

## OUTCOMES MEMORANDUM

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**TO:** CAMT Members  
**FROM:** Bruce DiGennaro  
**DATE:** March 23, 2020  
**RE:** March 17, 2020 CAMT Meeting #89

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**Attendees:** Ben Geske, Brycen Swart, Carl Wilcox, Cathy Marcinkevage, Darcy Austin, Deanna Sereno, Denise Reed, Erik Loboshefsky, Erin Cole, Eva Bush, Frances Brewster, Jason Peltier, Kate Spear, Kaylee Allen, Larry Brown, Linda Smith, Louise Conrad, Rachael Klopfenstein, Rachel Johnson, Rebecca Buchanan, Rene Henery, Sam Luoma, Scott Hamilton, Steve Culberson, Ted Sommer

### Action Items:

- Larry – follow up with Bay Delta Live regarding hosting Float MAST updates
- All – provide feedback on Larry’s draft presentation by 3/24
- Bruce – add “formally adopting DSSP” to 5/13 Policy Group agenda
- Brycen & Brittany– integrate DSSP recommendations and Pat’s observations in tracking sheet
- All – provide input to Bruce regarding how to move forward with Rebecca’s presentation by 3/24
- All – provide feedback on Retrospective by 3/31

### Discussion Highlights:

1. Agenda and Updates
  - It appears that there was high early-life stage mortality in fall run Chinook at Coleman and some in-river systems (e.g., Feather River) due to thiamine deficiency (resulting from salmon being lower in the system and eating more anchovies). This appears to be a Central Valley issue. USFW is leading the response. Placing juveniles in a thiamine bath seems to remedy the problem. Currently in the design stages of studies to see whether injecting females when they return is a viable solution (could be used for winter and spring run)
  - Maria Rea (NMFS) is starting a phased retirement at the end of March. Cathy Marcinkevage will be acting ARA.
2. Preparation for May 13 Policy Group Outflow Presentation(s)
  - Proposed 5/13 Policy Group agenda:
    - Longfin Smelt Symposium Summary
    - CSAMP Retrospective and Management Questions
    - Outflow Presentations
    - Other Relevant Science Activities
      - Frank’s Tract
      - Winter Run Life Cycle Model update
      - SFEI Rearing Habitat Study
      - Delta Smelt Science Plan Implementation
  - Delta Smelt Science – Float MAST Report (*Brown*)
    - Status of 2017 FLOAT MAST

## Facilitator Notes, Not Reviewed or Approved by Meeting Participants

- Revisions complete and forwarded to IEP to review and publish
- Basic conclusion is that high flows alone are not sufficient to increase Delta Smelt population
- In 2017, high temperatures were likely a major reason that Smelt population did not increase
- Context for Evaluation
  - Is only looking at wet years too limiting?
    - Yes, but Float MAST was asked to assess smelt population response to Fall-X2
    - Broadened to encompass preceding summer conditions
    - Will extend analysis to all seasons and water year types (in line with DSSP focus on ambient conditions)
  - Post-POD period is baseline for most analyses
- What do we know?
  - What happened in 2019?
    - Not clear yet
    - Data that requires laboratory processing (e.g., phyto, zoo, otoliths) has yet to be generated from samples
    - Standard monitoring can be displayed fairly quickly but is still hampered by lack of a central database
      - ◆ Most standard monitoring data is already displayed on Bay Delta Live, less of an issue for 2019
        - ◇ Is the goal to provide links to data or house data in a central location? Not clear whether people know what data is available where
          - Creating a path through DSSP to have quick access to data would be very helpful
          - Have been trying to solve this problem through IEP for years (most recent issue is ADA compliance which makes it hard to post complicated data sets)
  - New monitoring and studies have contributed to understanding
  - Other factors besides flow (e.g., food, turbidity, temperature) are important but relative importance varies among life stages, seasons and years
- Population Size
  - Is Smelt population too small to respond?
    - Current standard monitoring is at the margin of detection
    - Enhanced monitoring is still catching a few fish
    - Most IEP monitoring programs have some catches with zero Smelt
    - Still a debate as to whether Allee effects are occurring. Could possibly be addressed by new assessment of wild population genetics but there's a danger in chasing fish down the extinction spiral
    - Comments/Questions
      - ◆ Consider using surrogates (cultured fish)
      - ◆ Consider using other metrics besides fish population to gauge impacts of

actions. Monitor full life cycle conditions needed to support Smelt.

- Next Steps
  - Integration of ecologic understanding of life cycle with models will determine if there are new variables that need to be monitored and if existing monitoring needs to be expanded temporally/spatially; maintain ability to do directed studies of ecological processes
  - More efficiently providing information to managers:
    - Short term
      - ◆ Continue Float MAST effort but release as chapters online rather than a single comprehensive report (similar to the Delta Smelt Conditions Report)
      - ◆ Annual interpretive summary
        - ◇ May not be able to achieve consensus
        - ◇ May not meet peer review requirements
      - ◆ Consider more presentations, shorter written products in journals, embedding in DSSP
      - ◆ Consider Suisun Marsh and North Delta Action online updates on Bay Delta Live as a model for sharing
    - Long term
      - ◆ Implement a Delta Smelt Science Plan
        - ◇ Appoint a leader with authority along with staff and resources
- Comments/Questions
  - Should we continue doing flow actions? Presentation doesn't currently address this question and it may come up at 5/13 Policy Group meeting
    - Last population bump was in 2011 when there was a flow action, assumption is high flow helped and that in other high flow years where there wasn't a population bump there were other negating factors (e.g., temperature spikes, etc)
      - ◆ There is no data that would suggest we should take flow actions off the table
      - ◆ Consider more targeted geographical flow actions
      - ◆ When there are higher flows, ecological conditions seem to be better
      - ◆ Currently developing tools and conducting studies to better understand historic conditions (e.g., ambient temperatures)
      - ◆ Build bridge into presentation to SDM work

