - Influence of Sacramento River flows
- Sacramento River spring pulse flow proposal
 - Early May- 3 day 10,000+cfs through Wilkins slough
- SCS otoliths, scales, and eyeballs being collected by Rachel Johnson
- May 1-2 SCS PWT meeting at NMFS Sacramento office.

Implementation of the Final Recovery Plan for the Southern Distinct Population Segment of North American Green Sturgeon (Page Vick, NMFS)

- Final recovery plan was published in August 2018
- Identified recovery criteria, 5 demographic and 5 threat-based
 - Habitat connectivity (water operations)
 - Contaminants (adults and fecundity)
 - Take (poaching)
- Past recovery actions included the RBDD decommissioning
- Fremont Weir and the Sunset Pumps are current recovery actions
- GST spawning has occurred in both the Feather and Yuba since their listing
- Future: SCUTES outreach similar to east coast [program](#).

Fremont Weir Adult Fish Passage Project (Lauren Miele, CDWR)

- Former fish passage:
 - Denil style, manually opened, no baffles
 - 4+ known stranding locations
- Fisheries engineering technical team determined passage criteria
 - At least 3 feet deep and less than 6ft/sec velocity
 - based on sturgeon swim test
- Operational scenarios
 - Gate opens at 31.8' and stays open for 3 days
 - Gate opens at 31.8' and stays open for 1 day, opens again at 27' for no longer than 5 days.
- Monitoring
 - Stranding/rescue
 - Telemetry- combined array for depth/velocity
 - Hydraulics
 - ARIS
- Future possibilities:
 - Remote ARIS monitoring
 - Upstream ARIS
 - Maximize solar panel efficiency
 - Increase slurry to cut down on maintenance after flow events

2020 Meeting

Host: CDFW

Date: March 18, 2020

Time: TBD

Location: TBD