

Biology Committee Draft Webinar Summary, Tuesday, August 26, 2014

PARTICIPANTS

Biology Committee: Dave Speas, Melissa Trammell, Jerry Wilhite, Harry Crockett, Dale Ryden, Krissy Wilson, Brandon Albrecht, Tom Pitts, Leslie James for Bill Davis, and Pete Cavalli.

Others: Kevin Bestgen, Katie Creighton, John Hawkins, Mike Mills, Paul Badame, Matt Breen, Tildon Jones, Tom Chart, Kevin McAbee, Tom Czapla, Jana Mohrman, Scott Durst, Kirsten Holfelder, and Angela Kantola.

CONVENE: 9:00 a.m.

1. Final report reviews

- a. Smallmouth bass assessment – The final report and responses to comments was sent to the Committee for review and approval on July 8, 2014. Kevin Bestgen highlighted conclusions and recommendations and the Committee discussed response to reviewers’ comments. Kevin said this is the second of three reports; the last will be the population dynamics modeling report detailing the model and model results. Melissa asked what’s meant in recommendation #10: “Integrate re-evaluations of effectiveness of smallmouth bass removal efforts into a carefully designed adaptive management strategy to assess implications for recovery of the four endangered fish species.” Kevin suggested this might be re-worded to indicate a more *formal* adaptive management strategy, a much more structured process outlining expectations and then using a formal experimental approach. Melissa agreed a more full explanation of this would be helpful in the discussion or summary and Pete Cavalli concurred. Kevin will see how that can be worked into the report. Jerry Wilhite asked about potential model runs to help understand the effects of not removing tagged fish. Kevin thinks this can be more fully described – either in this or the third report and will take a look at that. The Committee approved the report with the foregoing modification(s).

2. Nonnative fish

a. Reservoir Updates

- i. Starvation Reservoir – Paul Badame said UDWR has been reviewing options to reduce or stop walleye escapement while meeting dam safety and water delivery considerations and discussing the most effective options with Reclamation, CUWCD, and Utah State Parks. A temporary screen in the spillway stilling basin was installed this spring by UDWR, and although it suffered some beaver and muskrat damage, it helped identify a good configuration. The 250-foot long net was installed diagonal to flow below the spillway stilling basin. They learned what to expect in terms of debris and algae buildup. There were 23 days of spill, the maximum flow was ~250 cfs, sustained flow was ~150-170 cfs (~3.5’ high at the screen), and approach velocities were up to 1.5-2fps. The configuration worked well and was maintained with weekly cleaning. They removed the net at the end of July. Based on opportunistic sampling (angling, etc.), thousands of smallmouth bass likely were produced this year in the spilling basin, and quite a few larger fish also were seen. Paul doesn’t yet know the walleye count. They are working on options for a permanent solution and also plan to rotenone the spillway stilling basin in mid-September. This location appears like a good one for a vertical plate screen in the same configuration as the net, and a good option for preventing most walleye escapement (and smallmouth bass, also). UDWR has solicited engineering design bids. The screen size will be 0.25” (won’t stop eggs or larvae), since all observed walleye escapement was juvenile to adult and they saw no indication that age-0 or first-year fish had moved into the river. The stilling basin would be treated post-spill during any year when the reservoir spills. >Paul will send a draft plan out when it’s

available. Another temporary (but beaver-proof) screen will be installed before next year's spill, with a permanent structure to be installed in 2016. Krissy Wilson said half the design cost will come from UDWR's native fish budget and half from the sportfish budget. Dave said he thinks there's some expectation of support from the Recovery Program, so we'll need to discuss what that should look like. Tom Chart noted that the Program's mechanical control in projects #123a and #123b have been contributing to the solution to this problem for a number of years, and will continue to do so. Paul said State Parks believes the cleaning/maintenance cost would be \$5K/year at most. When design is completed, Krissy said UDWR will convene stakeholders (and any interested BC members) to discuss potential funding sources.

- ii. Ridgway and Elkhead Reservoirs – Harry Crockett said they think there's a very low risk of smallmouth bass escapement from the Ridgway outlet works, but a very real risk over the spillway. Spilling spring runoff can be avoided in most years (and doing so benefits hydropower). However, spilling caused by monsoonal precipitation is much less controllable. Therefore, the operators believe they can typically avoid spilling, but can't guarantee it. Habitat in the Uncompaghre is unwelcoming to bass, but they could escape and move into the Gunnison and potentially thrive there. CPW concluded it would be technically challenging to chemically reclaim the reservoir and probably operationally prohibitive due to the required drawdown. Therefore, they are reviewing control and mitigation options. CPW drafted a position paper on lifting any bag or possession limits on smallmouth bass in the reservoir which, if approved by the Commission, will become effective in April. At an August 6 meeting in Glenwood Springs (hosted by the River District), CPW engineers, park staff, and aquatic biologists met with Reclamation engineers, the Program Director's office staff, and water users to revisit screen or barrier options for Ridgway and Elkhead. They generated a list of structural and non-structural options and hope to narrow those down in a meeting on September 4th. CPW still views a screen or barrier of some kind as very desirable options at both Ridgway and Elkhead. Krissy asked who owns these Ridgway structures; Ridgway is owned by Reclamation and operated by Tri-County Water District; CPW owns the Park. In light of the fact that anglers return three of four angled smallmouth bass to Ridgway, Tom Pitts suggested that CPW might want to reconsider implementing a must-kill regulation for the reservoir. Harry said that although must-kill is being discussed at fairly high levels (e.g., recent meeting of water users with CPW and DNR directors), it wouldn't happen quickly. Regarding Elkhead, Harry said CPW is considering many options including proceeding with planning for potential reclamation in 2015 (An initial feasibility meeting is scheduled on September 5 between CPW, Tri-State Generation & Transmission, Tom Chart & Kevin McAbee, water users, and some local governmental entities). Tom Pitts said the idea is to broaden the discussion among affected stakeholders in order to receive input on potential actions. Melissa asked if CPW is considering mechanical removal as part of the interim solution at Ridgway. CPW said it's being considered, but their biologists think it would largely be an exercise in futility. Tom Chart said the Program Director's office appreciates the emphasis on potential chemical treatment at Elkhead. Under that scenario, the District would be drawing the reservoir down very low, and since that could result in 200-300 cfs releases for a long period, Tom asked the group if there may be ways to disadvantage smallmouth bass in the river with those releases. Tom Pitts said he understands the releases would be made through the screens and doesn't know how much manipulation might be available, but it's something they can discuss on September 5. Kevin Bestgen said such a release would have to be timed to smallmouth bass reproduction to have a desired effect, and the Yampa River would otherwise have to be pretty low.
- iii. Stagecoach Reservoir – Under current FERC licensing (and as required under the existing Biological Opinion), CPW is supposed to continue their tagging study through 2015. Harry said Billy has tagged ~1300 pike total (including about 500 in 2014¹), and hasn't recaptured escaped tagged fish

