1

Questions

- Model version / Date?
  - May 2017
    - will be updated

(A) Make May version available
  - Minor changes from Jan.

- Ensure SWC comments are addressed

2

- Objective - model doc addresses comments raised
  - Record
  - more robust documentation

- Has the model been "Verified" with recent observed conditions? e.g. no action

(3)

- Is there a run to match today's conditions?
  - Yes
- Can we look at vital rates around life history diversity? eg habitat
  - Yes, simplified
  e.g. Fry survival is constant across all habitats

(4)

- Applicability to other runs?
  - Egg to Fry = To emergence
  - Clarify - Migrant vs Resident
    Smolts originate from Residents
  - Upper River Smolts go through Delta
  - Quicker migration = higher survival

5

- Delta survival rate is lower than upper river.
- Size - Not tracked explicitly
  - Track relative survival by habitat type
- Limited data on Fry
- Limited data on habitat survivals
  - Could do CWT studies to improve data

6

- Good data on smolts

Rearing Capacity

- Basis of X10 Salinity relationship?
  - Unpublished work
  - FWS Beach Seyn
- Do Sacrt data include capture probability?
  - No, but there is some trap/capture efficiency

7

- Some data has been corrected for capture Probabilities
  - Delta yes, River no
- How is density being incorporated in sub optimal habitat?
  - Sum all types
- How are different categories combined?

8

- Model estimates entire area in Delta, but recognizes some areas not used - connectivity.
- All capacity estimates Boil down to 1 number in LCM.
- Are other flood bypasses included? - Yes

(9)

- Preferences are based on frequency of occurrence
- Do prefences on map relate to where we find fish?
  - Do predictions match observations?
    - Not sure, not tested

* High Priority Need

(10)

- Assume all habitats have equal growth/survival
- Do the physical variables capture habitat values? e.g. what about nutrients, or substrate?
- Lower capacity in upper river moves fish into the Delta.
- Can we track migrant fish through time and DD

11

- Restoration
  - Can the model predict incremental increase in fish associated with adding habitat? Yes
    - Both in Delta + River
- Is 90th percentile capturing the error on Density?

12

- How do we distinguish between migrating fry and rearing smolts?
  - assume smolts are migrating and fry are rearing
- Fry in the Bay survive at same rate, but if no capacity the go to ocean where survival is low.
- Are we still using net flow?
  - No, added confusion based on 15 min time step.

(13)

- Still relying on some degree of net flow for direction
  - (A) Check wheather model is using residual flow or map. ⇒ eFTM workshop
- Swimming speeds?
  - making adjustments/refinements
- Survival dominated by inflows also depends on location and is low in transitional areas

(14)

- Is survival calc better on reach by reach basis? vs AT data/observation
  - Driven by other factors not in model. Release group by release group variation.
    - Turbidity
    - Predation
- Survival Chipps to Golf is the same - all fish
- How are we accounting for changes in sources of mortality over time (eg. screening)? Not (A)

15

Future Workshop

- Model fitting
  - eg. RBDD - screening
    - ↳ may not matter for comparisons vs absolute

- Have we done validation with data seperate from Calibration? - No
  - (A) critical to do

16

- Do fish on Yolo have a higher survival prob?
  - Yes relative to Delta and bay, but not relative to lower river

17

- Reintroduction
  - How do you construct Past conditions?
    - Very different env.
- ~~Can~~ Can we project changes as new habitats are created? - Yes
  - Can be incorporated
- Look at using other models that are better at predicting Past Conditions + Junctions.

18

- How does yolo habitat Change as a function of flow, absent access issue?
- What are survival rates based on for each reach?
- Is there a limitation of Redds?
- Survival Lower River = Survival after they leave the lower River.

19

- Do changes in capacity affect survival? No
- what if you improve the quality of habitat, not just quantity?
- Scenarios - what if you look at absolute changes in distribution rather than %?
- Could tidal restoration improve survival not just capacity?

A

20

- when do benefits of restoration materialize?
  - 40-50 yrs
  - Benefits small and take a long time for capacity increase in the Delta
  - Depends on other factors in the model
    eg. productivity upstream
- what if you increase spawning habitat?

21

- Define increases in Carrying Capacity better
  - Do restoration that increases survival
- Can we improve survival rates?
- Growth and Condition of fish. - Not in survival now.
  - (A) use bio energetics model to feed LCM
- Look at Validation

22

- Connect Capacity increases with changes in survival.
- How much would fry survival have to increase to off set some reduction in smolt survial?
- High existing Delta Capacity ∴ increases don't change things
- what about overlaps with Fall Run?
- Low Pop - Is it still Density Dependent?

23

- Quantify uncertainties for fixed parameters
- Trade-offs
  - Not dealing with size and growth
    - But scale makes it hard
- Spawning distribution
  - Smaller #'s in smaller area

24

- Future workshops
  - Flow scenarios - Run ePTM at constant flow, then range
  - Model assumptions and fitting
  - ePTM
    - Travel time vs. Dist traveled
  - Smolt survival parameter estimation
    - Sensitivity of survival term
  - Drought scenarios
    - when to take action
  - Growth + habitat + survival

XT model

25

- Habitat Capacity - Survival
- Apply a suite of mgmt actions (e.g. Eco Restore)
- Egg Survival
- Install model - LCM
- What's the endpoint/Goal?
  - # spawners.
  - extinction risk