

 **Upper Colorado River  
Endangered Fish Recovery Program**

**Biology Committee Meeting Summary  
October 24th 8:30am-4pm**

**In attendance:** Harry Crockett (chair), Paul Badame, Dave Speas, Tom Pitts, Melissa Trammell, Pete Cavalli, Dale Ryden, Derek Fryer. **Absent:** Environmental Representative.

**Interested Parties:** Tom Chart, Kevin McAbee, Julie Stahli, Cheyenne Owens, Tildon Jones, Don Anderson, Jojo La, Michelle Garrison, Kevin Bestgen, Mike Partlow, Matt Breen, Katie Creighton, Mike Mills, Chris Michaud, Ray Tenney, Craig Ellsworth, and John Caldwell.

**CONVENE: 8:30 a.m.**

1. Review/modify agenda - Agenda was modified to read as follows.
2. Hydrology Update - Don reviewed the strong runoff conditions seen in 2019. The Colorado River through the 15-MR had high spring flows sustained through CROS coordination. Flows exceeding 18,600 cfs in Reach 2 in the Green River filled six wetlands with water and larval razorback sucker. Flows out of Flaming Gorge supported higher base flows through the summer to support Colorado pikeminnow. The Aspinall unit fully complied with the ROD for a “Moderately Wet” hydrologic year. The Yampa and mainstem Colorado had higher flows through most of the summer (June and July) and supplemental releases were not needed until late summer, when conditions became unusually hot and dry throughout the basin. Supplemental flow releases for endangered fish began in August and were used through September and into October. Don highlighted the importance of having water available to the Program, Don thanked CWCB, Ute Water, Colorado River District, TNC and the Colorado Water Trust. Colorado Water Trust is currently raising money to fund flows in the 15-MR and implemented their first water lease for this purpose in 2019. TNC is building an endowment called the Yampa River Fund to support Yampa River conservation activities including, potentially, supplemental flows in the Yampa River. Don continues to hear from stakeholders across the basin seeking to improve flow conditions in the state. Redlands Water and Power has approached the Program about providing more water into the 3 mile reach of the Gunnison below the diversion. The Middle Colorado River Watershed Council has approached the program about working together to support flows in the mainstem Colorado River. TNC and UDWR are working on improving flows in the Price River. A White River Partnership is also proposed, including BLM, USU and the State of Utah. Tom Pitts asked if the Northern Ute tribe was involved. No one knew whether the tribe was actively involved or not, but noted there was another meeting in November [which Tildon now intends to attend on behalf of the Program].
3. Technical Committee approval of Draft Interim White River Flow Recommendations - Don said a contractor is expected to begin work within the next few months on a White River Management Plan that will consider potential future depletions in the White River basin. The

Program's goal has been to provide up to date information about the White River to the consultant to support that effort. Don and a number of partners have developed the Flow Recommendations document to provide that information, including a biological summary of both native and nonnative fish conditions in the White River. Flow recommendations were originally created in ~2012, then they were tabled while a working group was formed. Don revived the discussion last year with distribution of the draft document in Sept 2018. Don received input from a variety of stakeholders, which he incorporated as was possible. He hosted a webinar on October 3, 2019 to run through all of the proposed comments and the updated draft document. The participants on that call recommended the document be implemented as interim flow recommendations with two caveats. First, that the flow recommendations may be adjusted at some future time after completing additional field studies (the White River planning process is expected to help identify what specific elements need to be studied further to fill knowledge gaps). Secondly, a few parts needed to be updated with newer information, including: oil and gas operations in the basin, operations of Kenney Reservoir and Taylor Draw Dam, and documentation of the presence of northern pike in Kenney. James Greer from Utah asked for clarification on how the flow recommendations will be interpreted and administered in the future. Don has been working on updating those sections. Don also received comments following the webinar from Rio Blanco and Colorado River District (CRD), which have not yet been distributed. Don is planning on sending those out with the next updated version of the flow recommendation document. Don is asking the BC for support in accepting this document as interim flow recommendations, with the identified caveats and with approval by email after distribution of that document.

Tom Pitts asked how Don was going to incorporate CRD's comments. Ray said based on studies cited, the low flows are likely too low, which would likely eliminate management actions that would otherwise be included to support endangered fish. Don said that although the lowest flow recommendation numbers are very low, they are limited to only 10 days [correction: should be 14 days] in the 10% driest years. Tom Chart said that during the past few years the approach to developing flow recommendations for the White River has evolved into describing / protecting the current condition; flows in the range of 30 cfs were observed at the Watson, UT gauge in 2018. Ray reiterated that setting such low flows in the guidance document has the potential to degrade the ecosystem, even under limited durations, and advocated for higher minimums to support the identification of management actions, including a potential reservoir on that system. Tom Chart said they started with minimum flows of approximately 300 cfs (later 200cfs) and partners pushed back, because we did not have adequate scientific support nor a mechanism (storage) to manage for those targets. Again, we settled on trying to protect the current condition - these draft interim flow recommendations represent the current condition. Significant sources of water are not currently available to augment White River flows and the Program currently does not have capital funds to secure storage in a reservoir on the White. The studies currently available do not outline the effects of these low flows, and Tom sees that as a knowledge gap that needs to be identified in the management planning process. Tom Pitts said we may identify opportunities to fill flow gaps

during the management planning process and that we should let those conversations play out. Ray referenced the Smith and Orchard study that says that the ecosystem is likely to be degraded below 150 cfs. Tom Chart said the Program started with higher base flow recommendations for exactly the reasons Ray cited. However, we realized that more information would be needed to support flow recommendations that exceeded the current condition. Ray said without including higher targets, no management actions will be considered to address them. Tom Pitts said mitigation actions will be included in a PBO in the long run, and recommended that we approve these as interim recommendations and commit to continuing exploration of appropriate base flows. Melissa asked if there was sufficient language in the document calling for mitigation or augmentation to prevent flows below 150 cfs. Don referenced line 861 that defines a natural breakpoint of 150-161 cfs. Tom Chart recognized that the basic premise that the current condition should be adequate to support a native fish community in the White River has been greatly complicated by the presence of nonnative smallmouth bass. Tom recognized that there is not a robust body of information to support the recommendations on the low (base flows) or the high (spring peaks) end, and therefore reiterated the importance of developing a flow study plan to address the uncertainties. Tom Chart acknowledged that 30 cfs is an extremely low flow for the White River. And, flows in this range (as infrequently as they have and will likely occur in the future) have likely been detrimental, but for the reasons discussed above he supported the document as written.

Jojo asked if the comments would be distributed to the WAC/BC. Don committed to sharing the comments recently submitted along with proposed resolution to those comments in the final distribution. >Don will seek approval by email and asked that BC/WAC members request a follow-up webinar if needed after they see comments. Michelle recommended attention to Ray's comments and to leave space for conversations during the management planning process. Don committed to distributing that document within the next two weeks.