¹ <http://www.steamboattoday.com/news/2014/jul/13/pike-predicament-how-fish-creates-thrills-anglers/>

downstream in Catamount. Melissa asked about CPW's response to the Service's indication in the sufficient progress memo that they are more than willing to revisit the tagging study requirement in the Biological Opinion and replace it with mechanical removal. To accomplish the latter, Tom Chart said the Service would just need a letter from FERC asking the Service to reinitiate consultation (which he believes the PDO could facilitate). Harry said effective mechanical removal may require manipulating reservoir levels. They would like to continue the tagging study because they believe evidence of escapement would help gain cooperation for manipulating the reservoir levels. CPW would prefer not to address Elkhead and Stagecoach simultaneously. Melissa asked what additional effort would be required to just remove the fish; Harry said that to affect the population, a much greater number of fish would need to be removed than currently are being tagged. From a messaging perspective, Tom Chart suggests it makes sense to have a consistent approach (removing the worst-of-the-worst) at both Stagecoach and Elkhead Reservoirs. Harry summarized that CPW's reluctance to shift from tagging to removing pike from Stagecoach is based on: 1) the need for cooperation in manipulating reservoir levels, which might be more likely with evidence of escapement; 2) questions as to whether mechanical removal can be effective given the reservoir configuration; and 3) constraints on CPW resources.

- iv. 98c update – John Hawkins said assignment #20 from the June 11, 2014, meeting summary related to removing northern pike from the ~25 miles long reach of the Yampa River between Steamboat to Hayden. Work in this area was last done in 2004-2005, and was recommended again this year. CPW asked John Hawkins to do one marking and three removal passes. After work to scout the river, retrieve access to private property, and plan this new project, a late start in readying equipment meant they couldn't safely run the reach except for one marking pass because the high river stage precludes boats from passing under bridges. They planned to implement the 3 removal passes as the river receded, but the reach is all privately owned and many landowners sell leases for access to the excellent trout fishery (helped by pike removals upstream and downstream and habitat modifications at the Chuck Lewis SWA). To avoid affecting trout anglers and thus upsetting landowners, John and CPW elected to defer the remaining sampling until next year. Instead, Hawkins' crew assisted Kyle Battige's work downstream at the 151 "hotspot" and Billy Atkinson's reach (~25 miles) near Steamboat. In the one marking pass, they caught and tagged three pike and observed two others. Billy and John will follow up with landowners, be ready for a potential early runoff and prepare to sample earlier next season.
- b. Walton Creek rehabilitation project - Colorado Parks and Wildlife has secured CWCB Species Conservation funding to modify Yampa River habitat at the Walton Creek confluence to reduce northern pike spawning and rearing habitat. Construction could begin after spring runoff 2015. (The Walton Creek project is identified on the RIPRAP addendum table and is a prime in-river source of northern pike reproduction that needs to be remedied.) In the interim, CPW needs to contract an engineering feasibility study (not to exceed \$30K). Yesterday, the Management Committee considered and approved a SOW to accomplish this work with Section 7 funding. This would constitute the extent of the Recovery Program's financial involvement in the project. The engineering feasibility study is intended to assess possible solutions for reconfiguring Yampa River / Walton Creek confluence area to the maximum disadvantage of northern pike. Dave Speas and Melissa Trammell were glad to hear this area is going to be addressed.
- c. 2014 Nonnative Fish Workshop – Kevin McAbee said we've considered a number of suggestions to provide opportunity for more discussion of new methodologies/ideas. The format and structure for this year's workshop will allow more time for PI discussion prior to the full workshop. Plans for 2014 are:
 - December 2-5: Coordinators & McAbee hold webinars to discuss trends in data, 2014 successes/failures, future plans. Kevin said he does not envision much written preparation needed from the PIs for these webinars as they are more for discussion and brainstorming.

- December 15 afternoon: PI's meeting to finalize presentations, discuss ideas to be presented at workshop, address webinar action items.
- December 16-17: Nonnative fish workshop, open to Biology Committee, Program Director's office, and interested parties. (No BC meeting is scheduled in concert with this workshop.) Kevin McAbee will draft the agenda for the workshop and share it with the group in advance.

Melissa said that if this works for PI's, she supports it. Kevin Bestgen acknowledged this is a busy time and recommended considering this year's schedule an experiment to see how it works out before we commit to it for future years. Kevin McAbee and others agreed.

