

Draft Biology Committee Meeting Summary
Fort Lewis College, Durango, Colorado
January 13-14, 2016

PARTICIPANTS

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

Others: Tom Chart, Kevin McAbee, Tom Czaplá, Angela Kantola, John Hawkins, Tildon Jones, Kevin Bestgen, Chris Michaud, Matt Breen, Bob Schelly, Zane Olson, Dave Schnoor, Matthew Fry, Jana Mohrman, Melanie Fischer, Darrel Snyder, Brent Uilenberg. Via phone on Thursday: Bart Miller, Kirk LaGory, Lynn Jeka, Robert Wigington, Ray Tenney, Tom Pitts, Mark Wonzell, Katie Creighton, and Zach Ahrens.

Wednesday, January 13

CONVENE: 3:00 p.m.

1. STReaMS update – Amy Greenwell of CNHP presented much of the database progress at the Researchers’ Meeting on Tuesday. Dave Speas said a working release is out now. The next priority in development is that team is working on a batch upload procedure that will be particularly helpful to hatcheries. Other things under development are a web-based query builder and the storage of effort data. CNHP is working to hire behind Kirsten Holfelder, the lead programmer for the project, who is leaving this week. The first full scale training workshop will be held March 14-15 at CSU in Fort Collins and will focus heavily on solving problems folks would like to answer with STReaMS. These hands on questions will help both users and developers understand how STReaMS needs to be improved. An Agenda will be forthcoming from Dave. FY16 will be Travis Francis’ last year providing database support, so field personnel need to get comfortable using STReaMS and uploading their data. Kevin McAbee said Amy Greenwell has taken over downloading antenna data from the White River and Green River canal and is working on an auto-upload feature. Krissy asked if Dolores and San Rafael antennas are included; Kevin said we’ll need to talk to Peter and Amy.
 - a. Database position in PDO – Kevin said a draft position description has been developed. Tom Chart said the Service still requires a waiver for all new positions. The position went in front of the Regional Directorate Team for waiver approval this week and he’s hopeful it will be approved as the Regional Director, in her role as chairperson of the Implementation Committee expressed support for the position. Once the waiver is approved, the draft position description will go to Human Resources for review, processing, and then advertisement.
2. Discussion of Travis Schmidt’s and James Roberts’ (USGS) proposal to collect tissue samples of Upper Colorado River fishes in tributaries to develop a long term sampling strategy to track the status and trends of Hg and Se – Krissy Wilson e-mailed the proposal to the Committee on December 16. The study ties back to conservation requirements found in a section 7 consultation covering the effects of burning coal that is being mined on BLM property and permitted by Office of Surface Mining. Krissy said the plan is to assimilate data, then collect fish tissue from the White, Yampa and Gunnison rivers (over 500 river miles). Is there additional data we’d like them to collect? Dale commented on the link between coal and mercury, noting that the San Juan Program has gotten funding from a coal-fired power plant consultation. We need to be sure this is coordinated with collection of muscle plugs for Se from fish in the Gunnison River. The PIs are willing to accompany our field folks (which may be helpful because the additional work associated with securing the samples can be somewhat time-consuming). With regard to sample preservation, Dale Ryden believes the samples can be kept on wet ice. >Krissy will make arrangements for the PIs to join the Committee’s next webinar or meeting and also ask them to provide a sample protocol. In light of previous

experience in the Grand Canyon on a related topic, Dave Speas suggested we may want to ask to review any press releases or similar reports before they go public.

3. Report Reviews (20 min)

- a. Review/approval of cyprinid key – “*Guide to Cyprinid Fish Larvae...*” was provided to the Committee via FTP download utility on October 14, 2015. Darrel still has a list of small editorial changes he will make. The Committee commented on what a significant piece of work this is and their appreciation for the intensive labor that went into it. The Committee approved the report. Darrel will make the remaining changes and finalize the report.
 - Also, in the introduction to the cyprinid key, Darrel included a section discussing the “Fishes of the Upper Colorado River Basin” that includes a map of the UCRB with boundaries for its 8 HUC (4-digit) sub-basins and a table summarizing the recent (past decade) distribution and general relative abundance in lotic and lentic habitats within those sub-basins (similar to the poster Darrel presented at last year’s Researcher’s Meeting). Darrel has offered that info, map, and table for presentation and use on the Recovery Program website. Additionally, Darrel hopes that the table (and the spreadsheet data on which it is based [which he’ll provide]) might serve as a starting point for regular (perhaps annual) updates by the Program for the previous 10 years—thereby maintaining on the website a current listing of all fishes known to be in the UCRB (adding and deleting species as appropriate) and where they’ve been reported. Darrel suggests that this task might be best handled by the Program database manager, state aquatic database managers, and/or by the nonnative management group. Melissa Trammell said she thinks this is an excellent idea; Tom Chart said he supports this. Dale Ryden noted it may be difficult to decide when to “delete species, as appropriate.” >Darrel will send the information to Tom Czaplá (or the database manager if the position is filled by the time he is ready to send it).

