



Upper Colorado River Endangered Fish Recovery Program

Dated: July 2, 2018

Biology Committee Summary, April 2-3, 2018

445 Gunnison Ave, Grand Junction, CO 81501, First Floor Conference Room

Participants: BC: Melissa Trammell, Pete Cavalli, Jerry Wilhite, Brandon Albrecht (via phone), Dale Ryden, Dave Speas, Paul Badame, Harry Crockett, Tom Pitts (via phone)

Others: Don Anderson, Michael Mills, Chris Michaud, Katie Creighton, John Caldwell, Kevin McAbee, Julie Stahl, Tom Chart, Ryan Christianson, Matt Breen

Via phone: Tildon Jones, Kevin Bestgen

Comments submitted by: Kirk LaGory, Dave Speas, Pete Cavalli and Harry Crockett

CONVENED: 1:05 p.m.

1. Introductions and Review/modify agenda - Melissa added wetland updates to the agenda
2. Approve previous meeting summary - meeting summary approved by the committee. >Julie will finalize and post (*done*).
3. Project 129 SOW - Desolation/Gray canyons humpback chub - Katie Creighton explained the SOW was approved through email in February, but UDWR staff was present to answer any questions. John said UDWR submitted a comprehensive SOW during last year's planning efforts, which has since been reduced. The original proposal doubled the size of sampling sites to 12. The current scope proposes sampling only 6 sites, but intensifying the effort at those 6 sites with both hoop nets (20 nets per site) and antennas to reduce variance at each site. Antennas will be deployed for the entire study period. The original scope proposed beginning habitat evaluations this year; that will be delayed until 2019 until after John has a better understanding for the Deso/Gray region. Electrofishing has been abandoned between sites. Pete asked about the difference between point estimates and density estimates. John clarified that those are the same thing. Pete also noted that Figure 1 does not have any New Estimate Sites (hollow circles). >John will fix the maps for future years. UDWR consulted statisticians at USU who recommended intensive sampling at fewer sites to decrease variability around each point estimate. Katie noted that increasing the number of sites may be more relevant in future years if better point estimates can be attained using this method first. The results could then be used in conjunction with the habitat data. Pete asked how the original sites were determined. Tom Chart said it was based on an exploratory, canyon wide chub searches by Valdez and others in the 1980's. Pete would like expansion to a broader sampling group once solid estimates are obtained, because the sites currently sampled likely only include areas with high chub densities. Melissa said that sampling for chubs in optimal habitat may not show change as significantly as in less optimal habitat, so adding random sites may be helpful. The committee thanked John and Katie and supported the efforts moving forward this summer.

4. Project 138 SOW – (See attached PDF of presentation) Young-of-year pikeminnow and others monitoring - Chris Michaud noticed some trends, including the loss of high-value diverse habitat such as scour channels along sand bars. He noted that studies in the 1990's (conducted by Melissa) examined the relationship between habitat characteristics to young-of-year Colorado pikeminnow multiple times during the year. The results were not necessarily clear: on the Green River, high flows were associated with reduced habitat but Colorado pikeminnow abundance was not related to habitat quantity. On the Colorado River, no correlation was seen between flows and available habitat; moderate water years seemed better for Colorado pikeminnow production. Chris believes it is time to revisit these study efforts using new GIS and remote sensing technology to identify whether or not nursery habitat quantity and quality are declining. He noted that more data is available now such as sediment data from USGS at multiple gages. Chris is requesting seed money in 2018 to investigate whether or not habitat exists in the historic reaches that could be studied further, project what a full-blown assessment would cost and determine if partnerships with USGS/NPS may be viable. Chris is asking for \$12,600 to sample at each site in 2018; the request would not change obligated funds. In future years, funding may be requested for continued sampling in 2019 and 2020 if the concept proves out, coupled with funding to gain statistical expertise from USU.