3. Tusher Wash

- a. Electrical barrier study – Based on study design discussions at the February and June Biology Committee meetings, Jackson Gross was to provide a draft scope of work (including budget) for the electrical barrier study to help reduce entrainment in the Green River Canal. Kevin McAbee is working with Jackson to provide a scope in Program format and >will send it to the Committee prior to their next meeting on October 1.
- b. NRCS Diversion rebuild - The final EIS closed last month and the draft BO is being reviewed by FWS and will be provided to NRCS. The Management Committee approved the Program's paying 25% of the cost of the antenna array at the diversion to track passage of fish over the diversion dam. Boat and fish passage are part of the final design. Performance of the weir wall at the Hogback Diversion Dam (tests scheduled to be conducted in November 2014) also will be informative for the Tusher barrier. >Results of the Hogback weir wall will be discussed at the BC as soon as they are available.
- c. Update on canal salvage plans –The diversion rebuild is independent of the Program's responsibility to solve the entrainment problem (now known to be quite serious) on the west side canal. Until we can construct a permanent solution (probably a couple of years out), the BC recommended to implement salvage of native fish out of the canal. The Service (GJ and Vernal) and UDWR-Moab have been discussing how the fish salvage will be conducted in the Green River Canal this fall. Dale's crews will be conducting salvage in the Grand Valley at that time. Tildon Jones and Katie Creighton's remaining staffs are available, but limited in number. Vernal CRFP has adequate equipment, and between their shop and UDWR-Moab, they have at least 75% of the crew needed. This year will involve a big learning curve. Kevin McAbee is working with the canal owners on logistics. Katie and Tildon are preparing draft budgets and the PD's office will recommend funding sources. Six to eight folks will be needed; right now, the two offices have 4-5 people available. Melissa said she'll see if she can find a few days to help. Kevin said they may consider 1-2 years of follow-up salvage after construction of a permanent barrier (in addition to antenna monitoring). Krissy asked about miles of canal to be worked; Kevin said it may be 5-7 miles, but they'll need to learn where fish concentrate. In light of Utah's strict requirements about moving live fish, >Krissy will find out how the native fish need to be moved back to the river (it's possible only downstream relocation is permitted).

4. Review of draft revised Integrated Stocking Plan – Tom Czapla sent a draft revised plan and response to comments (Cavalli, Wilson, and McAbee) to the Committee on July 31. Tom said he also received comments from Dave Speas on the most recent version. Tom reviewed changes (stocking sizes and numbers, acclimation, etc.) from the previous version. Pete Cavalli said he saw a few editorial things that still need to be cleaned up. New information from the White River (Matt Breen) should be documented/incorporated. In addition, Pete and Kevin's comments regarding where and when fish will be stocked should be addressed more specifically. Along similar lines, Brandon asked how excess bonytail would be handled and if that should be addressed in the plan. Tom Czapla will add to the plan our decision to release unmarked excess fish from Wahweap into the system in light of the difficulty we're having with

bonytail survival and absence of wild offspring. We'll likely have a similar situation with bonytail from other hatcheries. Dale Ryden recommended saying that we'll annually stock *equal to or more than* 6,000 fish. Pete asked if Koreen submitted comments. Tom said he didn't get further comments from her. >Harry and Tom Czapla will follow-up on the description of stocking locations (need to build appropriate flexibility into the ISP). Colorado stocked 2,400 bonytail above Debeque Canyon last week (~310mm); Tom will capture that location and stocking in the ISP. >Any additional comments should be submitted within 2 weeks and Tom Czapla will finalize the document by the end of September.

5. Schedule next meeting and outline agenda: The Committee scheduled a webinar for October 27 (9 a.m. – 4 p.m.) and an in-person meeting for January 15 in Moab (after the researchers meeting).
6. Evaluation of Green River flow and temperature recommendations – Tom Chart reviewed the previous concept paper and then the draft scope of work he sent on August 18. The budget covers Kirk LaGory and Kevin Bestgen's time. Kirk said the bulk of the work will be analyzing information that has changed since the 2000 flow and temperature recommendations report. The evaluation is structured to address both physical and biological processes, with nonnative fish as a separate topic. The Green River Study Plan will be summarized in the introduction and the studies conducted under that will be included. Uncertainties in both the flow recommendations and the study plan will be addressed. Dave Speas asked about the cost, which seems high in comparison to producing the study plan, for example (although that wasn't analytical work). The cost covers 40 hours a month for 18 months (starting this October) for both Kevin and Kirk. Kirk believes he'll have time for this because his time on LTEMP is already decreasing. Krissy and Melissa commented on redundancy between this scope of work and the peak flow study plan. Kirk said the focus of the peak flow plan is to establish a monitoring program to provide the information needed to determine changes in the system through time (Colorado, Green, and Gunnison rivers). Krissy recommended adding consideration of bonytail when we look at floodplain connection and inundation; Kirk agreed to add this.
7. Peak flow study plan – The Committee discussed the draft study plan to identify peak flow requirements for sediment transport and habitat maintenance in the Upper Basin (sent to the Committee by Jana Mohrman on July 11). The flow and temperature recommendation evaluation (above) is primarily retrospective (looking at both published and unpublished information since the 2000 recommendations) and looks primarily at biological processes in relation to habitat in the Green River. This study plan is geomorphic only, is forward-looking, and identifies uncertainties related to peak flows in the Green, Gunnison, and Colorado rivers. Tom Chart says this goes back to Cory Williams' 85f work and resolving remaining uncertainties between his findings and Pitlick's (and interpreting 85f, since USGS stopped short of making recommendations). The Management Committee discussed this plan yesterday. Tom Pitts said water users have concerns about the objectives, since the point is to have credible flow recommendations that can be used to legally protect flows. The water users are concerned about how long it will take to implement the plan and whether it will result in validating the flow recommendations (and ultimately delisting the fish). Tom said he also has concerns about evaluation of the Green River flow and temperature recommendations. Dave Speas said he supports the technical aspects of the plan, but questions what kind of studies we're getting into and what they will look like long-term. Pete Cavalli asked about aerial photography; Tom Chart said the last round of aerial photography was taken in 2011 and it hasn't been fully analyzed. Jana said the 2011 data is not stitched together or georeferenced. Kirk said the last systematic evaluation of aerial photography was 2005. Kirk thinks we could update this work in a fairly cost-effective manner. >Jana will look into cost estimates for additional aerial photography analysis. Melissa observed that Tom Pitts may be asking for something on the Gunnison and Colorado similar to what the SOW for the Green River flow and temperature evaluation proposes. Tom Pitts agreed, saying this currently looks like a very open-ended study plan. The Water Acquisition Committee (WAC) is scheduled to review this on September 8. >Committee members will continue their review and provide comments by the end of September (the same will be requested of the WAC). >Within two weeks, Tom Chart et al. will prepare a short background outlining the genesis of this work.

