

Sturgeon PWT Meeting
September 10, 2008
Foster Room (Rm 1138) in Meyer Hall, UCD
10:00 a.m. – 3:00 p.m.

- 1) Updates from individuals tasked with assignments from initial meeting~
 - a) Bibliography and library development (Andrea Drauch and Josh Israel)
 - i) Andrea shared a PowerPoint that included 4 options for a bibliography- Connotea, Endnote of the Web, FTP site, and WSCS bibliography.
 - ii) Being able to access the document is important feature people would like.
 - iii) The number of citations we plan to have will define what type of query ability people would like.
 - iv) Endnote on the web may have some sharing, copyright issues related to it.
 - v) Dave W. would be willing to add his Word bibliography to it and share CD with references.
 - b) List of 'studies needing attention' for the group (use Jeff Stuart's list as starting point)
 - i) Composition of adults: it appears that adult age structure is very peaky in WS and may reflect stock-recruitment instead of flow-recruitment relationship.
 - ii) Location of green sturgeon within Delta. What is the spatial extent of spawning in the WS-San Joaquin, Feather, Yuba, and Bear (although the majority here appears to be white)? With respect to whites, the SJ use would be really important information to have, currently only known up to shipping channel.
 - iii) Sturgeon presence this year in upper Sacramento and Feather. Not much luck on Feather this year (one detected on a VEMCO receiver and one observed jumping). Fish started biting on the Sac in August according to guides in RB area.
 - iv) Would it be possible to look at distribution of sturgeon around areas of ecological gradients (salinity, temperature, tidal) with receiver arrays?
 - v) Knights landing fyke nets collected 100s of WS over 2 days. These fish seem to be highly variable and travel in pulses. Would it be worth PIT tagging these fish?
 - vi) Entrainment issues and passage for fish facilities are still not completely studied for white and green sturgeon. NMFS engineers are evaluating salmon criteria to consider sturgeon. It would be worth getting updates about this to this group.
 - vii) Foraging/food resources still have not been evaluated. There are some white sturgeon stomachs in a freezer which if there was a person, who would work on them, may be able to assist with analyzing them. Noninvasive study through examining lipid content may be possible. How are sturgeon effected by invasive species? How are nonnative species influencing growth in Bay-Delta? Is temperature control in upper Sac

influencing food availability for exogenously feeding larvae and possibly post-spawn adults? Well, what might be historic food available for post-spawn adults? R. Corwin suggested possibly lamprey ammocoetes and others thought possibly clams/mussels.

- viii) WS has tagging data that includes size at tagging and size at recapture; this will be synthesized by Jason in a report sometime soon.
 - ix) The 2009 sturgeon reporting cards will not have any reporting changes. The sturgeon reporting cards will continue with plans at least until 2010. This should yield more information about size, etc.
 - x) Egg size in general, as fish get larger so do the eggs and usually they produce more. In general, first reproductive cycle is not the best, but this is generalization with many assumptions. Does dietary dilution have maternal consequences for repeat spawners? This is unknown.
 - xi) Post-spawn adults are probably an important group to determine aggregation behavior since they appear more susceptible to angling because they are biting and remain in the river during the fishing season. On the Feather, many shad and salmon fishers are getting sturgeon as bycatch. DFG wardens are interested in protecting sturgeon and regulations may change if supported by science. D. Woodbury will try to assist NMFS in making some recommendation for geographic extent of sturgeon regulation changes.
 - xii) Episodic recruitment is giant issue in demography of white sturgeon. Someone should be evaluating this. CPUE data, tagging per unit data, all data indicates this is important.
- c) IEP managers updates:
- i) Draft letter sent to provide basic PWT info (Zac Jackson)
 - (1) We should have feedback from the IEP management team on goals, mission, and questions of interest.
 - ii) Website related requests (Alicia Seesholtz)
 - (1) The IEP website will be receiving attention by the program this winter and spring. If we can put together the list of what we would like, then perhaps we can select which of the web library choices to move forward with.
 - (2) AFRP website maintained by Stockton DFG office, the folks there may be interested in assisting with maintaining the database. If people would like to share NA sturgeon articles, grey literature reports from their agencies for inclusion, Josh would be happy to share.
- d) Acoustic tagging database inquiries (Josh Israel)
- i) Actually this is about the PIT tagging and acoustic tagging of sturgeon so folks from Oregon, Washington, and California (CVFTC) could coordinate better.
 - ii) PSFMC has a CWT database for Columbia; a similar database could be established for other tagging information for sturgeon. CVFTC would like to be more inclusive, and there seems to be numerous people who would like to

see this information put into a single database, but it is hard to require people to buy into the concept.

- iii) PTAGIS has a clear geographic extent and management purpose which makes it work.
- iv) Acoustic telemetry has many people involved primarily for research so it is hard to get people into a single effort, and sometimes the owners of tags never are contacted.
- v) CVFTC will be trying to upgrade database from ACCESS to a password-controlled web environment. CVFTC is exploring adding a graphic component to this possibly.

e) Next meeting date

- i) Wednesday, January 14 (10-3) in the Weir Room, Meyer Hall at UCD.

2) Talk about research needs that we feel are a priority~

a) Reproductive condition of sturgeon.

- i) Klimley proposal includes histology work which would be valuable if it included an aging component similar to the Chapman publication.
- ii) Another alternative is using ultrasound although previtellogenic females, immature and mature males are still difficult to identify.
- iii) Also, how about incorporating the Webb studies using steroids/hormones.
- iv) If these could be done together to ground truth, then we may move the steroid or most affordable study technique forward at a regular interval/product.
- v) Sonograms/ultrasound has also shown promise.
- vi) There is a need to know female:male ratio and sexual maturity.
- vii) We also don't know when these fish senesce.

b) How will we age fish?