Jerry encouraged Chris to talk to Kirk LaGory about the imagery studies occurring in the middle Green River and noted the NPS has LIDAR/NAIP data from Flaming Gorge Dam to the confluence with the Colorado. Melissa said there are a few other master's projects looking at the channel narrowing /widening projects run out of the GCMRC. Melissa said we need to coordinate all of these efforts to ensure duplication is not occurring, maybe in the form of a symposium. Chris clarified that although there is a lot going on to evaluate sediment movement, there is little occurring to link it back to Colorado pikeminnow populations. Chris is hoping to start in August with one pass to develop a baseline and discover what challenges may exist. Based on the results of that effort, he would develop a 3-pass plan to implement in 2019. Melissa said NPS is interested in developing sampling efforts to monitor the effects of experimental flows to habitat conditions. Tom Chart noted that replicating the 1990's study would be valuable to see what changes have occurred and expressed concern about the timeline for a symposium. Jerry recommended that it would be an appropriate topic for the Utah AFS or the 2019 Researchers' Meeting. > Jerry and Melissa will compile a list of projects covering this area of research and start discussions about a symposium. Dale and Harry highlighted work in the San Juan; Dale will send information to Chris. Pete asked if there is room in the schedule for a full-blown project. Chris said that both August and March are open; September may be an issue and might have to be combined with other sampling trips. The committee supported the pilot project, and encouraged UDWR to submit a revised scope of work in the next 2 months.

5. Bonytail stocking discussion, proposed next steps - A call took place in early March to discuss stocking locations so fish could be stocked in early April. Pete emphasized collecting and reporting environmental data with each stocking event. >The group emphasized having this call earlier next year, such as the fall.

- Wahweap is stocking at Green River State Park, the Dolores near the Rio Mesa Center, and at Mineral Bottom.
- Ouray Randlett is stocking at Enron boat ramp on White River, Leota 10 floodplain site, and other flooded tributary mouths (Pariette, Stewart Outlet, Baser wash, & RM 259 side channel).
 - i. Ouray NWR is willing to work with us to supply water and get fish out of Leota 10, so it is a viable option this year.
- Ouray Grand Valley is stocking in the Colorado River mainstem (Island backwater, Grand Valley Sites and Walter Walker and new locations upstream near Rifle),
- CPW is stocking at Yampa at Deerlodge, De Beque, and Salt Creek near Loma.

6. Stirrup & Stewart Wetland Updates

- Reclamation, BLM, and Program office met to discuss Stirrup wetland modifications last week. A design template was proposed with culverts and an overshoot gate, but design components need to be updated. BLM has offered to perform NEPA on the project. Excavation may be needed near the outlet to make sure the wetland can be completely drained, along with installation of a fish kettle. Tom reiterated that the Stirrup wetland is one of the most highly ranked sites for wetland restoration, with a maximum depth of 6 ft. and a maximum size of 28 acres. One concern that remains is that excavation may puncture the natural sealing of the wetland, and so cost estimates will include lining to prevent leakage. Once design/costs are developed by Scott, >Dave will send to the BC for approval, and then MC would need to approve funding. Tom said he is hoping construction can be completed before spring runoff in 2019. Dave said construction crews are currently available in March/April 2019 to do the work. Dave encouraged revisiting the Matheson proposal, which was supported by several other members. >PDO will add Matheson to a future meeting agenda.
- Stewart Lake burn - Matt Breen said Forestry, Fire and State Lands conducted an 11-acre pre-burn on the upper edge of the property (which protects private property and provided a training opportunity). Two burns are planned in the next few weeks, but are dependent on weather (e.g. wind and ceiling conditions) and available resources (e.g. adequate staff). As soon as a weather window opens, the burns will occur, but if it cannot be burned by May, the burn will not occur until after the summer season. The committee thanked Matt for all of his work to restore the wetland.

7. Humpback chub update - Tom Chart said the SSA was completed at the end of last year with input from the Science Team and coordination between Regions 2, 6 and 8. The SSA addresses species needs, current condition and future condition but does not make a decision about status. In January, the Service determined it was interested in beginning a downlisting package based on the data presented in the SSA. The five-year review was signed on March 19. Tom has since been talking to a variety of news outlets to try to get the news out. Tom clarified that threatened species currently may keep all the same protections as an endangered species, but downlisting allows for the exploration of a 4(d) rule, which could relax protections for some populations. The Service does not currently see the utility in a 4(d) rule

for this species. The PDO is committed to getting the proposed rule out in FY19, but acknowledges logistical and staffing constraints. Paul asked what 4(d) rules might apply for fisheries. Kevin said both scientific collection permits and catch / release angling would be examples.

