

OUTCOMES MEMORANDUM

TO: CAMT Salmon Subcommittee Members
FROM: Rafael Silberblatt
DATE: 1/17/20
RE: January 9, 2020 CAMT Salmon Subcommittee Meeting

Attendees: Alison Collins, Brad Cavallo, Brian Matthias, Carl Wilcox, Cathy Marckinevage, Deanna Sereno, Frances Brewster, John Ferguson, Josh Israel, Kate Spear, Mike Beakes, Mike Roberts, Pascale Goertler, Thad Bettner

Action Items:

- Bruce – Invite Rebecca Buchanan to present at March 17 CAMT meeting by January 17
- Bruce & CAMT Co-Chairs – Discuss standardizing the presentation of new scientific reports at CAMT
- ESSA - Share paper illustrating Q-sort methodology in a natural resource context (Complete)
- All – Provide feedback on CSSP survey criteria via this [link](#) by January 17
- Brad & Allison – Coordinate with Anna Sturrock on CAMT presentation (condense framing PPT and consider fact sheet handout) by January 21
- John, Cathy, Brad & maybe Lynn (Pascale to invite Lynn) – Coordinate with Rebecca Buchanan on CAMT presentation
- Josh & Ryan – Develop PPT slides outlining BiOps' language related to steelhead monitoring by January 21
- K&W – Schedule a Salmon Action Matrix call based on Bruce, Carl, Josh and Rene's schedules. (Complete)
- Items related to February Salmon Committee Meeting (all due by February 13)
 - Bruce – Connect with Mario re: USBR prize competition as it relates to salmon
 - Pascale & Carl – Look into Prop 1 funded salmon-related projects (2018 and completed respectively)
 - Carl & Erik – Look into salmon resiliency strategy action implementation
 - Brad, Alison, & Cathy – Look into salmon entrainment
 - NMFS & CDFW – Discuss steelhead monitoring

Discussion Highlights:

1. Agenda Review and Updates

- Salmon Actions Matrix
 - Opportunity to integrate into SIT did not materialize and some actions may already be modeled through SIT; subsequently completing the matrix has taken on a lower priority.
 - A quantitative framework (maybe as an additional column) is needed to model and judge actions in matrix.
 - CDFW and DWR have been doing work internally associated with VAs that are applicable to matrix and actions mostly likely to happen in the near term.

- Conference call between Bruce, Rene, Carl, and Josh to occur by week of January 27 to finalize matrix. Discussion items will include considering what actions have already been run through SIT and any necessary VA-related updates.
- Framing for Dr. Sturrock CAMT Presentation
 - Developed as means to introduce Dr. Sturrock's research and its relevance to CAMT.
 - Subcommittee members to provide edits to presentation by January 16.
 - Alison, Bruce, Brad to work with Dr. Sturrock to streamline her slides and develop a factsheet.
 - Tee up potential presentation to CSAMP.

2. Coordinated Salmonid Science Plan

- Overview of interviews
 - Key themes included:
 - Sentiments that the perceived need for more science is used as an excuse to not move forward management actions.
 - There is a lack of common objective/vision for the Delta.
 - To what extent the state of restoration is a result of lack of technology/resources or is more a reflection of management actions (or the lack thereof).
 - Some interviewees refrained from commenting on priority management actions, noting that this falls outside the purview of their agencies and/or roles.
 - Priorities that were shared were more thematic rather than prescriptive to a specific time or place.
 - Top priorities:
 - Management activities: Habitat restoration and improve/synthesize existing models and science
 - Scientific activity: location, timing and juvenile route section and smolt survival
 - Monitoring activities: Acoustic arrays, PIT and CWT program
- Literature review
 - Focused on trying to identify specific monitoring, scientific, and management activities.
 - ESSA's inventory includes a mix of activities that have been conducted, but mostly ongoing, or proposed.
 - 327 entries to date, more to come, consolidation needed.
 - 20 original "Foundational Documents" provided by the Subcommittee have been reviewed, and include 6 documents that were excluded by the Subcommittee on December 20 as being lower-priority.
 - A portion of the additional 17 priority documents identified by the Subcommittee on December 20 have also been reviewed, however review of these additional documents is still in progress.
 - Literature reviewed contains a considerable variation on the type of information and level of detail ESSA was able to pull from each document and activity.
 - Some documents contained highly specific activity information, others identified gaps and potential studies, some are very general to the Delta while others have more specific location information (including outside the Delta).
- Annotated outline update

