

OUTCOMES MEMORANDUM

TO: CAMT Members
FROM: Bruce DiGennaro
DATE: February 3, 2020
RE: January 21, 2020 CAMT Meeting #86

Attendees: Alison Collins, Anna Sturrock, Ben Geske, Brad Cavallo, Brycen Swart, Carl Wilcox, Cathy Marcinkevage, Chuck Hanson, Clint Alexander, Corey Phillis, Darcy Austin, Denise Reed, Erin Cole, Frances Brewster, Heather Casillas, Jason Peltier, John Ferguson, Julie Leimbach, Kate Spear, Kaylee Allen, Larry Brown, Louise Conrad, Lynda Smith, Mike Beakes, Mike Urkov, Pascale Goertler, Rachel Johnson, Rene Henery, Rod Wittler, Ryon Kurth, Sam Luoma, Scott Hamilton, Shaara Ainsley, Shawn Acuna, Sheila Greene, Stephanie Fong, Steve Culberson, Yuan Liu, Yumiko Henneberry

Action Items:

- Bruce – remove \$ estimates (and replace with “TBD”) from 2020 Workplan for those items that are not yet defined (COMPLETE)
- ? - Steelhead monitoring next steps:
 - Define what data is being shared by whom and posted where;
 - Consider coordination to improve uniformity of data collected/shared – potentially w/ help from CVPIA SIT
 - Could IEP steelhead team take on deep dive on adaptive management? CAMT Technical team looking at regulatory environment (BiOp, etc)?
- Bruce, Frances, Sam – put together a CAMT steering committee to tackle Delta Outflow effort
- Yumi - Send Bruce copy of presentation (COMPLETE)
- Bruce – Add item to Feb CAMT meeting to solicit input on DSP Science Action
- Bruce, Carl & Ted – for Delta Smelt Action: determine which science and monitoring to include (may have to wait on actions based on water year determination)

Discussion Highlights:

1. Consent Items

- Technical Protocols
 - What defines a CAMT technical study?
 - Something commissioned by CAMT
 - These protocols are going to require additional resources (time/money/people) for studies
 - Suggest that we keep in mind that this is a draft/experiment that may need to be revisited down the road
 - No objections noted to adopting Technical Protocols
- 2020 Workplan
 - Workplan is a work in progress (pending availability of funds)
 - Is there value in including budget estimates for undefined items?

Facilitator Notes, Not Reviewed or Approved by Meeting Participants

- Some items are more wish list/place holder items that still need to be scoped.
 - Maybe just say TBD rather than including budget until they're scoped
- No objections noted to adopting 2020 Workplan (w/ budget listed as "TBD" for undefined items)
- CSAMP website
 - Website available for review (<https://www.baydeltalive.com/CSAMP/>) – no major concerns noted at this time

2. Feb 5 Policy Group

- Smelt Activities
- Salmon Activities
- CAMT 2020 Workplan
- Prep for May Meeting

3. Steelhead Monitoring

- DFW Monitoring Plan and opportunities within BiOp
 - Adult Abundance Estimate in main-stem Sacramento River funded through 2021
 - Central Valley Distribution Survey – Sacramento and San Joaquin tributaries, not a priority under BiOps
 - Tributary abundance estimates – is being implemented on many tribs and could fall under BiOps
 - Being undertaken by different agencies, not uniform
 - Only Stanislaus is mentioned as a focus in BiOps
 - Central database and reporting – not currently underway, not directly called for but could be valuable
- Integration of BiOps and CDFW efforts
 - Coordinating and standardizing monitoring across tribs
 - Data sharing & reporting
 - Compatible monitoring methodologies
 - Similar temporal monitoring scope and methods
 - Incorporates monitoring juvenile life stages
 - Spatially balanced and randomized sampling protocol
 - Quantifying uncertainty for monitoring methods
- Questions/Comments
 - Concerned that there's no regulatory hook in BiOp re: data sharing/reporting – should be a priority
 - Seconding support for timely sharing of data (hopefully improving on release of Six Year Study data)
 - Bureau intends to share data publicly along the way at least for Bureau's monitoring activities
 - **Follow up item: what data is being shared by whom and posted where**
 - **Coordination to improve uniformity of data collected/shared – help from CVPIA SIT (?)**
 - No discussion of actions – is that a different conversation or has that been determined through SDM?
 - Only asked Ryon/Mike to report on monitoring
 - What mechanisms of change in fish populations are we hoping to monitor? What are the management nobs that we can turn (e.g., flow, cross-channel gates)? Are these in alignment?

- There has been a fair amount of discussion at SIT about turning nobs, not enough data to parameterize models to gauge outcomes
 - Steelhead is by far the largest data gap. **Could IEP steelhead team take on deep dive on adaptive management? CAMT Technical team looking at regulatory environment (BiOp, etc)?**
- Need to define why we're presenting this to CSAMP (e.g., so that managers are engaged?).

