

Draft Biology Committee Meeting Summary
Grand Junction, Colorado
February 20-21, 2014

PARTICIPANTS

Biology Committee: Dave Speas, Melissa Trammell, Jerry Wilhite, Harry Crockett, Dale Ryden, Krissy Wilson, Brandon Albrecht, and Pete Cavalli. Via phone: Tom Pitts.

Others: Tom Chart, Paul Badame, Kevin McAbee, Tom Czapla, Angela Kantola, Katie Creighton, Mike Mills, Bob Norman and Brent Uilenberg. Via phone: Tildon Jones, Matt Breen, and Jana Mohrman.

Thursday, February 20**CONVENE: 8:00 a.m.**

1. Review/modify agenda – The agenda was modified as it appears below.
2. Tusher Wash update and discussion of need for interim prevention of entrainment. In light of detecting roughly 100 Colorado pikeminnow and 500 razorback in the canal last year, along with the news that a permanent barrier may not be in place for a couple of years, Melissa Trammell said she and Dave wondered if a temporary barrier (e.g. picket weir) might be used at Tusher. However, the canal is very fast and deep, so a temporary solution may not be viable (and would have to be developed and installed before April 1). Kevin said that in reviewing data, it appeared that there were at least two examples of pikeminnow being detected in the canal and then captured later in river, so fish don't necessarily become permanently entrained in the canal. A more complete detection / recapture history for the overwhelming majority of pikeminnow and razorback sucker detected in the canal is pending. More than half of the pikeminnow detected in the canal were last detected at the upstream antenna, indicating that many fish *may* be leaving the canal, though we don't know for sure. Dave has talked to Peter McKinnon about putting another set of antennas below the siphon, where detection would indicate more a more serious degree of entrainment (i.e., less likely to leave the canal). Bob Norman noted that Bob Burdick once documented Colorado pikeminnow swimming upstream through a more restrictive siphon in the Grand Valley. Dave said two antennas only 5m apart really don't provide directionality, but two antennas are needed for redundancy to provide high detection probability of an individual fish. The Committee discussed electrofishing in the canal (which would present significant safety challenges) and salvage operations at the end of the season (which Dale suggests collects only a small portion of fish -- those that entered the canal late in the season). Canal salvage might offer insights into fish being entrained, however. Kevin said the proposed two new antennas below the siphon also would provide better before-solution (e.g., weir wall, screen, etc.) /after-solution information. Kevin suggested that new antennas (\$40-45K) and some sort of end-of-season salvage (details TBD) are the only feasible solution. Melissa and Dave agreed, recognizing we don't have a better plan we can implement quickly this year. The Committee concurred, assuming funds are available. Melissa asked about improving the first return pipe structure to make it more fish-friendly; Bob Norman thought that might be possible. >Dave Speas will work with Peter MacKinnon to develop antenna plan and implement installation; once funding for second set of antennas and salvage operation are confirmed, Kevin will talk to GRCC about logistics & permissions.

For the longer-term solution, Dave Speas suggested the Biology Committee consider alternative solutions to the weir wall (electrified or not), e.g., a large picket weir where all fish would be handled (and returned to

the river) or wedge-wire screens like those in the Grand Valley. Bob Norman described the value engineering process they went through on the Hogback Diversion (where they'd originally contemplated a fixed wire screen, and ended up doing a weir wall). This process vets different ideas for a project. Bob emphasized that the weir wall at the Hogback *is unproven*; however, we will have a year's worth of data on Hogback (2014) before going into design on Tusher. Bob stressed that one concern about any screen at Tusher is required maintenance, which will be a challenge at Tusher. This is one big advantage of a weir wall, if it will work (although the addition of an electrical barrier will add some maintenance). Brandon, noting that we don't yet know if the electric portion of the weir wall will be necessary, suggested the O&M funds not needed for electrical, might be put to better use handling fish (which would improve recapture rates). Kevin summarized that weir wall is still tentatively our preferred alternative, but we haven't closed discussions. Dave indicated his desire to conduct a VE study for the Tusher project; others agreed.

Melissa Trammell asked if tube nets to capture fish (e.g., like the one CPW installed at Highline) exiting the return pipes from Tusher Wash might be useful to check what fish are exiting.