8. Review of draft RIPRAP revisions and assessment – The Committee reviewed the draft RIPRAP documents posted to the listserver on February 12, 2017.
 - Draft revised RIPRAP tables and draft RIPRAP assessment (these notes capture the related conversation that occurred the afternoon of April 2 and the morning of April 3). Other minor changes are reflected in the RIPRAP tables as revised.
 - a. *General I.E. - >Don Anderson will email the instream flow spreadsheet to the BC in its current draft form
 - b. *General II.B.2 & II.B.3
 - i. find EPA weblinks for GIS data around pipelines (>*Done. US DOT maintains [website](#). Linked in RIPRAP.*) and contingency plans (>*Done. [Green River plan dated 2015](#) is posted*) and distribute to the BC.
 - ii. Dale asked if anyone had contact information around who we should call when spills are seen on the river because we operate at a different scale than the EPA. The contacts are in Appendix A of the Green River Contingency Plan and are locally applicable (nrt.org). >The PDO will try to figure out how best to distribute this information.
 - c. General: the CPW nonnative workgroup should be referenced. (*Done. Added to General tab, lines III.F.2, III.G.2, and III.H.2.*)
 - d. All: Genetics - Fix all references to “Dexter NFH” to SNARRC > (*Done throughout document*)
 - e. *General: IV.4A.4.d.1 - how do we get fish to SNARRC if we catch them? Is there an informal plan and do we need to formalize? Do they still need more fish? Can this be paired with the habitat sampling (Michaud)? >Julie will contact William Knight. (*Done. Awaiting response.*)
 - f. General: V.B.1.a.1 - What is the climate change initiative? (*Done. Updated.*)
 - i. Research Framework can be [found here](#). > PDO recommends revisiting the list of recommendations with the BC in July (*listed below on topics for July, done*).
 - ii. Recommendation for Climate Change Initiative:
 1. “Implement a climate change initiative that outlines a strategy for dealing with the effects of drought, reduced stream flow, and associated effects in the context of recovery of the four endangered fishes. Climate change initiatives should also assess effects on invasive species, and their potential interactions with natives. . Such work is being considered under the Southern Rockies Landscape Conservation Cooperative (LCC) but other sources of support should also be investigated.”
 - g. *Green: I.E.3. Paul Badame will check on NEPA compliance of the San Rafael tributary management plan.

- h. Stocking tab: Julie will fix and reimport >*Done*.
 - i. *Yampa: ISF: Check 5 year increments on flow filings to make sure the Xs are in the correct years. > Don to check rows I.B.3.e, I.B.4, I.C.3.d, and I.D.2.d.
 - j. WH: ISF: I.A.1. Update verb tense in column O to give a better explanation >*Done*.
 - k. *CO: ISF: Check 5 year increments on flow filings to make sure the Xs are in the correct years. I.A.3.c, I.A.4.a.(3),
 - l. *CO:ISF:I.A.5.b Don to check when the Ruedi Res. pool expires:
 - m. *CO:ISF and throughout document - if it says post program, it needs a description of what activity might be occurring. Yellow colored boxes.
 - n. *GU:ISF: I.D.1.a. - need to look at Xs in boxes
- Draft revised RIPRAP text (Word document). Not reviewed during the meeting due to time constraints. Committee members will send comments and recommended changes to PDO by Thursday April 5th.

ADJOURNED: 5:08 p.m.

Tuesday, April 3, 2018

Participants: BC: Melissa Trammell, Pete Cavalli, Jerry Wilhite, Brandon Albrecht (via phone), Dale Ryden, Dave Speas, Paul Badame, Harry Crockett, Tom Pitts (via phone)

Others: Don Anderson, Michael Mills, Kevin McAbee, Julie Stahl, Tom Chart, Darek Elverud

Via phone: Kirk LaGory, Phil Miller, Travis Francis, Kevin Bestgen, Tildon Jones
 San Juan Basin Recovery Program: Mark McKinstry, Tom Wesche, Scott Durst, Scott Clark, Nate Franssen, Ray Tenney, Ben Schleicher, Eliza Gilbert, Carrie Padgett, Cathy Condon, Bill Miller, Ryan Christianson

