

Biology Committee Meeting
August 23-24, 2004
Grand Junction, Colorado

Biology Committee: Tom Chart (now representing the Fish and Wildlife Service), Tom Nesler, Tom Pitts, Melissa Trammell, Gary Burton, Kevin Christopherson, Dennis Kubly (representing the Bureau of Reclamation), Kevin Gelwicks, Bill Davis, and John Hawkins.

Other participants: Bob Muth, Tom Czapla, George Smith, Pat Nelson, Angela Kantola, Dave Speas, Mark McKinstry, Rich Valdez, John Hayse, Gerry Roehm, Gordon Mueller, Larry Crist, Bob Williams, Chris Kitcheyan, Rick Anderson, Ray Tenney, Doug Osmundson, Paul VonGuerard, Chuck McAda. Additional participants on Tuesday: Don Meyer and Pat Martinez.

Assignments are indicated by “>” and at the end of the document.

Convene: 1:00 p.m.

Monday, August 23

1. Review agenda and previous meeting and conference call summaries - The April 28 and May 10 summaries were approved as written; >Angela Kantola will make sure Kevin Gelwicks is shown as having participated in the May 12 conference call. >Bob Muth still needs to discuss the outcome of the nonnative fish stocking regulations evaluation with Bruce McCloskey and determine what needs to be done to address this issue with CDOW and the Commission. >Utah and Wyoming still need to review their nonnative fish stocking permitting and regulating processes to be sure they don't gaps similar to those discovered in Colorado (especially compliance). >The Program Director's office will work with Kevin Christopherson and Kevin Bestgen on funding larval identification from the larval entrainment work.
2. Review reports list - >Bob Muth will call Tom Blickensderfer about the status of Colorado's aquatic management plans and put this on the Management Committee agenda. >Angela Kantola will post the updated list to the listserver. >The Biology Committee should discuss what to do with the Starvation Reservoir escapement work (after the annual report is submitted).
3. Approval of 'Dynamics of northern pike spawning and nursery habitat in the Yampa River, Colorado' - Tom Nesler noted that all the objectives could not be met since some were contingent on success in excluding pike from spawning habitats. The study did identify important spawning habitats, however. The statements regarding Stagecoach and Catamount reservoirs should be re-cast as recommendations, not conclusions. Clarify the origin of tagged northern pike that were caught in the study. On page 2, roundtail chub should not be identified as federally endangered. Also, re-word the sentence that seems to indicate that areas below dams are unimportant. If the site at RM 163.85 was a primary backwater site, why does it not

appear throughout the document (and is this the same site as 163.8)? Clarify sentence about limited recruitment of pike in the Yampa River (main channel). The Committee discussed the infeasibility of an electric barrier and suggested this portion be revised. Also, delete “should be discouraged” clause from the small reservoirs and ponds recommendation. The Committee asked to see the revised recommendations section (which will be in bulleted format) >Tom Nesler will post the revised recommendations to the Biology Committee.

4. Approval of ‘Evaluation of Larval Razorback Sucker and Bonytail Survival in the Stirrup Floodplain Depression with Nonnative Fish Species’ - Bill Davis asked if “re-set” was really tested, since it wasn’t compared to a non-reset area. Kevin said the previous year showed no survival in a non-reset area. Kevin will clarify in the discussion section what was actually tested. Tom Nesler noted that the precision of the area measurements is probably over-stated. Note at the beginning that razorback sucker and bonytail were in the same enclosures with the nonnative fish. Clarify the approximate age of the nonnative fishes placed in the enclosures. Clarify meaning “very high” densities of larval razorback sucker and bonytail on page 4. Table 1 should contain bonytail stocking information (true of many of the tables, actually). What is meant by water quality measurements were “alternated” on page 3? Page 5 should say that bonytail were stocked into the same pens, not the same ponds. Explain why different population estimation techniques were chosen. Correct percentage calculation on page 10 (9.8%, not 10.8%). Clarify second paragraph under results. Bill Davis asked why Kevin thinks the zooplankton densities were similar and Kevin replied that the total densities of fish were similar; Kevin will clarify. Bill asked how the razorback sucker survival estimates against a variable predator load were derived (below Table 4). Kevin agreed that fish outside the enclosure should not be included. Bill asked why there was a difference in razorback, but not bonytail growth rates; Kevin will add some discussion about that. Tom Nesler commented on the population estimates, noting that in some cases, the lower confidence interval is the same as the point estimate, and sometimes the estimate is not within the confidence interval, and in one case the point estimate was lower than the number actually caught. Kevin agreed this seems wrong, but apparently it is correct, and he will add clarification explaining why. Tom Pitts suggested the first conclusion should say “survive and contribute to recovery” or “achieve survival and contribute to recruitment” rather than “recover these species within natural floodplains.” Bill Davis pointed out that it wasn’t a reset floodplain. The second bullet is an observation, not a conclusion. Bill and Tom Nesler questioned the third conclusion. Tom Pitts suggested the higher survival rate in the control (see last sentence of executive summary) would be worthy of a conclusion. >Committee members will submit additional specific comments to Kevin by September 10. >Kevin will revise the report and re-submit it to the Biology Committee by October 5.
5. Process for reviewing non-Program reports - Entities submitting non-Program reports to the Committee should make clear what they’re asking the Committee to do (e.g., approve the report, consider the recommendations, etc.). The Biology Committee will inform the requesters of the timeframe in which the Committee can consider the report. The Committee also will ask