- i) Removing fin rays has 10% mortality rate and not pleasant for fish. This technique is used in other places with much less mortality, so perhaps it should be looked at again. Right now there are not enough fin rays in DFG office, so it could be suggested to start a new project effort to collect fin rays possibly (especially from the recreational fishery for whites).
- ii) Stable isotope may be something that should be groundtruthed also. While this may not directly sample from the group of interest, you may potentially get a lot of historic data from each otolith's record for life history information and migratory history.

c) Flow-juvenile recruitment relationships

- i) Josh showed some graphs in light of the work he has done with others on the sturgeon DRERIP models. Not clear if there is much of a pattern here or if pattern is related to stock recruitment. There is lots of uncertainty there and it seems like this is a point of interest to folks.

d) Other topics

- i) Where can we get fish for experiments?
 - (1) This year very few juveniles were available for experiments.
 - (2) UCD attempted to spawn Sac broodstock for fish to release in Sacramento, but encountered quite a bit of criticism.
 - (3) These progeny would be useful for microchemistry groundtruthing and juvenile studies.
- ii) Disease issues should be of concern, though iridiovirus has not been found in green sturgeon.
- iii) What about contaminant work with the eggs? Contaminant loading in GS seems unlikely since they spend less time in estuary than WS where this is a documented issue.
- iv) What is special about the spots where fish may be spawning?
 - (1) They appear to be sandy with complex velocity and turbulence.
 - (2) FWS found that 2/3 of traps collected no eggs upstream and downstream of these habitats, and perhaps these traps can go to other sites.
- v) What is the balance between egg/larvae and adult surveys and how can we get the most out of these surveys? Adult surveys can guide egg/larvae mat placement or habitat can guide egg/larvae mat placement.
- vi) We could really use some sturgeon conceptual models to evaluate data gaps and evaluate balance of regulation with research. People would like to use the DRERIP model to discuss potential hypotheses, evaluate which areas may have the greatest uncertainty and deserve attention for understanding, and help target where collective resource and permits goes.
- vii) Critical habitat and 4(d) rule. Should IEP PWT provide some input on this? IEP management team thinks this is beyond scope on PWT.
- viii) The number one priority appears to be determining what is limiting the sturgeon population. There were mixed thoughts/opinions by PWT members as to whether it was driven by early life stage or the adult life stage.

3) Discuss/review two proposals

a) Aric Lester

- i) Objectives/goals: Determine where fish are distributed, identify habitat variables for spawning and holding areas in distribution, development of 2D model for evaluating different flows at the reach scale. Develop this information in the context of a GIS database for sitings and project data between Hamilton City and RBDD. Tagging studies ongoing, but there is not a grasp on abundance in the upper river.
- ii) NMFS (Steve and Ethan) had a DIDSON out and combining DIDSON cameras (with Javier Miranda) to better enumerate fish would be valuable for getting an abundance estimate. How does bubbles and hydraulic influence results? Bubbles can influence results, but once people have an eye for what they are looking for they should be able to correctly id fish. How about getting from counts to abundances? Seems like you need to incorporate strip sampling or additional sampling techniques.

- iii) Because of the potential expense for surveying so many areas, some insight is needed into how to survey efficiently.
 - iv) Would a survey like this happen over multiple months do assess temporal variability in distribution? It seems like this type of survey should be done over as short a period as possible and encompass multiple years.
 - v) Concerns existed about WS/GS differentiation. Suggest that they could use video camera to verify species after DIDSON measurement.
 - vi) Distribution and habitat use of this study is easier with telemetry study, and DIDSON most effective with abundance.
 - vii) Comments should be submitted to Aric by September 17th for inclusion in what will be sent to IEP management.
- b) Pete Klimley
- i) 212 GS tagged 2002-2004 when array was not as extensive as it is now. Unfortunately, tag technology was only at 3 year battery life. The array currently includes 120 in Sac, 40 Delta, 10 in SJ, and ACOE's massive array in bay.
 - ii) DFG has a sampling program with GS and primarily WS in fall. They would like to catch 60 GS (Feb, Mar, April) and 60 WS. Could include biopsy to evaluate reproductive condition, and tags currently have life of 10 year, so you can get more information with this round of tagging. Could also collect genetic samples.
 - iii) Too many tags can interfere with each other, and there may be some fall backs from tagging effort. Perhaps Rio Vista is a good spot for capturing GS, though UCD spring capture in San Pablo, Suisun was high.
 - iv) Another interesting addition would be to have a depth sensing tag.
 - v) There is very little information about white sturgeon in the river. There needs to be more information on WS collected since Schaffter's article is quite old and had a limited sample size.
 - vi) Please send comments to Pete by Sept 17 for inclusion into comments for IEP management team.

Attendees:

Zac Jackson (USFWS), David Woodbury (NMFS), Bill Poytress (USFWS), Josh Gruber (USFWS), Josh Israel (UCD), Richard Corwin (BOR), Robert Chase (BOR), Ramon Martin (USFWS), Steve Lindley (NMFS), J. D. Wikert (USFWS), Andrea Drauch (UCD), Alicia Seesholtz (DWR), Aric Lester (DWR), Teresa Connor (DWR), Pete Klimely (UCD), Shannon Brewer (USFWS), Ethan Mora (NMFS), Joel Van Eenennaam (UCD), Mike Thomas (UCD), Zoltan Matica (DWR), Marty Gingras (DFG), Mark Adkison (DFG), Javier Miranda (DWR), Russ Bellmer (DFG), Mike Marshall (USFWS), and Jason DuBois (DFG).