CONVENED: 8:30 AM

9. Green River Flow updates

- Update from the GREAT - Kirk LaGory reviewed changes to the flow recommendations for Flaming Gorge. Kirk said a number of changes have been made to peak flow magnitude and timing, but no changes have been made to the instantaneous peak flow (18,600 cfs in 1 out of 2 years which is bankfull in Reach 2). Floodplain wetland connections occur at 14,000 cfs which is now the secondary target in 1 out of 4 average years instead of 8,300 cfs. Peak flow durations have been classified as goals, recognizing that there may be years of insufficient volume to achieve those goals. Muth *et al* recommended matching peak flows with the Yampa; the current recommendations formalize using LTSP in most years instead. The base flow recommendations formalize the experimental base flows triggered by the presence of Colorado pikeminnow larvae

which is a key recommendation: changing based on a biological trigger rather than a specific date. The GREAT eliminated the recommended down-ramp rate from peak flows to base flows, which was originally trying to match a more natural hydrograph. By getting down to base flows earlier, more volume is available to maintain experimental base flows for a longer time period. October to February base flows match the Muth *et al* recommendations. In average and drier years, a smallmouth bass spike-flow is recommended prior to the Colorado pikeminnow drift. The current recommendations relax the 3% variability recommendation within the baseflow period to a 300 cfs per day change during transition periods, which is based on an estimate of the stage change by 0.1 m which is protective of backwater conditions. In very dry years, lower base flow conditions may be reached earlier based on lack of water availability.

Temperature recommendations have not changed from Muth et al, but there is revised guidance around how those recommendations are met. The recommendations are currently based on date, but the recommendations will acknowledge that the critical benchmarks are the 18 C limit and the temperature differential at the Yampa/Green confluence during the pikeminnow larval drift period.

The GREAT has been working on implementation guidance to set annual priorities. Priorities are based on hydrology, with obvious priorities in both wet and dry years, but shifting priorities in intermediate years. Recommendations focus on prioritizing a single species or channel maintenance based on conditions. Timing of peak discharge can change based on these priorities - when channel maintenance is prioritized, matching the Yampa may be important, when floodplain wetland connections are likely, matching larval drift is more important. For the foreseeable future, razorback sucker are the priority for timing of peak flows to a biological trigger. Elevated base flows and smallmouth bass spike-flows are prioritized in drier years (below median average and moderately dry years), constrained by water availability. Guidance is also provided around when to provide more volume to peak flows vs elevated base flows.

Preliminary modeling has been completed for Greendale and Jensen gages and Flaming Gorge Reservoir with and without the modified recommendations. Modeling is currently in development to document how frequently targets are expected to be met given Flaming Gorge operation rules. NPS has concerns that elevated base flows and smallmouth bass spike-flows will result in channel narrowing. The white paper produced by NPS was sent to the BC on 4/3/17. Many sections of the new recommendations are complete, but modeling and related sections must still be finished, anticipated completion in Summer 2018.

10. Colorado pikeminnow PVA report - Kevin McAbee thanked Phil for presenting and introduced the PVA as a recommendation from the Colorado pikeminnow recovery team. The draft report currently under review is based on input from species experts, a PVA technical team, and the UCRP and SJRIP Program offices. Phil Miller said the analyses use a population dynamics software called Vortex. The software is flexible and can be widely applied to many species with varying information about demographic rates. Three subbasins were modeled: Green River subbasin, upper Colorado River subbasin and the San Juan River

subbasin. Phil is currently working on a combined model that incorporates information across all basins.

The key inputs are historic abundance and relationships between summer flows and fall young-of-year captures in ISMP sampling. Fall ISMP sampling of age-0 fish is a surrogate for fecundity because little is known about egg production, survival, and maturation in the wild; however we have robust data for fall age-0 captures. That is, August-September flows and age-0 fall captures per breeding female were used to produce probabilistic statements for fecundity values based on a function of flow and whether or not flow targets were met. Two hypotheses of long term population trends of adult abundance data were evaluated, a two-phase model (increasing through 2000 followed by population decline) or a single-phase model (a pattern of population decline that is less severe but longer in term). Both dynamics are supported statistically so both were evaluated as plausible. Management actions were applied to both dynamics to predict populations into the future. Models were calibrated based on survival data collected over the last 25 years using both dynamic hypotheses.

