

Dated: December 24, 2020

Biology Committee Webinar Summary

Wednesday, October 7, 2020 8:30 am – 4:30 pm MDT

BC: Dave Speas, Derek Fryer, Dale Ryden, Harry Crockett, Melissa Trammell, Tom Pitts, Paul Badame, Pete Cavalli

Attendees: Kevin McAbee, Julie Stahl, Kevin Bestgen, Tom Chart, Melanie Fischer, Don Anderson, Gene Seagle, Craig Ellsworth, Jojo La, Darek Elverud, Colleen Cunningham, Matt Breen, Lindsey Bruckerhoff, Jared Hansen, Koreen Zelasko, Wade Wilson, Brian Hines, Bart Leeftang, Charles Yakulic

CONVENED: 8:30 a.m.

1. **Hydrology Update** – Don said 2020 has been a very tough year from a hydrologic perspective. Reasonably good basin-wide runoff conditions were forecast through February; but beginning in March, consistently dry and hot conditions across the upper basin resulted in forecasts dwindling to approximately 50% of normal runoff into Lake Powell. All basins were below 100% in snowpack and spring runoff. The Program works with partners to manage flows as best it can, given flow conditions. Flows were released from Flaming Gorge to achieve Green River peak flows below the Yampa River confluence of over 14,000 cfs for ~11 days, timed to entrain larval razorback sucker into multiple Green River floodplain wetlands. On the mainstem Colorado River, various reservoir operators coordinated to increase peak flow through the 15-Mile Reach. Don thanked and praised all water users who have voluntarily operated to improve conditions throughout the river. In the Gunnison River, the Aspinall Unit achieved a ‘Moderately Dry’ year peak-flow target of 4510 cfs. As summer advanced, all of Colorado and most of the upper basin was officially placed in drought conditions. The upper Colorado basin was pretty much the epicenter of the drought conditions. Don has not seen significant monsoonal moisture in late summer in the last four years and is concerned that may be a new normal. As of today streamflow remains very low in the upper parts of the basin (generally, far below 50% of normal). Reclamation has maintained Green River base flows in a desired range (~1900-2100 cfs at Jensen) for all of August and part of September. Similarly, on the Yampa, conditions became very dry, but Elkhead Reservoir storage available annually to the Program, together with additional funds and partnerships, improved flow conditions in the lower river below the Maybell gage. Along the Colorado, the low flows fell below the 810 cfs dry year target for most of July, August, and September, but working with partners, the Program was able to maintain about 400 cfs or more for much of that period. Those flows have been well supported by donations of water. Reclamation has continued to meet flow targets in the Gunnison.

Don thanked Exxon/XTO energy, which donated 5,000 af of Ruedi water, a contribution coordinated by attorney Kristin Moseley. CWCB has leased additional water from Ute Water for the 15-Mile Reach. An additional 2000 af was just acquired on September 30, bringing the CWCB-Ute Water lease total this year to 10,000 af. Colorado Water District has also assisted with donated water and logistics in making these new leases work. Colorado Water Trust has acquired water to support flows in both the Colorado and the Yampa rivers this year. Don said the Program works hard to make these flows happen, but without the efforts of these other organizations, we would not be able to continue to maintain what we have. Looking ahead, drought is expected to continue through the end of the calendar year.

Don highlighted additional actions of partners. Water users and Reclamation carried over HUP surplus in Green Mountain Reservoir from 2019 that was used in 2020 to help address the ‘April Hole’. Middle Colorado River Watershed Council has been considering a variety of proposals to improve riverine conditions; several of those projects could provide direct benefits to the Program. Along the Yampa River, the Division 6 Engineer completed a transit loss assessment and implemented a lower loss value than has been applied in previous years. Functionally, that means that more of our fish water released from Elkhead Reservoir is protected. In addition, the Yampa River Fund was also created (~\$4.5M endowment), and beginning this year started funding its first projects throughout the basin to improve river conditions and ecological integrity. In the Price River basin, UDWR and TNC have continued to work on plans to improve Olsen Reservoir and provide supplemental water to the lower river in late summer.

2. White River Management Plan – Don said work is underway to develop a White River Management Plan covering already developed water and providing a carve out for future development. ERO Resources is currently working with Wilson Water Group on hydrologic modeling to support the management plan. When that is complete, conservation actions will be developed to offset the impacts of current and future water development. Kevin McAbee provided a memo to the White River Management Team describing the issue of nonnative fish management in the White River and possible conservation actions to include in the Management Plan and PBO. The recommendations were created through conversations with local PIs and state reps familiar with the White River fish community. The memo stated that broadly the Management Plan should focus on these five ranked nonnative fish priorities:
 - i. Limit and reduce the existing smallmouth bass population in the White River;
 - ii. Eradicate the illegally introduced northern pike population in Kenney Reservoir;
 - iii. Control other problematic nonnative species, such as white sucker;
 - iv. Investigate the feasibility of providing enhanced ecological connectivity at Taylor Draw Dam; and

- v. Prevent the establishment of any new nonnative species not compatible with recovery, including illegal introductions.