4. Nonnative fish

a. Proposed Changes for 2016

- Request for 4 additional SMB removal days on the White River in Utah (#167) (Breen) – The proposal from UDWR-Vernal requests an additional \$9,310 for Project #167 in order to add more targeted work once crews document areas of highest density. Currently UDWR Vernal has little flexibility to target concentration areas after performing their first full pass. Pete Cavalli asked about the locations of concentration areas and Matt Breen said they have shifted somewhat over time, so the targeted removal needs to be determined annually. Dale asked if there are any sections that can’t be accessed on a day trip; Matt said they can’t reach the locations below Bonanza Bridge on day trips. At this point, Matt said he thinks they need to sample the full pass from the Utah/Colorado state line to Enron boat ramp annually, but in a year or two they may be able to assess whether there are specific concentration areas they can focus on every year going forward. Matt said the main point is a “surge” effort where they’ve typically found spawning adult concentrations. Kevin McAbee noted this is the only request for additional funds out of the nonnative workshop. The Committee approved this work and the additional funding.
 - Matt asked Dave Speas about the two submersible antennas in this scope of work (to detect tagged endangered fish movement as well as roundtails) and who will purchase them. The cost of the antennas in this proposal is identified, but not included in the total. Dave Speas said he’s not sure where Peter’s at and USBR doesn’t have a contract with BioMark right now; >Dave Speas will look into what antennas are needed and who can get them this year. Three antennas purchased with Utah’s remaining NFWF capital funds will go to Tildon’s office (for use at Tusher and other locations).
- Thurs: Potential additional outreach to Yampa River landowners - more netting locations and access

to Upper Maybell? Harry Crockett said CPW has agreed to try to do this; Cory Noble will be taking the lead. Cory has identified one new landowner who may be willing to work with us (below Highway 40). Kevin McAbee said one question from the workshop was do we need to have additional folks (e.g. water users) talking to landowners. We're also working with the Maybell Ditch folks and may be able to generate more cooperation through that process. John Hawkins suggested that >biologists first identify the most important locations where we need to improve communication with landowners. We should consider including field folks in discussions with landowners, as well as people who may already have relationship with the landowner. Chris said in stretches with lots of backwaters, they need landowner permission to stop more frequently than the every 2 mile stops they've made in the past. >Hawkins, Noble, and Smith will work on the specifics of this item and determine a path forward.

- Thurs: Expand gill-netting during spawn in critical habitat and during Yampa buffer zone e-fishing? Overnight netting in 98b? Tildon said they'd also like to transition into more netting during the 98b work. Harry said CPW will support this, but we'll need to carefully monitor by-catch. Beyond that, we just need to figure out where there's permission to do the netting. Melissa suggested the possibility of using the turbidity curtain to block off and treat backwaters. In upper 98c, John Hawkins said he'd like to do a pass with a GPS with Google Maps live to specifically identify and record key locations and asked for any technical expertise folks could offer to that. >Chris Smith can help or Kevin McAbee can help find someone else.
 - Walleye (search for spawning aggregations in Split Mountain in late winter, night electrofishing trial, jet boats in lower Green for increased access) – Bob Schelly said that in 2015, walleye spawning riffles were discovered and large concentrations of walleye were removed during early spring main channel electrofishing in Dinosaur National Monument (specifically sections A and B, RM 319.3-310.8). Utah recommends continuing to monitor and target these riffles in the spring, with additional exploratory sampling (up to 4 day trips) upstream in similar habitats in the Island Park and Split Mountain reaches, necessitated by the fact that no other projects sample in these areas at that time. In addition, Utah plans to experiment with night electrofishing near Jensen once they have evidence of walleye movements (from anglers or sampling). They expect this sampling to occur earlier (late March - early April) than pikeminnow population estimates. By optimizing the period of spring fyke-netting for northern pike, they will shift some of that effort into walleye targeting, so these changes will be budget neutral. The Committee approved this work. Matt Breen noted he still needs to get approval from Dinosaur.
- b. Potential cross collaboration with out of basin experts: AFS North Central Technical Committees Meeting July 25-28 in eastern NE – Kevin McAbee recalled we discussed working with walleye experts. Kevin reached out to Dr. Dan Iserman who suggested our Program present in front of the North Central AFS' three technical committees on our walleye, pike, and smallmouth bass work when they meet in Nebraska in late July. Dr. Iserman said the technical committees seem open to giving us a few hours to half a day (with additional conversations during evening social time). Kevin hopes we can make this work as he believes it would foster some excellent interaction. We could perhaps have one lead from our program present on each of the species, but perhaps in a longer format than we just did here at the researchers meeting. Dave suggested it likely will be most helpful if we go there with specific questions developed (e.g., how to maximize walleye captures, etc.); Kevin agreed. Kevin Bestgen noted that the Midwest doesn't have many riverine walleye experts, so we'll need to seek those folks out. >Committee members and others will begin submitting specific questions to Kevin McAbee.
- c. Smallmouth bass disruption flow studies – Kevin Bestgen described what a study might look like to investigate a flow spike to disrupt smallmouth bass spawning (e.g., as described by his presentation on Wednesday). Kevin Bestgen said in light of the potential for a big hydrologic year, we might want to request a spike this year, and he recommends selecting a few sites for a pilot study to determine the best sampling techniques – Rainbow and Island Park, for example. Kevin said much will depend on hydrology, what the Yampa contributes, etc. Tildon has volunteered to assist with the field component.

