



**SAN JUAN RIVER BASIN RECOVERY  
IMPLEMENTATION PROGRAM (SJ RIP)  
BIOLOGY COMMITTEE (BC) MEETING SUMMARY**  
Durango, CO  
21-23 February 2023

Comments from Barkalow, Zeigler, Miller, and Chart have been incorporated.

<b>Biology Committee (BC) Members</b>	<b>Representing</b>
Mark McKinstry (Chair for Crockett)	U.S. Bureau of Reclamation
Jim White (Alternate)	State of Colorado
Matthew Zeigler	State of New Mexico
Sarah Seegert	State of Utah
Jacob Mazzone	Jicarilla Apache Nation
William Miller	Southern Ute Indian Tribe
Vincent Lamarra	Navajo Nation
Absent	Ute Mountain Ute Tribe
Brian Westfall	U.S. Bureau of Indian Affairs
Stephen Davenport	U.S. Fish and Wildlife Service, Region 2
Benjamin Schleicher	U.S. Fish and Wildlife Service, Region 6
AJ Keith	The Nature Conservancy
Tom Chart	Water Development Interests

<b>Program Office (PO)</b>	<b>Representing</b>
Melissa Mata, Program Coordinator	U.S. Fish and Wildlife Service
Eliza Gilbert, Assistant Program Coordinator	U.S. Fish and Wildlife Service
Scott Durst, Science Coordinator	U.S. Fish and Wildlife Service
James Sykes, Program Assistant	U.S. Fish and Wildlife Service

<b>Other Interested Parties</b>	<b>Representing</b>
Adam Barkalow, BC Alternate	State of New Mexico
Blake Hansen	Pittsburg State University
Ben Miller	Utah State University
Brian Hines	Utah Department of Wildlife Resources
Carrie Padgett, BC alternate	Water Development Interests
Casey Pennock	Utah State University
Chris Kitcheyan	U.S. Bureau of Indian Affairs
Colleen Cunningham, CC Alternate	State of New Mexico
Dale Ryden, CC Member	USFWS Region 6
Dan Lamarra, BC Alternate	Ecosystems Research Institute
Dave Speas, BC Alternate	U.S. Bureau of Reclamation
Emily DeArmon	Museum of Southwestern Biology
James Whitney	Pittsburg State University
Jamie Shockey	Colorado Water Conservation Board

<b>Other Interested Parties</b>	<b>Representing</b>
Jenn Logan	State of Colorado
Jerrod Bowman	Navajo Nation Fish and Wildlife
Jill Wick, BC Alternate	State of New Mexico
Joseph Trungale, CC Member	The Nature Conservancy
John Cleveland	Kansas State University
Kara Scheel	Colorado Water Conservation Board
Katie Creighton, BC Alternate	Utah Department of Wildlife Resources
Keith Gido	Kansas State University
Kerri Pedersen	U.S. Bureau of Reclamation
Kin-Lan Han	U.S. Fish and Wildlife Service
Koreen Zelasko	U.S. Fish and Wildlife Service
Lee Traynum, CC Alternate	U.S. Bureau of Reclamation
Melody Saltzgeber	U.S. Fish and Wildlife Service
Mike Farrington	American Southwest Ichthyological Researchers
Nate Caswell	U.S. Fish and Wildlife Service
Nathan Franssen	U.S. Fish and Wildlife Service
Paul Badame	U.S. Fish and Wildlife Service
Quinn Donnelly	River Restoration
Rachael Grey	U.S. Fish and Wildlife Service
Sophia Bonjour	Kansas State University
Stephani Clark Barkalow	American Southwest Ichthyological Researchers
Steve Platania	American Southwest Ichthyological Researchers
Susan Behery	U.S. Bureau of Reclamation
Tildon Jones	U.S. Fish and Wildlife Service
Tracy Diver, BC alternate	U.S. Fish and Wildlife Service
Travis Francis	U.S. Fish and Wildlife Service
Weston Furr	U.S. Fish and Wildlife Service

Tuesday 21 February 2023

### **Introductions and changes to agenda**

Miller requested clarification on process for spending Four Corners Power Plant NFWF mitigation funds. Added to today's agenda.

### **Approve draft summary from 6-8 December 2022 BC meeting; review Action Item list – Durst**

Durst reported that Miller and Zeigler had provided comments and those were incorporated. Mazzone motioned to approve the summary, Zeigler seconded. No further discussion, summary was approved.

### Action Items from 6-8 December 2022 BC meeting

1. The PO will explore options to pipe water into the PNM fish passage to increase attraction flows. *Ongoing.*
2. Crockett will draft a memo to the CC detailing the proposed change to operate PNM fish passage open year-round and evaluate the effect after one year. *Ongoing.*

3. PO will work with Lawson to develop a SOW for developing a structured decision making and adaptive management process for the entirety of the SJRIP. *On this meeting's agenda.*
4. Caswell will organize a subgroup to identify habitat projects that could be constructed using capital funds. *On this meeting's agenda.*
5. Zeigler will confirm sharing New Mexico ISC's RIS comments. *Completed. Jones incorporated these comments in revised RIS but did not distribute them because only BC review has occurred at this time.*
6. The BC will provide its comment on the RIS to Jones by 16 December 2022. *Completed.*
7. McKinstry and Donnelly will develop a proposal to develop a future proposal to build a wetland in Bluff. *On this meeting's agenda.*
8. Gilbert will send a Doodle poll for the May meeting. *Completed.*

### **Consider nomination of Kerri Pedersen as Reclamation's BC representative (vote) – PO**

Miller asked if Pedersen could give an overview of her experience. Pedersen said her experience with the U.S. Bureau of Reclamation (BOR) began 3 years ago with the Grand Canyon Dam Adaptive Management Program where she worked on a lot of projects, assuring they were meeting their agreements and conservation measures. Prior to that, she worked for the Department of Agriculture as a wildlife biologist. McKinstry asked if any BC member was opposed to her nomination, none were opposed. Pedersen's nomination was approved.