Some ideas could involve modifying management of Kenney Reservoir to sluice sediment, halt releases in the summer to dry smallmouth bass nests immediately downstream, provide flow-spikes to disrupt bass nests, or decrease reservoir depth in spring to keep pike out of nesting areas. Conversations with Rio Blanco Water Conservancy District (RBWCD) regarding possible modified operations have begun, but they must operate within FERC guidelines that currently limit reservoir elevation changes to 2 ft. Much of the reservoir is also filled with sediment, decreasing capacity from 14,000 ac-ft to about 3500. Alden Vanden Brink (RBWCD's General Manager) is potentially interested in many of these experimental operational changes, and is involved in conversations on how we could make efforts of interest to the RBWCD align with the Recovery Program. RBWCD is going to try to test sediment sluicing next year, for example. They have concerns about the impacts, especially on dam infrastructure and/or irrigator operations downstream. Melissa asked if they would be allowed to move water through a low level bypass to move sediment. Don said bypass tubes are available but more experimentation is needed to determine what will happen. Tom Chart said a flushing flow has been completed to manage algae. Rio Blanco was able to generate a release of 1100 cfs and more valves and tubes are available to potentially increase that release rate. Tom said there are more options than he was originally expecting. Dave said some habitat has been affected after fire flows for a few years and caution should be used. Dave asked if permits were needed. Tom Chart said coordinating with FERC is the first regulatory concern, but that the experimental plans would likely be involved in the Management Plan and reviewed by the program.

3. Outreach Update – StoryMap – Melanie said The Chesapeake Conservancy and the Babbitt Center reached out to the program about a year ago. Their goal was to use GIS data and the ArcGIS StoryMap format to tell a story about the Colorado River basin. This was provided with no funds from the Recovery Program and was an in-kind donation. The purpose of the StoryMap is twofold. First, it is a good resource for all partners to share information with others. Second, it puts all of our efforts on a map to help orient people to the Program. StoryMap uses GIS information to make maps and communicate effectively.

Jojo said it is important for I&E to look differently this year. Jojo said the StoryMap can be used for quick access and talking points and as a communication tool with others. Jojo said one of the most difficult parts of the program for her to understand were the spatial aspects of the program, which are all included here. The project focused on simple messages coupled with beautiful photography. The first map, with the Upper Colorado River Basin, can be scanned around with pop up boxes displaying information. Jojo noted there are a variety of clicks and links that lead to additional messages and information. Critical habitat is shown in the next map for each of the species. The next map describes how water users release water for endangered fish. In addition, Chesapeake is making another tool (RAFT) - Reservoir Assessment Forecasting Tool. It accumulates and combines all the water flow and reservoir release data and helps predict how those flows move through the basin. The CWCB owns this product and has the ability to adjust this map, so any suggested changes should be

sent to Melanie and Jojo. Melanie thanked Jojo for all her work on this product and noted the essential need to have more tools like this in times of COVID.

4. Colorado River pikeminnow estimate 127 report, final approval – Darek said the report is a summary of data collected over the last 20-year period. Doug Osmundson put together much of the information presented. Three peer reviews were incorporated from Koreen Zelasko, Scott Durst, and Travis Francis. Dave Speas also provided comments. Overall, Colorado pikeminnow in the Colorado River seem to be maintaining population numbers. Darek opened the conversation for comments. Darek said he tried to make the report more efficient, cutting out information as possible. Dale said the change in PIT tag technology really changed the dynamics for collection and data processing. Dale supported the changes implemented by Darek in continuing to track information from historical and current analyses. Dave asked when the last draft was distributed. Darek confirmed it was last spring. A response to comments document was sent out in late August. Darek noted that Travis submitted a few additional clarifying comments which Darek is working to incorporate. Koreen thanked Darek for incorporating all of the comments she recommended, including moving some of the information into the appendix and condensing some information. Darek thanked all of the commenters who helped improve the report. Dave said the responses to his comments had been addressed adequately. Tom Chart thanked the Grand Junction office for handling the long-term, complex dataset that is so important to the program and for more recently incorporating population estimates for razorback sucker. Tom appreciated inclusion of the specific population estimates for razorback sucker in this final draft. The Committee approved the report as written and revised.
>Darek will send a finalized copy to Julie for 508 compliance and posting (*done*).