4. Feedback on a Letter of Support for a TU Project - Don was approached by Trout Unlimited about a project on Elkhead Creek below Elkhead Reservoir. TU is concerned about channel incision in the five miles below the dam, which is causing problems for landowners and is degrading habitat. They are seeking to increase resilience of the river system, and restore the health of the surrounding farmland and believe a letter of support from the Program would assist in fundraising. Don would like to write a conditional letter of support with a few caveats. First, that the area is not critical habitat and therefore would not directly benefit the endangered fish, but could contribute to overall ecosystem health. In addition, he would like to request that TU would ensure that they do not unintentionally create habitat for smallmouth bass in streambank stabilization efforts. Don also noted that when high flow levels (~75 cfs) are being released, some landowners have concerns about moving heavy equipment across the creek and that it would be helpful if the channel improvements helped relieve those concerns. Tom Pitts recommended sending a letter outlining these concerns, but recommended staying away from a formal endorsement. Tom Pitts said that FWS would have to consult on any 404 permit needed by TU and did not want to interfere with that process. Melissa supported the letter, reinforcing the need to include the warning about smallmouth bass habitat. Harry said CPW would be working closely with TU on this project if funding is obtained. CPW is generally supportive,

but they have not seen a specific proposal as of yet. Pete asked if we were early in the process in providing support, but recommended providing a list of concerns. Harry asked that Don forward the email from TU to the group. Don committed to distributing that email and a draft response letter to the BC. *Don emailed the BC on 10/28/19.*

5. Proposed modification to Suspended Sediment Monitoring SOW - Don said the scope of work was originally approved in the work planning process earlier this year. One of David Toppings' students found 33 cross section endpoints that were originally surveyed in the 1980's. David has a hypothesis that channel complexity is enhanced under the net sediment loss conditions he has observed, which could be verified by surveys of these cross sections in Oct 2020 and following years. No additional Program funding would be needed, but Don was seeking approval on the change in focus in the scope of work. David has identified efficiencies in his current work that would cover the costs of the additional work. Dave Speas said some work might be needed on the budget tables to account for that change. >Dave will talk to the contracting group about further necessary actions, Don will follow up with Dave. Tom Pitts recommended approval of the modified scope. Paul Badame seconded. The BC approved the revised scope of work.
6. Wetland Update
  - Matheson - Tildon said UDWR-Moab was able to set light traps in Matheson's inlet before construction occurred. They identified larval razorback (confirmed by Kevin Bestgen), pulled the stop logs and created a temporary screen to complete a larval-triggered inundation of the wetland. A fish kill occurred pretty early in the summer, which may have been because this was the first year of filling after a lot of biomass developed (and decomposed) in the wetland. In September, infrastructure was completed with a gate and screen with Program funds originally designated for Wahweap. Pete asked how long the wetland held water. Katie said draining occurred by the beginning of August, supported by high base flows in the Colorado through July.
  - Green River wetlands - Juvenile razorback sucker were detected in Stewart Lake, Johnson Bottom, Sheppard Bottom, Old Charley, Stirrup and Leota. Mortality can occur from sampling, so once presence was confirmed, biologists left the fish alone. Johnson has started draining, 1 razorback sucker has been found; 2 weeks remain on draining. At Old Charley, 152 juvenile razorback sucker have been found (64 have been tagged); draining will finish tomorrow. Stewart Lake produced 24 razorback sucker with 4 ft of water remaining and more fish expected. Two young-of-year (YOY) bonytail were found in Stewart as well. The MarshMaster is scheduled to treat cattails in the wetland in December. UDWR and Tildon met with the contractor and are confident the monitoring and treatment plan will address our concerns. Melissa asked if any other sites should be treated while the contractor is in Vernal. Tildon has considered multiple treatment options; he said the primary cost is to move the equipment and is concerned about cost overruns if we move it to other wetlands. Tildon thought we may want to view this first treatment as a proof-of-concept before broader scale application. He is looking to see if other partners own this type of equipment. The three remaining wetlands (Leota, Stirrup and Sheppard) will be sampled in the Spring 202, because there is no easy way to drain those wetlands. This also provides the unique opportunity to study overwinter survival. Pelican Lake water has been going into Sheppard to ensure the wetland is deep enough; the water is also available for Leota if necessary. Stirrup construction has been delayed till Summer 2020 based on the availability of the Force Account Crew.

Pete asked if any fish kill occurred at Sheppard. Tildon said no kill occurred. A drainage gate exists on the southwest side of the wetland which might be available to help collect fish using fyke nets if needed. Leota will be harder because of its size. Stirrup will likely be drained with a pump for construction, during which salvage efforts will occur. Old Charley is filled through the outlet, but the river also broke through the inlet channel, breached the road and broke through a few levees on the upper side. Pete asked if the Program was responsible to fix the levees and whether nonnatives were found in Old Charley. Tildon said adult channel catfish were found, along with juvenile green sunfish. Chris Smith said YOY carp were prevalent along with YOY crappie. He is seeing adult carp and black crappie as well, but not many. Tildon is working to determine responsibility for fixing the levees. The work last spring was done with both fisheries and refuge resources at FWS. Melissa asked if cyanobacteria was tracked or monitored in the wetlands and if fish kills or bird kills occurred. Chris has not seen any bird or fish kills and DOT monitors are present in the wetlands. He noted DO has been lower at Old Charley (<2 mg/L) than at Johnson (~10 mg/L). Chris consulted with Matt Fry and verified that razorback sucker can withstand low DO levels. Chris said not many razorback sucker have been seen at Johnson Bottom. Carp have been found in the kettle; large populations of red shiner and fathead minnow have been found in the canal above the kettle.

7. Update on bonytail feed studies - Cheyenne reviewed development of the bonytail feed study and the high levels of mesentery fat and fatty livers. To help see whether these high levels of fat may be “normal”, they compared HCPs for Rio Grande chub and roundtail chub currently housed at Mumma. Both species had lower levels of mesentery fat and a higher prevalence of normal livers than bonytail. Wild roundtail chub have also been collected for comparison, but have not been analyzed yet. HCPs for the Program hatcheries show a high prevalence of excessive mesentery fat and a low prevalence of normal livers with some seasonal variation. Wahweap conducted a 16 week trial on YOY bonytail testing both a pond diet and natural feed consisting of zooplankton and insects from installed bug lights. YOY on both diets grew larger than fish in previous years that were on the razorback sucker diet. Zane plans on keeping the fish on the Pond LE diet throughout the winter and will conduct spring HCPs. Mumma tried to compare diets but had limited success in getting Year Class 2018 fish to take to the Pond LE feed. Melissa asked if Pond LE floats. Cheyenne said it does, whereas the razorback sucker diet is made to be slow-sinking and promised to investigate further [Razorback Sucker diet is slow sinking with up to 15% float. Pond LE is a floating diet as is, however due to grinding and sifting for smaller feed sizes the diet used at Wahweap was slow sinking]. Anecdotal evidence suggests lower mesentery fat levels for both novel diets coupled with faster growth rates, and we are awaiting the results of further analysis.