### **2022 Project Reports and presentations**

#### 2022 hydrology and possible 2023 operations – Behery

Behery reported that the 2022 Water Year (WY) had a near average snowpack, runoff was 50-70% of average with little improvement to the low deep soil moisture. The runoff peak came relatively early, there was no spring release from Navajo Dam, and no flow goals were met. There was also a heavy monsoon season in summer of 2022. Behery reported on a survey conducted in 2019 that quantified reservoir storage at various elevations, with storage decreasing between 35,000 acre feet (af) and 53,000 af, most likely due to increased sedimentation in the reservoir. The reservoir elevation has continually declined since 2019 with each year ending lower than the previous year. Running tabulation of reaching the desired spring high flow targets continued to decline with the 8,000 cfs target being 8 years past its desired maximum occurrence (i.e., at least once every 6 years). 2022 was the first year where the 2,500 cfs target surpassed the recommended maximum occurrence (i.e., every 2 years). Several monsoon events pushed discharge above 4,000 cfs at several gauges between June and August with very high turbidity, indicating large amounts of sediment inputs.

The forecast for 2023 WY is slightly better than last year. However, the starting elevation of the reservoir is a few feet lower compared to WY 2022. There have been some improvements in the deep soil moisture, above average snowpack (116% so far), and the forecast is for near average runoff. The Navajo Dam decision tree does not call for a spring peak release, with no release, no high spring flow targets are forecasted to be met.

Relationships between the Animas runoff and reaching the high spring flow targets showed that we needed the Animas to be at least 130% of average to meet the 8,000 and 10,000 cfs flow targets. The lower targets of 5,000 and 2,500 cfs were often met when the Animas runoff was <100%. These patterns didn't consider any timing of the Animas peak with releases from Navajo Dam.

Given the most probable (110%) and maximum probable (148%) Animas forecast, the Program Office asked how many days at 5,000 could we get from Navajo Dam to try and hit the high flow targets. There will likely not be 21 days at 5,000 cfs available from Navajo dam but there is >10% chance that there could be 10 or fewer days. The group discussed the potential to modify this year's Decision Tree to release a shorter duration spring release from Navajo Dam to clean sediment from the system by capitalizing on the relatively high predicted Animas runoff.

Miller thought the Program had already decided that we need at least 21 days at 5,000 cfs to do the habitat work we desire. McKinstry added that some high flows could flush out some of the recent monsoonal sediment. Durst reminded the group that there was a similar situation in 2019 where BOR's channel maintenance release of <10 days was able to nearly get the 8,000 and 10,000 cfs flow targets by matching the Animas runoff. Gilbert added that we need the Animas to have a relatively high runoff to meet those higher targets. Durst thought we should have incorporated the Animas runoff into the Decision Tree for years like this. Westfall asked if the ramps could be modified to increase the numbers of days at 5,000 cfs. Susan thought that would depend on the amount of sediment in the channel, if the ramp rate is too fast we may flood people near the river, but could be as fast as 3 days. Lamarra stated the type of work that the different flow targets do vary: the 2,500 cfs target mobilizes sand, 5,000 cfs moves sand in secondary channels, 8,000 and 10,000 cfs moves cobbles and changes the channel. The 5,000 cfs target is critical for maintaining backwaters and secondary channels. McKinstry cut the discussion short for the sake of time and suggested the topic can be discussed the following day.

#### Habitat monitoring – Lamarra

Dan Lamarra reported that the flights conducted this year occurred later than normal and he has not had enough time to complete the mapping. He should have it completed before the annual report deadline.

Due to the unforeseen break in the schedule, the group decided to move on to other topics that were supposed to be covered later in the meeting.

#### FY2023 funding – McKinstry

McKinstry said BOR has not received FY2023 funds but all the agreements are in place and ready. He doesn't foresee any issues with getting the money to people this year. He added that BOR doesn't know how much money they may have in FY 2024, but they have not requested an increase in funds, therefore the Program should probably plan for the same amount of money available in FY 2024 that was available in FY 2023.

#### FY2024 Annual Work Plan – Mata

Mata disagreed with McKinstry and thought the Program should plan for the new proposed annual budget of \$4.2M in FY 2024. With this increase, there should be room for new projects in the annual budget. PIs will need to submit Scopes of Work (SOW) using the BOR templates. Budgets from previous projects do not need to stay the same, so PIs should include the full cost of the work that is to be completed in their SOWs. Chart asked to review the timeline for SOWs and annual reports. Gilbert said the Program Office will send out a list of potential project ideas by February 27, SOWs will be due March 31, those will be sent to the Biology Committee (BC) by April 5 with budgets for their review, reviews from the BC will be due to the Program Office by April 26, the Program Office

will then have an Annual Workplan (AWP) draft to the BC by April 30. The BC will then meet on May 9 to discuss the draft AWP. Revised SOWs will then be due by June 2. Draft annual reports are due at the end of March, Final reports due at the end of June.