5. GREAT Report Update

- a. Seeking final approval of Base Flow Experimental Study Plan –Dave Speas reminded the committee that there were concerns noted by Tom Pitts and Leslie James as to when the experiment would be evaluated and how effects on fish would be used to guide decisions. Kevin Bestgen has altered the report since the last meeting. More specifically, Kevin included a commitment to interim reporting which is now covered in the abstract and the discussion. Annual reporting (in association with Project 22f) will occur in addition to a more detailed interim report summarizing the findings after 4 years (2020-2023), including the technical details of what we have found thus far. It is not recommended that 2023 would be a decision point on continuing the experiment. Kevin said the changes were highlighted in yellow in the most recent draft. In table 4, the buffer period (between predicted larval emergence and onset of the targeted base flow) was shortened to provide more flexibility to deal with other flow experiments (e.g., LTSP and / or smallmouth bass flow-spikes). Kevin believes that flexibility will help address a potentially packed schedule during that critical time. Those changes are highlighted in blue in the PDF copy. Dave pointed out that four out of five criteria would have to be met for the experiment to be considered to be ‘valid’ and described concerns he had about how years which

didn't meet that criteria would be evaluated. Kevin presented alternative text which addressed Dave's concerns, noting that years when the indicator score less than four would still be evaluated adaptively to try to gain new information. One of the purposes to have the four factor score is to try to add a little structure and increase the focus on specific criteria, but data collected every year will be considered. Don, Tom, and Tildon from the Program Office were supportive of approval. The committee approved the new report, incorporating the new language, which will replace the text starting on line 859. Derek Fryer thanked Kevin for all his work on the study plan and his diligence in incorporating comments from all parties. Dave said it has taken a long time to write the flow recommendations and it will take some time to evaluate them again in these experiments. Results will be presented in annual, interim, and final reports to allow for adaptive learning as needed. Dave appreciated Kevin's willingness to evaluate information on multiple time scales. Kevin Bestgen thanked everyone for their input on the study plan which made it a stronger document. >Kevin will send a finalized copy to Julie for 508 compliance and posting (*done*).

Tom Chart noted this is the fourth and final study plan that has been approved by the Recovery Program, which provide Reclamation with the information they need to proceed with these experiments.

- b. Update on Flaming Gorge hydropower analysis – Derek Fryer said that implementing experiments is one of the largest challenges in developing the CRSS models, including when and how experiments are implemented. A draft document, completed by Reclamation modeler, Conor Felletter, outlines the assumptions and rule sets to evaluate the experiments. A call will be held in coming weeks to finalize the information for the CRSS modeling analysis to be completed. The CRSS modeling should occur between October-December at which point WAPA will use the flow volumes and elevations produced to model hydropower impacts. Derek was not sure how long that would take, but estimated a month or two (January- February). Derek needs to talk to the upper basin states about how drought operations will be incorporated into the models. Derek will continue to keep the BC apprised. Melissa said the analysis seems to have grown in scope since it was originally proposed and it is now the last thing holding up approval of the GREAT report. Melissa expressed concern about how long this has taken. Derek said if the CRSS data was readily available, the WAPA piece would have been easy. The CRSS modeling was more complicated than originally thought, including a need for specific funding. Derek apologized for the delay and noted that WAPA is working hard to meet the deadline of the flow request letter, but that they may not meet the deadline. The CRSS models will incorporate Record of Decision seasonal flow variability (e.g., +-40% summer base flows) and WAPA hydropower requests in the winter. Tom Chart said the PDO considers completing this modeling of highest priority. Conor is a new player in this process, but Tom recognized that he has been an extremely quick study of these complicated experiments. Derek agreed and noted that Conor is a capable member of the team. Harry asked what the practical implication is of not having this in place before the flow request letter is due. Tom said that will certainly limit the options within

the flow request letter and will prohibit a request for a flow-spike. Larval trigger will continue as it has in previous years, and the base flow experiment will likely be limited to flexibility within the ROD. National Park Service has started their monitoring efforts, which will be documented in the flow request letter. Tom will try to be as flexible as possible in implementing last minute results, but the request letter must be approved and submitted by February 28th. Melissa said the flow-spike doesn't happen until summer and encouraged the inclusion of a flow-spike in the letter to support action once the WAPA information is approved. Tom agreed, and hopes the Management Committee and Reclamation can be somewhat flexible, but this is a complex process. Dave said the flexibility that we have had in the past in terms of timing is likely not an option this year.

6. Fish Population Modeling – Dave thanked both Charles Yakulic and Lindsey Bruckerhoff for taking time to present to the committee. Tom Chart said we are frequently asked to interpret the effects of climate models on native and nonnative species in the basin. The White River Management Plan is a great example of that where we will be asked to anticipate such effects. Tom introduced Charles and Lindsey's effort as being responsive to those information needs and recognized that they will be seeking input from experts across the region. Charles said Lindsey is completing the ongoing modeling work, but Kevin Bestgen, Jack Schmidt, and Ted Kennedy have all been working on these efforts. Charles said the question is "Will changes to water shortage policy facilitate, or hamper, recovery?" Flow and thermal regimes in the basin affect each reach of river throughout the basin. The amount of water moving through the system can be shown in patterns with reservoirs creating anomalies. In addition to the effects on natives, the flow and temperature regimes also affect nonnatives. He noted they are not necessarily trying to develop new information, but instead are just compiling a lot of information that already exists on the landscape. One of his first assignments was to predict humpback chub populations under various management scenarios to support the EIS. He discovered that fish management actions had very little effect in comparison with how much water was in Lake Powell. Jack Schmidt started the Future of the Colorado River project at Utah State. Lindsey is working on merging Jack and Charles's work. In looking at models, Lake Powell storage has a lot more impact on the downstream system in the lower basin than climate change. With climate change, humpback chub, razorback sucker, and Colorado pikeminnow would have much more suitable conditions in the Grand Canyon from a temperature perspective, but that the warming would also increase populations of nonnatives like red shiner, catfish, and smallmouth bass. He noted that warming temperatures that benefit nonnative fish could make recovery considerably harder, even though those temperatures also benefit the native species. In the upper basin, climate change has much larger effects than water storage. He noted the decisions about storage do have effects on recovery, riverine habitat available, and ability to create designer flows to advantage natives or disadvantage nonnatives. Business as usual policy means a focus on regional water use and storage decisions and then make segment specific decisions; this process is not efficient and could be altered to create new opportunities.