Bozeman Fish Technology Center will be working with both federal hatcheries to conduct a factorial study examining various levels of protein and lipid in new diets. The diets studied will have higher levels of protein and lipid than the Pond LE diet in order to use uniform ingredients across experimental diets. The studies will begin in November after they receive experimental feeds from Bozeman. Cheyenne anticipates the studies will go at least until February, but hopes to continue as long as possible through the spring. Grand Valley will use YOY fish. Randlett will use 2017 fish. Bozeman started a similar study with YOY in September. Bozeman has 100-200 bonytail that they did not use that are available for other studies as recommended by the BC. Cheyenne thanked all of the hatchery staff at the Program for their continued work in

these diet studies.

Pete asked if the fish with the lower fat had different behavior, specifically whether they swim lower in the water column. Cheyenne had not heard, but will check with Zane [abnormal swimming behavior in bonytail first observed at Randlett so we can make note of swimming behavior during their feeding trials]. Melissa asked if all of the diets are being tested at each facility. Cheyenne said the state hatcheries were testing the Pond LE and the federal hatcheries and Bozeman will test the Bozeman created diets. Cheyenne would recommend comparing the best diet from Bozeman with Pond LE at the end. Melissa thanked Cheyenne for all of the good information.

8. Excess bonytail pre-approved list of alternatives - Paul said Zane has completed PIT tagging for the season, but had about 5000 fish that were too small to tag. Currently, there are about 14,000 fish that are too small for tagging/stocking [163 mm]. Paul asked for a list of pre-approved actions that could occur with extra fish. Melissa said we have put them into Lake Powell in the past. Dale said Mark McKinstry has thought that bonytail could do well in inflow areas. Dale does support that effort, but is concerned about the untagged nature of the fish. Melissa said she has easily obtained email permission from NPS to stock in the park. Cheyenne referenced the 2015 Integrated Stocking Plan that specifically addresses excess bonytail and allows for the stocking of untagged fish. Tracey Diver's paper indicates that as long as the parent population is large and has not been graded, the fish should be viable for stocking. Melissa said NPS was fine with placing them in Lake Powell, but preferred into muddy areas where cover may be available. >Melissa and Paul will work together to get a long-term scientific permit for stocking into the Lake. Dale asked that language from that permit be distributed to the hatcheries just in case extra production occurs at the other hatcheries. Tom Chart reiterated that the BC should be informed of the disposition of those fish and summary stocking data should be included in annual reports. Dale said a scope of work has been proposed in the San Juan to trap and transport fish from below the waterfall and so that office needs to know if fish are placed in Lake Powell. >Cheyenne will talk to the San Juan PDO about this and will circle back around with Zane [Wahweap has 14,050 extra bonytail that average 163mm and are naturally spawned individuals (YOY 2017). These fish are too big for pikeminnow feeding. An additional 20,483 YOY 2019 were stocked into the pikeminnow pond for forage last month].
9. Canal Salvage in the Grand Valley - Dave Speas reviewed the elimination of canal salvage in the Grand Valley to save costs during the work planning process, primarily because most of the fish that are captured are three species vs endangered species. Dave said he is concerned about the elimination of this project and has been working with FWS and CPW to ensure that salvage occurs. CPW has stepped up to coordinate that effort this year, with support from Dave, Melissa and the UFWS-GJct stocking truck. Salvage will occur on Nov 13, 14, 15 in the Palisade "hot spot" reaches. The canal work is harder than it appears, with two solid weeks of work that is easily impacted by landowner permission and weather conditions. There are hazards involved, making it not appropriate for volunteer support. Dave thanked CPW and Lori Martin for all the work to fill the gap this year. Dave has heard that landowners/the public expect the canal salvage to occur and is an effort where the Program effort is visible to the public. Dave asked whether we have determined if canal salvage is required based on PBOs. Tom read the incidental take statement for the canals. The Program committed to designing and

installing the screens and creating a monitoring plan to determine take in the canal. Based on the long term salvage efforts, the low levels of endangered fish may have provided sufficient information on take. Don reviewed the 2013 action item status from the PBO. The status description indicates that ongoing canal salvage was the monitoring plan.

Harry thanked Dave, Melissa, and Amy from the FWS Ecological Services Office in Grand Junction for volunteering to help. Harry said CPW has committed only to this year as a proof of concept, but is concerned that CPW has been put in a position where they would be forced to pick this up on such short notice. Harry also asked how all of these fish get into the canals with screens in place. Dave said there is a long history of operations that affect fish presence in the canal. Dave wanted to consult with the BC to gage support for discontinuing this work as a Program. Melissa acknowledged that she suggested taking it out of the Program budget, but would have preferred to have further conversations with CPW before that was finalized. Dave also understands how Dale chose canal salvage to make budget reductions. Dale said all of the scopes are important and cutting budgets was a struggle. He chose to focus on keeping projects focused on endangered species whole. Dale supports canal salvage moving forward, the native species salvaged are an important prey base for pikeminnow. Dale said they typically salvage 16-18 miles each on two different canals and that hot-spots can shift from year to year. Dale expects quite a few fish to be in the canals because of high water conditions. Tom Chart said that based on the HUP calls, most of the screens have been in place for most of the summer so there may be less fish this year. Dale said there is a learning curve to figuring out salvage; he recommended taking a day off between salvage events. He said one day without screens in a high flow year might produce more fish in the canals than many un-screened days in dry years.

>Tom and Don will circle back with the GJ-ES office to determine if other actions are required as part of the PBO. Dave asked if the BC thought they made the right decision in cutting this scope. Tom Chart was interested in seeing how this scaled back effort worked to help make the decision for next year. Melissa supported the path we are on and reiterated the importance of canal salvage as a fish community management action. Harry encouraged continued discussion after the trial canal salvage occurs. Harry said it is unlikely that CPW would ever be able to complete 2 full weeks of effort because of timing conflicts.