Obviously, a flow request would have to be a part of this. Dave said he doesn't know if Heather is aware of this for 2016. Tom Chart suggested we also need to do outreach with guides below Flaming Gorge; Jerry agreed and urged us to do this sooner rather than later. Melissa noted we'll need to reach out to anglers, also. Melissa noted that someone mentioned reducing the temperature of the release; Dave said he didn't know if it would be possible. Tom Chart said there will be a temperature effect with the release in any case. Dave noted we need to mention the temperature effect to the anglers, also. Kevin Bestgen said they have funds to cover preparing a study plan and conducting pilot-level work this year. Tom Chart said this action will be described as best we can at this point in the spring flow request letter, along with a base flow request to support YOY pikeminnow, and the LTSP request from previous years. The specifics of these flow requests will be moved forward at the FGTWG and the proposal

- d. Thurs: Elkhead Net timeline update – Kevin McAbee said Ray Tenney is working to develop a new schedule for purchase and installation of the net. The State Engineer's office has to do a safety review, which requires substantial effort. Reclamation said the NEPA document was released January 11 with a 30-day comment period. CPW is very close to finalizing the Elkhead Lake Management Plan. Brent said Ray has suggested completing the earth work before runoff (while the reservoir is fairly drawn down already) so that we can deploy the net right after runoff this spring. Brent said he supports this approach. >Kevin will work with Ray and Brent to provide the MC and BC an update on cost and schedule when it is available.
 - e. Thurs: Walton Creek rehabilitation project engineering feasibility study status – Harry said the feasibility study was completed in December. The project is feasible (and would cost ~\$1M, so more funding in addition to the Species Conservation Trust Fund \$500K will be needed). Another round of stakeholder meetings will come next in late February or early March.
5. Elect 2015 Biology Committee vice-chair – The Committee selected Dale Ryden as the 2016 vice-chair; Dale will become the 2017 chair.

BC chair rotation through time

1998-1999	BOR	Larry Crist
1999-2000	FWS	Frank Pfeifer
2000-2001	WAPA	Art Roybal
2001-2002	WY	Paul Dey
2002-2003	BOR	Tom Chart
2003-2004	Utah	Kevin Christopherson
2004-2005	NPS	Melissa Trammell
2005	CDOW	Tom Nesler (1/2)
2005-2006	BOR	Dave Speas (1.5)
2006-2007	WY	Kevin Gelwicks
2007-2008	Utah	Krissy Wilson
2009	FWS	Dave Irving
2010	NPS	Melissa Trammell
2011	NPS	Melissa Trammell
2012	CPW	Harry Crockett
2013	WAPA	Jerry Wilhite
2014	BOR	Dave Speas
2015	UDWR	Krissy Wilson
2016	WYGF	Pete Cavalli
2017	FWS	Dale Ryden

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

ADJOURN: 5:00 p.m.

Thursday, January 14

CONVENE: 8:00 a.m.

7. Report Reviews, cont'd (70 min)

- a. Approval of the Peak Flow Technical Supplement report (several members of the Water Acquisition Committee joined by phone). The revised version was sent to the Biology and Water Acquisition committees on 11/6/15. Kirk LaGory described revisions, and noted it is now considered a technical supplement to the Green River and Aspinall Study plans. Rather than organizing by hypotheses, the report now is presented in five topical areas. Table 5 describes peak flow topics, related and ongoing studies, remaining high priority information needs, and recommended studies. Recommended new studies are described for each topic area. Melissa Trammell said her comments have been addressed; Tom Pitts said his comments were addressed, as well. Mark Wonzell asked Kirk to explain the process of going from periodic monitoring to specific flow recommendations. Kirk said the recommendations in Muth et al., are being reevaluated through studies designed to address uncertainties; this supplement identifies additional physical pieces of the puzzle that haven't been addressed by the ongoing studies. Mark suggested some opportunistic monitoring following significant flow events may be helpful. Kirk said some of that is included in the supplement. Robert Wigington said he understood that pulling all of the pieces together into any kind of revised flow recommendations would be done under the original Flaming Gorge and Aspinall study plans; Kirk agreed. Tom Chart thanked Kirk for the effort he put into this revision, saying he believes it has been improved significantly. Robert Wigington agreed it is now a much clearer strategy. The committees approved the report; >the Program Director's office will post it on the website next to the study plans under technical reports under the instream flow section.
- b. Discussion of BC Review of "*River Regulation Affects Reproduction, Early Growth, and Suppression Strategies for Invasive Smallmouth Bass in the Upper Colorado River Basin*" by Bestgen and Hill.
 - i. The Biology Committee received the peer reviews by Julian Olden, Grace Loppnow, and Tildon Jones on December 17, 2015, along with BC review from Dave Speas. Biology Committee comments were due to Bestgen and Hill 1/14/16. Kevin Bestgen said they'll begin working on revisions now.
 - ii. Potential studies designs of implementation of such a proposed flow disruption – Already discussed (see 5.c. above, discussion of flow pulse (likely a 3-day duration at power plant level) after spring releases to negatively affect spawning smallmouth bass). A draft flow request letter for larval trigger, this pulse flow, and elevated base flows will be circulated for Committee approval around February 1 with a goal of a final letter by the end of February. Brent recommended the letter prioritize the flows in the event the hydrology can't support all of the requests. Tom said this will be a process, with the flow request showing a range of options and real-time decision making being discussed by the FGTWG. Scheduling and notification of the flow would be similar to that for the larval trigger flows.
- c. Follow-up on backwater synthesis – Final comments on "*Reproduction, abundance, and recruitment dynamics of young Colorado pikeminnow in the Green and Yampa rivers, Utah and Colorado, 1979-2012*" were due 10/27/15, but Western expressed additional concerns to be addressed regarding: 1) maintaining Aug-Sep flows below 2,200 cfs in average and wetter years; 2) wording that seems to indicate average size of the backwaters surveyed, but the number reported is the average area seined per backwater; and 3) missing discussion on the disparity in recruitment between the 1979-1993 and 1994-2012 time periods. Western has said they don't oppose the experimental approach identified in