Dave emphasized the need to create an attractive exit from the canal for the fish and questioned whether the 'saloon style' gates we have discussed for a weir wall barrier will provide such an exit.

3. Nonnative fish

- a. Rapid response to Ridgway Reservoir smallmouth bass – Harry Crockett reminded the committee that illegally introduced smallmouth bass were discovered in Ridgway Reservoir (on the Uncompahgre, a tributary to the Gunnison River). 2013 data indicate that numbers are increasing and that bass occupy habitats near the spillway. If escapement were to occur, fish could be flushed into the Gunnison, where habitat is suitable for bass colonization (habitat in most of the upper Uncompahgre is not well-suited for bass). Harry, Kevin, and others met yesterday with the Tri-County Water Conservancy Board, and outlined the various response options (both short and long-term). The Board was very receptive and indicated they would do what they could to prevent spills in the short term, as a more long term solution is being developed. The outlet works are ~100-feet below the water surface, so it's thought to be unlikely that bass would ever exit the outlet alive. Thus, the major concern is temporarily preventing spill, and then designing some kind of screening option for the long term. In some situations, spill would be unavoidable. Tom Chart asked if debris removal from the face of the dam was discussed as TCWC had mentioned that they use spills to pass debris downstream. Kevin said the State Park supervisor said they'd attempted to remove debris in the past and that it's somewhat difficult. Harry thinks this is a manageable concern. Meanwhile, CPW will do mechanical removal of smallmouth bass, investigate changing regulations, and take other actions to promote harvest in the reservoir. Harry said a next step is for CPW and Reclamation engineers to evaluate the potential for a permanent barrier downstream of the reservoir; >Brent and Harry will be working on this.
- b. Otoliths – Kevin McAbee provided a summary of otoliths not yet analyzed (Attachment 2). Kevin has told PI's to continue to collect otoliths from new species and nonnative fish discovered in new locations. Dave Speas said a contact (Karin Limburg of SUNY Syracuse) takes samples to Woods Hole, who charges ~\$1,600/day to run about 15-20 large otolith samples (doesn't include the cost of someone's time/travel). Dave asked what information we need from current collections that might change the direction of nonnative fish management. Krissy said the original goal was to determine the source so we know where to apply control, but a forensic, law enforcement purpose also has been mentioned. Melissa said it's unlikely currently collected otoliths would be used for law enforcement purposes. We've had considerable interest in determining the source of the northern pike in the upper Colorado River, though

two of the potential sources are being addressed. It would be good to know if Green River walleye are coming from Starvation or Lake Powell, but we don't currently have the ability to distinguish between those (without finding a more diagnostic isotopic signature). Melissa doesn't think analyzing the Green River walleye is our highest priority. Dale recommended at minimum collecting the otoliths in a central location; Kevin McAbee said he would be the repository. Tildon added that doing this analysis might identify years when walleye are more likely to escape, and may lead to clues as to what types of releases/spills may contribute to their escapement (or expansion up from Lake Powell, as Melissa noted). >Kevin will work with Melissa to refine otolith guidance & then send PI's instructions for when, where, and from what fish otoliths should continue to be collected.