Lindsey introduced herself, she received her Masters at the University of Arkansas primarily looking at the effects of hydrology on the spatial aspects of fish assemblages. She received her PhD at Kansas State on the role of spatial and landscape scales and the effects of predators on fish communities. Lindsey said political decisions and responses are likely to stem from declines in runoff, longer droughts and increased variability. The goal of the Future of the Colorado River project is to focus on the likely fish population responses to those options. Alternative management paradigms and future climate conditions impact temperature and hydrologies which then affect native and nonnative fish. Current focus is on humpback chub, razorback sucker, Colorado pikeminnow, red shiner, northern pike, smallmouth bass and rainbow trout. They are studying everything above Lake Mead. After compiling available data, they are developing conceptual models to predict brackets of the worst and best cases of future possibilities. They will identify uncertainties, survey expert opinion to develop scenarios and specific hypotheses. They are using age/stage-based populations models for each species and will incorporate spatial aspects like barriers and connectivity of tributaries. They are seeking input from as many experts as possible to make sure the models are strong from the outset. Lindsey shared specific examples of information needed for their models. After finalization of conceptual models, they will be identifying volunteers to participate in the expert elicitation process (anticipated this winter). The goal of the effort is to incorporate potential ecosystem consequences into discussions about future water management.

Dave said these efforts are ambitious and timely and appreciated Charles and Lindsey's work. Dave asked if they were aware of the DCP operations at Flaming Gorge dam and the concerning impact list developed by the program. Charles said the Futures Project is focused more on DCP. Kevin Bestgen said the flexibility in the approach they are considering would allow for modeling various effects of how different flows would be released from Flaming Gorge to Lake Powell. Kevin said DCP is a big deal for the upper basin and our ability to implement flow experiments. Jack Schmidt said the Futures Project is trying to specifically link changing watershed runoff to the ecosystem drivers (temperature, flow, sediment). In two months, another white paper will be released covering potentially evocative management scenarios and the effects on temperature and flow of those strategies. CRSS currently has Interim and DCP guidelines and are the foundation for the Future Projects models. They are looking at how different options would affect the system. Kevin Wheeler is part of the Futures Project. After the models and relationships are built, the Futures Project will look back into CRSS to potentially propose an alternative management strategy to achieve a more desirable outcome. Jack is in regular consultation with Reclamation, the states and the Upper Basin Commission. Tom Chart said the integration with CRSS is key and may allow us to be in the room with the DCP discussions and possibly influence the next version of Interim Guidelines. Jack said that the goal is to come up with ecological information to support future DCP discussions as effectively as possible. Jack noted the importance of expanding those discussions to include ecological knowledge, and exploring how to expand the conversational space.

Melissa asked what the process is to receive expert elicitation, she also volunteered. >Lindsey will send a follow-up email to the programs and encouraged people to forward that along as much as

possible. Lindsey will develop a schedule and distribute that to volunteers. Dave also volunteered. Kevin Bestgen has a good working relationship with Charles and Lindsey and will continue to provide information to support their efforts. He noted that climate will be a large factor in the upper basin and consider the implications for stream flows and native fish. Dave asked about the schedule. Lindsey said expert elicitation should last through the winter for the Green River specifically, which would be followed by a formal report and branching out to other systems. Lindsey may be able to present at meetings early in 2022. Jack said the goal of the Futures Project was to wrap up in December and present at CRWUA (cancelled). A white paper will be produced sometime in December looking at management scenarios, at which point the funding decreases. The next phase will really focus on the fish assemblages. Jack said the work will remain above Lake Mead as modeling gets very complicated below that system. Charles said all are welcome, with input provided as soon as possible, with priority focus on the Green River. Tom Chart asked Charles, Lindsey, and Jack to come present to the MC, specifically related to policy-level water management decisions across the basin. >Jack agreed and will work with Tom to find an appropriate time. Jack said the white papers from the Futures Project are widely read and conversations are ongoing with multiple state agencies and experts. Dave thanked everyone for their efforts.