10. Pikeminnow broodstock collections and holding - Broodstock collection started in all three nursery areas (middle Green, lower Green, lower Colorado). The middle Green effort was completed with Project 158 funds, the redirection of which was authorized at a previous BC meeting. The UDWR-Moab office did not collect in the Colorado this year because of low ISMP sampling results. UDWR-Moab did sample in the lower Green and collected 115 YOY pikeminnow in that reach. SNARRC held the fish in the stocking truck during the collection effort. 71 of those fish made it to SNARRC. Chris Smith in the FWS-Vernal office collected 30 fish on the first day of sampling in the middle Green, with 15 mortalities. He and the Ouray NFH instituted some changes to their protocols and improved survival after that first collection. Overall, 132 fish were collected from the middle Green; 114 survived the trip to Dexter, NM. A

debriefing call will be scheduled over the winter to establish best practices. The Randlett hatchery was used to hold middle Green fish before transport, which reduced transportation time and potentially increased survival. ISMP sampling throughout 120 miles of the middle Green yielded one pikeminnow, yet Chris was able to catch over 100 during this broodstock collection effort. Tildon will continue to investigate, but thinks the apparent discrepancy in results could be attributed to changing water temperature and subsequent distribution of fish. Collections occurred at the end of September in the lower Green and ISMP occurred the week preceding the collections. In Vernal, the fish were in much shallower backwaters in autumn, but as the river cooled, pikeminnow moved into the warmer portions of deeper backwaters. SNARRC has requested 200 pikeminnow per nursery reach in each of 3 years, for a total collection goal of 1800 fish. >Cheyenne will send the BC the summary from the broodstock collection debriefing call [to be scheduled]. The mortalities from the first day of middle Green River collections were evaluated and stress in various forms was determined to be the largest source of mortality. Melissa has asked the Chief of Resources of Canyonlands about collecting pikeminnow in the park and said that could occur with a standard collection permit. Tom Chart thanked everyone for their broodstock supplementation efforts; this is critically important to both recovery programs. Melissa clarified that this work will continue until the broodstock at SNARRC is sufficient. Tildon said the goal is to catch as many alleles as possible, varying collection efforts by year and by spawning reach. In earlier efforts, SNARRC and UDWR-Moab secured 131 YOY from the lower Colorado River in 2016.

11. Pikeminnow SSA - Tildon reviewed the purpose of the SSA process and the history around the development of Colorado pikeminnow recovery goals. During the goal revision process, a suggestion was made to conduct a PVA, which was completed by Dr. Phil Miller. The SSA incorporated the PVA as the basis for current and future scenarios. Tildon reviewed the resource needs, including peak and base flows, water temperature, abundant forage base and complex, redundant habitat. Population needs include adult abundance, stability, reproduction, age-0 abundance and abundance of wild recruits (sufficient to offset adult mortality). There are six analysis units: Green River, Upper Colorado River, San Juan River, Colorado River - Grand Canyon, Lower Colorado River and the Gila River. The SSA examines stressors and conservation actions and their impacts on needs. Each analysis unit was analyzed based on the categories in the condition category table. Resource categories were analyzed similarly. Currently, the Green and Colorado rank as moderate, the San Juan ranks as low and the three lower basin areas are categorized as functionally extirpated. Four future scenarios were considered, including: status quo, conservation reduction, increased conservation and significant conservation increase. Tildon is hoping to get the document to the Upper Colorado and San Juan BCs by the end of October. Comments will be addressed in December and January and then the SSA will be finalized in early 2020. The BCs will have 45 days to review upon distribution. Melissa asked if Tildon was still working with Dr. Miller on the models. Tildon said he worked with Dr. Miller to refine the models that were presented in the SSA, but no new models were run. Melissa asked if information from the trip down the Grand Canyon was included. Tildon said that information was included, but additional information is expected

from the GCMRC in terms of a final summary of that trip. The big question that remains is how many miles of suitable habitat are available and whether that is sufficient. No decisions have been made about reintroduction. Melissa asked how the Tusher diversion was considered as a barrier (if the passage isn't cleaned). Tildon said it is not considered as a barrier and noted some transition rates in the population estimates indicate it may not be preventing all movement.

12. Review and approve July 2019, Biology Committee webinar summary – Julie reviewed the suggested changes and made additional recommendations based on the Committee's suggestions. The Committee voted to approve the summary. >Julie will finalize and post.
13. Update on recovery goals decision from MC/IC meetings - Tom Chart said the humpback chub proposed downlisting and 4(d) rule is currently with the Assistant Secretary for Fish, Wildlife and Parks at DOI. The razorback sucker proposed rule cleared regional review at the end of September which has just been submitted to FWS HQ. We anticipate the razorback sucker rule will be on a similar timeline as humpback chub has been. As Tildon explained above, the pikeminnow 5-year review is expected early next spring. Cheyenne Owens completed a short form 5-year review for bonytail. During the MC/CC meeting, some of the stakeholders expressed interest in progress on recovery goals in addition to these reclassification efforts. The SSAs will provide the basis for revised recovery plans and the post-2023 process has provided a wealth of information on actions, time, and costs. Broad discussion occurred about doing all four species together, which the PDO does not think would work well. The PDO did commit to making progress on one of these species in the coming year, focusing on measurable criteria, actions, time and costs. MC/CC members expressed an interest in documenting FWS perspectives on what recovery goals look like to help support cooperative agreements. Tom said that many conversations have been had in the PDO, focusing on the complexities of trying to write recovery goals in the middle of proposed downlisting measures.

Kevin McAbee described statutory requirements in the Endangered Species Act that have to be completed by FWS. One of those, is a 5-year review for each listed species. These 5-year reviews have been the FWS's first step in the process of evaluating the current status for each of the four endangered fish. At the conclusion of each 5-year review the FWS makes a recommendation for what additional regulatory steps should be taken. Note: The SSA is not a regulatory document, but has been written to support the 5-year reviews for 3 of the 4 species (not bonytail).

In the bonytail 5-year review, FWS did not recommend revision of the recovery goals because of a lack of new substantial information, nor did it recommend a change in listing status. For both razorback sucker and humpback chub, the 5-year reviews recommended downlisting to threatened status and revisions of the recovery goals. FWS leadership prioritized finalizing the downlisting processes for both humpback chub and razorback sucker before revising the recovery plans because 1) status revisions will inform the recovery planning process and 2)

completing downlisting recognizes species conservation success. The FWS needs to honor the downlisting process before we can launch into recovery planning because there are important public comment periods and leadership review. A public comment period is part of that downlisting process and the information received in that should be incorporated into any future documents, including recovery plans.

The only 5-year review not completed is the Colorado pikeminnow. Tildon said that document should be completed soon. If the Service recommends maintaining Colorado pikeminnow as endangered, then no additional steps would prevent the recovery planning process from moving forward immediately. This could benefit the Post2023 process because the Program is implementing a lot of large-scale recovery actions to support pikeminnow, including enhanced baseflows. Colorado pikeminnow is a species managed by both programs (Upper Colorado and San Juan) which will more adequately inform the post-2023 process. A lot of groundwork has been completed for the species' recovery plan, including draft documents developed prior to the SSA, therefore the recovery plan may not take as long to complete. In summary, the FWS believes that working on a humpback chub or razorback sucker recovery plan is not appropriate at this time, because FWS needs to fully respect the rulemaking process that has been initiated. However, the PDO thinks it can meet the commitment of completing one draft recovery plan by considering the Colorado pikeminnow as the species of focus. The PDO will report back to the MC/CC when a more definite plan has been constructed and we have had the chance to fully brief FWS leadership. The Committee appreciated Tom and Kevin's explanation of the PDO's rationale.