- c. Smallmouth bass projection tool update – Kevin McAbee said the rollout has begun and the tool distributed via e-mail. A webinar will be held the afternoon of February 25 and a workshop in Grand Junction on March 18.
4. 2014 Work Plan adjustments – The goal is for the Committee to prioritize activities and then the Program Director's office and Reclamation will see what can be funded (some agencies have returned funds and Reclamation's sequestered amount was restored, so some additional funds should be available). A “√” preceding the project indicates those that will be added to the Program budget table and submitted for immediate funding.
- a. Evaluation of Green River flow and temperature recommendations – Tom Chart expects the backwater synthesis report by the end of March and thinks some work could potentially begin by late summer. Western has offered to bring some funds and assistance to this work. Dave Speas and Melissa Trammell indicated that Reclamation and NPS would like to be formally involved (other agencies may be interested too). >Tom Chart and Jerry Wilhite will discuss what Western can offer and draft a process for Biology Committee review.
 - b. Nonnative fish: Kevin McAbee said a few recommendations came out of the nonnative fish workshop (e.g. electrofishing reaches not otherwise being sampled this year, optimizing smallmouth bass removal, adding a pass in the lower White River [Matt Breen said they don't have 3-species work there this year]). The Committee supported the nonnative fish removal projects. Tildon noted that pike might be a bigger problem than bass based on current snowpack.
 - i. √ 123a spring and fall walleye removal (\$40.4K to UDWR Moab)
Matt Breen wrote in: “Island Park bass surge—UDWR Vernal will be conducting 6 passes (2 passes/week x 3 weeks) from Island Park to Rainbow Park (upruns from Rainbow Park) in combination with Vernal CRFP efforts. Effort will come from 123b (no cost increase just a shift in focus area). To optimize nest disturbance, we will conduct our passes on Mondays & Wednesdays to match with Tildon's trips when his crew would come through on Fridays. Language not yet incorporated in SOW (we were waiting on NPS approval when revisions were submitted).” Katie sent out a 1-page overview for both fall and spring sampling that is flexible in terms of timing and methods. UDWR has cleared access for spring sampling near Tusher Diversion with the landowners. If we want to continue the work in 2015, that can be refined based on this year's experience. Colorado pikeminnow population estimate passes will resume in 2016.
 - ii. √ Pike removal by CSU in the “98c” reach (\$90K) – Harry said the Program office and Biology Committee have advocated for this for several years, and it made the “short list” of items that emerged from the meetings with the States' fish chiefs last spring. CPW asked CSU for a scope of

work (e-mailed to the Committee this morning). John Hawkins said 98c work was done in 2004-2005 with pike mark/removal passes between Steamboat and Hayden. This proposal recommends a one-year abundance estimate to compare with '04-05, followed by at least two removal passes; subsequent years might or might not include a marking pass, depending on the Committee's preference. The entire reach is private land, so the work will require considerable coordination with landowners. The intent is to conduct something of a "pike surge" to disrupt spawning, as those areas are identified and can be targeted. April removal passes would be followed by June-September sampling for young-of-year to confirm spawning locations. The goal is to direct future management, improve ability to catch pike, and target spawning areas. Melissa agreed it's important to compare previous work and didn't object to the one marking pass. Pete recommended trying to re-run the estimates from 2004-2005 with just one marking pass to check confidence. John thinks it will be pretty good as he recalls a fairly high probability of capture. Harry said Billy will continue to do two removal passes just above this reach (Tom asked if a mark pass is needed there, also, to compare population estimates; Harry said the estimates were made by reach in 2004-2005, but agreed this is a good idea and >will look into what it would take to add a marking pass). With regard to access, Harry said CPW provided CSU a list of landowner names (DWMs will make the initial contacts). John said this would be an added task to project #125. Dale said FWS-Vernal is willing to help with this work, but would need to know quickly to hire staff. John Hawkins noted that CSU can make other adaptive changes discussed for #125 within existing budget.

- iii. 123a bass surge optimization (Jones & Howard, \$0) – Tildon said they'll attempt more electrofishing in the upper reach of Island Park where there's been recent evidence of smallmouth bass spawning. The work will involve a combination of three half-day passes by UDWR motoring up and shocking side channels, followed by FWS crews three days later (end of Yampa Canyon trip) doing half-day passes (shifting from one of the Echo-Split passes). They may also potentially set nets or angle in this reach. With ~120% snowpack on the Yampa and 115% on the Green River (2008 currently the analog year) however, high flows may eliminate smallmouth bass spawning in this reach this year.
- iv. ✓ 123b walleye removal in lieu of bass pass (Breen, \$0) (However, \$9,818 would cover this *and* a bass pass, which the Committee supported.)
Matt Breen wrote in: "We have analyzed spring walleye capture data in the middle Green River to determine best times and areas to focus on walleye removal in years when pikeminnow population estimates are not conducted. Walleye are heavily concentrated upstream of the Duchesne River confluence and we have identified certain 5-mile sections where they are more heavily concentrated, but just like our bass removal strategy we will use an adaptive approach as needed to remove as many as possible. This spring walleye removal effort will take the place of an equivalent single pass in the middle Green River from Split Mountain to Tabyago (replacing late season efforts that would occur in August/September)." Harry asked if the proposal to replace a bass pass was for logistics or funding; Matt said it was a cost concern, but they could do both; Matt later provided a cost estimate of \$9,818 to cover labor costs and travel (this is a limited effort and would only replace one pass for pikeminnow population estimates in off-years).
- v. ✓ 167 White River smallmouth bass additional pass / reconnaissance (Breen, \$9.1K)
Matt Breen wrote in "Following 2012 removal efforts in the Utah portion of the White River (UDWR) we determined that bass densities were low in the lower White and recommended removing one of the two passes slated for 2013. Our removal pass in 2013 showed the opposite, where bass became widespread in the lower White River with much higher densities throughout our