#### Nonnative fish stocking procedures – Mata

Mata reported that she had a call with Navajo Nation and the States to consider the nonnative fish cooperative agreement and to edit the document. Edits would include citing Navajo Nation's management plans as well as clarifying the language about existing stockings, however any new stockings would be reviewed by the signatories. These changes will require new signatures and the document would still need to be approved by the Navajo Nation Council. Miller asked to circulate the revised document to the Southern Ute Indian Tribe so they can evaluate if it may impact their current lake management. Zeigler was also fine with the proposed edits but asked about the timeframe for the revisions. Mata stated they would send the document to Navajo Nation first to make sure the document captured their concerns accurately, which will probably take 3 weeks. Zeigler asked if there had been any conversations with the State of Utah joining the agreement, Mata said not yet.

#### APS fish passage – Franssen

Franssen reported that we are still waiting to hear back from APS's engineers about their thoughts on the recommended fish passage at APS weir. We are expecting to hear back from them at any time. McKinstry noted that the deadline for getting this project included in BOR's planning is rapidly approaching, if this is not 'on the books soon', the money set aside for the project may be diverted to other needs. Chart asked if BOR's engineers were made aware of Miller's suggested changes and Franssen affirmed they had heard them. Gilbert added that the Coordination Committee (CC) was made aware of the likely increase in construction costs at their last meeting and they may have to approve an increased budget for the project.

#### Process for spending Four Corners Power Plant Mitigation funds – Franssen

Miller asked why the RZB spawning bar construction below the waterfall was proceeding when the Biology Committee had asked for more preliminary work to be completed before its approval. Franssen stated he was under the impression that the BC was not responsible for determining how the Four Corners Power Plant mitigation funds are spent. McKinstry and Davenport both agreed they would approve the project going forward if asked to review the project again. Mazzone didn't think it was the BC's purview to be overseeing these funds. Miller referenced language from the 4CPP BO, in particular Reasonable and Prudent Measure 4, which caused him to question the role of the San Juan Program in the implementation of those funds. Based on Miller's reading, Chart asked if the action agency thinks this mitigation money needs to be added to the Program's Annual funds. Franssen stated his leadership has directed him to manage those funds outside of the Program's decision-making process but help the Program with any budgetary shortfalls that could also satisfy directives of the Biological Opinion. Mata will investigate the BC's oversight of the Four Corners Power Plant mitigation funds regarding the Reasonable and Prudent Measure 4 from the Biological Opinion.

#### Structured decision making and adaptive management – Gilbert

Gilbert reminded the group that the BC had recommended Dr. Lawson provide a SOW that would outline the process of developing an Adaptive Management Plan through a Structured Decision

Making process for the Program. Gilbert and Lawson reported this to the CC at their last meeting and general comments on the potential SOW are due from them soon. McKinstry asked if the CC had seen the full potential cost of the project, “yes”. Westfall asked what the general “temperature” of the CC was after the presentation. Cunningham said she was shocked by the budget but didn’t get a good feel from other CC members. McKinstry asked if the BC would still be getting a new SOW for the project in March. Gilbert said yes, but she is still waiting for CC comments that are due in 1.5 weeks.

#### Backwater productivity – Blake Hansen

Hansen reported their study area was between Shiprock and Montezuma Creek. They sampled backwater habitats between July and September in 2021 and 2022. There was a total of 5 sampling trips in each year with 10 island backwaters and 10 secondary channel backwaters sampled per trip. Backwater size, shading, permanence, connectivity, temperature, invertebrate and fish densities were quantified between backwater types in both years. Secondary channels had higher shading, dissolved oxygen, large woody debris areas, and fish and invertebrate biomass compared to island backwaters, indicating secondary channel backwater are higher quality habitat for fishes compared to island backwaters. However, both backwater types experienced deterioration due to sediment accumulation during the monsoon season. Based on previous analyses of the habitat monitoring data, increases to baseflows could increase the size of secondary channel backwaters.

Durst asked about the 2019 habitat mapping that was conducted at elevated baseflows and showed decreases in backwater habitat, Hansen was unaware of those data. McKinstry asked how the permanence measures could detect differences between water and mud, Hansen is still working through those data but that is an issue they are aware of. McKinstry asked if backwater drying could be killing fish, Hansen thought it could be stranding fish in unconnected backwaters. Farrington thought isolated pools can be refuges until they are reconnected. Keith asked if Hansen had any idea about thresholds for baseflows to keep backwaters connected, Hansen thought 500 cfs. Gilbert reminded the BC that this work was funded due to the previous analyses that suggested the two backwater types could be differentially affected by changes to baseflows.

#### Nonnative vegetation to enhance in-stream habitat for native fishes – Ben Miller

Ben Miller explained the study design of Before, After, Control, Impact (BACI) with paired control and treatment reaches. In 2021, a total of 120 wood structures were added to the river. In 2022, fewer but larger woody debris piles were constructed (n = 35). Treatment and control reaches were sampled monthly by seining, electrofishing, PIT antennas, and habitat (flow, depth, velocity) and invertebrate densities were quantified. Generalized linear mixed models were used to assess differences in fish counts and invertebrate biomass, habitat variation was summarized with a Principal Component Analysis (PCA). Native fish counts and overall fish counts were higher in the impact reaches compared to control sites, but nonnative fish showed no patterns. Kick-net invertebrate densities were similar between control and treatments but inclusion of invertebrates from woody debris samples from treatment reaches increased invertebrate densities substantially. The addition of woody debris had large effects on local scale geomorphology of the substrate with large accumulation of sediment downstream of wood piles. Overall, the addition of large woody debris increased habitat heterogeneity. PCA of habitat variables showed habitat near the structures was much different than average habitat around them. Franssen asked why PCA looked to have two groups. Ben Miller stated likely due to only two substrate classes, sand and cobble. Gilbert asked at what flows did wood piles become mobilized, Ben Miller thought the 8,000 cfs monsoon flows were enough. Barkalow wanted clarification that only wood piles were scrubbed for invertebrates and not cobbles, yes, only wood.