14. Update on expected RIPRAP review / Sufficient Progress process for 2020 - Tom reviewed all of the things that will need to be addressed over the next year including the Section 4 documents, the post-2023 process, and general program management. The RIPRAP review may be an opportunity for efficiencies in FY2020. The PDO will still go through the RIPRAP table and add information for each line as we have done in past years, but will then send that information out to all committee members for review over email instead of the typical face-to-face meeting format. The MC and IC have approved this effort, but Tom wanted to update the BC as well.
15. Post-2023 Planning update - Tom summarized the process to date: the spring technical workshops, generating selections for consideration of future activities, the MC partners generating their preferred list of activities. Julie reviewed the MC selections and partner input, and noted the 10 MC ideal selections were the main data used in the process. The partner and PDO submissions were used to assist as "tie-breakers" if there was not clear agreement from the MC submissions. The MC combined selection totaled \$9.7M annually, mostly in nonnative fish, propagation, and monitoring. Instream flow recommendations focused on the core areas where the Program is currently involved. Habitat focused on additional wetlands and improvements to screens and passages in critical habitat. Nonnative fish recommendations continued to stress management of northern pike, smallmouth bass and walleye and developing new techniques, e.g. genetic manipulation. Propagation activities broadly supported more frequent assessment of stocking plans and hatchery maintenance, and tracking genetic management. Monitoring activities generated larger expenses than expected, but there was

support to continuing existing monitoring to serve as the foundation for decisions and management actions. There was broad support for a research fund to address specific, rotating topics of interest as they emerge. There was also broad support for continued participation in engagement at public events, and continued production of publications and materials. There was agreement in expanding the I&E activities and funding. There has been diverse feedback from the MC on refining the suite and scope of activities. The PDO plans to forward the \$9.7M budget to the funding group of the MC as a starting point. Tom expressed that the input from technical experts and feedback from the MC has generated a reasonable starting point based on the combined expertise involved. The timeline for the report to Congress makes moving forward a necessity, and the MC funding group can determine whether the identified funding amount is realistic. Dave Speas asked about the process for making a final recommendation for the future program and who would be involved. Tom reiterated that MC members would ultimately refine what that looks like.

Julie then showed the BC the list of capital projects with costs that came from the MC selections. Ryan Christianson helped develop those costs given the vague details of the selected projects. The PDO then ranked those projects based on feasibility and necessity. Julie reviewed the projects by rankings. Melissa asked if the PDO was seeking input on this list. Julie said the PDO would like the BC to provide recommendations. Tom noted that the list does not include large maintenance expenses on existing capital projects that have been constructed to date, and said Ryan suggested ~\$40M over 15 years to cover those needs. Julie summarized that there were about 12 projects listed in the two top tiers of priority work. The PDO has been tasked with refining the capital projects list for the MC. Julie agreed to send the list to the BC for their consideration. Any feedback is requested to be submitted by November 1st. Melissa asked if other BC members had seen this list and given it some thought. Craig expressed a need to put the current activity expenses in the list for context.

16. Management implications of the humpback chub genetic monitoring report and next steps - Tom reviewed that we have had the translocation report to move humpback chub back into Dinosaur National Monument on our to do list for a while; however, declining populations of Colorado pikeminnow has recently caused the Program to focus on developing a Colorado pikeminnow broodstock instead of humpback chub projects. Tom said there is a pretty clear signal out of the genetic monitoring report from SNARRC that lower basin fish should not be used in Dinosaur National Monument and that restoring DNM would require broodstock development and production efforts. Tom asked if the BC was getting that same signal. Dale said their hatchery currently has fish from Black Rocks that could be used for broodstock and asked for guidance on what to do with those fish. Tom said the genetic report indicated that if DNM is the site for augmentation, the source population should be Desolation Canyon. Dale is going to draw that pond down next week to see what survival has been. Melissa agreed that using lower basin fish is not appropriate, but said we should likely keep Black Rocks fish in captivity in case we need them as she says there is less clarity around whether we should mix upper basin populations in any effort. Paul asked if there was space at any hatchery to move humpback into production. Cheyenne said there is not space currently, but it could be considered. **>Melissa will reconvene the Humpback Chub Dinosaur National Monument group to make progress on the white paper.** Shane is still interested in participating, Kirk

LaGory, Kevin McAbee, and Cheyenne may be good team members as well. If anyone else is interested in participating, please contact Melissa.

#### 17. Field updates

- CSU - finished sampling in Lodore/Whirlpool for 115, 140, Yampa nonnative control halted due to low flow conditions. Smallmouth bass were smaller and lower in number. Northern pike numbers were high.
- CPW - Additional sampling at Kenney turned up three adult NPK. Another 64 have been turned in for the harvest incentive. Nonnative removal efforts are complete for the White, Yampa, and Colorado and pike removal occurred at Catamount. The Ridgway Tournament is complete and the post-tournament population is down to 763 adult bass. Chapman reservoir was treated again for nonnative fish. Removal also occurred at Stagecoach (only one smallmouth bass) and a freezer is currently in place to encourage removal of nonnatives. Please see appendix for full update.
- UDWR-Vernal - Field work has wrapped up in 172, 123b, 167. Roundtail chub were collected for a captive population out of the White. Over 2,500 bass were removed from the Green. Please see appendix for full update.
- FWS-Vernal - Tildon said Chris has spent the most time on broodstock collection and wetland management. NNF data is still in processing.
- UDWR-Moab - Katie said Zack is currently in Cataract Canyon. John Caldwell said humpback chub sampling in Deso/Gray occurred at 4 sites (with double effort at 2 sites). Overall, 108 individuals were captured. Population estimates are likely based on number of recaptures. Trammel nets provided the majority of the captures and CPE looks similar. Access issues are impacting sampling. Filamentous algae also filled nets and impacted catch rates. Chris Michaud said ISMP sampling produced 5 CPM on the Colorado, which was expected for high flow, colder water conditions. On the Green, 113 CPM were found, mostly between Green River State Park and Ruby Ranch, which is higher up in the system than normal. Broodstock capture followed ISMP and was successful. Nonnative fish removal produced many largemouth bass, which may have just spilled out of a local reservoir. They also caught pikeminnow, bonytail, roundtail, and juvenile razorback sucker.
- FWS-Grand Junction - A variety of nonnative fish were removed in 126a, including a record number of striped bass (n=23) and more walleye than in previous years. Captured two large bonytail, one without a tag. The Grand Valley hatchery has completed all stockings and exceeded stocking goals for both species. Please see appendix for full update.

Tom Chart noted that the GREAT report is being finalized and will hit the BC/WAC in the near future. Tom Chart thanked Kevin Bestgen for all his efforts on that report.

#### 18. Review reports due list - Reports due list was revised and amended.

#### 19. Schedule next webinar or meeting and identify agenda items - *Tom Chart said a webinar would likely be necessary to seek final approval on the GREAT and White River reports. Don will schedule by doodle in conjunction with the WAC. Harry suggested that BC members propose other topics ripe for discussion as that meeting is scheduled.*

**ADJOURNED: 4:00 p.m.**

## Attachment 1: Assignments

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

For earlier history of items preceded by an ampersand “&”, please see previous meeting summaries.