### 3. DSSP Implementation

- Tracking sheet
  - 9 recommendations from DSSP
  - Beta observations/recommendations from Pat's recent report
- Developing tracking sheet into action plan (Brycen to lead, Brittany to provide support)
- Questions/Comments
  - Have we formally adopted DSSP and if not, should we?
    - Never formally adopted
    - Consider asking the Policy Group to formally adopt the DSSP
  - Would this be a CAMT action plan or would another agency host it and report out to CAMT? How

does this integrate with existing efforts (augment/replace)?

- DSSP was written with the intent of it being under CAMT (but could be adapted)
- It should be a CSAMP initiative (i.e., administered by CSAMP)
  - Will need to work through mechanics of coordination/communication between agencies and conduct outreach to explain plan

4. Relating survival of San Joaquin salmon and steelhead to river flow and operational conditions (*Buchanan*)

- Key takeaways:
  - Fall run Chinook survival through the Delta has stronger associations with conditions in mid-Delta than with Delta inflow at Vernalis
  - Different regions have different flow-survival relationships
  - Chinook and steelhead have different flow-survival relationships
- Survival Data
  - Head of Old River to Chipps Island
    - Steelhead is notably higher than Chinook
    - No single route stands out as being better for survival
  - Head of Old River to Turner Cut
    - Improved survival for Chinook
    - Variability by year for Steelhead
  - Turner Cut to Chipps Island
    - Variable for Steelhead
    - Low for Chinook
  - Covariates identified primarily by SST Gap Analysis (plus Temperature, X2, Fish Size, Time of Day)
    - Chinook – key covariate is flow at Bacon Island
      - Most fish from both Old River and San Joaquin did not pass Bacon Island
      - Bacon Island conditions represent conditions in lower Delta region
      - Most fish detected at Chipps Island came via CVP holding tank
    - Steelhead – key covariate is Delta inflow at Vernalis
      - For Turner Cut to Chipps largest factor is migration route
- Relation to SST Key findings
  - Through-Delta survival has been consistently low for Chinook – supported
  - Smaller fish usually experience lower survival than larger fish – supported
  - Direct mortality at the facilities does not account for majority of mortality in Delta – supported
  - Relationship between San Joaquin inflow and survival is variable and depends on barrier status and region of the Delta – supported
  - Extent to which reduced negative OMR flows and I:E affect through-Delta survival is uncertain
    - Steelhead - supported
    - Chinook - not supported (likely due to CVP holding tanks being most successful route)
- Comments/Questions
  - What is the time period of the migration periods?
    - Chinook: mid-April – May
    - Steelhead: February/March – May
  - Is the data based on hatchery releases?
    - Yes

- Given steelhead releases scheduled under new ROD and continued support for six-year study – have you been in contact to help plan/make improvements?
  - Yes, currently engaged in discussions. Suggestion has been made to do some downstream releases in future years to get better information on survival downstream of Turner Cut. Could help understanding of route selection.
- Did you see any evidence of long-term decline in survival over the years?
  - Numbers are lower than 2010; 2015 numbers were abysmal – consistent with a decline in survival but doesn't prove it (limited time series including a drought is not conclusive)
- Seems like there is evidence of high survival in wet years, and potentially an association between run timing and survival – how could we dig into this more?
  - Was expecting to see higher survival for 2011 and 2017 but only saw this for certain regions (not overall scale of Delta). It's possible that high survival isn't associated with smolts (which were the focus of this study). We need more information about how different juvenile life stages use the Delta and how this relates to adult returns – acoustic telemetry is missing the smaller fish. Consider pit tags and otolith to determine when and from where fish are returning. 2011 releases missed the peak of the flow – ideally would have released fish earlier. In future studies, try to include more releases under more conditions.
- Should one of our goals be to seek more complicated/granular metrics in regulations?
  - Hard to say which co-variates should be the basis for policies. For Chinook, OMR might be a better measure than Delta inflow for downstream reaches (at least for this data set).

5. CSAMP Retrospective and SAA Input on Management Needs

- Retrospective would frame current management questions/needs which would be a slice of larger SAA effort to identify management needs
- 104 science and management questions identified by CAMT in 2013, 19 of which were used to guide technical studies. Other questions were set aside as CAMT started looking at species recovery more broadly.
- Recent management questions oriented around how species are responding to various conditions
- 11 CSAMP technical reports completed over the past seven years
- Report card analyzes 19 questions that CAMT tried to answer
- Findings:
  - Delta Smelt Survey Data
  - Delta Smelt Entrainment
  - Delta Smelt Behavior Modeling
  - Proportional Entrainment Loss
  - South Delta Salmon Survival
- Subcommittee recommendation on future CSAMP focus:
  - Habitat restoration actions
  - Water operations
  - Responses to specific actions and conditions
  - Improved science-policy communication
- Comments/Questions
  - Not clear on purpose of report card?
    - Take stock on what we've accomplished/haven't accomplished and where we are in terms of answering questions