Diver asked how we scale this up. Ben Miller said probably not with posts like we did, may need to push whole trees in the river. Pennock thought loosening banks may also be needed. McKinstry was surprised at the amount of channel change with the wood addition, Westfall recalled that previous work with Navajo Nation was limited by permitting for instream work. Westfall asked how the wood piles were anchored; woodpiles were anchored with wooden posts driven into the substrate. Lamarra thought tree addition is already happening but only at high flows. Bill Miller said channel change was assessed by Ron Bliesner and Vince Lamarra during the 7-year research period. Russian olive became established in the early 1960s, which also coincided with channel simplification.

#### Facilitated passage in the San Juan River – Ben Schleicher

Sampling occurred February 1 through March 14, 2022 below the Piute Farms waterfall with the metal trap and electrofishing. The trap was moved 5 times during the sampling effort with only 1 Colorado Pikeminnow (CPM) being captured, all other trapped fishes were hybrid sucker species, Flannelmouth Sucker, and Channel Catfish. Several CPM and Razorback Sucker (RZB) were detected on PIT antennas near the trap, indicating the trap was not effective. Tagged RZB and Flannelmouth Sucker were placed in the trap to assess escapement, both species escaped readily, the two RZB had escaped within 1.5 hours. 163 RZB and 13 CPM were electrofished and moved above the falls, those individuals were not detected again below the waterfall during sampling. No translocated individuals were detected on “wagon wheel” PIT antennas placed below Mexican Hat, but some individuals were detected upstream above Shiprock, NM later in the year.

Pennock asked how far fish were transported, Schleicher said 0.10 miles above the falls. Furr asked if any Channel Catfish were detected at the Slickhorn antenna, Schleicher didn't know. McKinstry noted that Flannelmouth Sucker behave very different than RZB. McKinstry said the Program should think about a hoist or some contraption to move fish as the trail above the waterfall is getting difficult to navigate, we should still think about the cost of this effort for the numbers of fish that are being moved. Davenport asked about trammel netting, debris load is too high and nets fill rapidly.

#### Rare fish stocking summary and stocking RZB in Lake Powell – Furr

From Horsethief Canyon, juvenile RZB (~200 mm TL) were stocked at -10.0 RM in Lake Powell (n=3,141), and RZB (>300 mm TL) were stocked at Montezuma Creek (n=817), Shiprock (n=787), PNM weir (n=799), and Bloomfield (n=811) in the San Juan River. Age-1 CPM were stocked in McElmo Creek (n=7,421) and at Hogback Canal (n=2,436 flow-trained; n=2,324 control).

#### NAPI pond management and PNM fish passage – Bowman.

An Oxygen Infusion System from Biomark was tested at the PNM fish passage in hopes of increasing fish passage rates in 2022. Sediment was too high to run the infuser successfully in 2022 and going to try again this year. The NAPI ponds received new Cla-Valves, a fish processing facility, and a new stocking side-by-side with trailer and tank. Hidden Pond had new aeration pump box installed after a fire occurred. NAPI ponds had the highest return rates to date at 82.4%, total number stocked was 4,946 RZB >300 mm TL. One pond was drained too fast and they worked over night to stock them out. Most fish came from active harvest as only 255 fish from passive harvest, they are still having low catch rates using fyke nets. Average length of fish stocked was 383 mm TL. The PNM fish passage processed 6,327 fish, of which were 11 CPM and 9 RZB, 128 were non-natives, the rest were Flannelmouth Sucker and Bluehead Sucker. The raw data from the PNM passage are missing.

Durst asked if PIT tag data from the NAPI ponds are still missing. Bowman replied all the data were recovered. McKinstry asked if Bowman had the numbers of fish passed while the PNM fish passage was “open” in 2022. Bowman didn’t have those but Franssen said he would provide them to Bowman for the annual report. Gilbert asked if the passage had less sediment while it was being operated open, Bowman didn’t think so. This year the passage will be operated as open the entire passage season.

#### Channel Catfish management – Furr

Furr gave a short history of Channel Catfish removal efforts. Smaller reaches with highest efforts showed the most effects of removal. Overall rates of exploitation have not been enough to cause growth or recruitment overfishing. Winter removal efforts were initiated in 2020-2022 to assess if removal during lower flows and higher water clarity could increase removal efficiency. Removal was conducted in the winter from RM 119 to 76.5. A tagging trip was conducted to assess removal rates and allow for population estimates. Turbidity was higher than anticipated. Exploitation rates ranged from 10.1% to 28.0% depending on fish size, these rates are still too low to cause growth or recruitment overfishing. Numbers of smaller Channel Catfish seem to be increasing.

Chart asked if the new Channel Catfish telemetry work was going to occur in the winter, Gido said tagging will not really capture the winter period.

Wednesday 22 February 2023

### **2022 Project Reports and presentations**

#### Larval fish monitoring – Farrington

Larval fish sampling occurred in the long-term study reach (RM 147.9-2.9) and the “expanded” study area (RM 180.6-168.4) in 2022. No samples were collected below the waterfall. Sixteen larval CPM and 3,127 RZB were collected riverwide. Four age-1+ CPM were also collected. It appeared two spawning dates occurred for CPM, one in June and another in July. Estimated densities of CPM in 2022 were the lowest since 2015. June temperature and numbers of adult CPM collected in adult monitoring were the best predictors of CPM density. Highest CPM densities occurred downstream compared to upstream. RZB larvae were collected from RM 147.4 to 3.0 at 86 sites that had between 1 and 438 individuals, that ranged in size from 9.5 to 29.5 mm TL. All fish were protolarvae through metalarvae. Razorback Sucker spawned from April through May with two distinct peaks in each month. Density estimates were the highest on record. Total RZB stocked was the best predictor of RZB larval densities. Similar to CPM, highest densities occurred downstream. Other larval fishes showed relatively stable trends over time, but Red Shiner had a huge drop compared to last year. Habitat analysis of the endangered fishes showed highest densities in backwaters compared to other habitats. Overall, spawning of CPM has been documented for 10 consecutive years, the number and distribution was much lower compared to last year, and captures of age-1+ individuals was a record low. RZB have been documented spawning for 25 years, densities in 2022 were among the highest on record, spawning occurred over an 8-week period and were distributed throughout the river.