removal reach. We would like to re-instate the 2nd pass for 2014 given the greater concern for the native fish populations in the White following a very successful bass spawn, especially since this range expansion occurs in important rearing habitats for natives that spawn upstream.” Tildon said the work in the Colorado reach would remain the same as 2013 (few days available to put more boats on the water in that reach).

- c. ✓ Database management (\$150K [\$100K UC, \$50K SJ]) – Dave said several entities have expressed interest in this work. The Committee agreed this is a very high priority and approved it. Tom Czaplá suggested the Programs’ non-Federal partners also consider submitting a proposal for our future long-term data management under the National Park Service’s [NSF Long Term Research in Environmental Biology program](#).
- d. Humpback chub genetics, SNARRC (\$37K) – The purpose of this work is to understand if we need to develop a broodstock based on upper basin humpback chub. Melissa, Dave, and Pete thought this was a fairly low priority and we should go ahead and develop a broodstock based on existing management units. Tildon said he thinks it’s important to understand the diversity we have (e.g., the unique Yampa strain was never captured). Tildon said he thinks the Douglasses information is a good place to start, though he has a few questions about it and would like to know if they have new information they haven’t published. Melissa said the Douglasses said don’t mix Desolation Canyon and Colorado River populations and doubts additional genetics information will change that. Melissa thinks this will end up being more of a policy question. >Tom Czaplá will send the Committee a list of where the samples are from. Tildon said he thinks humpbacks especially are at risk to a catastrophic event in the Green River (e.g., oil and gas spills – not a matter of if, but when and how bad) and we need to develop a humpback chub broodstock. Tom Chart affirmed that we need to be clear about what we’re going to do with the information if we do this work.
- e. Green River razorback population estimate (>LFL developing estimate; FY15?) – Data already are being collected, but we’re not doing population estimates. Colorado River work will be reported under the Gunnison River fish community project (due in 2015, likely can get a preliminary estimates this year), but the Green River has a large number of fish and recaptures and LFL may not be able to work on it until FY15. Tom Czaplá recommended more flat-plate antennas for Vernal-CRFPs work on the razorback bar if funds are available; Dave endorsed this. Based on experience in the June Sucker program, Krissy would first like to know how those data would be used in population estimates. Bestgen recommended in the Razorback Sucker Monitoring Plan that the more of this data we can get, the better.
- f. Jackson Gross pilot study with CSU (Crockett) – La Farge Pond (37 acres) has pike and smallmouth; Lori has been doing as much electrofishing and netting as she could fit into her schedule, but hasn’t seen a depletion effect. Pike captured in the Colorado River may have come from this source. CPW proposes a pilot project here with Jackson Gross’ seismic water gun (~\$12K of direct expenses plus considerable logistical support, with a large in-kind match from Smith-Root). Harry said Jackson still needs to confirm that he can do the work at the required time after ice-off. The Committee asked questions about how large an area can effectively be treated, whether it will affect pike and bass, etc. Committee members endorsed trying new tools, but emphasized the need to be able to determine effectiveness. Melissa asked about using this technique at the RM151 backwater on the Yampa River. Harry suggested they could add this as a task on CPW’s existing SOW. >Harry will contact Jackson and let him know the Committee appreciate Smith-Root’s interest (and willingness to bring considerable cost-share), but would like to see a proposal that includes evaluation of success and a report. Some

consideration of a smaller area would be good, but wouldn't help us treat this area this year. Rotenone isn't an option this year because the notches can't be filled before spring flows. Dale said that depending on timing, his office might be able to offer help on this project (likely no cost).