7. HBC reintroduction plan update – Melissa Trammell said the latest draft has been distributed to the ad hoc committee, which will meet again on 10/22 to discuss the last round of edits and approve a final draft. During the development of the plan, the ad hoc committee asked Rich to complete additional work, especially in relation to PVA modeling to determine how many fish could be removed from a source population and numbers that are needed for a successful reintroduction. Therefore, additional funding to complete those revisions was requested and approved by the Management Committee. Melissa is hopeful that the white paper will be able to be shared with the BC soon and approved at the next BC meeting. Most BC members are part of the ad hoc committee so Melissa believes the review should be relatively short. Comments from the ad hoc committee are due on October 14th.
8. Razorback sucker abundance and vital rates in the Green River, UT – Koreen Zelasko said individuals from the hatchery group expressed interest in data from Koreen’s recent reports. Survival rates and scenarios affect populations of razorback sucker in the upper basin. In previous work, they determined that survival during first year was lower than in subsequent years with season of stocking and total length affecting survival the most. Fish stocked in summer were less likely to survive than those stocked in other seasons. Post-stocking survival rate after the first year was approximately 75%. Fish stocked in summer never recovered the high survival rates seen in fish stocked in other seasons. Fish stocked in other months had a first year survival rate of 8% when 250 mm in size. Fish stocked at 300 mm had higher survival rates. Revised stocking plan recommended stocking fewer larger fish stocked in months other than summer. Koreen is currently looking at data from portable and permanent antennas that are spread throughout the basin. Her current dataset looks at data from 2003 to present. In the more recent analysis, season of stocking and total length at stocking provide the highest variance in survival rates, just as with the original study. Survival for fish after first year

have increased in recent years, moving from about 75% to 90%. 2007 data has been deleted from the dataset because it was a statistical outlier. Mean survival after the first year averaged 80% across all years. When looking at first year survival, fish stocked in summer still have significantly lower rates than the other seasons. An autumn-stocked 350 TL razorback has a higher survival rate both in year-1 and post-year 1 survival in the newest data (higher and more precise survival rates). She modeled 30,000 razorback sucker in the river, 6,000 stocked annually in autumn at 350 mm TL. Under those conditions, the 30,000 abundance would decline to 21,500 over ten years. Changing survival rates in any given year has dramatic effects on the populations in the river, either dramatically slowing the decline or exacerbating it. With average survival rates, the population declines but flattens out around 20,000. Potential recruitment may change these dynamics, but mortality of stocked fish through time is key in the near term until recruitment can replace stocking. Koreen presented this a tool that is available for decision making as hatchery conversations move forward. Dave noted a large impact from how large fish are. Koreen said it is a cost-benefit discussion of what works best for the species. Dave said current recovery goals recommend 5,800 fish that are self-sustaining. While the tool does not cover self-sustaining efforts, it will be helpful to examine dynamics in the system. Pete said it is important to incorporate the hatchery perspectives into these discussions. Kevin Bestgen asked if Koreen was willing to share the spreadsheet and she agreed to do so. Dave recommended adding another tab outlining limitations, assumptions, appropriate use, data that went into this analysis, and her confidence in the results. >Koreen will send Julie a new copy to be distributed (*done*). Pete thanked Koreen for the presentation and the tool.

9. Grand Valley Hatchery Update – Over the past year Cheyenne created experimental conditions for bonytail feed conditions to determine if bonytail could be healthier when stocked. Hatcheries used the experimental spirit to consider ways to produce better bonytail. Dale Ryden and Brian Scheer have a proposal towards that goal (see PDF powerpoint). Previous SOPs for Horsethief Canyon Native Fish Facility (HCNFF) have been focused on razorback sucker production for both the UCRP and SJRIP. They are considering updating the SOPs because producing multiple species requires flexibility, and adjusting their methods to match SOPs at Wahweap which would keep some bonytail out in the ponds over winter. The change could help the hatchery meet goals for bonytail and pikeminnow, while still meeting razorback sucker goals. HCNFF will continue business as usual for razorback sucker in 2021. The facility wants to adjust bonytail rearing and production processes to see if bonytail production will be improved. Pete said he is not thinking this will likely produce a better bonytail (that there are other efforts in that vein that may be more effective), but he is supportive of the proposal they brought forward if it can make room for other species. Melissa agreed that this was not likely the final answer, but that it is a step in the right direction. Melissa asked if this change would support stocking each species in the “right” season. 9,000 bonytail would be stocked in summer (optimal for bonytail). The 5,000 fish in the pond may need to stay in the hatchery longer (until October) to reach appropriate stocking length. Melissa asked if they would be graded. Brian said Zane produces fish on a four-year cycle. Despite size grading during the first two years, he does not see a difference in male/female ratios. Brian is unsure how grading and sex ratios will play out in Grand Valley. Brian said right now, the goal for bonytail is 250 mm, and asked

whether that is the optimal size and encouraged continued experimentation until we figure it out. Dale said razorback sucker handle stress very well. Bonytail do not handle stress well and food consumption varies widely with stress levels. He noted that leaving them in the pond will hopefully decrease the stress levels, Dave agreed that stress was a big factor. Harry said the fish from Mumma are being stocked at over 300 mm and they appear to be healthy, but their survival is not clearly better – size may not matter. Pete asked how they get so big. Harry said he believes that they are held for 4 years at Mumma. The Biology Committee supported Dale and Brian’s proposal. Dave encouraged all who are interested to join the hatchery phone calls. Melissa asked for a conversation about the 10 humpback chub from Black Rocks on station HCNFF at the next BC meeting. >Julie will add it to the agenda. The next hatchery meeting will be November 10th at 2 pm. Please contact Tildon Jones for details.