the requesters to go through the typical process of peer review, revision, etc.

6. Review of 'Movement, migration, and habitat use by Colorado pikeminnow in a regulated river below Flaming Gorge Dam' (non-Program report; approval requested) - Melissa Trammell noted that the National Park Service, which sponsored this work, has a separate review process. >Chris Kitcheyan will e-mail his responses to reviewer comments to the Biology Committee. Melissa Trammell said the Park Service will coordinate with the Program if they recommend implementation of any of the report recommendations. Gary Burton noted that the report needs a careful proofing. Bill Davis asked the basis for the sentence in the second paragraph of the executive summary which concludes that the native fish community re-established itself after the penstock modifications. Chris said it is based on the Holden and Crist citation and will clarify what is anecdotal vs. what has been shown to be a cause and effect relationship. The Committee decided they would consider the report after the Park Service has commented on it, those comments have been incorporated and the revision has gone back to the peer reviewers (their comments and the authors' responses should be provided to the Committee), and the coordinator has had an opportunity to review the revised report. Melissa noted that she and John Wullschleger don't believe the data support the base flow recommendation.

7. Review of Anderson flow investigation (non-Program report; Program has been asked to consider adopting the methodology described in the report for use in determining instream flow requirements for endangered fishes) - Given that the purpose of this study was not to recommend flows for recovery, Tom Pitts asked if Rick thought the methodology is appropriate for making flow recommendations for endangered fish and Rick said believes the methodology is appropriate, but it's important to know the limiting factors (Rick added that he doesn't believe adult Colorado pikeminnow habitat is limiting in the 15-Mile Reach). Rick clarified that his recommendations are *minimum* flow recommendations to maintain existing populations of native, non-endangered suckers. Rich commented that the method appears fairly precise, but accuracy is another question. Rich asked what would be involved in applying the method more broadly and how would it apply to endangered fish (given the cost of 2D modeling), and Rick said it would be very expensive, but once a section is modeled, it can be re-used if you know the habitat requirements of the various life stages. Tom Chart asked how habitat quality (if it is a function of high flows) could be factored in and Rick said it would be difficult to tie the biology to peak flow frequency using this model. Dave Speas asked if complex life-history apparently precludes use of this method (as for roundtail), is it really applicable for the endangered fish? Rick agreed a different analysis would have been needed for roundtail. Dave noted that he thought the 2D methodology was appropriate for suckers, but did not believe the flow recommendations were well-founded. Rick agreed there was considerable subjectivity in the flow recommendations. John Hawkins emphasized that no explanation is provided between what the data would seem to suggest and the flow recommendations Rick made. Tom Pitts suggested that everyone (including the Program Director's) office >provide comments by the end of September, Rick will respond to those; then the Program will consider those responses

and let CWCB know if they believe this is an appropriate methodology for making endangered fish flow recommendations. >Bob Muth will let CWCB know of this process. Rick distributed his comments responding to the reviews submitted so far. >Angela Kantola will forward the peer review comments on the report to Dennis Kubly. >Tom Nesler will send to the Biology Committee the draft manuscript that has been submitted for publication on this work. Doug Osmundson noted that there are two steps to this methodology: the modeling, then how that is applied to make flow recommendations. Bob Muth recalled early work with PHABSIM and habitat suitability models and noted that these methodologies were abandoned when it was realized they didn't work for the endangered fish. Bob suggested that Rick consider this as he responds to comments.