1. Humpback Chub (refugia/broodstock development / genetics) - 10/24/19: *Melissa will convene a group to discuss next steps based on the results of the SNARRC report.*
  
2. The Committee endorsed an experiment to tag smaller hatchery razorback and bonytail (for fish coming out of floodplains). Tom Czapla will investigate which hatchery could do this. Tom Czapla 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. Tom Czapla will make sure this has been written up. Melissa Trammell said Dave Ward has done a great deal of work on this and will send references to Tom Czapla. Dale Ryden and others emphasized that experienced hatchery personnel likely will always be able to tag smaller fish than seasonal technicians in the field. Tom Czapla will compile information he's received and provide it to the Committee in advance of the May webinar. 5/23: Tom Czapla will request write-up from Matt Fry. 7/14/17: In progress; 10/12/17; Tom Czapla sent draft to the Committee for review on September 29; to be discussed in January 2018. So far we received comments from Pete Cavalli and Dale Ryden, are any other BC members planning on sending comments? 1/25/17: Discussed at the January meeting; Tildon Jones will assist Matt Fry in completing the report. Any additional comments should be submitted by Feb. 15. 11/8/18: Cheyenne will assist Matt in the development of this document as Tildon assumes other responsibilities.*
  
3. Biology Committee members can share any thoughts/comments on proposed graduate research projects back to the Committee and the Committee will track as a future agenda item to determine any next steps or specific projects we want to focus on. 3/7/17: *Although FY18 budgets appear constrained, we can always put these on a contingency list and keep our eyes out for other funding sources.*
  
4. Floodplain follow-up assignments:
  - a. The Program Director's Office will discuss terms of the Escalante wetland and Lamb property leases with Ouray NWR (Dan Schaad, Sonja Jahrsdoerfer, and Andrew Pettibone) to ensure the Program really benefits from them. Tildon noted that the easements may be protecting these floodplains from other development. Tildon said there are two easements being proposed to be open to oil and gas leasing though the BLM - Pariette and Escalante Ranch. Pending.
  - b. PDO will develop a prioritization strategy for both the Colorado and the Green by the end of August and will schedule a call (Sept-Oct) to continue discussion. 10/27/17 - *Draft discussed by Committee; comments due within two weeks to the Program office. Tom Chart will then take it back to Brent and Ryan and see about next steps. 1/25/18: Prioritization now dependent on elevation surveys and larval information. 9/17/18: Tom expressed support for moving forward with the Stirrup on the Green River and*

*noted the Matheson may be the best option on the Colorado River. The PDO expects to make progress on this issue as soon as we get additional staff online.*

5. Exploration of using alternative methods of nonnative fish control in systems where traditional mechanical control is ineffective/infeasible. Kevin/Tom/Don will start the discussion with relevant parties and bring agenda items back to the BC as necessary for both the White and the Duchesne. Kevin will talk to Jenn, Chris Smith and Matt Breen to get more information around the White and Kenney Reservoir. 9/17/18: Don and Tom discussed releasing water in the White for algae control, which might also have benefits of removing nonnative fish. Tom said they released water in early July to control cladophora. CSU field crews were on site and the PDO will check back to determine the effects on the fish population. Kevin Bestgen confirmed sampling occurred pre- and post- flow. The data has not been worked up yet, but will be in the off season. Kevin Bestgen thinks the event occurred pretty late in the spawning season and may not have had a large effect. Tom noted that Alden said it may need to occur on an on-going basis for algae control.
6. The hatcheries need new guidance from the PDO which will incorporate HCP protocols. Julie Stahli will provide as time allows. Guidance will include collection and reporting of environmental data. Stocking discussions will happen earlier in the year and be more comprehensive. 11/8/18: *Julie and Cheyenne will convene a group of BC members and hatchery managers to develop a plan forward for bonytail.* 3/12/19: *The bonytail group met on 3/7/19 to discuss options for a food study. Future meetings will be scheduled to support the propagation element as needed.*
7. Geomorphology/CPM nursery habitat symposium - Jerry Wilhite and Melissa Trammell will explore starting a symposium at either the Researchers Meeting or Utah AFS. *Pending.*
8. PDO will figure out how best to distribute spill contact information (potentially on the website). *Pending.*
9. Kevin McAbee will hold a nonnative fish workshop sometime in the Winter-Spring of 2019-2020.
10. PDO will start conversations around a razorback sucker monitoring plan, including revisiting the 2012 report for recommendations.
11. Tildon, Julie and Kevin Bestgen will use STReAMS data to explore signs of pikeminnow avoidance to electrofishing.
12. Julie will distribute RefWorks information.
13. Don and Tom will determine if canal salvage is required under PBOs.

## Appendix 2: Field Updates

### CPW non-native fish updates for BC, 24 Oct 2019

#### **Kenney Reservoir:**

As reported at the July BC meeting, following last year's discovery of illegally introduced pike in the reservoir, CPW conducted 4 weeks of mechanical removal beginning as soon as the lake was ice-free. Subsequently, CPW has collaborated with Rio Blanco Water Conservancy District to encourage pike harvest by incentivizing harvest with a \$20 per pike payment. The incentive remains in effect until November 30. The District has very graciously agreed to receive and process pike turn-ins. They store carcasses or heads in a chest freezer provided by CPW, for pick-up as needed by CPW.

- CPW spent three days and one night sampling Kenney this fall. We set 20-26 gill nets each day and checked them every 2 hours. We electrofished one night and during the day while checking gill nets. We collected three pike this fall, all of which were captured by gill net, on the first day, and with lengths of 651mm, 855mm, and 721mm.
- As of 10/21/2019, 64 pike have been turned in for the harvest incentive.

#### **White River electrofishing:**

- CPW completed 8 days on the river. A planned-for final day this fall could not be accomplished due to flows.
- A total of 704 SMB were removed, of which 349 were 200mm or larger.
- No pike were captured by CPW in the river.
- Total SMB numbers for CPW are lower than last year, but CPUE has not been calculated. Lower raw catch may be mostly attributable to non-ideal fishing conditions (high flows, low temperatures).

#### **Colorado River:**

CPW Completed 1 day of block-and-shock pre-runoff, Rifle to Rulison, with no pike or smallmouth bass collected. After flows dropped:

- Completed 4 additional passes in mid-September in the Silt to Una Bridge reaches. Una to Debeque was omitted due to water levels over the Bluestone diversion.
- No pike captured in the river.
- About 10 SMB captured (exact number will be available when multiple crews' data are combined).
- Fewer LMB than previous years.
- No concentration areas of NNF were discovered and many backwaters were shallow and inaccessible. 2 additional days of habitat concentration efforts omitted.
- Numerous Razorback sucker and one Bonytail were captured.
- CPW is also conducting 6 days of 3-species surveys in October. Pike and centrarchid species will be removed during all passes.