the document, but would like implementation of the experimental approach to consider the above comments. Tom Chart sent Kevin Bestgen's responses to Western's comments in an e-mail to the Committee on January 7. Tom Chart noted this report will serve as the basis for the elevated base flow request. Kevin Bestgen described how he's addressing Western's comments and discussed patterns in the data (noting, for example, that we likely can only expect positive recruitment in response to elevated base flows in one of every two years). Jerry asked if some of the magnitude of response to elevated base flows may be tempered by the effects of nonnative fishes; Kevin said it's possible, but the fish community in the backwaters has been about the same since 1979 and we don't see large numbers of bass in backwaters. (There is, however, the nonnative fish "gauntlet" for the larval fish to get past before they get to a backwater and then for the young pikeminnow to encounter when they leave the backwaters.) Kevin emphasized the importance of the length of the growing season in the backwaters for Colorado pikeminnow recruitment. Jerry said he hasn't had much time to review Kevin's responses and asked to have until February 5 to review them. The Committee agreed. Kevin Bestgen said the Park Service also has made comments on the report and the potential for the recommended flows to increase invasive vegetation such as Russian olive. Kevin has discussed this with them and has added a paragraph addressing this potential concern for channel narrowing. Melissa noted that the peak flow technical supplement recommends studies that will adequately monitor vegetation encroachment/channel narrowing. Fish response may be considerably faster than a longer-term channel narrowing. Brandon commented on what excellent work this report represents and how helpful these larger synthesis reports are. Tom Chart noted that as a flow report, this will go to the Management Committee for approval after technical committee approval. Argonne's physical habitat report is a companion report, and that hasn't come to the technical committees yet. Subsequent to that, there also will be a synthesis chapter for both reports. Tom Chart recommends waiting until we have that full package approved at the technical committee level before seeking Management Committee approval; the Committee generally agreed if Argonne's report will be forthcoming soon. Melissa recommended going ahead and *sending* the reports to the Management Committee as they are finalized, although the Management Committee likely will wait to approve them as a package. >Jana will check in with Utah's Water Acquisition Committee member, James Greer, who was not on the call.

8. Proposal to bolster bonytail conservation and recovery – Dave Speas sent an e-mail on 12/22/15. Dave said Mark McKinstry asked BioWest if they'd be willing to lead a subgroup interested in bonytail and prepare a proposal regarding what can be done to improve bonytail survival. The proposal Ron Kegerries of BioWest has prepared includes some more formal, structured stocking experiments and tracking survival post-stocking in more controlled (predator-free) wild habitats as those may be available. Dave noted that the MSCP invests pretty heavily in researching hatchery and release protocols. Dave said he does think this needs to be Program-led effort to turn around the situation with bonytail. We could either: 1) take a low or no-cost approach with the tools we have now and asking if we're doing everything we can; or 2) conduct the kinds of experiment in Ron's proposal. Tom Czapla said he and Krissy have been communicating with the hatcheries and field staff about potential stocking location, stocking excess fish in ponds like CDOT's near Debeque. The Mumma hatchery is flow-training fish, and perhaps we need to implement that at our other hatcheries, as well. With regard to Ron's proposal, Tom Czapla suggested the sonic tag approach might be helpful. Tom Chart noted Paul Badame's report (Badame and Hudson 2003) that summarized earlier stocking efforts. Brandon said BioWest tried to review all the information on what's been done on bonytail to date and the proposal considered the evidence that bonytail appears much more lacustrine than Colorado pikeminnow, for example. In the upper basin, we have the good fortune to have some habitats with cover and turbidity that we think bonytail need. Krissy said it seems the hatcheries have made headway in reducing the stress levels of stocked bonytail. Rearing bonytail in the hatchery is fairly straightforward, but we need to capitalize on how easily they spawn in hatchery ponds. Dave Schnoor said they know how to keep bonytail alive and well. They've reduced stress as much as they can, but bonytail are not as hardy in the hatchery as razorback. Bonytail seem susceptible to external parasites, so they've also taken steps to reduce that. Dave said he thinks Bob Muth's staff is looking at developing a bonytail specific diet. Tildon