8. PITTAG transition update - Tom Czapla said the Program now purchases the newer, lower frequency tags, but still has some of the 400khz tags left (which are being used on stocked fish, especially smaller bonytails), although most of those will be gone by the end of this year. Several new tag readers are being purchased this year. Due to errors in the new readers detecting the older 400khz tags, the field will still use both tag readers for the foreseeable future. Doug clarified that whenever they catch a fish with the older tags, they put in a new tag. The only fish tagged with the new tags so far are Colorado pikeminnow in the Colorado River. (Those working in the Green River should be aware of this, in light of potential fish movement.) Chuck said the new tags should be used for all population estimates.
9. Stocking Evaluation update - Tom Czapla said he and Chuck are still working on this (the data files have required considerable clean-up as software has been migrated from dBase to Excel to Access). Tom said he's concerned about whether Chuck has received all the data that have been collected (e.g., in nonnative fish studies, Cataract work, etc.). Chuck said he thinks he has most all the data, but will double-check. Rich asked the best protocol for determining the origin of re-captured stocked fish and Chuck said that's what they're working on right now. >Tom Czapla will try to provide the Committee a projected completion date by their next meeting. Bob Muth said he doesn't believe we need to do an analysis of stocking success prior to stocking larger fishes, and Chuck said he doesn't believe we need to re-summarize the data that Bob Burdick has already written up for razorback sucker. Gordon suggested checking with Paul at ASU on how they're managing data in the lower basin.
10. Review of 'Consideration of site-specific floodplain inundation thresholds in implementing peak flow magnitude and duration recommendations in the Middle Green River, Utah' (Flood plain white paper; non-Program report; Committee asked to consider logic and determine if uncertainties identified could be addressed in ongoing studies) - John Hayse gave a presentation regarding floodplain habitat and Green River peak flow durations in average to wet years, showing roughly the same amount of depression floodplain area inundated at 14,000 cfs as at 18,600 cfs.

Tuesday, August 24

Gary Burton suggested this information could provide opportunity to increase the duration of inundation flows (and allow a longer period to entrain drifting larvae), without sacrificing the instantaneous peak flow. Larry Crist said he believes we should implement the existing flow recommendations and use these hypotheses to test the recommendations (but he's not comfortable with actually modifying the flow recommendations at this point). Gary said their hope is to look at 14,000 or 15,000 cfs over the next few years. Rich Valdez said it fundamentally makes sense to stretch the duration in years when higher flows aren't available, and he believes this is a valid hypothesis to test under the flow recommendations. Rich noted two caveats: 1) 13,500 cfs was the level at which the dikes would be breached and the connection is initiated (how much above that is needed for full inundation is something we still need to investigate); 2) entrainment appears to be a function of local hydraulic features. Rich noted that another uncertainty about the higher flows (18,600 cfs) is how valuable they may be for increasing overall productivity of the river; John Hayse clarified that they're not recommending sacrificing the instantaneous peak flow. Bill Davis suggested that the EIS could consider implementing the flow recommendations along the lines of what's discussed in the white paper and believes it would benefit both the fish and power customers. Pat Nelson noted that breaching the levees and getting water into the site doesn't necessarily guarantee enough water to entrain drifting larvae. Also, since we want the sites to connect after reset and then maintain the fish in the depressions for a couple of years, we don't want to lower the levees beyond the point where adequate depth is maintained in the depression. Tom Chart emphasized that the flow recommendations are for instantaneous peak flows of 18,600 cfs *or greater* and for two weeks *or more*. Tom said that to change the recommendations in the EIS would delay it significantly (a tragedy in light of the status of the populations at this point); and he believes we should implement the flow recommendations as written and consider these hypotheses within that. Kevin Christopherson listed a number of uncertainties: how backing off the higher recommended flows might affect channel maintenance; what's needed to *flush* the sites; entraining larvae requires that they be in the river on the ascending limb of the hydrograph; what hydrology is needed to *maintain* the depression sites; the importance of nutrient input from terrace flooding; and the question of hydrology/cues required to move adult fish out of the site. John Hayse noted that however the EIS and/or flow recommendations get implemented, it shouldn't preclude testing these hypotheses. Tom Pitts agreed we shouldn't delay the EIS, and noted that all our flow recommendations represent best information at the time and that the Program's intent is to refine those as we go along. Tom said he thinks the data presented in the paper represents good information to test. Tom advocated implementing a strong monitoring program to address these uncertainties (especially with regard to razorback suckers) and recommended that Program staff identify the critical uncertainties and solicit scopes of work to investigate them. George Smith said his sediment paper coming out in the next month will contain a proposal for real-time sediment monitoring help determine release patterns. Kevin Gelwicks stressed that he doesn't think we should be giving up the variability built into the flow recommendations; and John Hayse said he doesn't think their recommendations would do that. Dennis suggested starting with a knowledge assessment of what is known about the ecology of