- g. Ouray NFH electrical repairs? (Capital?) (needs discussion) >The Program Director's office will discuss with Reclamation and Dave Schnoor.
 - h. Tiger musky – Harry said CPW is upgrading a hatchery to produce more and larger tiger muskies (promotion of increased production of sterile game fish is on the Sufficient Progress shortlist), at a cost of \$20K. The majority of the fish would be for northwest Colorado and CPW would like to ask the Program to contribute \$10K. Harry sees this as a one-time contribution. Krissy suggested that if CPW would like to provide half of the fish to Utah, Utah would be willing to contribute the funds; >Harry will propose this.
5. Review draft revised RIPRAP, RIPRAP assessment – The Committee reviewed the RIPRAP table and assessment (with Angela making notes below, and on the RIPRAP itself, which will be compiled in a revised version provided to the Management Committee). Brief comments were made on the RIPRAP text; >Biology Committee members will e-mail any additional track changes or comments on this text by c.o.b. next Friday, Feb. 28 (a revised version will be compiled for the Management Committee in advance of their March 20 meeting).

RIPRAP TABLES

General

The PD's office asked if field biologists have 'spill kits' and is there a process to analyze field samples. Tildon Jones said Uintah County, Tri-County Health have rapid response spill kits; Tildon said he could get one from them, but what Tri-County really wants is for our folks to collect fish in response to a spill. Tildon said EPA is still developing the action plan for the Green River down to the town of Green River (and will be consulting with FWS).

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. >The Nonnative Fish Subcommittee should discuss need for completing long-term syntheses for Project 140- Yampa River native fish response and Project 115-Lodore/Whirlpool Canyon (with emphasis on the smallmouth bass early life history otolith analysis).

Developing a measure of successful suppression of smallmouth bass perhaps belongs under other reaches besides the White River so the Committee moved it to the General Action Plan.

>The PD's office (Czapla) will ask LFL when the cyprinid key will be completed.

>The PD's office (Kantola) will get a link to the CWCB Laserfiche library on the Program website.

Green

>Jana Mohrman will check on Green River 2013 targets (make graphs/table on assessment tab consistent with hydrologic year category). Dave said Heather's draft 2013 FG report classified the summer baseflow period as "dry."

Yampa

>Jana also will check the Yampa assessment tab (see Green River, above)

White

Kevin will add notes on fish detected by the PIT antenna.

Colorado (Friday, February 21)

The Biology Committee remains concerned about the amount of down time on the fish screens in the Grand Valley. Dale emphasized that the irrigators make concerted efforts to operate the screens, but debris and algae can make this difficult. >The PD's office will review and summarize operations over a longer period (and as it relates to hydrology and conditions under which the irrigators are not required to operate the screens). With a new manager at GVP, we should be able to get annual reports on this project in the future. >Jana and Tom Pitts will discuss all these concerns with Brent and Bob Norman.

Gunnison

We need to identify what fish community monitoring should look like post-2014. Biology Committee members agreed monitoring should continue as per the Aspinall Study Plan, which shows this work continuing through 2016 and outyears).

Dolores

>Jana will add hydrological information for the Dolores (even though we don't have flow recommendations).

RIPRAP TEXT (Friday, February 21)

ADJOURN: 4:30 p.m.

Friday, February 21

CONVENE: 8:00 a.m.

The Committee concluded their review of the RIPRAP (see above).

6. FY 15 Work Plan review/adjustments – Need to add continued field work to #163; >Dale will provide a revised scope of work.
7. Flaming Gorge Flow request letter, initial FWTWG meeting update – Tom Chart said the spring flow request letter will be patterned very similarly to the last few years and will again reference the Larval Trigger Study Plan. Tom asked Dave if he could review the draft 2013 Flaming Gorge report so he can correctly characterize the hydrology. Melissa's burbot risk paper also will be helpful since a spill could occur if we have a big water year. Tom will send a draft to the Biology Committee for e-mail approval next week, and then it will go to the Management Committee. At a minimum, a draft flow request letter will be

available for the FGTWG kick-off meeting on March 20, 2014.