8. Database – Dave Speas introduced Kirsten Holfelder of the [Colorado Natural Heritage Program](#). Kirsten and Amy Lavender will be leading the database project. Dave reviewed the history of the proposal to develop a database for the Upper Basin and San Juan programs. Kirsten described datasets they've worked with and said CNHP's goal is to develop technical tools to support biological resources. Their largest database is Biotics5, a web-enabled Oracle database. Dave said Peter McKinnon will be working with CNHP to upload remote PIT antenna data. CNHP has begun compiling contact lists for where data are housed (the FWS-GJ PIT-tag data from the last 10 years and San Juan data provided by Scott Durst will provide the bulk of the seed data for the first mock-up database to be developed over the next year). A symposium or session on the database and PIT tag arrays will be scheduled in conjunction with the January 2015 researchers meeting. About a month later, a follow-up session(s) will be scheduled with PIs and researchers. Kirsten said the design process will be very iterative and they'll seek regular feedback from PIs and database users. Dave encouraged folks to be thinking about who should interact with CNHP on this project and Kirsten endorsed this, since the more feedback they get, the more useful the product will be. Kirsten said CNHP has uploaded more and stranger data than the Programs' in previous work, so they are confident they can work with our datasets. Melissa asked if there will be a data upload template for the future; Kirsten said yes. Brandon thanked Dave and the team for moving this forward. All in the group expressed appreciation and excitement about the project.

9. Field updates (See also Attachment 2)

- White River (UDWR) – Matt Breen sent an update on the White River a few weeks ago. Recaptured stocked bonytail were in excellent condition and were using a variety of habitats. They also captured ten Colorado pikeminnow and one razorback sucker well above the confluence post-spawn. Bass densities were much lower than last year (potentially related to monsoonal conditions and subsequent severe sedimentation in low-velocity habitats). UDWR will conduct habitat assessments in conjunction with YOY surveys in September. Matt added that they've hired Adam Boehm who replaces Ben Kiefer.
- Stewart Lake (UDWR) – Matt said they've been sampling every second week since mid-July. This has consisted of 40 seine pulls at 8 different localities throughout wetland, with the goal of sampling all habitat types. Carp, fathead minnows, and red shiners (in that order) have made up the majority of the fish biomass. Filling Stewart began on 6/1. High water mark was 195 cm gauge height at outlet on 6/17, when inlet gate was closed. No supplemental water was obtained this year, so water levels have been dropping. Sampling and water height are summarized below:
 - 7/21 – 7/24 (162 cm gauge height at outlet): 13 Razorback sucker, 28-44 mm
 - 8/4 – 8/7 (150 cm gauge height at outlet): 29 Razorback sucker, 27-69 mm
 - 8/18 – 8/21 (147 cm gauge height at outlet): 4 Razorback suckers, 33-98 mm (reduced sampling effort that was directed at more marginal habitats).
 - 9/1 – TBD

The outlet gate will be opened and draining of the wetland will commence beginning on September 2. Exiting fishes will be sampled and measured at a weir and trap installation, with the goal of determining the total number and size distribution of juvenile razorback suckers returned to the river.

- Pikeminnow translocated above Redlands fish ladder (USFWS) – Dale Ryden noted the Program Director's office suggested physically moving Colorado pikeminnow further upstream in the Gunnison rather than simply allowing them to pass through the Redlands fish ladder. So far this year they've captured 14 pikeminnow in the Redlands ladder (a new record), and all of them have been young (400-600 mm) and untagged. They tagged and moved all of these fish to the Escalante boat launch about 37 miles upstream of the ladder. Dale hopes these young fish establish a home range there. An Aspinnall sampling trip about a week and a half ago detected some of those fish as well as a fish captured last year. Dale said they're not seeing many of that size fish in other sampling in the Colorado River. In the GVP

ladder, they've had a record year for razorback (but no pikeminnow has ever been captured in that ladder).

- Lake Powell (USFWS) – Dale said they caught several hundred razorback sucker over ~20 miles of river/lake and saw several aggregations of apparently spawning fish. They confirmed movement upstream past Hite Marina. Most of the recaptured fish had been stocked in the Green River rather than the Colorado. The lake appears to support a large number of razorbacks, as they caught them almost everywhere they looked. They may sample later into the year next year if possible. Dave Speas noted that several bonytail also were captured, including one ripe fish. Dale said they also caught some pikeminnow, but they were pretty skinny.
- Electrofishing course – Dale said the electrofishing workshop took place in Grand Junction from 18-21 August. Twenty-one participants earned completion certificates during this course. Agencies represented in the workshop included Colorado Parks and Wildlife, Colorado State University, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, and Utah Division of Wildlife Resources. Dale thanked the following people for their help in making the workshop happen: the Recovery Program office (for arranging the meeting room and hotel rooms), Colorado Parks and Wildlife (Alan Martinez at Highline Lake and Shannon Wadas at James M. Robb State Park for access to and use of their respective facilities, and Sherm Hebein for taking care of the state collecting permit issue), and Dave Speas who did a lot of the initial leg work for setting up this course a year ago and for helping the instructors during the course. The instructors were very pleased and positive about the existing level of standardization among all of the agencies' equipment. Dave Speas said the course served as a good field test of the SOP, and we may tweak the SOP document a bit for future field use. Dale said he thought it was a very worthwhile course. Jim Reynolds and Jan Dean anticipate providing a report to the Committee soon. >Dale Ryden will follow up on the untagged bonytail caught during the electrofishing course that may have escaped from the CDOT pond.