Gilbert asked if the age-1+ CPM were wild fish. Farrington didn’t know, he would have to look at their sizes. Diver asked if the first peak in CPM spawning dates could have been the fish she stocked as larvae. Farrington wasn’t sure, but he was going to get those samples to her to investigate. Westfall asked what caused the Red Shiner declines, Farrington thought the high monsoon flows. McKinstry said decline in Red Shiner may be bad for CPM because they are a food source, Farrington noted they



also eat larval endangered fishes. Only one Common Carp collected was also good news, but Platania noted that Channel Catfish densities are likely low because they are sampling prior to most spawning. Gilbert thought it may be informative to get environmental covariates for the other species, Farrington said it was possible, but it would take some more data processing. Chart asked if incubation periods are included in the hatch dates for CPM. Farrington said hatch dates are only calculated from emergence.

#### Small-bodied fish monitoring – Barkalow

Small-bodied fishes sampling via seine occurred between August 29 through September 9, 2022 in Reaches 1-5 and September 13-15 in Reach 6. A total of 2,611 fishes was captured, 78.3% were native fishes. Highest catch rates were for Speckled Dace followed by Flannelmouth Sucker and Channel Catfish. One age-1, and 5 age-2 CPM were collected, no RZB were collected. The size of the age-1 CPM was relatively large (222 mm TL) compared to previous years. Bluehead Sucker showed declines in density from the previous year, Flannelmouth Sucker had average densities. Speckled Dace continued to show low densities compared to previous years. Red Shiner and Channel Catfish also had sharp drops in densities compared to 2021. Age-1 CPM was likely wild-spawned. Native fish were numerically dominate and nonnative fish were rare.

Farrington asked what is causing the Speckled Dace declines, Barkalow thought lack of high spring flows. Gilbert noted high prey densities upstream of PNM weir, it will be important for CPM to access them. Furr asked if stocking age-1 CPM could be causing declines in small-bodied fishes? Barkalow thought those CPM are still likely invertivorous, so probably not.

#### Demographic monitoring – Hines

The sample area for demographic monitoring was between Shiprock and Sand Island. Three electrofishing passes with four boats occurred in August and September of 2022. Crews only captured endangered fishes. The capture data were analyzed with “closed capture” models in program MARK. Some preliminary analyses using Robust Design models were also conducted. RZB recaptures were high enough to get estimates for both juveniles (<400 mm TL) and adults. Not enough recaptures of age-1 and age-2 CPM for abundance estimates, so only modeled age-3 and age-4 individuals. Capture probabilities among passes for CPM (range = 0.02 to 0.15) were similar to RZB (range = 0.07 to 0.12). Coefficient of Variation of estimates for CPM were much higher than RZB, indicating less reliable estimates for CPM. Mean abundance estimates for age-3 CPM was 162 individuals with large error, and 246 age-4+ individuals with smaller error estimates. Mean juvenile estimates for RZB was 599 and 3,429 for adults. Catch per unit effort was similar among passes for CPM but slightly increased overtime for RZB. Preliminary results from the Robust Model showed slightly different abundance estimates compared to the closed models for both CPM and RZB. Remote PIT antenna data were included in the Robust Models, but they didn’t help that much with reencounters. Robust Models will be used for the annual report and will be reviewed by Mary Conner at Utah State University to ensure their appropriateness.

McKinstry noted the inclusion of remote PIT antenna data seemed to increase capture probabilities, so they are useful. Gilbert asked if there was enough data to separate RZB into age classes? Hines didn’t think so. Jones asked if estimate for adult Colorado Pikeminnow (i.e., fish >450 mm TL) could be conducted. Hines will add those to the annual report. McKinstry said some of the low apparent survival estimates for CPM could be due to emigration over the waterfall.

Quantifying effective number of breeders – Saltzgeber

A new GT-seq panel was used on RZB samples to quantify Nb for RZB and CPM in 2021. They assessed spatial distribution of full-siblings of larval fishes and looked for parental relationships of fish transported above the Piute Farms waterfall and PNM weir to assess their contribution to larval fishes. To date, 2222 larval RZB have been analyzed compared to 961 CPM. 793 RZB and 142 CPM were analyzed from 2021. Of the 29 juvenile “RZB” sampled in 2021, 4 were wild RZB, 1 was a Flannelmouth Sucker, and 24 were hybrids. Of the larvae from 2021, 736 were pure RZB, 1 was a Flannelmouth Sucker and 56 were hybrids (7%). Nb (mean = 59) was similar in 2021 compared to previous years for CPM. Multiple full-sibling pairs were identified from the larval samples. RZB Nb estimates were also similar to previous years with a mean estimate of 214 in 2021 with very tight 95% confidence intervals (206-222). Because the large number of larval RZB analyzed in 2021 didn't increase Nb estimates, this suggests low sample sizes are not the cause of the low Nb estimates for RZB. Similar to CPM, several full-siblings were identified from larval samples. When assessing reproduction by translocated RZB, 27 translocated fish (13 males and 14 females) were parents to 45 larvae! These comprised 6% of all larval fish sampled. One male sired 5 larvae from 3 different females. River mile location of larvae ranged from -21 to 126.7. GT-seq panel worked well and will replace the microsatellite and ddRAD methods. One wild age-1 RZB was contacted in the river in 2021.