8. Bonytail stocking – Tom Czaplá recommended that the Committee prioritize floodplains for bonytail stocking. Reviewing the [Larval Trigger Study Plan](#) matrix (page 5), Tom said he understands the concerns at Stewart and Escalante, but said he hopes some of these or other floodplains may be available for stocking bonytail. We need to find a site that will not require additional management. Tom Chart suggested that the Committee also consider terrace floodplains that would drain back to the river after a short time.
9. Review previous meeting assignments (All, 15 min) – *See Attachment 1.*
10. Review reports due list – The Committee reviewed the list; Angela Kantola will provide an updated version with the draft meeting summary.
11. Schedule next meeting and outline agenda – The Committee scheduled a webinar for Wednesday, June 11 9-4 with an hour break for lunch. Agenda items will include: Maybell Ditch report, the Colorado pikeminnow population estimate report, Tusher update (which may also require a standalone conference call before the June 11 meeting), and more.
12. Review and approve January 16, 2014, Biology Committee meeting summary – Comments were received from Pete Cavalli and Dave Speas. A track changes revised draft was sent to the Biology Committee with this agenda. Pete Cavalli noted the need for an additional correction in the assignments, which has been made. The summary was approved as revised; Angela Kantola will post the final to the listserv (*done*).

ADJOURN: 11:45 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 will work on completing the literature search portion of the mortality study (which will aid the discussion in the biological opinion). Need to assign lead.*
 - *The **Biology Committee** will review Jackson Gross’s proposed scope of work (to evaluate potential e-barrier impacts) (done). **Tom Czapla** will work with **Kevin McAbee** and **Dave Speas** (and keep Tom Pitts in the loop) on developing a recommendation for how to accomplish Objective 1 of the proposal (determine the minimum electric gradients needed to prevent downstream passage while minimizing the risk of injury). 11/1: *Kevin sent list of BC/PDO questions, comments, and ideas to make the proposal for Obj. 1 more complete to Jackson Gross (who responded he’d begin laying out a strategy to answer the questions). Smith-Root/Program will discuss if this study needs to be accomplished before e-barrier installation (to determine potential effectiveness levels, barrier configuration, or velocity requirements) or only after installation (to determine effective electrical gradients for an existing e-barrier design and structure). Jan 16 – Jackson 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 study for Tusher; others agreed.**
 - >Dave Speas will work with Peter MacKinnon to develop antenna plan and implement installation; once funding for second set of antennas and salvage operation are confirmed, Kevin will talk to GRCC about logistics & permissions.
 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.*
- 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 will follow up on due dates.

&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).
 - 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).
3. & Flaming Gorge/Green R burbot: **Melissa Trammell and Pat Martinez and Krissy Wilson and Jerry Wilhite** will work on a Flaming Gorge burbot risk assessment. 10/16/12: They held a conference call August 30 and October 15; will have another call November 20, and Melissa will present something to the nonnative fish workshop (done). UDWR is funding two studies (food web and early life history). Late this season, Tildon tried baited hoop nets and other methods in the Green River and did not capture burbot. 12/7/12: **Melissa** will provide a draft to the ad hoc committee members in early February. 1/29/13: **Melissa** asked if **UDWR** could include larval burbot sampling near the spillway in their current work in Flaming Gorge; Krissy thought they could. Tildon asked and Krissy said they're not doing any sampling in the tailrace for burbot. **Melissa** will provide a draft assessment to the Committee by the end of July 2013.

1/16/14 – Melissa assured she'll have this done by the end of February 2014; Krissy and Jerry will review at that time, then it will go to the Biology Committee.