the system (addressing all 4 species). The EIS stresses adaptive management and Dennis recommended having scopes of work ready to test the various scenarios. Melissa summarized that the Committee is clearly interested in addressing the uncertainties identified, and that would probably take the form of outyear Program guidance. Tom Pitts added that if there are existing scopes of work that can address these uncertainties with some modification, that also could be considered. Gary Burton said they would like to finalize their white paper for future use and asked for >comments to be submitted by September 17 (a final should be out in early October).

11. GIS update – George Smith introduced Don Meyer from the Colorado River Water Conservation District who’s been working on a GIS for the endangered fish. George said he’d like to get the Committee’s input on where to take this from here. Don described: basic GIS capabilities; data tools (local, field, and web access); information included to date (fish stocking and capture data); and the web interface being developed with the Southwest Data Center for interactive map-servers. Don displayed a mock-up of what a map server for endangered fish might look like, showing how fish captures for a specific reach over a specific time can be mapped, for example. Don also showed overlays of aerial photos they are incorporating and noted that Louanne McMartin of the Service’s Grand Junction Ecological Services office is working with Utah State University to expand the Service’s GIS capabilities for the basin. Don explained that on a webserver, spatially-based links could be provided to photos, documents, and more. Ray Tenney said the River District is willing to help move this forward (after which the Program might need to dedicate some resources to maintaining the data). Rich Valdez suggested starting with the all data in the data set Chuck McAda maintains (and link those to the actual datasets). Ray said that can happen (although going back in time is more work, because the data often have to be entered by hand), but going forward if all data could be reported in a highly-importable format, that would be very useful. Don said there are also ways of allowing biologists to input data interactively. Pat Martinez noted that the amount of useful data is increasing exponentially, so how to keep the information updated is a huge question (probably requiring a few FTE’s at some point). John Hawkins said he thinks the Committee needs to carefully consider the question of overall purpose for a GIS, how it would be used, and how it would be error-checked. >George Smith will lead an ad hoc group of Melissa Trammell, Tom Pitts, Rich Valdez, John Hayse and Chuck McAda to continue these discussions.
12. Yampa nonnative fish management and criteria - Tom Nesler identified two concerns: measuring escapement of smallmouth bass being put into Elkhead; and movement of northern pike from the upper reaches of the Yampa River. Tom proposed a criteria of escapement from Elkhead or movement into the downstream reach exceeding 10%. Alternative criteria might be recruitment of a significant percentage or numbers exceeding a target density of the controlled species. Pat Martinez said he thinks whether the number of fish removed is enough should be biologically based, then we need to figure out how to achieve that removal level. Bill Davis suggested we don’t know if we’re getting to the heart of the problem since we don’t know if adult nonnatives are the life stage having the greatest impact. Rich Valdez asked what 10% means and how

reproduction of those escapees would be considered. Tom Nesler said he thinks we first need to determine if escapement or downstream movement are diluting our nonnative fish control efforts. Pat Martinez noted that we need to clarify what we would do with smallmouth bass if escapement from Elkhead is too great (e.g., removal to somewhere else, lethal removal, etc.). Melissa said she thinks we need to treat escapement of smallmouth bass from Elkhead separately from downstream movement of pike and that we should be looking at the percentage of the total population of pike in the upstream reach that moves down. Kevin Gelwicks asked if the tagging effort should be moved upstream to measure escapement of pike from Catamount and Stagecoach, and whether we have information on tag retention (are we doing a back-up fin clip?). Kevin recommended fin-clipping the smallmouth we put in Elkhead. Tom Nesler noted that floy tags tend to make a recognizable wound, so if we start seeing these wounds, it would indicate tag loss. Kevin also asked about young-of-the-year moving out of the reservoir. John Hawkins said they do see small fish, and will capture thousands of them in the native fish response work this fall. Their permit requires putting those back in the river, and John asked if we could consider removing those fish from the treatment reaches (lethal removal would be simple; translocation would be difficult). Tom Nesler said the Division would consider that. The Committee will discuss the criteria further when they see the data collected this year. >Tom Nesler will get information from the researchers and provide it for the next meeting.