10. Hatchery needs and opportunities discussion update –Dave Speas reviewed the hatchery discussions occurring within the program, noting the program is at a huge crossroads with the hatchery recovery element. We have identified the need to bring more pikeminnow into captivity into SNARRC as well as into the upper basin. In addition, we have developed the Humpback Chub Reintroduction Plan, which calls for bringing a fourth species into the hatcheries. These two tasks are additional workloads on our current hatcheries. Tildon Jones convened a group to discuss hatchery needs for the program, they discussed interim goals as outlined in 2015. The interim goals called for a checkpoint in 2020. Mumma and SNARRC are at full capacity for housing and propagating fish. Grand Valley does have some flexibility. The group discussed expansion of the Horsethief facility as well as the Randlett facility. Ray Tenney brought a proposal to the group to build an entirely new hatchery in the De Beque area. That proposal was determined less feasible and effective than expanding our existing federal facilities. Randlett does have space for expansion. The Hatchery Needs Group is looking at a variety of issues including housing Colorado pikeminnow broodstock and a potential reintroduction plan for humpback chub. Dave imagines these groups will likely coalesce as a single group. Dave recently sent the meeting summaries from those groups to the BC for review. Dave thanked Koreen for her work on razorback sucker stocking survival that will support these discussions well. Dave also thanked Brian and Dale for their proposal that will experiment with bonytail rearing. The overall bonytail propagation emphasis is becoming “how do we build a better bonytail”. It seems like our current stocking strategy is not establishing populations. Dave is currently working on a proposal to refocus bonytail rearing that will be ready for the BC in coming months. He is incorporating information from the lower basin, but acknowledges that there are not a lot of definitive answers on optimal rearing and stocking protocols. Predator and flow training are potential recommendations. Dave would like to make more use of wetlands and off-channel standing water habitats for bonytail production, including use of naturally produced offspring in these environments. Dave suggested that we may need to shift our focus from meeting production targets toward more applied research (e.g., more experimentation in wetlands and off-channel standing water habitats); possibly employing graduate students. An historical review indicated that bonytail that spend more time in ponds may do better than those that are brought into hatcheries during the winter.

11. FY22 and FY23 Budgets – Julie Stahl reviewed the current budget tables for FY22-23 and noted the \$1.1M overage in both years. When the BC recommended budget cuts in FY20 and FY21, the total was approximately \$250,000 per year. For FY22 and FY23, we need to cut budgets by approximately \$600,000 per year. She said the PDO is looking for guidance from the BC to direct Program Guidance to cut budgets rather than have PIs redevelop scopes after program guidance has gone out. Julie noted part of the issue is the loss of cost indexing in the funds transferred from Bureau of Reclamation. In all years since 2019, we have received \$5.76 million from the Bureau of Reclamation. If indexing had continued, those funds would be at \$6.026 million. Projects costs continue to rise with inflation without corresponding increases in funding. In addition, new projects are being added that provide value to the program. Some of the additions in recent years include funding PIT antenna maintenance, expanding floodplain management (e.g., Matheson and soon Stirrup), and channel monitoring as called for in the GREAT report. We have eliminated some scopes (e.g., Green River Canal salvage), but the demand for new work outpaces actions that become obsolete. And budget cuts we implemented in FY20 and FY21 were not carried through to FY22 and FY23 scopes. Julie said the program office would use the next few meetings to discuss how these reductions would be implemented to be able to develop program guidance for FY22 and FY23. She asked that over the course of those discussions, the BC follow three rules. First, be as open and honest as possible, in both questions and responses. She noted that in order to reach this magnitude of cut, everything will likely need to be on the table and she encouraged people to explore areas where we may be able to effectively cut as well as receive questions about scopes with an open mind. Secondly, she asked that everyone serve as a representative of the program and not of each office or pet project. The cuts will likely require some hard decisions in multiple areas. Thirdly, she asked that people look for solutions first and not roadblocks. She acknowledged that many of the on the ground dynamics often affect budget discussions because of where each crew is when, but noted that we may be able to discover some unique savings by considering all options, even when conflicts in existing scheduling or commitments may be more obvious than the potential options. Pete said he supported all of those rules, as he believes it is how the committee should always operate. The committee agreed to the ground rules. Julie then asked the BC to prioritize our current efforts within large areas using the following links. Input was also accepted from interested parties.

Julie asked that the surveys be filled out by Friday, October 9th; the PDO will bring results back to the next meeting in November.