4. & 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). 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.*
- 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).*
- ***Walleye:** **UDWR** will modify their proposed addendum to 123a and submit it to the Committee for discussion and approval (via e-mail, if possible). **>Kevin McAbee and Paul Badame** will work on organizing a "walleye summit" with appropriate outside expertise. **PI's** should fully document walleye captures (date/time, length/weight, and river mile). **>Protocol for otolith collection** is needed before field season begins.
- **Walton Creek:** Action items after the site visit were to determine if fill material is available and what topography information is available; **Harry Crockett** provided follow-up on this to the PD's office.
- ***Private (LaFarge) 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.
- **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.*

5. **The Program Director's office** will work with States to compile all the Lake Management Plans. *Pending — McAbee. (Krissy said she believes she submitted information to Pat in the past, but can do so again). 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. ***The PD's office (McAbee)** will work with **Harry Crockett, Krissy Wilson, Dale Ryden, and Pete Cavalli** to review the otolith analysis situation and make recommendations for FY14-15. *Deferred pending available funding. >Dave Speas will discuss with Bill Pine, who has a source(s) for this work (see 2/20/14*

meeting notes). **Kevin McAbee** will work with Melissa to refine otolith guidance and then send PI's instructions for when, where, and from what fish otoliths should continue to be collected.

7. 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).*
8. **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).*
9. **Brett Johnson** will draft revisions to the Project C-18/19 final report for **Dave Speas'** review, and then he and Dave will propose revised language to the Committee via e-mail. >Dave also will send a few comments to **Kevin McAbee** who will work with Brett to see if they can be reasonably addressed. Kevin will summarize any changes made and seek Committee approval via e-mail.
10. The **Program Director's office** will find out if there are ways Program partners can support the CRI proposal for the proposed work by FWS at Johnson Bottom on the Ouray National Wildlife Refuge. *Tom Chart understands a decision has already been made and we should hear soon if the proposal was accepted.*
11. **Brent Uilenberg** and **Harry Crockett** will be working with CPW and Reclamation engineers to evaluate the potential for a permanent barrier downstream of the Ridgway Reservoir.
12. **Tom Chart** and **Jerry Wilhite** will draft a process and discuss Western's monetary contribution with regard to an evaluation of Green River flow and temperature recommendations.
13. **Harry Crockett** will look into what it would take to add a marking pass in Billy Atkinson's reach on the upper Yampa.
14. **Harry Crockett** will contact **Jackson Gross** and let him know the Committee appreciate Smith-Root's interest (and willingness to bring considerable cost-share), but would like to see a proposal that includes evaluation of success and a report.
15. The **Program Director's office** (Czapla) will discuss Ouray electric repairs with Reclamation and Dave Schnoor.
16. **Harry Crockett** will discuss with CPW Krissy Wilson's proposal to provide \$10K to Colorado toward upgrading a hatchery to produce more and larger tiger muskies in exchange for half the fish production.

17. **Biology Committee members** will e-mail any additional track changes or comments on this text by c.o.b. Friday, February 28.
18. 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.
19. The **Nonnative Fish Subcommittee** should discuss 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).
20. The PD's office (**Czapla**) will ask LFL when the cyprinid key will be completed.
21. The PD's office (**Kantola**) will get a link to the CWCB Laserfiche library (which houses the Program's technical report library) on the Program website.

>**Jana Mohrman** will check on Green River 2013 targets (make graphs/table on assessment tab consistent with hydrologic year category). Jana also will check the Yampa assessment tab. Jana also will add hydrological information for the Dolores (even though we don't have flow recommendations).
22. The **PD's office** will review and summarize 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.
23. **Dale Ryden** will provide a revised scope of work for Gunnison fish community monitoring (#163) to cover continued monitoring.

Attachment 2

Otolith Summary February 2014

Wyoming – All pike otoliths have been submitted by Bobby Compton for analysis

UDWR Vernal – 9 Walleye from Red Fleet (2012), 149 from Green River (2012 & 2013); 19 Gizzard Shad from Green (2012), 1 from White (2012). Some 2012 samples are damaged.

UDWR Moab – No otoliths on site

USU – 13 walleye from Midview - 7 samples analyzed for C13/N15 already (data provided to PDO); 6 more samples on site

CRFP Vernal – 1 burbot from Whirlpool (2012); 11 smallmouth from the White (2012); 26 Walleye from Deso (2012), 2 from Whirlpool (2012), 4 from Jack Creek (2012) and 3 from Yampa (2012)

CRFP Grand Junction - ~20 walleye heads from lower Colorado in 2013, will catalog eventually

CPW Grand Junction – 1 pike from Roaring Fork River (2012); 1 pike from Mack Mesa Reservoir (2012); 9 pike from CO River (2012); 1 largemouth bass and 20 pike from La Farge/Snyder Pond (2012); 1 pike from CO River (2013); 131 pike from LaFarge/Snyder Pond (2013)

No walleye otoliths from Lower Green – do we want some collected this year? (Kenny & Derek took samples, but the whereabouts are unknown)

422 total samples

Attachment 3
Smith-Root Study Plan Outline
for
Determining Minimum Electric Gradients to Prevent Downstream Passage

Preventing downstream entrainment of endangered fish of the Upper Colorado River Basin



Jackson Gross
Smith-Root Inc.