Others: Harry provided an update on the Yampa River from Kyle Battige on young-of-year (YOY) pike sampling (11 locations in the Yampa River and 5 in Elkhead Reservoir, where he'd previously done early-season pre-spawning sampling). Emphasis was on YOY, but some adult pike were also collected. Far more YOY were captured in the river than in Elkhead, even accounting for the unequal number of sites sampled. At minimum, Harry suggested that this should compel us to recognize that in-river reproduction is a major source of pike (likely far bigger than the reservoirs in Harry's view). Based on some early season netting Kyle did in backwater habitats, Harry believes we'd benefit greatly from an effort on pike spawning analogous to the smallmouth bass "surge." Harry suggested that this be a topic of discussion at the PI's non-native fish workshop pre-meeting. Melissa agrees we should consider pike spawning surge.

10. Review previous meeting assignments – See Attachment 1.
11. Review reports due list – The Committee reviewed the list (an updated version accompanied this meeting summary).
12. Review and approve June 11, 2014 webinar summary– Dave Speas sent a draft to the Committee on June 18 that highlighted areas needing clarification. Krissy Wilson submitted comments on the draft on June 24. The Committee reviewed and corrected the summary; Angela will send out the revised summary (*done*).

ADJOURN: 3:50 p.m.

Attachment 1: Assignments

(Asterisked items were on the meeting agenda; items preceded by a “-“ can be deleted after this summary)

Note: 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. * & Tusher Wash Screening: - 1/26/12: **Tom Czapla, Dave Speas and Kevin McAbee** will draft a Tusher Wash mortality study and literature review RFP (or similar) for review by folks who would not be submitting a proposal. 7/12/12: *no proposals were submitted in response to the RFP, >the ad hoc committee was to work on completing the literature search portion of the mortality study (which would aid the discussion in the biological opinion); however, the need has shifted to the mortality study so this was dropped.*
 - **Kevin McAbee** will keep the BC updated on developing a recommendation for how to accomplish an Electric Barrier Study to complement the proposed entrainment prevention solution at the Green River Canal (determine the minimum electric gradients needed to prevent downstream passage while minimizing the risk of injury).
 - 1/16/14: *Jackson Gross presented preliminary concepts at BC meeting.*
 - 2/21/14: *The Committee considered Jackson’s recent study outline and framework (Attachment 3 to 2/21/14 meeting summary). Melissa suggested also testing smaller pikeminnow than Jackson is contemplating (adding a third size class) and eliminating the juvenile bonytail size class. Several Committee members questioned whether field conditions can be mimicked adequately in a hatchery and would like to see a schematic of what the testing setup would look like. Dave Speas suggested adding another test variable of no electricity. The Committee suggested considerable cost-share from Smith-Root would be appropriate. >Kevin will discuss Committee ideas and concerns with Jackson and ask for cost estimates. Dave Speas suggested we consider a value engineering (VE) study for Tusher; others agreed. 6/18/14: Brent Uilenberg said a VE study will be a requirement of construction and that we should wait for results of the Hogback monitoring in November 2014. >Results of the Hogback weir wall will be discussed at the BC as soon as they are available.*
 - 6/11/14: *Jackson presented an updated version of the proposal (see 6/11/14 meeting summary) that includes Melissa and Dave’s recommendations. It does not mimic exact field conditions in order to keep costs low (save on purchase of materials and construction of a new set-up). > Committee members will let the rest of the Committee, Jackson Gross, and Kevin McAbee know if they are comfortable with Jackson’s revised study design by June 25. >Jackson will then craft a budget based on committee review.*
 - 7/1/14: *July 1 – No comments were received from the BC, Jackson began working on SOW*
 - 8/26/14. *>Kevin McAbee will send SOW to BC once it is received from Jackson. To be discussed at October 2014 BC meeting*
 - **Dale Ryden, Kevin McAbee, Tildon Jones, and Katie Creighton** will discuss and get back to the Committee with a plan to salvage fish from the Green River Canal this fall. >**Kevin McAbee** will speak to canal operators to learn about canal operations and canal details, and coordinate a canal walk-through, if needed. >**Krissy** will find out how the endangered fish need to be moved back to the river (it’s possible only downstream relocation is permitted).
2. * & Revise the Integrated Stocking Plan (ISP) and related issues. **Tom Czapla** is convening a group to revise the ISP.
 - 9/27/12: *Revised draft ISP sent to ad hoc group by 9/27/12; comments due by the end of October. 5/2/13: Comments received from Zelasko, Wilson and Cavalli; 7/10/13: Czapla will incorporate comments and try to have to Biology Committee by end of July 2013. 9/27/13: Czapla sent revised draft to Committee for review July 31; Cavalli comments submitted September 26, McAbee September 27; 10/10/13 Tom Czapla sent those to the Biology Committee. 1/16/14: **Krissy Wilson** will complete her portion by the end of*

February and the small group will get it in shape to send it to the Committee. 6/11/14: **Tom Czapla** anticipates getting this out to the Biology Committee for review within about a week (for approval at the next meeting), and will incorporate recent discussions stocking marked Colorado pikeminnow in the Gunnison River. 8/26: . >Harry and Tom Czapla will follow-up on the description of stocking locations (need to build appropriate flexibility into the ISP). Comments on the current draft are due by September 9 and the plan will be finalized by the end of September 2014.