4. CVPIA Near Term Strategies

- Almost across finish line with structured decision-making process ("Near Term Strategies") – means work should be starting soon on implementing priorities and collaboration
- Focus on fall run and reducing key uncertainties, turning attention to other species/runs
- Structured decision making is a cyclical process – we've completed one cycle over the last seven years (anticipate faster cycles going forward)
- Make science the loudest voice in the room through coarse resolution model for prioritizing actions at the tributary level (up to managers to determine locations for actions identified)
- Model is focused on tribs, Delta is a black box that should be fleshed out in next iteration
- Chinook model has 87 parameters with sub-models that calculate interactions between parameters
- Actions evaluated:
 - Add habitat (set # of acre increments)
 - Spawning (1-acre increments)
 - Instream rearing (2-acre increments)
 - Floodplain rearing (3-acre increments)
 - Survival (pick from a mix of temperature, screen small diversions, reducing diversions, etc to increase survival by 5%)
- The model selects five actions/year (based on rough budget estimates)
- Now it's time to close the loop by implementing actions and gauging whether results match model
- Many tribs didn't get actions allocated (as opposed to mainstem Sac which had 18 actions)
- Model informs but doesn't dictate action – used Eisenhower decision matrix to add human expertise (do, delegate, decide, delete)
- Chinook Priorities
 - Mainstem Sac above American River confluence
 - Non-natal rearing along mainstream Sacramento for winter run
 - Battle Creek
 - American River
 - Stanislaus River
 - Clear Creek
 - Butte Creek (Survival)
 - Feather River below confluence with the Yuba River
 - Ongoing maintenance of spawning habitat
- Chinook Uncertainty (focus of future data collection/modeling efforts)
 - Spawning habitat
 - Flood plain habitat
 - Total delta inflows
 - In channel fry habitat

- Data is publicly available (currently through CVPIA website and looking into storing on EDI repository)
- Questions/Comments
 - Changing habitats changes survival rates (overlap), there are some shortcomings (e.g., impacts of growth on ocean survival). Is this level of resolution sufficient or is additional resolution (especially in regards to life history diversity) needed?

5. Hatchery Salmon Releases (fall run Chinook salmon)

- Climatic and oceanic variability impacts life history diversity
- Hatcheries releases are staggered to mimic nature
- Dams constrict habitat and flow – hatcheries are an attempted mitigation
- Limited understanding of trends in hatchery release practices and the factors influencing straying rates
- Study objectives:
 - Georeference all fall run CCV hatchery releases since 1941.
 - Document spatiotemporal historical trends.
 - Quantify population responses (e.g. straying) to differing management actions and environmental conditions.
- Takeaways:
 - Over time mean transport has increased
 - In recent years, there's been a constriction of hatchery release times
 - Only 50% of straying could be accounted for in study but straying rates were higher when:
 - Fish were trucked further
 - Return flows were lower
 - Returning fish were relatively older
- Small amount of straying is healthy but too much straying can hinder local adaptation, mask declines in population, and keep hatcheries from recovering their brood stock
- Next steps (get from “some data gaps” slide)
 - More experiments/replications to estimate survival vs. straying rates as a function of transport distance, release age/timing, river flows, and release types
 - Better understanding of how hatchery practices alter maturation timing
 - Better quantification of ecological, demographic and fitness effects resulting from hatchery strays and hatchery-wild interactions
- Conclusions (get from “take home messages” slide)
 - Today's hatchery portfolio less diverse than ever before –
 - Fish size (almost all large smolts)
 - Abundance (approx. ~30 million every year)
 - Timing (almost all entering ocean in Apr-May)
 - Location (more clustered in Delta & Bay, particularly during droughts)
 - Trucking further → increased straying, increased genetic & demographic homogenization, broodstock loss, increased survival advantage/numeric imbalance.
- Questions/Comments
 - If we were to do 100% marking how much faster might we learn?
 - Very helpful for real time segregation, but for determining hatchery vs wild current methods are sufficient
 - Portfolio diversity critical in terms of climate change impacts

- Are hatchery strategies fundamentally at odds (conservation vs return to wild stocks)?
 - Maybe there's a place for each (eg., conservation further downstream to minimize impacts upstream)

6. DSP Science Action

- **Yumi - Send Bruce copy of presentation**
- Science Action Agenda update is about to get underway focused on filling gaps and promoting collaboration
- Actions have been identified as important but are potentially falling through the cracks
- Two new focus areas
 - Horizons - Identifying trends that are on the periphery now but could be bigger issues in 50 years
 - Management needs – would like to solicit input from CAMT re: management needs
 - Questions:
 - How critical to have consensus on list of needs?
 - Management questions vs management needs
 - Transparency linking orgs to needs?
 - How might Boards use the list of needs?
- CAMT – provide input on management needs within next month or two.
 - **Bruce – Add item to Feb CAMT meeting to solicit input on DSP Science Action**

7. Delta Smelt Science Plan & 2020 Delta Smelt Actions

- Delta Smelt Science Plan Update Test
 - Test scoping (guidance doc)
 - Cataloging of 2019 CSAMP Science
 - Assessment
 - Informal North Delta Flow Action workshop – how was action planned as compared to how it would be planned under Delta Science Plan
 - Product is observations recorded through the process (as opposed to recommendations) regarding current planning gaps and (in)consistencies
- Delta Smelt Actions
 - Feb 5 presentation
 - **Bruce, Carl & Ted – determine which science and monitoring to include (may have to wait on actions based on water year determination)**
 - Delta outflow work in May
 - Waterboard did an assessment in 2017 – should start here to ensure we're not being redundant
 - Avoid getting into arguments – clearly define objectives (e.g., filling gaps)
 - Go into May meeting with some initial synthesis and proposal for more structured effort
 - **Bruce, Frances, Sam – put together a CAMT steering committee to tackle Delta Outflow effort**