noted that bonytail fatten very quickly on razorback diet and they have to cut back on the food or the fish can't maintain neutral buoyancy. Dave said they've reduced hauling densities, and they carefully monitor hauling temperatures, pH, and time. Dave is willing to work with the other hatchery managers to further discuss these items. Tildon said that bonytail seem more susceptible to accumulating stress over time. Tildon said their previous work seemed to show they survived pretty well in ponds until the ponds ice over, and then they don't see the fish again. They've thought about potentially stocking bonytail into the Johnson Bottom inlet. Dave said where they put extra razorback in bonytail ponds, they still get razorbacks back (i.e., the young razorback are not all eaten by the bonytail). Matt Fry suggested stocking small, excess bonytail in Leota, Sheppard, Stewart Lake, and/or Pariette Wetlands. Krissy agreed, but said she thinks we have to have ways to track our success. Zane said that at the warmer Wahweap hatchery, they don't get fatty livers and some of the stress that they see at the Ouray hatchery. >Krissy recommended that all the hatcheries do the health condition profile at least 30 days prior to hatching, compile the data, compare it across hatcheries and discuss what we can do to improve it. Tom Chart asked what it would take to measure cortisol levels. Zane said timing of stocking is a challenge. When they stock fish in May at or near spawning condition, that increases stress. Before May, river flows are too high. After May, temperatures increase. Tildon endorsed experimental floodplain stocking, but said we'll have to accept that not all wetlands will succeed. Dave Speas said these are all good suggestions. He added that we might also consider size at stocking. Zane noted the grading factor that Wade raised (females grow faster, causing us to stock more females at first), so we need to increase the "slot" size of stockable fish to maintain genetic diversity. Brandon noted that this illustrates how everyone wants to do the right thing for bonytail, but we need to figure out how to move forward in an organized fashion. >Kevin McAbee suggested the first database manager's assignment should be to summarize and analyze bonytail data in STReAMS, in order to provide the committee and hatcheries with an initial idea of the number of fish that remain in the system over time, and the characteristics of those fish. The Committee agreed. Dave Schnoor suggested that we also move forward with pond experiments and said he would be willing to work with Tildon on a specific proposal. Tom Czapla asked if there might be potential to stock fish in Stewart Lake; Dave said that since we're hearing they may not pose as much of a risk to razorback as we thought, perhaps that would be possible. >Tom Czapla will reconvene the bonytail group (including hatchery folks) via conference call or webinar within the next week or two to outline a plan of action. Tom Czapla asked if there's a possibility of a bonytail telemetry study in Lake Powell. Tom Czapla emphasized that we've only been stocking larger and greater numbers of bonytail in recent years. Tom Chart and Dale noted that in the Project 127 Annual Report, Darek Elverud reported that 30-40 bonytail were captured that had overwintered, which represented a significant increase over previous years.

9. Researchers Meeting follow-up – The San Juan Program held a great event and Fort Lewis College was a very nice venue. Although Durango is difficult to get to, the San Juan Program can only host meetings in the San Juan Basin (Durango or Farmington). Brandon said a sense of urgency to do things for pikeminnow stood out for him in the talks, but it seems we're on track to do that. The 2017 meeting will be hosted by Colorado in Grand Junction. 84 people were registered for this year's meeting; 90 for last year's. The 2017 meeting will be January 10-11, with a Biology Committee meeting to follow on January 12.

10. Green River Canal and Green River Diversion updates

- a. Updates on the efforts to design a fish exclusion at the Green River Canal – Brent Uilenberg said the proposal is to emulate the barrier weir at Hogback. Based on the limited tests of that weir so far, it seems pretty impressive compared to the percent of time we're able to operate screen barriers in the upper basin to date. The additional testing that was planned couldn't be accomplished due to electrical interference issues with the PIA and due to the mine spill (after which irrigation diversions ceased). We've also agreed we're not going to try to address the hydro entrapment. Most recently, Reclamation has been working on issues related to providing enough head without impacting water deliveries. One possible solution to that concern would be to compensate water users for some loss of delivery that would occur during certain conditions (e.g.,

compensation might take the form of rehabilitating their radial gates for a total cost for the whole project of \$2.5 - \$3M). Reclamation will need to submit design specifications by January 2017 for construction in fall-winter 2017-2018. The weir wall, although it's not fully proven, still seems like the best option (and we could perhaps add an electrical array to it), so the Committee supported moving ahead. The design will be conducive to later installing an electrical array in case it's needed.

- b. Updates on construction schedule, PIA installation, and coordination for the Diversion rehabilitation – Kevin McAbee said the NRCS awarded a final engineering contract about 9 months ago and a construction contract in November . Construction is underway. The diversion may be passable by boats in time for the Colorado pikeminnow population estimates. The PIT tag array design is complete and BioMark is manufacturing the antennas and should be installing them late winter/early spring. The fish passage structure will be very similar to the one at Price-Stubb.
 - c. Fish entrainment and canal salvage data summary – Dave said they detected 254 endangered fish at the PIA in the canal this year (average hydrology). We do see fish getting back to the river from the canal, but we don't know at what rate. Zach Ahrens said that in 2014, they salvaged one subadult pikeminnow and 4 YOY chub out of 854 fish total. In 2015, they salvaged a total of ~1,400 fish, mostly nonnative, but 4 pikeminnow (all untagged) and a fair number of age-0 chubs. Pete Cavalli asked if bird predation could be affecting their salvage numbers. Tildon said there was not much opportunity for that as the salvage crews are actually managing the draw down and they are sampling as the canal is still flowing somewhat. Immediately prior to salvage the the canal is moving fast and is fairly turbid. Tildon said it's notable that almost all the fish they catch are young of year, very few adults, and so far no tagged fish that Dave is detecting on the antenna (except one bonytail going out of a sluice). There are lots of opportunities for fish to exit the canal, and also some opportunities for fish to end up in laterals. Krissy asked if we've looked at modifying the sluice returns to make them more fish-friendly; Tildon said that's a possibility, but may not work on all the sluices where riprap is needed to prevent erosion.
11. Recovery plans update – Tom Czaplá said all three species are on track for a species status assessment and thanked Rich Valdez for providing the updates at the researcher's meeting.
- a. Colorado pikeminnow PVA – Contractors are lined up and the PDO will be sending the contract letters next week (this is funded with Section 7 funds held at NFWF). The first meeting will hopefully be in February.
 - b. Humpback chub recovery plan development – The Science Advisory Group will meet February 10-11 (anyone on the larger humpback chub recovery team can attend).
 - c. Razorback sucker SSA – Brandon said he received the contract (this is also NFWF-funded) and he has begun work on the SSA.
12. Review reports due list – Both the Westwater and Black Rocks humpback chub reports should be on the next meeting agenda for approval.
13. Schedule next webinar or meeting and identify agenda items – Upcoming agenda items are:
- review and discuss RIPRAP revisions and assessment;
 - review the humpback chub reports and likely other reports;
 - hear more about the USGS proposal to collect tissue samples of Upper Colorado River fishes in tributaries to develop a long term sampling strategy to track the status and trends of Hg and Se; and
 - Discuss the results of Wade Wilson's humpback chub genetics analysis.