Main research objectives are to prevent downstream passage of endangered fish.

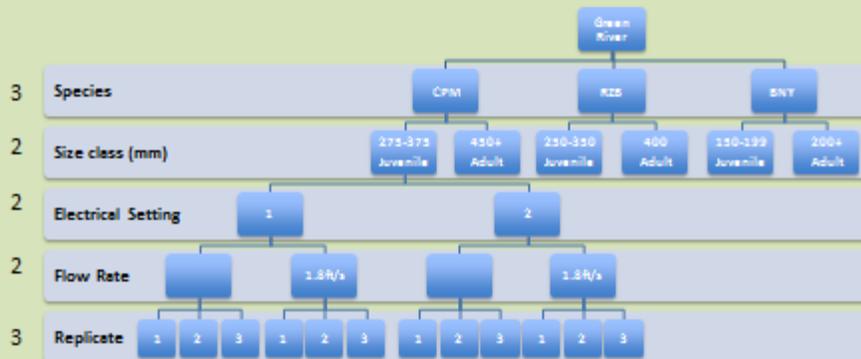
- **Barrier effectiveness is then defined by**
 - # of fish that pass the barrier
 - # of barrier challenges
 - Barrier avoidance or distance maintained from the barrier
 - Fish health and safety
- **Endpoints include measured responses for the individual and the group**

Description of variables

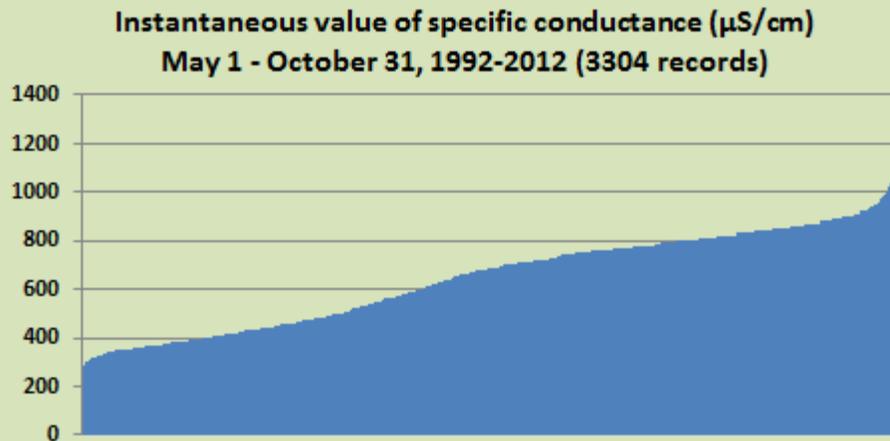
Size classes: based on availability and sizes not able to pass thru turbine

Settings: 3 pre-determined voltages based on range finding experiments
Conductivities bracket river conditions
May-October 264/664/1000 uS/cm

Flow Velocity: Sweeping velocity to weir wall
Theoretical canal conditions (Mean (~1.3 ft/sec) and 1.8 ft/sec)



24 trials per species; 72 total trials



Mean: 664 +/- 194 $\mu\text{S}/\text{cm}$,
1SD: 470-858 $\mu\text{S}/\text{cm}$,
Range: 264-1330 $\mu\text{S}/\text{cm}$

Milestones

- I. Study Plan Development**
- II. Permitting**
- III. Fish Transport & Acclimation**
- IV. Electric field & modeling**
- V. Physiological Response/Range finding**
- VI. Model Evaluation/Electrode determination**
- VII. Behavioral tests**
- VIII. Analysis**
- IX. Reporting**