Humpback Chub (population estimates)

- 3/7/13: **Program Director's office** will check with Kevin Bestgen on a revised due date for the humpback chub combined population estimate from Gary White. 3/14/13: LFL will turn this around as quickly as possible after they receive the most recent data from the Service (scheduled for 3/19/13). 3/19/13: The **Program Director's office** will discuss with Kevin Bestgen what it would take to use the 131 analysis of Westwater/Black Rocks to identify clues as to early life history dynamics and recruitment failure. >**Dale Ryden** will provide revised due date. 6/28/13: Three reports are pending: a 2011-2012 Black Rocks report, a 2011-2012 Westwater report, and a 1998-2012 combined analysis report. Previous discussion indicated the combined analysis would be provided by LFL and tacked onto the Black Rocks report, but it doesn't fit neatly into either the 2011-2012 Black Rocks or 2011-2012 Westwater reports because it has data from both. Further, Grand Junction CRFP's SOW only covered writing a Black Rocks report, not a combined report. 10/10/13: Biology Committee will discuss later after Kevin, Travis et al. recommend how to proceed with reporting (after Travis completes this year's fieldwork). 1/16/14: What Kevin Bestgen presented was the joint report and parts of it will appear in the individual reports. A young-of-year sampling effort may need to be added back to the fieldwork. Czapla said we have new due dates of January 2015 for the Black Rocks and Westwater reports.

&Humpback Chub (broodstock development / genetics)

- 3/6/12: **Tom Czapla** will remind the humpback chub genetics ad hoc group to submit comments (7/13/12 comments still pending). 1/17/13: Some comments received and incorporated; comments still pending from **Trammell**.
- As identified in the 2012 sufficient progress assessment and requested by the Management Committee, the **Program** will develop an action plan for establishing refugia for humpback chub (avoiding getting bogged down in genetic analysis). Mike Roberts has recommended building in limiting factor/life history studies to better understand what's going on in the system that's affecting humpback chub populations. 5/2/13: **Program Director's Office** will provide outline to Biology Committee in advance of the July 10, 2013, meeting. 7/10/13: **PDO** will forward the document that a smaller group has worked on and the Biology Committee will discuss in October 2013 (discussed 1/16/14). Tom Czapla received comments on the draft from Dave and Tildon and is trying to reach Wade Wilson regarding his genetics work on the fin clips we've provided. **Dave Speas and Tom Chart** will see if a deliverable on Upper Basin fin clips was mentioned in Wade Wilson's Lower Basin scope of work). After Wade's report is received, a workshop should be held to include discussion of when and where fish would be stocked. Tom Chart recommended outlining questions for a workshop, conducting the workshop, and then finalizing the action plan. 2/21/14: No deliverable on Upper Basin fin clips; cost would be ~\$37K (Committee considering, but not our highest priority; see 2/21/14 meeting summary). 6/11/14: Dave recommended making a decision on whether we want to fund analysis of the fin clips this year. 8/26/14: Dave Speas said Reclamation is working on the funding agreement (may inform index of effective population size different than that for the Grand Canyon population). Tom Czapla said Moab handled at least 25 Deso and WW humpback chubs during smallmouth bass removal and got fin clips from all of them. Tom Czapla said he thinks the priority for analysis should be the Desolation, Westwater, and Black Rocks fish. Moab may still collect some more in Westwater this year. The roundtail chub would be a lower priority.
- 10/16/12: Age-0 Gila from Westwater were going to be brought to the Horsethief Canyon ponds this fall, but

river conditions won't allow safe transport until spring (timing will depend on hydrology). Tissue samples from those humpback and fin clips collected from humpback in the field in 2012 will be analyzed by Wade Wilson to provide information needed to determine if we can use local humpback chub for broodstock development, if needed, or if we will need to incorporate fish from the backup broodstock at Dexter NFH (from the Grand Canyon). Fish will be brought in fall 2013. 10/10/13: Dale said they brought ~25 fish they caught into ponds, but have less than a dozen at this point. They will try to build these numbers in future years if the Biology Committee supports that (1/16/14: the Committee supports this). Travis hopes to capture some larger fish from Black Rocks using hoop nets this year. (If we continue this in future years, we may want to alternate taking fish from Westwater and Black Rocks to avoid hitting either sub-population too hard. However, it's harder to transport fish from Westwater, so that may remain a concern.)

3. & Nonnative fish management follow-up:

- **Melissa Trammell** offered to work with **Travis** in summer 2013 and report other nonnative fish data (e.g. gizzard shad, nonnative fish captured during Colorado pikeminnow estimates to the Committee each year). *Pending*. The **Committee** will review the information Melissa provides in working with Travis and then discuss what further analysis may be needed.
- In 2013, population estimates for smallmouth bass will only occur in Project 125. The **Committee** will reconsider resuming the smallmouth bass population estimates throughout the current Yampa River population estimate reaches in 2014, based on an analysis from André. 1/16/14: *To be revisited after workshop on projection tool*. 6/11/14: *Pending*.
- The **Committee** agreed to suspend all mark / release of northern pike Program-wide in 2013. They made a **firm agreement** to revisit this issue (northern pike population estimates) when results of the northern pike synthesis are available.
- **Harry Crockett** will check to see if Colorado's Parks folks might be interested in administering a harvest incentive program. 7/10/13: *response pending*. 10/10/13: *Harry said CPW is open to considering this in some situations and will discuss further with the Program Director's office (Kevin McAbee, Harry, and Vernal CRFP to discuss and consider bringing proposal on this and a potential White River incentive program to the nonnative fish workshop)*. 1/16/14: *Harry said CPW is discussing this and thinks it may be implemented in one or more places in 2014 (though not on the White River)*. *Ongoing*. 8/26/14: *Harry prepared a white paper and CPW is discussing broad agency response to illegal stocking (harvest incentives, must-kill, etc.)*. >Harry will ask if he can provide a draft to Kevin McAbee.
- Walleye: >**Kevin McAbee and Paul Badame** will work on organizing a "walleye summit" with appropriate outside expertise. *Pending*. **PI's** should fully document walleye captures (date/time, length/weight, and river mile).
- *Walton Creek: Action items after the site visit were to determine if fill material is available and what topography information is available (*done*). 8/26/14: *CPW got funding for habitat work on the Yampa to benefit native fish. CPW sees Walton Creek as the top priority spot and the Program is providing Section 7 funds for an engineering feasibility study*.
- Private (LaFarge, aka Snyder) Pond near Rifle: **Harry Crockett** will find out if the landowner will allow and if CPW can reclaim the pond before spring runoff (considering a seismic gun option); >**Tom Chart** will coordinate with **Harry** and **Brent Uilenberg/Bob Norman** on repairing the notches after runoff. 6/11/14: *Sampling ongoing and Reclamation will work with CPW on filling the old notches. Harry said rotenone is still an option (and more likely than a seismic water gun approach at this point)*. 8/26/14: *Harry said they couldn't arrange a site visit (CPW, Reclamation) before spring runoff, but that could happen now that flows have receded (>Tom Chart will contact Brent about this)*. **Harry Crockett** will contact **Jackson Gross** and let him know the Committee appreciate Smith-Root's interest in the Snyder Pond work (and willingness to bring considerable cost-share) (*done*), but would like to see a proposal that includes evaluation of success and a report. 6/11/14 *Jackson indicated that the availability of hydraulic pumps had been a problem this*

spring, but that pumps are now available from Smith Root. 8/26/14: CPW is more interested in the rotenone option at this point. Dave said sonic water guns might be useful in the Yampa wetland areas.

- ***Starvation Reservoir escapement:** The **Committee** will hear more about escapement control options once the **strategy work group** can discuss **Reclamation's** evaluation. **Dave Speas** will see if he can find out when USBR-Provo will provide their *evaluation* (2/21/14: pending; Paul Badame said Reclamation has asked for more information); **Krissy Wilson and Paul Badame** will call for a follow-up meeting (will include CUWCD). **Paul Badame** will send Tom Pitts his presentation, his report, and the 2005 escapement report and then schedule a call with Tom to review. 2/21/14: *If an in-reservoir net solution is selected, Krissy believes a portion can be paid for with UDWR boating safety funds. 6/11/14: an in-reservoir net is no longer considered an option. UDWR will treat the spillway stilling basin in September 2014, then meet with stakeholders to discuss engineering and costs for a metal fence-type structure to be installed before next year's spill. >Paul Badame will revise the plan to describe this preferred alternative and send it to the BC and stakeholders.*
- 4. **The Program Director's office** will work with States to compile all the Lake Management Plans. Pending — McAbee. 2/21/14: Kevin received a number of plans from Utah (though three still under review are outstanding), Pete and Harry are working on compiling Wyoming and Colorado's. 6/11/14: Harry has almost completed his list and Pete Cavalli just sent Kevin a large number of plans.
- 5. The **Program Director's office** will recommend boilerplate language (including identifying reduction targets) to be used across applicable nonnative fish management scopes of work. Pending (PD to include in FY16-17 Program Guidance in February 2015).
- 6. **Kevin Bestgen** and Dale Ryden will work up estimated costs for addressing additional razorback data being collected (need for additional data analysis on both Green and Colorado rivers). Dale said Kevin wants to wait until after the end of the field season to ascertain the number of records to be analyzed (probably ~150,000 fish records). This may be a fairly involved effort. 2/6/14: FWS project #163 has task for razorback pop. est. in Gunnison and Colorado, though not enough razorback captures/recaptures to do much with the Gunnison River data. Osmundson developed razorback matrix for 2008-2010 and Gary White ran this data through Program MARK in 2013 (data to be reported in 2015). PIs recommend also including 2013 razorback data (from the Colorado River pikeminnow population estimate study) in this analysis (\$2K in SOW for White to help with data analysis in 2015, adding 2013 razorback data shouldn't add to cost). Developing razorback population estimates in the Green and Yampa will be more difficult, probably not in existing SOWs, and probably should be separate effort. PD's office will discuss costs/mechanism (e.g., add-on to #128) with LFL. 2/21/14, cost estimate pending from LFL).
- 7. ***Brent Uilenberg** and **Harry Crockett** will be working with CPW and Reclamation engineers to evaluate the potential for a permanent barrier downstream of Ridgway Reservoir. 6/11/14: Harry said Brent would like to define the sideboards before committing time to this. The **Program Director's office** will begin the conversation on this and Elkhead with Brent. Meeting/conference call was held on August 6th in Glenwood Springs. 8/26/14: a meeting is scheduled September 4. Dale Ryden said they sampled from Delta to Redlands and didn't find any bass, so that's good news
- 8. The **Program Director's office** (Czapla) will discuss Ouray electric repairs with Reclamation and Dave Schnoor. 6/11/14: Tom Czapla reported the hatchery also has had well problems, and Reclamation has drilled two new wells. 8/26/15: Tom thinks the Service was able to fund some of these repairs and will report on this after his visit there next week.
- 9. Regarding white sucker hybrids, **Harry Crockett** will talk to **Kevin Bestgen** about any further work needed subsequent to the identification guide that Pat Martinez distributed last year. 8/26/14: Ongoing (very complex issue that really deserves a combined genetics and morphological study). This could be put into the

next round of Program Guidance (>PD's office will do) and we should be considering potential outside funding sources, as well, since this relates to more than listed fish.