#### **Mamm Creek Pit:**

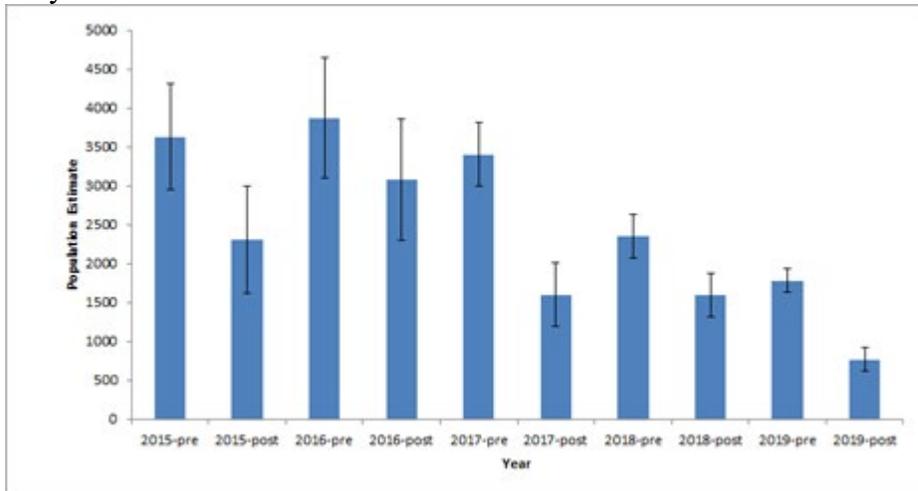
The Merwin trap was deployed from ice-out through July 22, with no pike caught throughout the season. Pits 2 and 3 were also sampled using overnight gill net sets, 3-4 nets each, with no pike collected in either pit.

#### **Ridgway Reservoir:**

This year we had 79 registered anglers who removed 1,498 smallmouth bass. Each year we conduct a mark-recapture population estimate on adult SMB (> 6 inches long) using the tournament as the recapture event for the estimate. This year we estimated that there were 1,778 adult SMB prior to the

tournament. The tournament reduced this estimate to 763 adults. Prior to the first tournament in 2015, we estimated that there were 3,632 adult SMB in the fishery, so in the five years of the tournament we have reduced the adult population by around 79 percent. It is truly amazing to see what these anglers can do.

Chase Nicholson from Ouray was the winner this year, catching 571 smallmouth and the first place prize of \$5,000. Chase also won \$500 for smallest fish (3.3 inches) and tied with Tyler Deuschle for biggest fish (each were 17.2 inches), splitting the \$500 prize. Second place went to Lawrence Cieslewicz from Montrose, who caught 283 smallmouth winning the second place prize of \$1,500. Lawrence also won the grand prize raffle for an additional \$2,500. The third place angler was Chris Cady from Delta who turned in 128 fish.



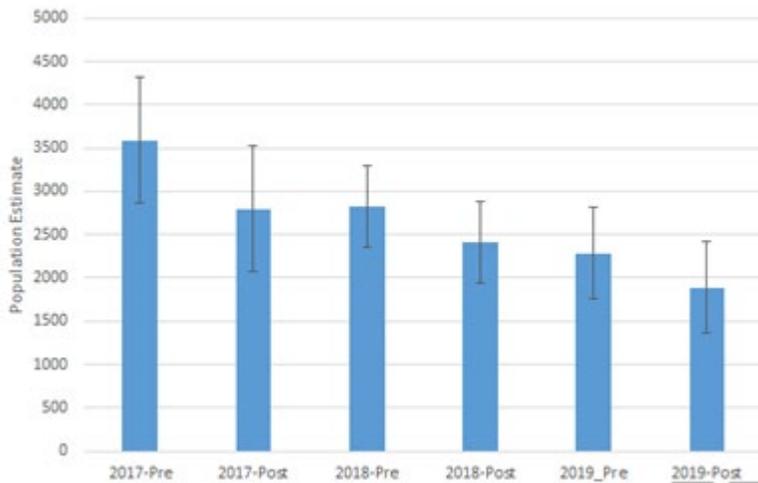
**Elkhead Tournament:**

This info was reported at the July meeting; just included here again for completeness.

The tournament ended June 30. There were 270 anglers registered (comparable to 269 in 2017 after a dip last year). Here are the numbers of pike and smallmouth bass harvested in 2019 vs previous years:

	2019	2018	2017	2016
<b>Total both species</b>	911	859	1358	582
<b>NPK</b>	419	319	395	53
<b>SMB</b>	492	540	963	529

Smallmouth bass population estimates, pre- and post-tournament, are shown below:



We were able to get a population estimate for NPK this year. The estimate for NPK > 300 mm is 3,419+/- 1,132 (@95%CI).

### **Yampa NNF removal:**

As reported previously, CPW caught more pike during boat electrofishing in 2019 (139 vs 68 in 2018) and fewer SMB (954 vs 3,279 in 2018). An additional 210 pike were removed during the backwater netting. CPUE for pike during backwater netting was 0.638 pike per net-night, virtually identical to 2018 (0.66).

- Overall electrofishing CPUE has not been calculated as we don't have all the data yet. For CPW, we reduced electrofishing effort in order to expand backwater netting (209 electrofishing hours vs 255 in 2018), but caught more pike, so we anticipate CPUE will be higher if the other agencies' results are similar.

### **Catamount Reservoir:**

Catamount produced a large cohort of pike last year. As previously reported, 1230 pike were removed in spring – early summer, primarily with gill nets and fyke nets. This catch consisted mostly of age-1 and age-2 cohorts.

Due to other obligations during the 2019 field season, small-mesh gill nets were not deployed through the summer months. In late September, CPW removed 1119 pike via two days of boat electrofishing, comprised mostly of the age-0 and age-1 cohorts. This is down from just over 3000 pike removed in 2018 during the same effort. CPUE has not been calculated yet, but will be lower, as electrofishing effort was similar to 2018.

Discussions with Catamount and Metro Water District management are continuing, regarding improved boat access post-drawdown, to improve removal capabilities.

### **Chapman Reservoir:**

The reservoir was sampled this spring (June) to follow-up on last fall's chemical reclamation. As previously reported, several pike were caught in the June sampling, indicating an incomplete kill. The 2018 treatment was conducted in an unconventional way, using little rotenone due to winter conditions and concerns with detoxification. Following the collection of pike, CPW biologist Billy Atkinson met with the reservoir operators and negotiated an intentional drawdown during the summer of 2019, to facilitate a full rotenone treatment. During the first few weeks of October, CPW treated the reservoir pool as well as approximately one mile of stream habitat upstream. The treatment appears to have achieved a complete kill. Eight gill nets were deployed throughout the reservoir post-treatment, for

three nights and four days, with no fish captured. The reservoir was detox-ed following a one-week treatment of rotenone.