13. Review and Discussion of new/revised 2005 SOWs -
 - a. Native Fish Response to NP and SMB removal in the Green River - The Committee approved the scope of work with minor modifications to be made as comments are submitted. Utah abstained, as this is their scope of work.
 - b. RZ larval drift experiments - This scope hasn't really changed; but the Committee approved it as a placeholder for addressing uncertainties identified in the floodplain white paper discussion. Utah abstained, as this is their scope of work. >Kevin Christopherson asked for any additional comments/input from the Committee on this scope.
14. Gordon Mueller – presentation on use of refugia to establish bonytail and razorback populations – Discussion on applicability to Upper Basin Recovery Program. Gordon said refuges like those being used in the lower basin are not recovery, but he believes they are a required tool for advancing recovery efforts (a “half-way technology”), and are the only way to study semi-natural communities and early life stages. Gordon stressed that historically the system had oxbows that weren't connected every year, and this isolation was apparently critical to bonytail and razorback survival. Gordon summarized that he believes the upper basin should integrate isolated refuge communities into the Recovery Program strategy.
15. Next meeting and agenda items - The next meeting will be in Denver and run from noon on October 20th to 4 p.m. on October 21st and will be held at a hotel near DIA. >The Program

Director's office will arrange a meeting room. There also will be a brief Biology Committee meeting after the nonnative fish workshop concludes on December 10. Agenda items for the October meeting may include:

Potential reports to review; Miller 'Bug Report', Christopherson and Modde 'Stirrup Report', Hawkins 'pike removal', Trammell and Speas 'NNC removal', two SOWs from Utah (see this agenda, item 13); Nesler, 'Escapement criteria'; Anderson methodology for flow recommendations.

Adjourn: 12:00 noon.

ASSIGNMENTS

1. Angela Kantola will make sure Kevin Gelwicks is shown as having participated in the May 12 conference call.
2. Bob Muth still needs to discuss the outcome of the nonnative fish stocking regulations evaluation with Bruce McCloskey and determine what needs to be done to address this issue with CDOW and the Commission.
3. Utah and Wyoming still need to review their nonnative fish stocking permitting and regulating processes to be sure they don't have gaps similar to those discovered in Colorado (especially compliance).
4. The Program Director's office will work with Kevin Christopherson and Kevin Bestgen on funding larval identification from the larval entrainment work.
5. Bob Muth will call Tom Blickensderfer about the status of Colorado's aquatic management plans and put this on the Management Committee agenda.
6. Angela Kantola will post the updated list to the listserv.
7. The Biology Committee should discuss what to do with the Starvation Reservoir escapement work (after the annual report is submitted).
8. Tom Nesler will revise the recommendations from Chris Hill's northern pike exclusion study and post those to the Biology Committee.
9. Committee members will submit additional specific comments on the Stirrup report to Kevin Christopherson by September 10.
10. Kevin Christopherson will revise the Stirrup report and re-submit it to the Biology Committee by October 5.

11. Chris Kitcheyan will e-mail his responses to current reviewer comments on the Lodore Colorado pikeminnow report to the Biology Committee. (The Committee will consider the report again after the Park Service has commented on it, those comments have been incorporated and the revision has gone back to the peer reviewers (their comments and the authors' responses should also be provided to the Committee), and the coordinator has had an opportunity to review the revised report.
12. Committee members, the Program Director's office (and anyone else interested) will submit comments on Rick's paper by the end of September, Rick will respond to those; then the Program will consider those responses and let CWCB know if they believe this is an appropriate methodology for making endangered fish flow recommendations. Bob Muth will let CWCB know of this process. Angela Kantola will forward the peer review comments on the report to Dennis Kubly. Tom Nesler will send to the Biology Committee the draft manuscript that was submitted on this work.
13. Tom Czapla will try to provide the Committee a projected completion date of the stocking evaluation by the next meeting.
14. Comments are due on the floodplain white paper by September 17 (Gary Burton said a final should be out in early October).
15. George Smith will lead an ad hoc group of Melissa Trammell, Tom Pitts, Rich Valdez, John Hayse and Chuck McAda to continue discussions on GIS.
16. Tom Nesler will get information from the nonnative fish management project researchers and provide it to the Biology Committee for discussion of the criteria at the next meeting.
17. Committee members are asked to provide additional input on the larval drift entrainment scope of work to Kevin Christopherson.
18. The Program Director's office will arrange a meeting room near DIA for the October 20-21st meeting.