IEP Tidal Wetlands Monitoring Project Work Team
April 21, 2015
9:00 – 12:00
DWR – West Sacramento – Room 106

CDFW – Alice Low, Stacy Sherman, Rosemary Hartman, Dave Contreras, Trishelle Morris, Tim Stevens, Hildie Spautz, Dave Zezulak
DWR – Pascale Goertler, Erik Loboschefsky, Gardner Jones, Gina Benigno, Brett Harvey, Krista Hoffman, Anitra Pawley, Jamie Suria, Heather Fuller, Kris Jones, Louise Conrad, Gina Darin
USGS – Larry Brown
SWFCA –Kelsey Cowin (phone)
DSP/DSC – Daniel Huang, Maggie Christman, Karen Kayfetz
ESA – Ramona Swenson
USFWS – Heather Swinney, Katherine Sun, Lori Smith
SFEI – April Robinson (phone)
MWD - Shawn Acuna
MLML – Beverly van Buuren (phone)
Bruce Herbold

Brief Updates on Status of Conceptual Model Text

- The new deadline for completed text is the end of May. For some of them this means it will be ready to share with the group. For others, this means it will be ready for outside review. If you would like to give comments on any of the models, please contact the lead authors.

Tidal Wetland Overview: Lead author Stacy Sherman

- This overview model was presented and well received at IEP workshop and AFS Cal/Neva conference
    - Stacy has been working through the comments on the text and would like to incorporate more figures into the text

Tidal Wetland Evolution: Lead author Rosemary Hartman

- The text is pretty much done except for possibly adding a figure to the text
- More comments are welcome

Foodweb: Lead author Rosemary Hartman

The text is pretty much done

Chinook Salmon: Lead author Pascale Goertler

- A draft was circulated and the comments are being worked on

Delta Smelt: Lead author Gardner Jones

- An incomplete rough draft was circulated and the comments are being worked on
- Once completed it will be sent out to the team for additional comments

Aquatic Vegetation: Lead authors Louise Conrad and Anitra Pawley

- A draft is currently being passed between Louise and Anitra.
- Louise has been in discussion with Katherine Boyer about a white paper Dr. Boyer has been working on regarding invasive plants in the Delta. The aquatic veg. conceptual model text will be complimentary, not redundant with that effort.

Invasive Clams: Lead Author Rosemary Hartman

- A draft has been completed, but it can use more comments
- DWR will attempt to give comments

Transport: Lead Author Rosemary Hartman

- The draft is in good shape, but it can use more comments

Contaminants: Lead Author Krista Hoffman

- Currently working with people on different sections of the model.
- A draft should be available next week for review

Conceptual Model Publication

- Looking for outside review before submitting for publication
    - Will need to talk with the Delta Science Program about getting a review panel together
- It may be better to just have the publication review the conceptual model text, so it only undergoes one review process
    - San Francisco Estuary Watershed Science would probably be open to this
        - Bruce Herbold will talk to Sam Luoma (SFEWS editor-in-chief) about publishing our text
- Denise Reed may provide some guidance on publishing

Generalized Monitoring Plan Hypotheses Review

The hypotheses have been renumbered and grouped into broad categories: Physical Habitat (P), Food Resources (F), and Stressors (S). Physical habitat contains hypotheses relating to topography, aquatic vegetation, and fish habitat access and occupancy. Food sources contain hypotheses relating to zooplankton, fish food/condition, and flux. Stressors contain hypotheses relating to clams, HAB, non-native fish presence, birds and mammals, and contaminants.

- Might be good to have a flowchart to direct usage of these tables.
- The hypotheses could be arranged in some order (ex. suitable plant establishment habitat, surrounding plant community…)

P1: The topography of restoration sites will change over time, with sites subject to greater tidal energy evolving greater heterogeneity.

- Elevation and freshwater flow would increase heterogeneity (this may be covered in hydrology section)

P2: Restoration sites will change in elevation through sediment deposition and organic matter accumulation (peat formation).

- Is climate change addressed?
  - Addressed in meta-analysis section
  - Scale should be addressed
  - Scour should be added to the hypothesis

P3: Newly -created tidal wetlands will be passively colonized by aquatic vegetation species (all AV types) that are proximate and connected to the restoration site.

- no comments

P4: Planting, plant propagation method and propagule size, along with timing of restoration action and initial colonizer species, will influence vegetation community composition.

- no comments

P5: Inundation regime, bathymetry, and water velocity will influence the type of AV colonists that become established.

- This hypothesis is broken into sub-hypotheses by SAV, EV, and FAV

P6: Soil organic matter and/or level of compaction will limit SAV and EAV establishment, depending on method of propagation.

- Try to combine this hypothesis with P5 or this could be a sub-hypothesis?

P7: Higher percentages of photic zone depth to average depth, either through changes in depth or water clarity, will influence AV composition, proliferation and coverage.

- Try to combine this hypothesis with others

P8: Seasonal patterns in peak biomass will vary by AV species and type.

- P8 – no comments

P9: Establishment and growth of aquatic vegetation (all types) will result in localized decreases in water velocity, promoting sediment accretion, which in turn will promote more SAV and EAV establishment.

- P9 - no comments

P10: Establishment and growth of aquatic vegetation (all types) will influence local water quality, including temperature, dissolved oxygen, and turbidity.

- P10 - no comments

P11: Fish community composition will vary by vegetation type and abundance, and thereby fish community composition will change as wetlands evolve through time.

- Add invertebrates and structure to the hypothesis
- Possibly combine with P12?