#### Stagecoach Reservoir:

- As previously reported, one smallmouth bass was captured (~345mm) this spring, the first occurrence of the species in Stagecoach. Proving, for all practical purposes, another illegal introduction in that reservoir. No additional smallmouth bass were captured by CPW nor have any been reported by anglers.
- CPW updated signage encouraging the public to harvest SMB, in addition to other illegally introduced species. We have also purchased a chest freezer & located at the marina, for anglers who support removal of illegally introduced species but don't want to deal with the fish. Apparently this is catching on and some anglers are utilizing the service.
- As previously reported, ample water availability enabled the Upper Yampa Water Conservancy District to avoid filling the upper 1.5 feet of the reservoir for approximately 4.5 weeks post ice-off. This was expected to negatively impact pike spawning success by reducing available spawning habitat. CPW set light traps in known spawning areas after the reservoir filled and collected no pike fry, suggesting the delayed filling might have had the desired effect. We expect the 2020 sampling season will provide better data on this.
- In 2019, 34 pike were captured in standardized gill nets, compared to 14 in 2018. Walleye numbers dropped from 55 in 2018 to 35 in 2019 with standardized gill netting. Another 58 pike were removed from Stagecoach and connected ponds via fyke nets and additional gill netting in 2019.
- Final numbers of removed by CPW (that is, excluding angler turn-ins at the marina) by all methods were: 92 pike, 35 walleye and 1 smallmouth bass.

#### **UDWR—Vernal Field Update 10/24/19**

##### Stewart Lake (Project #165)

Draining began on 9/30/19 with an initial gauge height of 5.825 ft. Following continuous draining and daily trap checks every morning and evening, gauge height on 10/23/19 was 4.275 ft. The outlet gate was shut for three days 10/18/19-10/20/19 for much needed R&R.

- As of 10/23, 24 YOY razorbacks collected
- Avg. TL = 98.6 mm; range = 67–186 mm
- 7 razorbacks collected on morning on 10/23 (things might be picking up)
- 1 adult bonytail (313 mm) and 2 YOY Gila spp. (60 & 69 mm)
- Cattail destruction via Marsh Master contractor is still on track for December, 2019

##### Remote Monitoring of Endangered Fish in the Middle Green River (Project #172)

· In addition to spring antenna deployment to increase razorback sucker detections, one antenna was deployed at Placer Point, Dinosaur National Monument on 6/28/19 and removed 9/12/19; a total of 319 detections.

##### Green River NNF Removal (Project #123b)

- 10/02/2019 Concluded 12 weeks of targeted SMB removal on the Middle Green River
- Electrofishing effort totaled 236.4 hrs, which included “surge” efforts from Island Park to Rainbow Park boat ramp between 7/03–7/11/19.
- 3,489 non-native fish were removed; 14.76 fish/hr
- Almost 75% of the fish removed during this effort were of the targeted species; 2,571 total smallmouth bass

- Other NNF removed included 8 northern pike, 9 walleye, and 288 white sucker
- White River Bass Removal; October Pass (Project #167)
- Fall removal pass (Utah state line–Enron) completed from October 20-23, 2019
  - Low flows (daily discharge ~420 cfs during the trip) & float from Big Trujillo launch in Colorado to our start point added significant time to complete this pass; total electrofishing effort = 37.898 hrs
  - A total of 84 smallmouth bass removed
    - CPUE = 2.22 fish/hr; mean TL = 190 mm; range = 125–386 mm
    - 32 adults (38% of catch); 48 adults captured with 98.2 hrs effort this spring
    - Water clarity (60+ cm) affect our catch?
  - Roundtail Chub transfer for a NE Utah captive population was an added component to this trip; an additional boat & crew members were added to the trip so it did not affect the removal project. The roundtail were put in a pond close to Dutch John for overwintering.
  - 15 bonytail (mean TL = 300 mm) & 1 Colorado pikeminnow (653 mm TL) also collected

### **FWS-GJ-FWCO Field Updates:**

These updates are good for sampling through 10/18/2019. We have a couple more sample days from this week to enter.

#### 126A - NNF Removal

SM - 1,773 removed. Minimal YOY production in 2019. In general reduced catch rates (by half) for subadults, adults and direct competitors with CS when compared to 2018 catch rates. This is for all reaches GVWU to Potash and lower 2.3 miles of the Gunnison River.

LG - 2,013 removed. In general (when compared to 2018 catch rates), 5 times reduction of YOY and subadult catch. Equal catch rates of adults and a 3 1/2 times increase in direct competitors with CS. This is for all reaches GVWU to Potash and lower 2.3 miles of the Gunnison River.

WE - 88 removed. Increase in overall catch rate; 2018 - 0.3678WE/hr, 2019 – 0.4782WE/hr. Reaches from Bighorn Camp in WW Canyon to Potash.

NP - only one collected in the reach from Corn Lake to Redlands PKWY 901 mm 4560 grams.

SB - 23 removed = record year. Overall catch rate 0.125SB/hr Last year we had a record year collecting 4. Reaches from Bighorn Camp in WW Canyon to Potash. Wayne Gustavson had reported a record threadfin and gizzard shad production year in Lake Powell, so we believe these more robust (healthy) SB are more likely to move upstream. Documented two juvenile CS in SB stomachs.

Koi - caught in Grand Valley - first in our collections 568mm 2500 grams.

Endangered Fish – Had a reduced catch of BT, CH, FR and HB compared to past years. 76 BT, 1 FR, 6 HB, 210 RZ. Observed many age 2 and 3 CS in the reaches around Moab. Note: We do not handle CS outside of CS population estimate work.

Two notable BT captures in FY-2019 - 1 was an untagged 453mm 650gram fish and the other was a recaptured 464mm 780 gram fish both caught near Moab. The recaptured fish was stocked by Ouray Grand Valley Unit in 2016 and has grown more than 100mm and this was that fish's first encounter since stocking.

HB Refugia Fish Collection - collected 15 HB and brought 10 of those into captivity. K McAbee and his nephew Aiden were a great help.

#### Fish Passage Facilities

Redlands Water and power Fish Ladder (Gunnison River) – Endangered fish collected = 8 BT, 6 RZ, 0 CS, 0 HB

Grand Valley Water Users (aka Government Highline) Fish Ladder (Colorado River) - Endangered fish collected = 16 BT, 1 CS, 4 HB, 29 RZ. The best news to report is that significant sediment removal work was completed at GVWU Ladder in spring 2019. This has been the first year in many years where we didn't have to truck fish upriver during low water periods of the year because the return tube was functional throughout the entire field season.

Price Stubb Non-Selective Fish Passage (Colorado River) – Had a record year for number of unique PIT tags detected (n=1,137). Travis just uploaded Ouray Grand Valley Units 2019 stocking records into STReAMS so species composition will be reported in annual report.

#### **Ouray National Fish Hatchery – Grand Valley Unit:**

Stocked 7,538 age-2 razorback sucker into the Colorado and Gunnison rivers in FY 2019 (125.6% of target)

Stocked 10,648 age-2 bonytail into the Colorado River in FY 2019 (106.5% of target)