12. Field Updates –

- a. CPW – Harry said not much is occurring for CPW this time of year. The tournaments and in-river removal are complete. Bonytail are being tagged for release in DeBeque Canyon Tuesday October 13th. CPW will complete as much canal salvage as possible and will be monitoring downstream of Highline and Elkhead nets as well as downstream of Rifle Gap. Harry said Lori

will coordinate with Dale to get the stocking truck for canal salvage. Dave said volunteers are likely available as well. Anyone interested should contact Lori Martin.

- i. ****Note:** Subsequent to the BC meeting, Harry Crockett shared news that an illegal introduction of northern pike had been confirmed in Mack Mesa Reservoir.
- ii. “Last month CPW discovered an illegal introduction of northern pike in Mack Mesa Reservoir NW of Grand Junction. We didn't spread the word on this for a few weeks during the initial active investigation, but we'll be putting out a press release when the timing is right, and wanted to make sure the Program Office and BC got the info in advance.
- iii. Mack Mesa Reservoir sits immediately above Highline Lake. It is filled from the Highline Canal and under normal operation the water goes nowhere except by evaporation. It has an outlet structure that drains to Highline Lake but that structure is not typically used and is currently inoperable. Highline Lake in turn drains to the Colorado River by way of Mack Wash (see attached map)

A brief summary of the timeline & CPW's response is also attached. In a nutshell, we got an angler report of a pike that was hooked but lost in Mack Mesa; we responded by setting nets and electrofishing starting the following day, and saw rapid depletion over subsequent days, with a total of 8 pike captured. All were large adults suggesting a single illegal stocking event.

A couple points worth noting are: 1) the Highline Lake spillway is netted, preventing escapement to critical habitat, should fish be moved to Highline. (Again, they can't get from Mack Mesa to Highline on their own.) We have had no reports of anglers catching pike in Highline. 2) Mack Mesa has been illegally stocked with pike at least once before, in 2008 or 2009. CPW responded similarly and removed a similar number of pike, which evidently eradicated them as there have been none collected or reported in the intervening 10+ years. This is a small-ish lake and a very popular local fishery; if pike had remained in the system they'd have been detected.

So as these things go, I think we have a good chance of squelching this one, but it's more proof that illegal introductions continue.

Barring additional reports from anglers this fall, our plan is to thoroughly sample the lake in early spring when pike are most susceptible to capture. Further response will depend on what we find.

In the meantime, we have discontinued stocking catchable rainbow trout in Mack Mesa. Not to penalize the law-abiding anglers but to avoid feeding these fish to pike if any remain.

- b. FWS-GJ – Fish ladders are shutting down this week, which will allow for a slowing of water releases in the Gunnison. All four endangered species used the Redlands ladder over a long period during the summer, including over 30 Colorado pikeminnow. He thinks that is because of

the low flows in the Colorado River. Nonnative fish removal is ongoing, only limited by flows. They have not completed work in the 15-MR because of low flows, but have moved those efforts to other sections. They have found about 6300 smallmouth bass, 4200 largemouth bass, 2900 green sunfish, 45 walleye, 1700 white sucker, 45 striped bass, and 100 gizzard shad. Zero northern pike were captured. Nonnative removal efforts will be completed by the end of October. Gunnison sampling will occur next week. Dave asked about size of the bass. Dale said some were large and anticipated that bass had a good reproductive year. Pete asked if the largemouth bass numbers were high in comparison to other years. Dale said they were high because when flows are low and clear, largemouth bass survival improves. He anticipated any storm flows would likely decrease that population quickly. Dale said a few large fish were likely sourced from an active private fishing pond at the high end of the system adjacent to Clifton lands. Harry was pleased that no northern pike were captured in the system and noted that none were captured by CPW either.

- c. Hatchery GJ – everything looks good to meet stocking goals and some maintenance was able to be completed when ponds were empty.
- d. UDWR-Moab – Crews are continuing to assess Westwater humpback chub and are continuing Colorado pikeminnow broodstock collection. Sampling in the Green River was successful, including capture of 497 young of year in a single backwater along the Green River. They switched efforts to the Colorado River the subsequent week. In another few days along the Colorado, 434 fish were collected, 375 made it to SNARRC. Wade said the truck is returning to Green River where another ~500 fish were collected. Wade believes that Colorado River sampling is planned for next week. During the first pass in Westwater, Brian caught about 1200 taggable *Gila sp.* and 318 *Gila sp.* too small to tag and saw quite a few recaptures. Large smallmouth bass (not many, but big) have been captured in the canyon with electrofishing but not in nets. No walleye have been captured, but green sunfish and bullheads were. Fewer nets were set this year still resulting in many fish. Brian believes of the *Gila sp.* caught to date there may be a higher percentage of humpback chubs than roundtail chub than in previous years. Hoop nets were used with success.
- e. UDWR-Vernal – See attachment, young-of-year pikeminnow have not been seen at all in the Middle Green, which is very concerning. Stewart Lake has started draining but they have not reached the point where high numbers are likely to be seen. Higher water temperatures are supporting life in the wetland and fish are holding tight in the wetland.
- f. FWS-Vernal – 23 razorbacks have been found in Johnson Bottom and draining has just begun. Six fish have been found at Old Charley and that draining is complete. Chris will continue to look for pikeminnow broodstock despite a lack of success to this point.
- g. CSU – The last Lodore-Whirlpool trip was completed. Very large numbers of pike and bass were seen, higher than they have ever been. Projects 140 and 125 are finishing up. In addition, one day in the White River has been completed. A mountain of larval samples from Matheson, Stewart

Lake, Johnson and Old Charley and in-river Colorado pikeminnow samples have been brought out to CSU and they need to be processed.