P12: The area of substrate and structure suitable for spawning, rearing, and/or adult residence of at-risk fish species on-site will change compared to pre-project conditions.

- no comments

P13: Water quality as habitat for at-risk species on-site will be suitable compared to pre-project conditions.

- no comments

P14: Conditions allowing at-risk fish species to access quality habitat will be increased compared to pre-project and reference conditions.

- P14 – reference conditions does it refer to good habitats
    - It refers to other sites in the area

P15: At-risk fish species will use restored habitat for some portion of their life history.

- no comments

P16: The ability of at-risk fish species to avoid predation by non-native predators will be improved on-site compared to pre-project conditions due to the availability of refuge habitat.

- no comments

F1: Nutrient species, concentrations, and ratios will influence primary producer biomass and community composition.

- no comments

F2: Restoration landscape and site attributes will drive the magnitude and type of primary production on the site.

- no comments

F3: Form and magnitude of primary production, along with site and landscape attributes, will drive form and magnitude of secondary production.

- no comments

F4: Zooplankton community composition and size structure will affect fish diet.

- What does size structure refer to?
    - It refers to the size of zooplankton

F5: Increased emergent vegetation will increase the contribution of periphyton, detritus, and other marsh-derived carbon to the pelagic food web.

- This hypothesis could use rewording to encompass more food sources
- Perhaps add a reference to a year round food source

F6: Fish on, or adjacent to, restoration sites will have higher food consumption, resulting in higher condition and growth relative to pre-project conditions.

- Add reference conditions to hypothesis
- Make sure condition is represented by condition factor

F7: Tidal wetland restoration will result in a net increase of nutrient import (nitrogen and phosphorus) to the restoration site.

- no comments

F8: Restoration will result in a net increase of primary production (phytoplankton and detritus) exported from the site, or at a minimum increase access to productivity by making it available at certain times in the tidal cycle.

- no comments

F9: Restoration will result in a net increase of secondary production (zooplankton and other invertebrates) exported from the site, or at a minimum increase access to productivity by making it available at certain times in the tidal cycle.

- no comments

S1: Fish food quality and quantity, and thus fish feeding, reproductive, and/or growth rates, will be reduced in the presence of harmful algal blooms on site.

- Harmful algal blooms also increases energetic demand
    - This should be worked into a sub-hypothesis

S3: In areas where benthic grazing is high, primary and secondary pelagic biomass will be reduced. The effect of grazing rates on biomass will be influenced by physical conditions, such as depth and residence time, on site.

- This hypothesis is too long and captures too many ideas
- This should be broken into two hypotheses

S2: Benthic grazer biomass will increase within restoration sites relative to pre-project conditions.

S4: The area of suitable habitat for non-native fish, gelatinous zooplankton, benthic/epibenthic invertebrates, and shrimp species on-site will increase compared to pre-project conditions.

S5: Non-native fish, gelatinous zooplankton, and shrimp competition with and predation on at-risk fish species will reduce survival and growth on at-risk fishes on-site compared to pre-project conditions.

- Add “reference conditions” to each hypothesis

S6: Birds and mammals will significantly affect abundance and composition of fish assemblages on sites, thereby affecting growth and survival of at-risk species.

- Remove the word significantly from hypothesis

S7: Surrounding land use and history of site will affect types and concentrations of contaminants.

- no comments

S8: Contaminants will decrease phytoplankton standing stock.

- Change standing stock to production?
    - This will be brought back to the contaminants subteam meeting
- Add pre-project and reference condition

S9: Contaminants will reduce pelagic, benthic, epibenthic and epiphytic invertebrate standing stock through lethal or sub-lethal (e.g. reduced reproductive capacity) effects.

S10: Contaminants will result in sub-lethal deleterious effects (e.g. increased occurrence of intersex fish) on at-risk fish populations.

S11: Persistent contaminants will bioaccumulate and may biomagnify over time and up trophic levels.

S12: Increases in dissolved organic compounds may chelate metals in solution, making them less bioavailable.

S13: Increased turbidity will enhance sequestration of hydrophobic chemicals, such as PAHs and pyrethroids, and will decrease photo-activation of PAHs through inhibiting photo-activation by UV-light.
S14: Increased plant cover (i.e. vegetative surface area) will enhance sequestration of hydrophobic chemicals, such as PAHs and pyrethroids.
S15: Increased residence time will accommodate microbial and photo degradation of contaminants.

- These hypotheses were not covered due to time constraints. Please provide any comments, suggestions, or edits by email
- Should hypotheses S12-S15 be included in our plan since it addresses how wetlands may reduce contaminants in our system
    - This should be included since it provides data on better water quality
    - These hypotheses are very specific for monitoring and will be brought back to the contaminants sub team for discussion

Review of Analysis Chapter

- Not addressed due to time constraints
- This chapter should be reviewed by the subteams to ensure the analysis is appropriate and complete.

Status of Other Chapters and Appendices

- Not addressed due to time constraints

Inclusion of Decision Tool

Goal of this tool is to rank and choose hypotheses based on the project's criteria or limitations.

- The goals/objectives of each project should need to directly link to the ranking criteria
- Cost will be a huge limiting factor if included in this tool
- Perhaps rank by required vs optional
- The tool may not capture the special needs of projects
- Perhaps this tool can be used as performance measures of each project
- Perhaps use this tool to get the cheapest method to address the hypothesis

FRPA Pilot Monitoring Plan (presentation/questions)

- Not presented due to time constraints

Next Meetings

- Subteam meetings – during next two months
- General meeting in June – Doodle poll will be circulated