- Latest outline: incorporates feedback received to date, fleshes out content and identifies key references in each section, and assigns a suggested page count to each section.
- Also includes details on proposed methods for prioritization and information flow mapping.
- Prioritization will balance: effort agencies spend on activities and restoration; assessing what has and has not worked; and sequencing of activities.
- Member questions/comments and responses:
 - What's going to be produced from the literature review?
 - A list of potential activities that will then be prioritized. ESSA will need help from CAMT on what is already being worked on or completed.
 - Objective should be to improve survival, broadening resiliency, and assist in recovery of listed and non-listed stocks. Emphasize biology before the process.
 - The previous direction provided to ESSA was that this is not a recovery effort. There are plenty of other docs that cover biology.
 - Note: after the Salmon Subcommittee meeting, ESSA revised the objective statement as follows:
 - "The objective of this Coordinated Salmonid Science Plan (CSSP) is to use the best available information to integrate and logically prioritize salmonid science, monitoring, and management activities in the Delta region to support robust decision-making for the allocation of limited resources dedicated to salmonid conservation and management."
- Challenges for CSSP
 - Diversity of science needs, restoration actions, monitoring needs are all vastly different 'grains' and levels of specificity.
 - No universally accepted focal species conceptual models (and related objective hierarchies, limiting factors/key stressors, core performance indicators, uncertainties). This means multi-criteria scoring systems (e.g., number of stressors alleviated, number of objectives addressed, etc.) cannot be developed.
 - Modest budget and project timeline.
 - Cannot use 'SDM' approach based on life-cycle modelling as they require:
 - Substantial money and time;
 - Come with restrictions on types of actions/responses that can be represented as rule-sets in chosen models (including probs. w monthly time-step); and
 - Tend to be single species focused and do not leverage optimization.
- Proposed solution: sequential series of criteria-specific Q Method surveys
 - Has been used in decision making in a natural resource context in the past.
 - Draft criteria for survey:
 - Accelerates learning surrounding achievement of key, well-accepted protection and recovery objectives/big questions. In so doing, clarifies management options.
 - Map to number of objectives/big questions the action contributes to/addresses
 - Map to number of target fish species / run types / populations likely to be supported by the action

- Improves understanding (accelerates learning) on limiting cause-effect mechanisms on salmon survival, and/or the related key uncertainties for focal salmon species.
 - Map to key limiting stressors alleviated or addressed by the action
 - Map to key information gaps in generally well-adopted life-cycle modelling tools (for high-sensitivity parameters/functions)
- Perceived spatial scale of benefits and coincidence of action with generally accepted priority habitats/hotspots for focal species. (Not to be confused with the footprint of the action).
 - Action promotes connectivity to major target fish migration corridors, including ability to export/receive nutrients, plankton and other fish food
 - Has adjacency/proximity to synergistic project sites
- Implement-ability/Action feasibility – can the action be achieved effectively
- Other proposed criteria/metadata
 - Action operates at fundamental and/or multiple biophysical tiers (supports an ecologically balanced strategy) operating across landscape scales rather than just one biophysical tier (e.g., habitat alone).
 - Action is low on redundancy and duplicity with other efforts
 - Action directly promotes genetic diversity and resilience of naturally self-sustaining populations.
 - Action is likely to provide benefits to non-target (non-salmon) species / Auxiliary ecosystem benefits (beyond salmon).
- Member discussion on Q Method:
 - Request for the Subcommittee to review the full list of the various “grains” of actions to assess the ability to group and pursue them as a suite.
 - Actions that speak to population or that demonstrate a positive outcome would be worth pursuing. Specifically, pursuing activities that evaluate population level, not just community or ecosystem – focusing too narrow does not paint a holistic picture.
 - The science and management actions and their respective gaps are known but the studies needed to address those gaps are not known. An example of this is steelhead out migrating from the San Joaquin basin and associated management actions.
 - Flexibility in grain is needed when there is minimal existing information.
 - More proposed methods to address gaps of the themes are needed.
 - Implement-ability is very subjective as there is always a reason not to do something. This criteria should not contribute to the prioritization of actions.
 - Suggestions for adding clarifying questions regarding issues/hurdles associated with actions deemed infeasible.
 - Remove “big questions” from the first criteria.
 - Management; science activities; and monitoring actions will need to be separated (suggests the number of surveys will be potentially be 3x the number of criteria).
 - Subcommittee to look through criteria and provide collective feedback by January 17.
 - February Subcommittee meeting to include discussion on how surveys will be conducted and who will be invited to take them.