The meeting will be in the Reclamation's conference room in Grand Junction, CO, March 10 – 11 starting at 8 a.m. on the 10th and adjourning by noon on the 11th.

14. Consent item: Review and approve October 13, 2015, Biology Committee webinar summary – Kevin McAbee provided edits to page 4, item #8 which Angela Kantola sent with this agenda. Approved. Angela will post the final to the listserver (*done*).

ADJOURN: Noon

Attachment 1: Assignments

The order of some assignments has been changed to group similar items together.
For earlier history of items preceded by an ampersand "&", please see [previous meeting summaries](#).

1. Humpback Chub (population estimates)

- **& Humpback chub combined population estimate** from Gary White. 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. 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 (included in draft FY16-7 SOW). Czapla said we have new due dates of January 2015 for the Black Rocks and Westwater reports. 5/28/15: Travis was working with Kevin Bestgen on the methods section; Kevin has provided revisions and Travis anticipates completing a draft by the end of June. Brian Hines said he's on a similar schedule and will have something by the end of July or August. 7/28/15: both reports now expected by the end of August. Peer reviews submitted and should be on the March 2016 agenda.*

& Humpback Chub (broodstock development / genetics)

- 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. *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). 8/26/14: 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. 10/27/14: Reclamation awarded contract to SNARRC for analyzing remaining fin clips and completing report (including lower basin data). 1/15/15: data on upper basin chubs will be written up within about a year. The subgroup developed a list of questions for Wade to address (Tom Czapla sent to BC 1/21/15); **>Melissa Trammell will find and send the plan development proposal document to Tom Czapla by January 21 and Tom will send it to Wade with a courtesy copy to the Biology Committee and Kevin Bestgen. (Done). Wade said he will revise the scope of work (done; any comments due by January 29).***

2. & Nonnative fish management follow-up:

- ***Walleye:** **>Kevin McAbee and Paul Badame** will work on organizing a "walleye summit" with appropriate outside expertise. *Pending. 10/27/14: Still trying to get some outside funds to support this effort. 7/28/15: Matt Breen suggested contacting Greg Sass with Wisconsin-DNR about a walleye presentation for the walleye summit or the NNF workshop. 10/13/15: Kevin McAbee has invited Dr. Dan Iserman from Wisconsin to come to the workshop. Dr. Iserman couldn't come, but participation in an AFS North Central Technical Committees Meeting July 25-28 in eastern NE is being discussed.*
- ***& Private (LaFarge, aka Snyder Mamm Creek) 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. 10/27/14: **Reclamation** will review plans for filling the notches with the city of Rifle, which has a nearby water intake. 5/28/15: Filling the notches is not feasible since it turns out they maintain the hydraulic pressure on either side of the levee within specific bounds. Lori Martin has been gill-netting the ponds since ice-out and installed a big trap net a month ago near the outlet to trap or obstruct fish trying to leave the pond once it connected. Long-term solution(s) will need to be considered further. Rotenone might still be an option (since pike are not abundant in the Colorado River and Rifle Creek has been screened, the chances of re-invasion are reduced). 10/13/15: see below. 1/14/16: Harry Crockett said CPW built another Merwyn trap, and will install them at both ends this year.*