The predictive models were then used to evaluate abundance trends under different management scenarios that directly impact demographic and survival rates. Management actions in the Green and upper Colorado rivers included frequency of providing summer base flows within ranges expected to maximize production, management of nonnative fish, changes in adult mortality, screening of the Green River canal, and combined intensities of these different management actions into predictive scenarios. In the San Juan River, management actions evaluated stocking success and nonnative fish management. The model shows that in the San Juan post-stocking survival is likely to be low because of very low levels of reproduction and recruitment. Populations would need to be increased dramatically before stocking ceased. The metapopulation analysis indicates that inter-basin interactions support genetic exchange, but not much demographic benefit.

Paul Badame asked how summer base flows are related to fecundity of Colorado pikeminnow rather than larval survival. Phil said from the model standpoint, there isn't a direct relationship between production by a gravid female, but instead is a combined metric of young-of-year survival (it's just labeled fecundity in the model). Kevin clarified that we did not have data around how many eggs each female produced, but instead have data from fall ISMP monitoring. Melissa recommended using a different label for "fecundity". Tom Pitts asked what other factors affect fecundity other than flow. Phil noted that nonnative predator removal does have an impact on young-of-year survival rate. Tom asked if there is a way to assess the feasibility of the ideal management scenario in the San Juan River subbasin. Phil said we do not have age specific estimates in the San Juan, we just know that survivorship across age classes is exceptionally low, so the rates for any given age class are estimated to produce a model that looks like the current population. Scott Durst clarified that age-specific survivorship is in the works, that age-1 survival has recently been documented in the river (which is not currently in the model) and reinforced the fact that these models are predictions and we do not really know what the effects of management actions might be. Nate Franssen added that predation rates by channel catfish are also being explored. Phil said these new developments could be incorporated into the model if time allows. Nate Franssen

said the documented age 1-3 survival rates are similar to those currently in the report and may not produce much of a change.

Tom Pitts noted that any population response appears to take 10-20 years to manifest after management actions change. Kevin McAbee and Phil confirmed this and reminded the group that the status quo (current data) is more of a representation of the effects of management in the early 2000's rather than actions specific to today. Phil said if there are management actions that have been implemented in the last few years, they could be added to the current status quo scenario, but that has not yet been done. Tom Chart explained that flow and nonnative fish have been managed in all systems, but we can still improve. Tom Chart noted that screening of the Green River Canal is currently planned to occur in the next few years and it is predicted to positively affect many life stages of Colorado pikeminnow. Tom Chart said one of the things we discussed is a modeling run that would characterize where the species would have been without recovery program actions, but that we have not determined how to describe those scenarios. Phil said this is really difficult to do, but there has been renewed interest in what is called 'counterfactual analysis' in his organization which predict what would have happened without recovery actions.

Melissa reminded the group that reviews are due to Phil on 4/20. >The PD, San Juan and Phil will determine whether new San Juan data can be added based on timeframes. Phil said he is interested in exploring metapopulations further, but thinks the three populations are most appropriately managed as three separate demographic basins.

11. Project 127 – Colorado basin pikeminnow population estimates - Grand Junction FWCO does not currently have seasonal employees which means that Colorado pikeminnow population estimates will not occur this year. Work would have had to begin last week. The project will be delayed to 2019-2021. Delaying the work a year preserves the quality of the annual and full 3-year population estimates. Trying to start late or reducing total number of passes could result in poor estimates or could result in requiring four years of sampling. USFWS will ensure this does not occur again next year. The schedule for Colorado estimates will be reevaluated in future years. Vernal FWCO is hiring returning seasonals which started this week. White River Colorado pikeminnow estimates may be slightly delayed, but will be completed.
12. Recovery Program's 2018 Green River Flow Request - Tom Chart said the flow request letter to Reclamation has gone through the committees and is basically the same as previous years. The request focuses on continued larval triggered spring releases, elevated base flows within existing seasonal flexibility identified in the 2006 ROD, and a continuing emphasis on the importance of smallmouth bass spike flows at some point in the future.
13. Other updates:
 - Wahweap - Paul Badame said the hatchery found funding from NRCS to harden the streambank shared with the wash and will provide rock as in-kind contribution.
 - Starvation Reservoir - The USBR office in Provo has delayed construction of the screen at Starvation because they want to reevaluate the design. The current

design was completed five years ago, with a summary document of evaluated alternatives. Regressing to the design phase will likely delay construction until after other capital projects (~2021).