13. Review reports due list – list was reviewed and updated.
14. Options for researchers meeting - Options include continuing with the current format (a single larger meeting) or hold a series of shorter meetings separated out by topics. For example, the Colorado River District's Annual Seminar this September split out those meetings into a few day lunch webinar presentations. Recommend using the week of January 11-15 in a series of shorter meetings, with the BC meeting in one of the following weeks. TWG Jan 20-22. Tuesdays would be better if splitting between multiple weeks. >PDO will bring a plan back to the BC in November.
15. Desert Fishes Council – Dave needs to provide a presentation about the state of the upper basin, including highlights. He has not received much input from state contacts. He would like to present the pikeminnow broodstock efforts and will likely lean on the program's efforts as highlights. He will also talk about the fire issues and the dismal flow conditions along the Colorado. Dave asked for other suggested topics that should be included in that presentation. Tom Chart thanked Dave for presenting on behalf of our program
16. Schedule next meeting – November 5th, 9-12 and December 8th from 9-2
17. Consent agenda –Approval of August 2020 Biology Committee summary – *The summary was sent with this agenda, no comments have been received to date. The committee approved the summary. >Julie will finalize and post (done).*

Attachment 1: Field Updates

UDWR-Vernal

Project #158: Pre-ISMP age-0 pikeminnow monitoring in the middle Green River

- Assist with evaluation of FG summer experimental flow targets
- 2 passes (Split Mtn. to Sandwash) completed 8/10-14/20 and 8/27-28/20 & 8/31/20–9/2/20
 - 180 total seine hauls; ISMP-like (2 backwaters/5 mile reach) + sedimentation measurements & gear comparison (seine mesh size and seine length)
 - Flexibility in seining location for subsequent hauls
 - Identified 5 bluehead sucker (34–57 mm) & 10 flannelmouth sucker (48–69 mm)
 - Note: most samples preserved after picked; unidentified samples transferred to LFL
 - Age-0 smallmouth bass ($n = 100$; 34–108 mm) present in 57% of backwaters sampled
- Currently providing assistance with pikeminnow brood collection (GRBFWCO)

Project #138: ISMP age-0 pikeminnow monitoring in the middle Green River

- Sampling completed from 9/15/20 to 9/22/20
- 41 backwaters sampled; 21 primary backwaters, 20 secondary backwaters
- No age-0 pikeminnow; 1 bluehead (68 mm), 2 flannelmouth (66 & 79 mm), 1 *Gila* spp. (57 mm)

Project #123b: Smallmouth Bass Removal in the middle Green River

- 10/5-7/20 trip from Ouray Refuge to Sandwash concludes 14 weeks of middle Green River targeted SMB removal
 - As of 09/13/2020; 5,202 NNF removed, including 3,875 smallmouth bass
- YOY SMB abundant; 100-200 mm most prevalent size class
- Other NNF removed during main channel electrofishing include 8 northern pike, 38 walleye, and 941 white suckers (includes effort during targeted walleye removal)
- Note: most recent data yet to be incorporated – crew reports high catch rates

Project #165: Stewart Lake

- Outlet trap installed 9/21/20; draining initiated on 9/22/20 – earlier start to avoid weekends

- Gauge height as of 10/6/20 = 4.6 ft.
 - Common species: speckled dace, fathead minnow, red shiner, green sunfish, brook stickleback, common carp and black bullhead
 - One razorback sucker (61 mm)
 - Warmer draining temperatures having an effect? Lower #'s for all species
 - ~100 acre/ft supplemental water remain; 10 cfs flow pulse x 24 hrs x 2 (water quality)

Project #167: Smallmouth bass removal in the White River

- October 13-15th trip canceled due to limited flow
 - COVID savings; only 2020 project cancellation for UDWR-Vernal

Attachment 2: 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. 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.
2. 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.
3. PDO will figure out how best to distribute spill contact information (potentially on the website). Pending.
4. The PDO will develop a plan to have in depth conversations on nonnative fish issues and inclusion of PIT antenna data in analysis and will schedule workshops or meetings as appropriate.
5. PDO will start conversations around a razorback sucker monitoring plan, including revisiting the 2012 report for recommendations.
6. Julie will distribute RefWorks information. 1/24/20: USFWS has run into some major implementation challenges with RefWorks and will continue to seek collaborative tools to share resources.
7. Kevin McAbee will work with PIs familiar with the White River to suggest potential management actions in concert with the White River Basin Management Plan.

8. Future BC agenda items:
 - a. Discuss options for a walleye synthesis report.
9. Program participants will work with Lindsey to support modeling efforts.