- **Dave Speas** will talk to Rob Clarkson regarding what support he may be seeking for the novel piscicide study. 3/4/15: Dave said the work is being done at a USGS facility in Wisconsin; Rob reports that the PI estimates testing Supraverm at ~\$10K per additional species. Wisconsin likely has walleye, bass, and pike readily available and they believe they could get endangered fish from Arizona. Rob told Dave he did not expect to see any difference in test results among Gila species. 5/28/15: Kevin McAbee pursued Service funding for adding species to the Supraverm study, but USGS then said they didn't believe Supraverm was proving as selective as initially thought. **Paul Badame, Kevin McAbee** and **Harry Crockett** will find out if Utah and Colorado have regulations similar to the one that David Ward in Arizona that allows temporary use of ammonia as a piscicide. Kevin McAbee 2/25/15: David had indicated he acquired a 24(c) Special Local Needs pesticide registration from the state of Arizona. 24(c) references a section of the Federal Insecticide, Fungicide, and Rodenticide Act that gives ALL states the ability to "register an additional use of a federally registered pesticide product". Both Utah and Colorado (and I assume all other states) maintain a list of pesticides registered in this way. (Kevin e-mailed the Committee a summary from various state and federal websites describing this regulation). Kevin concluded if someone devoted the time and energy, the Recovery Program should be able to try to apply for a 24(c) registration for ammonia, just like Ward et al. did (likely going through the state's department of agriculture). However, approval requires a lot of specific planning and paperwork, and is not guaranteed. Committee to discuss ramifications of this conclusion. 3/4/15: Krissy suggested some of the ponds that Dale suggested would be good tests. Kevin asked if it might be used at LaFarge Pond if Rifle is concerned about rotenone; Sherman said potential impacts would need to be carefully investigated, but it could be considered. Krissy recommended that both Utah and Colorado begin investigating the process and required lead time. Sherman Hebein contacted Laura Quakenbush; Pesticide Registration Coordinator for Colorado's Division of Plant Industry and forwarded the subject email and attachments to her. Laura and John Scott, Pesticide Section Chief, will review the situation and advise what options are open to use ammonium hydroxide as a piscicide in Colorado. 5/28/15: Kevin McAbee again asked if ammonia might work at LaFarge and if we should pursue permitting for its use at this site; >Kevin will discuss with Lori Martin and >Harry Crockett will let Laura Quakenbush know we're still interested. 7/28/15: The Merwin trap may be effective enough at Snyder, but if/as we discover other locations, we might consider piscicides. **Utah** may look into whether ammonia could work at the pond below Flaming Gorge at Brown's Park. 10/13/15: Kevin reported that Rob Clarkson waiting for a first year report from the Service and may present that at the workshop. Dave Ward has had difficulties finding locations to test ammonia and is interested in talking to upper basin researchers about potential experimental locations. Kevin is discussing this with CPW (e.g. at LaFarge Pond) and UDWR (e.g. at Brown's Park to control white sucker). 1/13/15: *See update in nonnative fish workshop summary; Supraverm not selective enough for use. Krissy suggested discussing with the group in AFS that focuses on piscicides to get*

ammonia registered. Kevin McAbee suggested it might be most helpful if Dave Ward took the lead on this with our help; >Kevin McAbee will discuss with Dave Ward.

- To get the word out to anglers and guides to report fish captures below Flaming Gorge, **Jerry Wilhite** will mention it to guides when he talks with them each year, and we will mention it at the Flaming Gorge meeting, also. Jerry also will e-mail a few of the active folks and ask them to spread the word; >**Kevin McAbee** and **Melanie Fischer** will draft something for Jerry to share with the Green River Outfitters and Guides Association (GROGA), asking them to report burbot, northern pike, smallmouth bass, kokanee, and Colorado pikeminnow seen or caught in the A, B, and C sections. 7/28/15: *Kevin McAbee and Krissy and Jerry have drafted a letter that Trina Hedrick and Ryan Mosely commented on, also. Jerry and Ryan will be the points of contact for data submission. 10/13/15: Jerry met with GROGA last week and provided a letter and data sheet. Jerry emphasized the need for photos. Jerry will meet with them again early next summer.*
- 3. ***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. 3/4/15: CPW, CWCB, and Reclamation have talked to Tri-County and they will attempt to avoid spilling again this year. 5/28/15: Kevin McAbee is working on setting up a stakeholder meeting in July (7/28/15: now contemplated for September or October). We will keep reservoir updates as a standing agenda item. 10/13/15: Stakeholder meeting was held September 2 to discuss long-term solutions for how Ridgway might parallel the Elkhead process (net or similar escapement prevention, LMP revision, etc.) and how woody debris might be managed. 1/13/16: Another meeting will be held on March 17, 2016 in Grand Junction at 1 p.m.*
- 4. 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** did) and we should be considering potential outside funding sources, as well, since this relates to more than listed fish. 1/13/16: The 2016 Colorado-Wyoming AFS meeting will have a dry lab workshop on sucker identification and hybrids. Kevin Bestgen recommends a genetics study linked to a morphological study.*
- 5. *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 (*done*). **PDO** sent revised plan to BC & WAC for review; comment deadline extended to January 23; revisions and review pending. 5/28/15: *Jana said the study plan is still being revised and more tightly connected with the Green River and Aspinall study plans. The 2011 aerial photos will be posted on the internet by the end of this summer (not georeferenced). 7/28/15 The **Program Director's office** received a revised draft on August 11, 2015. 10/13/15: Tom Chart is reviewing and will send to the BC and WAC by the end of October. Argonne provided an estimate for 200 hours of georeferencing, orthorectification, and color-balancing; and 300 hours for mosaicing (image rotation and shifting) previous 2011 high flow Green River aerial photography for \$55-\$65K. Price estimates for new photos are included in the Peak Flow Technical Supplement. In the fall of 2015 LiDar was flown for the Green River corridor from Canyonlands NP to Flaming Gorge and should be available in the spring of 2016. It was paid for by the State of Utah and the National Park Service and will be quality checked by the USGS. 1/14/16: the **Program Director's office** will post the final peak flow technical supplement on the Program website next to the study plans under technical reports under the instream flow section.*
- 6. **Krissy Wilson** will find out if PIT tag data from the San Rafael and Price rivers are being submitted to

Travis. 3/4/15: Some has been submitted in past years, but not the most recent year or two; UDWR will submit to Krissy who will submit to Travis by March 15. 5/28/15: Krissy submitted a partial list, but will submit more once the antenna data is available. 7/28/15: Dan Keller will update this shortly. 10/13/15: Krissy said all the San Rafael data have been submitted; Krissy will check with others (Peter McKinnon) about the Price and Dolores river data. Peter and CNHP are aware that all of the antenna data needs to go into STReaMS.