10. The **Nonnative Fish Subcommittee** should discuss the need for completing long-term syntheses for Yampa River native fish response and Lodore/Whirlpool Canyon (funding has not been available so these syntheses had been placed on hold).
11. - The PD's office (**Czapla**) will ask LFL when the cyprinid key will be completed and ask Darrell to report his progress and anticipated submission date on the next call. *8/26/14: Tom Czapla said Darrell anticipates submitting his report for Program review by March 2015.*
12. - The **PD's office** will review and summarize fish screen operations over a longer period of time (and as it relates to hydrology and conditions under which the irrigators are not required to operate the screens). **Jana Mohrman** and **Tom Pitts** will discuss concerns about fish screen operation with Brent Uilenberg and Bob Norman. *6/11/14 Jana has been compiling history. 8/7/14: Jana e-mailed summary to the Biology Committee (and this is being tracked through the sufficient progress action items). 8/28/14: Jana sent a corrected summary to the Committee.*
13. ***Harry Crocket** will let the Committee know when CPW will make their draft Elkhead plan available. *6/11/14: CPW and CRWCD don't have date yet, but are planning public meetings in September. 8/26/14: Harry said this is still pending.*
14. **Doug Osmundson** will revise recommendation #3 and finalize his Colorado pikeminnow population estimate report. *8/26/14: Pending; >Dale will check on this.*
15. The **Program Director's office** will attach an errata sheet to Appendix C of the Basinwide Strategy. *Pending.*
16. -*Harry Crocket related a message from John Hawkins who recommended that once the Yampa River high flows subside, we cancel the Steamboat/Hayden northern pike removal pass because of potential impacts to trout (and thus, landowner support) later in the season (the pass was canceled). **Harry Crockett** will look into what it would take to add a marking pass in Billy Atkinson's reach on the upper Yampa. *6/11/14: Harry noted this is somewhat confounded since John Hawkins doesn't anticipate completing a marking pass this year (to mimic the 2004 and 2005 work). 8/26/14: Harry recommends wrapping this into a 98c scope of work for 2015.*
17. Related to the peak flow study plan, **Jana Mohrman** will look into cost estimates for additional aerial photography analysis. **Committee members** will continue their review of the draft plan and provide comments by the end of September (the same will be requested of the WAC). >Within two weeks, **Tom Chart et al.** will prepare a short background outlining the genesis of this work and restate the objectives.
18. **Dale Ryden** will follow up on the untagged bonytail caught during the electrofishing course that may have escaped from the CDOT pond.

Attachment 2: Field Updates

White River (Matt Breen, UDWR):

First, there were some really exciting observations regarding bonytail. During both passes we captured numerous bonytail (~100 fish/trip) from what I can only assume were fish that were stocked last fall near the Bonanza bridge. I have not had a chance to go through the data yet, but we can check on tag numbers for the fish we did work up at a later time. Bonytail were so abundant that we actually had to start ignoring these fish in order to stay on task with our project (Tom Chart can attest to this). Not only were they abundant, but all bonytail were in excellent condition and captured in a variety of habitats throughout the entire study reach, even close to the Enron takeout. Overall, it looks like bonytail are taking to the White River very well!

For other endangered fish captured, there were 10 Colorado pikeminnow and 1 razorback sucker. Although post-spawn, the razorback was still found well upstream of the confluence at river mile 54.3. In addition, more evidence of pikeminnow spawning in the White as one of the fish we captured was a turberculated/ripe male.

As for bass, good news as well. Total fish removed was much lower than last year (sorry, no numbers at this time), which was a real scare as we observed bass numbers skyrocket in 2013 (mainly from the 2012 cohort). The interesting observation here is that bass densities were much higher above vs. below the Evacuation Creek confluence, whereas during last year's removal pass there was no real distinction between sampling reaches. If you recall, there were several monsoonal rain events in August and September last year that contributed a high sediment load to the White River from ash and debris left behind by the WolfDen fire. My initial thought is that these fish were unable to adapt to the changing habitat conditions as slow velocity areas were largely filled in with sediment.

One last note, and an unfortunate one, we did capture our first walleye in the White River near River Mile 35. Unless CPW or FWS captured any upstream this year, this is the first documented walleye in this system.

Yampa River (Kyle Battige, CPW):

Spring netting efforts by CPW documented extensive use by northern pike (NPK) of key backwater locations within the Yampa River for spawning. As a follow-up to spring netting work CPW wanted to determine if successful reproduction and survival of young of year (YOY) NPK within these same backwater locations was occurring. CPW staff (Kyle Battige and Bill Atkinson) along with CSU-LFL staff (Hawkins et al.) sampled 8 locations on the Yampa River within 98a and 98b where spring netting had occurred (Figure 1), along with 3 locations around Steamboat Springs, and 5 locations in Elkhead Reservoir to determine presence/absence, as well as spawning time frames, and size distribution of young of year (YOY) northern pike (NPK). Sampling was conducted using electric seines at most locations although bag seines and backpack shockers were utilized in areas the electric seine could not adequately sample.

In total, 73 NPK were captured (and removed from riverine locations) during sampling, 56 of which were YOY (Table 1). 54 YOY were captured in the river and 2 YOY were captured in Elkhead Reservoir. Size of YOY NPK ranged from 80-210mm with the largest size cohort being 91-100mm (Figure 2). YOY NPK were documented at every backwater location that was sampled (a YOY NPK was observed but avoided capture in the Ross BW). Catch rates varied across sampling locations due to habitat conditions as well as abundance of YOY NPK. Sampling at all Steamboat locations was difficult and catch rates were likely low due to increased flows from recent rain events. Catch rates were highest in the 151 BW at 0.99 YOY NPK/minute (Figure 4). The 151 BW was also the only location where YOY NPK < 100mm were observed (16 YOY NPK < 10mm), representing a late spawned cohort of YOY NPK. Average length of YOY

captured at 151 BW (n=31) was 103mm compared to an average length of all other YOY captured (n=25) of 159mm.

YOY NPK captured at all locations were preserved by CSU-LFL staff in order to back calculate hatch dates using otolith aging.