- Humpback chub refugia/broodstock development - Grand Valley brought 10 additional fish into the hatchery to supplement the refugia population

14. Review previous meeting assignments – *See Attachment 1.*

15. Review reports due list – an updated list was sent to the Biology Committee with this agenda.

16. Schedule next meeting/webinar – July 16th afternoon, July 17th all day, Grand Junction

- *Agenda items will include Stewart Lake burn update; Jim White about Dolores smallmouth bass flow; field updates; RBS SSA; Research framework recommendations.*

ADJOURNED: 1:39 p.m.

Attachment 1: Assignments

The order of some assignments has been changed to group similar items together.

For earlier history of items preceded by an ampersand "&", please see [previous meeting summaries](#).

1. Humpback Chub (refugia/broodstock development / genetics)
 - The **Program** will develop an action plan for establishing refugia for humpback chub (avoiding getting bogged down in genetic analysis) and continue to add new wild fish to hatcheries.
 - Program needs to continue to evaluate fish for Yampa Canyon replacement
2. The Committee endorsed an experiment to tag smaller hatchery razorback and bonytail (for fish coming out of floodplains) & 1/25/17: *Discussed at the January meeting; **Tildon Jones** will assist **Matt Fry** in completing the report. Any additional comments should be submitted by Feb. 15.*
3. Floodplain follow-up assignments:
 - a. The **Program Director's Office** will discuss terms of the Escalante wetland and Lamb property leases with **Ouray NWR (Dan Schaad, Sonja Jahrsdoerfer, and Andrew Pettibone)** to ensure the Program really benefits from them. Tildon noted that the easements may be protecting these floodplains from other development. Tildon said there are two easements being proposed to be open to oil and gas leasing though the BLM - Pariette and Escalante Ranch. *Pending.*
 - b. **PDO** will develop a prioritization strategy for both the Colorado and the Green by the end of August and will schedule a call (Sept-Oct) to continue discussion. 10/27/17 - Draft discussed by Committee; comments due within two weeks to the Program office. Tom Chart will then take it back to Brent and Ryan and see about next steps. 1/25/18: Prioritization now dependent on elevation surveys and larval information.
 - c. Matheson wetland consideration
4. Discussion on prioritization of efforts between stocking vs wild support of razorback sucker. **PDO** will incorporate into the planning process
5. **UDWR-Vernal** will explore options to protect juvenile razorback suckers in the channels just outside of Stewart Lake. Fish coming out of the wetland seem to have high site fidelity which may make them vulnerable to predation in the channel.
6. **PDO** will add discussions about northern pike population estimates in the Yampa to future agendas as appropriate.
7. National Park Service white paper regarding monitoring pre and post-spike flow. **Melissa Trammell** will distribute information as it becomes available. > done 4/3/18
8. Exploration of using alternative methods of nonnative fish control in systems where traditional mechanical control is ineffective/infeasible. **Kevin/Tom/Don** will start the discussion with relevant parties and bring agenda items back to the BC as necessary for both

the White and the Duchesne. **Kevin** will talk to Jenn, Chris Smith and Matt Breen to get more information around the White and Kenney Reservoir.

9. BLM concerns regarding ownership of Stirrup wetland. **Paul Badame** will bring this information to Todd Adams (Utah rep on MC) to discuss in water resources at the UDNR level. 4/3/18: Jerrad Goodell will investigate and provide an answer in April.
10. SOW Updates:
 - Update Stewart Lake management SOW. **Matt Breen** will revise the SOW for FY19 and beyond.
 - John Caldwell - will fix the map on Project 129.
11. The hatcheries need new guidance from the PDO which will incorporate HCP protocols. **Julie Stahl** will provide as time allows. Guidance will include collection and reporting of environmental data. Stocking discussions will happen earlier in the year and be more comprehensive.
12. Geomorphology/CPM nursery habitat Symposium - **Jerry Wilhite** and **Melissa Trammell** will explore starting a symposium at either the Researcher's Meeting or Utah AFS.
13. **Dave Speas** will send out design/cost information on the Stirrup wetland once attained.
14. Don Anderson will email the instream flow spreadsheet to the BC in its current draft form (*done, April 17, 18*).
15. PDO will figure out how best to distribute spill contact information (potentially on the website).