7. *As the time to stock bonytail approaches, **Tom Czapl**a will seek the Committee's approval of stocking locations via e-mail. 5/28/15: Wahweap bonytail went to locations identified in the plan (Green River at Jensen Bridge and Green River State Park and Dewey Bridge on the Colorado). Dale would like to add a site near Rifle (this year or later) for about a fourth of the fish they stock (~2,500). In light of anglers around Rifle, Dale will check on planned stocking dates. Harry wondered if downstream around Rulison would be better; Dale will check truck access. Tom Chart asked if hits on the Price-Stubb antenna might provide information; Dale thought it could help, but wouldn't be definitive. Harry asked if we could more formally analyze what's working in terms of stocking locations; others endorsed this idea. The Committee concluded this won't happen until we have someone in the database position to do the analysis. Meanwhile, Tom Chart said he has no objection to trying other sites. Krissy Wilson recalled the bonytail that went into Stewart a few years ago and left as flows receded; therefore, we should continue to work to find low velocity habitats from which bonytail can leave of their own volition. Dale said one difficulty has been that low velocity sites are often quite inaccessible for safe transport of fish. Another option is to stock fish far enough upstream of low velocity habitat so they can drift in. Dale will stock at previous locations for now and further explore low velocity habitats in this area and discuss sites with Harry. 7/28/15: Dale said they have a couple of locations to consider in lower-water years. Sherm said Lori and Jen observed that when we put bonytail in Butch Craig showed up in the Gunnison River at larger sizes. To use Butch Craig for this purpose again, we need to address access issues (re-establish contact with and permission from landowners) and rotenone to remove nonnative fishes. CPW and FWS will continue to discuss and decide how to move forward to re-acquire access and remove nonnative fishes. Dale also will check to see if Butch Craig is part of the Colorado River floodplain refuges. 10/13/15: Dale said BLM oversees Butch Craig access and he hopes to meet with the landowner in the next week or two in hopes they can do some netting in the pond, determine boat access, notch condition, etc. Dale will coordinate this with Jenn Logan. 1/13/16: Dale said they got access (we have an easement for access across private land as part of the Colorado River management area) and discovered many largemouth bass in Butch Craig (likely a bait bucket type of introduction) and that they'll be working on that this spring. CPW would be willing to treat it. Harry noted we've had good results with bonytail at Butch Craig in the past.

Krissy recommended that all the **hatcheries** conduct bonytail health condition profile at least 30 days prior to hatching, compile the data, compare it across hatcheries and discuss what we can do to improve it.

Kevin McAbee suggested the first **database manager**'s assignment should be to summarize and analyze bonytail data in STReaMS, in order to provide the committee and hatcheries with an initial idea of the number of fish that remain in the system over time, and the characteristics of those fish. The Committee agreed.

Tom Czapla will reconvene the bonytail group (including hatchery folks) via conference call or webinar within the next week or two to outline a plan of action.

8. The Committee endorsed an experiment to tag smaller hatchery razorback and bonytail (for fish coming out of floodplains); >**Tom Czapl**a will investigate which hatchery could do this. **Tom Czapl**a will check the BO written for scientific take permits to see if any change in permitting would be required. 1/13/16: **Matt Fry** is experimenting with tagging smaller fish and will document this work for the Committee in the Ouray NFH 2016 annual report.

9. **Angela Kantola** will make a note for the FY18-19 work plan review it would be good to have more introduction of new or significantly revised scopes of work from PIs (perhaps on a webinar a week in advance of the work plan review meeting). *Pending*
10. **Dale Ryden** will provide the Committee results of Wade Wilson's humpback chub (wild and pond-spawned progeny) genetics analysis as soon as it's available and then the Committee will discuss options. *1/13/16 – Dale said Wade and Tracy are writing this up now and we may need to schedule a conference call or put this on the next meeting agenda (we'll need to turn this around fairly quickly).*
11. **Krissy Wilson** will make arrangements for Travis Schmidt and James Robert' (USGS) to join the Committee's next webinar or meeting and also ask them to provide a sample protocol for collecting tissue samples of Upper Colorado River fishes in tributaries to develop a long term sampling strategy to track the status and trends of Hg and Se.
12. **Darrel Snyder** will send the "Fishes of the Upper Colorado River Basin" information that includes a map of the UCRB with boundaries for its 8 HUC (4-digit) sub-basins and a table summarizing the recent (past decade) distribution and general relative abundance in lotic and lentic habitats within those sub-basins information to Tom Czapl (or the database manager if the position is filled by the time he is ready to send it). The **Program Director's Office** will maintain this information on the Program website.
13. **Dave Speas** will look into what antennas are needed and who can get them this year.
14. **Biologists** will identify the most important Yampa River locations where we need to improve communication with landowners. We should consider including field folks in discussions with landowners, as well as people who may already have relationship with the landowner. Chris said in stretches with lots of backwaters, they need landowner permission to stop more frequently than the every 2 mile stops they've made in the past. **Hawkins, Noble, and Smith** will work on the specifics of this item and determine a path forward.
15. **John Hawkins** would like to do a Yampa pass with a GPS with Google Maps live to specifically identify and record key locations and asked for any technical expertise folks could offer to that. >**Chris Smith** can help or **Kevin McAbee** can help find someone else.
16. **Committee members** and others will begin submitting to **Kevin McAbee** specific questions for the North Central AFS' three technical committees on our walleye, pike, and smallmouth bass.
17. **Kevin McAbee will work with Ray Tenney and Brent Uilenberg** to provide the MC and BC an update on the Elkhead net cost and schedule when it is available.