- Proposed Approach to Info Flow
 - Major Management Activity classes would be:
 - Operational Management (exports, flow, temperatures)
 - Habitat Restoration (habitat rest., creation, and barriers)
 - Stressors (non-lethal effects of WQ / pathogens / contaminants)
 - Direct Losses (pump and salvage losses, predator losses)
 - Excludes hatchery management (out of ESSA's scope).
 - May be necessary to focus on a specific subclass of management action to map for each category.
 - Utilize a generalized "information ecology" framework for natural resource decision-making to guide this task.
 - Use a survey or fillable form guided by generalized framework to collect information on organization data needs, interactions, barriers, and decisions as they relate to EACH major class of management activities.
 - Distribute to members of CAMT and potentially back out to people interviewed earlier in project.
 - Use results to build abstracted conceptual models of information flows for each class of management activity (example for emergency management at right).
 - Guidance on information acquisition and diagnosis of barriers available from prior applications in watershed management, forestry, and natural disaster management.
- Next Steps
 - Complete review of additional documents prioritized for review by CAMT within the constraints of available resources.
 - Refine proposed approach to prioritization task and develop implementation plan based on Subcommittee feedback.
 - Begin writing the background sections of the Draft Plan using structure, notes, and key references found in the annotated outline and incorporating any additional feedback from CAMT.

3. Rebecca Buchanan's Fall-Run Survival Research

- Member discussion on relevance of research to CAMT
 - Should Rachel present, the presentation would be framed in a similar fashion to Dr. Sturrock's presentation (e.g., length, level of detail, and introduction noting relevance to CAMT).
 - Quarterly presentations from researchers is something CAMT should consider. Additional candidates include Jim Hobbes' smelt papers and research from DOP. We should standardize how/when we bring people to come in and do these presentations.
 - Target the March CAMT meeting for a presentation from Rebecca. Share draft presentation for review at March Subcommittee meeting.

4. CAMT 2020 Workplan

- Categories of "Continue to Discuss and Support" and "Consider Focused Discussions Regarding" are the least defined; establishing subgroups to further define these categories and what is applicable to CAMT was recommended at December CAMT meeting.

- At February Subcommittee meeting, the following salmon-related activities within the above categories will be discussed:
 - Bruce: USBR prize competition as it relates to salmon
 - Pascale and Carl: Prop 1 funded salmon-related projects (2018 and completed respectively)
 - Carl and Erik: salmon resiliency strategy action implementation
 - Brad, Alison, Cathy: salmon entrainment
 - NMFS and CDFW: steelhead monitoring

5. Steelhead Monitoring

- CDFW's Comprehensive Monitoring Plan for Steelhead in the California Central Valley was drafted in 2010 as resulted of a BiOp.
- The plan identifies actions needed to fill knowledge gaps and collect baseline information on steelhead abundance and distribution. The goal of this plan is to provide detailed scientific procedures to measure life-cycle parameters of adult Central Valley anadromous steelhead and collect precise statistically-valid data to guide resource management, while minimizing monitoring efforts and impacts.
- While funding has been limited/inconsistent, specific portions (e.g. adult estimation in Region 1 and some tributaries) have implemented through CDFW's own funds.
- CDFW currently has money to continue operating through 2021 but funds have not yet been identified to continue work past that time.
- Member questions/comments and responses
 - Have abundance data estimates posted?
 - CDFW has not generated population estimates.
 - The Subcommittee has noted the uncertainty around steelhead populations – this study would address that uncertainty but we need to find the funding for it. Further clarification needed regarding the extent of CAMT's role in steelhead restoration.
 - The new BiOp includes language around CAMT helping with steelhead monitoring.
 - CDFW is willing to make a presentation to CAMT on the portions of the plan it has implemented. The presentation would include a broader overview of study and methods deployed in different watersheds.
 - CAMT needs to know there is not an abundance estimate, the lack of juvenile monitoring, and where the study has taken place to date.