McKinstry asked if the translocated parents came from the waterfall or PNM weir. Saltzgeber didn't know yet but those data will be in the annual report. McKinstry asked if moving fish increased Nb substantially due to the number of parents. Saltzgeber said that was not likely due to the large numbers of siblings in the samples. Chart thought continued sampling in Lake Powell could be important for assessing effects of the translocations. He also asked if the large number of Grass Carp larvae that were captured in Lake Powell came from the Colorado River or San Juan River arm. Farrington said the Colorado River arm. Creighton and McKinstry were in disagreement if Utah Department of Wildlife Resources (UDWR) was going to sample the San Juan River arm this year or not. McKinstry asked Farrington if they sample at the inflow to Lake Powell, Farrington said no because the silt is too deep to safely sample and they have not increased their range of sampling since they started work down there.

RZB age at maturity – Diver

The study reach included the San Juan River from the confluence of the Animas River to Shiprock in 2022. Razorback Sucker were sampled via electrofishing monthly from February through June. During each month, target sample sizes were 20 age-3 and age-4, and 30 age-5+ RZB for blood samples and ultrasounds sonograms. During the month of April, 30 individuals each of age-3,4, and 5 were sacrificed for histological analysis of their gonads. A total of 1,099 RZB was collected, very few of these individuals were collected during Demographic Monitoring over the last two years, indicating limited mixing and a large number of RZB upstream of Shiprock. Sex steroids showed age-specific variation and differences overtime, particularly for males. Testosterone in males and females is much higher compared to hatchery-reared RZB. Specifics of steroid variation will need to be determined after histological analyses are completed. Histology analyses have been delayed due to machine malfunctions, but samples should be completed by the end of the summer.

Gilbert asked what could be causing age differences in male testosterone. Diver thought likely due to reproductive abilities changing with age. Furr asked if there were any correlations between body mass and steroid concentrations. Diver hadn't looked at that yet. Davenport asked if RZB population

estimates could be conducted with the data, Diver said we probably could but they didn't sample the entire reach with every pass. Davenport also asked if the histology data will be able to detect different reproductive strategies like batch spawning. Diver thought that could be possible but they only sacrificed fish over a small temporal window so that may be difficult.

#### Identification of RZB spawning areas in the upper San Juan River – Clark Barkalow

PITPASS rafts were used to detect RZB individuals in an upper (~RM 189-173) and lower (~RM 166-159) reach in spring 2022. Five passes were conducted in each reach between April 22 and May 6. After the first pass in each section, a coarse density map identified potential aggregations, the next pass was then used to deploy submersible PIT antennas near those locations. Each was paired with a HOBO temperature logger. Tag detections on submersibles were also used to identify live versus ghost tags. Embryos were also sampled at presumed spawning bars with D-nets, sampling locations were also measured for depth, velocity, substrate size, and embeddedness. Tag detections were classified as alive, assumed-live, or ghost tags, upper and lower sections were analyzed separately, and Getis-ord-Gi\* was used to quantify spatial aggregations. A total of 2,225 RZB tags were detected, with more tags being detected in the lower section compared to the upper section. Spatial analyses indicated several hotspots of RZB aggregations in both the lower and upper sections. Some hotspots moved over time but some were also consistent through time. RZB embryos were collected from all suspected aggregations, embryos were hatched out to determine species. Embryos were sampled from at least 12 sites but not all hotspots were sampled. RZB embryos were collected from relatively deep and fast water with low cobble embeddedness. Only some hotspots were sampled for embryos, water temperature declined during the study period likely due to increased runoff from the Animas River. Density differences between upper and lower reaches indicates passage issues at APS and PNM weirs. Aggregations and confirmed spawning suggests off-channel rearing habitat improvements could benefit the upper reaches. Control sites will be identified for comparisons in 2023.

Diver asked if spawning habitat is limiting. Clark Barkalow thought so because spawning appeared to only occur in unembedded cobbles, which were relatively rare. Furr asked what the cause of the temperature decline over time was from. Clark Barkalow thought flows from the Animas River. McKinstry wondered if their data could be used for abundance estimates, probably. Franssen asked if they are focusing on specific habitats or are bands of fish moving around. Clark Barkalow thought probably some of both. Keith asked if they had thought about correlating aggregations with potential rearing habitats. Clark Barkalow thought they could do that but haven't yet. Zeigler asked how many individuals were usually in the aggregations, Clark Barkalow thought up to 30.

#### Dispersal, behavior, and habitat use of stocked CPM – John Cleveland

Fifteen flow-trained and 15 control age-1 CPM were radio tagged before being released into Hogback Canal on October 25<sup>th</sup>, 2022. Fish were tracked during four trips up to 7 weeks after stocking. Both stationary antennas (at the waterfall, Sand Island, and McElmo Creek) and mobile tracking were used. Movements by radio tagged CPM were corroborated with other PIT tag detections of the other stocked fish. When individuals were located during mobile tracking, depth velocity, and primary habitat type were recorded. Only 25 of the 30 radio tagged CPM were detected right after stocking, the other 5 likely moved downstream out of the canal rapidly. Fish moved out of the canal relatively rapidly and by day 3 only 2 of the 30 fish were still in the canal. There were no apparent differences in residency time in the canal between the two treatments. After 10 days post-stocking, several individuals were detected up to 70 km downstream. After 25 days post-stocking, 4 individuals were

still found in the study reach. However, after 50 days post-stocking no individuals were detected. No differences in movement rates between treatments was detected. Data from PIT antennas showed similar patterns with two ‘waves’ of CPM moving downstream with one wave occurring within the first week and then a second starting three weeks later. The number of fish detected by PIT antennas gradually decreased moving downstream. One radio-tagged individual was detected at the Piute Farms waterfall only 5 days after stocking. When encountered, most radio-tagged fish were found in the main channel (n=18) versus secondary channels (n=3). Fish were found in <0.9 m depth and <0.7 m/s in velocity. One radio tag was found in a tree and another was found on the bank near a pile of 46 PIT tags, all of which came from the recent stocking. Terrestrial bird predation was likely the source of mortality. The PIT tag data on STReAMS will continue to be analyzed to assess overall stocking success. The study will be repeated in 2023 but the Program may wish to alter stocking dates or sites, try different hatchery enrichment, and consider what can be done about terrestrial predator densities.

Age-2 and age-3 CPM were also tagged with radio transmitters in spring of 2022 between McElmo Creek and Mexican Hat. Habitat availability in this reach was quantified from every river mile with transects and data collected at every 5-meter sample point. Depth, velocity, substrate, and mesohabitat type were recorded. Eighty CPM were collected but only 13 were large enough to tag, 2 in March and 11 in April. Eight tracking trips then occurred between April 1 and October 23<sup>rd</sup>, with 361 river miles sampled. There was a total of 86 mobile detections, 32 stationary detections but no PIT detections. The vast majority of individuals were encountered in the main channel with relatively few fish found in secondary channels. Fish were found in no/low velocity habitats in greater frequency than was available. Two radio tags were found in lateral washes. Of the fish that were watched for 24 hr periods, no diel differences in movements were detected. Overall, saw minimal longitudinal movements over time. The plan for 2023 will be to tag more fish, confirm fish are alive when they are encountered, and continue to collect habitat use data, hopefully at different river discharges. It may be useful to place submersible antennas in lateral washes to assess their use (e.g., Chinle and Lime Creek).

Westfall asked how far away radio tags can be detected. Cleveland needs to quantify that better next year. Gilbert asked if low secondary channel use could be poor detection efficiency. Cleveland said they floated through the ones they could and searched up and downstream of ones they couldn’t, but that could be an explanation. However, there were not a lot of secondary channels flowing either. Chart thought more detections over time would give better insights, Cleveland agreed and hoped to send receivers on other monitoring trips to increase detections. Barkalow asked if the tags were coded or non-coded, they are non-coded. Platania said he has found similar piles of PIT tags on the Rio Grande but figured they were dropped by researchers and not from bird predation. Gilbert thought we should look at other stocking sites as fish have to exit Hogback Canal through a fairly high-velocity slot. Chart noted fish of this size in the upper basin are still using low velocity habitats, it may be a good idea to stock them at other sites, it would also be interesting to conduct a similar study in the upper basin to see how results compare. Gido thought stocking further downstream may increase survival. Davenport suggested we could build better stocking locations. PNM sluice might be a better alternative.

#### General discussion of FY2022 results and progress toward recovery

Platania gave an update on the 2022 CPM broodstock collections. They had good luck collecting fish from the Middle Green River with 130 age-0 CPM collected. Other work near Moab resulted in 250 fish but 200 of those died in transport. Wade Wilson from the Southwestern Native Aquatic Resources Recovery Center (SNARRC) said that another year of collections could be possible but

probably not this year. There are plans for more sampling next year, but if this year has a bumper crop, UDWR could mobilize and do some collections. Diver asked if sampling embryos could be an option, could be if spawning sites were accessible.

McKinstry wants to encourage more work below the waterfall given the highest percentage of untagged RZB were collected down there last year. Durst said frequency of untagged fish is not good evidence of wild recruitment, why don't we start genotyping all broodstock to get a better idea of wild recruitment. May take a lot of time before that pays off due to life span of already stocked fish. Schleicher said he and Diver are thinking of putting a Scope of Work (SOW) together to use electrofishing rafts at the inflow. Chart thought the inflow area is intriguing and if recruitment is occurring down there then spawning at Slickhorn could be important. McKinstry clarified that he was interested in doing more early life stage work down there. McKinstry also brought up fish passage, why not get a full design for fish passage at the waterfall. There are also relatively few CPM detected down there but now that fish are being stocked with PIT tags, contact rates could increase. Gilbert asked if the BC would support getting 30% designs for a fish passage at the waterfall. McKinstry was not excited about trapping fish but could run it open during the RZB spawning run in the spring when relatively few nonnatives are below the falls. Westfall asked why we are concerned with nonnatives when the waterfall is relatively new. Schleicher noted that other nonnatives have invaded the upper basin in recent years. Chart thought passage will be important if recruitment is occurring below the falls. Chart, Zeigler, Keith, Mazzone, McKinstry voiced support for getting 30% designs for a couple fish passage options. Gilbert will prepare a SOW asking for 30% designs by BOR's Technical Services Center, any funding will come from capital dollars so the SOW can be reviewed at any time.

Chart wanted to put more annual funding effort below the waterfall. Ziegler said New Mexico Department of Game and Fish is not interested in doing small-bodied monitoring down there due to distance from New Mexico and logistics. Pennock caught 10 small RZB below the waterfall a few years ago, they were identified as RZB but were preserved in formalin so no genetic confirmation. Gido said day trips could be taken from Copper Canyon but e-fishing rafts could not be launched there. Miller suggested that if fish surveys do occur in the inflow area, habitat should also be surveyed. Mazzone asked when do we stop looking for recruitment down there and added we can't monitor our way to recovery. Diver thought further investigations could help evaluate the proposed RZB spawning bar below the waterfall as well.

Zeigler raised the question about the potential to stock YY Channel Catfish to address the nonnative species. Zeigler has been having conversations with Diver and Durst, but the main issue is that they can't start building a broodstock without an Investigational New Animal Drug (INAD) permit from the U.S. Food and Drug Administration. Zeigler is finished with his YY Channel Catfish model and is working to publish it. Diver needs to test a genetic sex-linked marker and needs to publish that as well before starting the next experimental steps. Zeigler will submit a SOW for experimental brood stock development and sex marker testing this year.

Westfall asked how soon the broodstock could be raised to produce offspring. Zeigler responded 7-8 years. Durst asked if the Program does not think Channel Catfish are a problem, why would we invest in the technique? McKinstry and Keith agreed.

McKinstry asked if we should start thinking about using PITPASS for future endangered fish abundance estimates. Davenport suggested we at least should move Demographic Monitoring further upstream due to all the RZB that are apparently upstream of Shiprock. McKinstry thought it would be

a good idea in addition to other data collection efforts. Barkalow thought PITPASS would increase the number of detections.

McKinstry reminded the group that the PITPASS boats do not belong to the Program and we should think about purchasing some if we want to use them in the future. Gilbert said the Program Office was working with PIs to develop a SOW to conduct more sampling upstream, particularly in the Animas River and upstream of Farmington in the San Juan River. Chart, Zeigler, and Pedersen were all in favor of conducting PITPASS in those reaches. The SOW idea was added to the PO's ongoing list of potential SOWs for FY2024.

Durst thought a new Nb SOW could be a good idea given that was put on pause last year. Platania was perplexed why Nb numbers are so low when large numbers of RZB apparently are spawning as detected from the PITPASS work. The group discussed Nb at length, Zeigler thought age at maturity could be the issue and Diver added that some fish will "practice" spawning with other reproductive adults so those PITPASS numbers may be inflated.

Other potential SOW included more monitoring below the waterfall and resurrecting the Phase III wetland site. McKinstry added that he and Quinn Donnelly are working on more natural ponds near Bluff or the Phase III site.

Chart asked if we are expecting reports from the backwater productivity and addition of woody debris studies, yes, those will be completed this spring in the form of annual reports. Some additional ideas from those studies could be to scale up woody debris addition and test elevated base flows on backwater habitats.

#### Thursday 23 February 2023

#### Discuss metrics to inform PNM Fish Passage operations – BC

Franssen gave summary of rationale for proposal to keep PNM fish passage "open" for the entire passage season (March-October) from the last BC meeting. Generally, passage rates of endangered fishes increase substantially when the trap is not being operated and fish were allowed to swim through. BC members discussed pros and cons of keeping the passage open and weighed potential new and current monitoring that could occur to help decide if the change should be reversed in the future. Mazzone noted that proposed metrics so far have focused on negative effects relative to Channel Catfish but not positive responses by the endangered fishes. No consensus on new monitoring projects emerged and current Adult, Small-Bodied, and Larval Monitoring were determined to be adequate to assess changes to the fish community upstream of PNM weir. Changes in endangered fish passage rates will be evaluated from the current PIT antenna system at the facility. Chart didn't think one year would be enough time to detect the ecological responses of the management change. In addition, one 'trigger' (e.g., evidence of catfish reproduction upstream of PNM) is probably not realistic as the group will likely need to evaluate many sources of information. Chart proposed that the memo Crockett is drafting for the CC be revised to have the experimental period as least 3-5 years with evaluation occurring during this meeting every year. The memo should include what information we plan to gather, a summary of benefits/costs, and potential risks. No BC member voiced concern over the proposed plan forward.

#### **Potential SJRIP habitat projects**

Overview of Upper Basin wetlands – Jones

Tildon Jones gave the history and overview of wetland operations used in the Upper Colorado River Basin to entrain and rear wild RZB. The biggest take aways from the wetlands has been that larval RZB have relatively strong swimming capabilities and do not need to be pushed into the wetlands with upstream flow inputs, they can enter from backwaters on their downstream ends. 2022 was the best year for RZB recruitment in the wetlands to date. Between 2012 and 2020 there was a total of 4,600 wild RZB collected but in 2022 there were just under 4,600 RZB with 3,000 in Stewart Lake alone. Westfall asked if upstream inflows were necessary, Jones said upstream inflow is important for flushing sediment when the wetlands are being drained. Westfall asked if the downstream inflows are enough to maintain water quality. Jones said the wetlands are filled during peak runoff and then all flows to them are shut off throughout the growing season, if water quality starts to get poor, the fish are released into the river. Stewart Lake has a dedicated water source and the other wetlands have the ability to pump water into them from the river. Chart asked how far are the spawning bars upstream of the wetlands, Jones said anywhere between 2 and 50 miles. Quinn Donnelly asked if there is any subsurface connection between the river and the wetlands. Jones thought there was some at some of the wetlands but he also thinks some wetlands have a clay layer that seals the bottoms. Quinn followed by asking if there is a gradient to the wetlands, Jones said yes, they will drain out if allowed to, but some wetlands can't be drained completely. Stewart Lake was modified most recently, and provides the most flexibility to operations with in- and outflows. Lamarra is impressed with the wetland operations and thinks it is a good idea to link these habitats to the life-history of the species. He thought historically there were likely oxbow lakes that RZB could have lived in over several years before reentering the river proper. Lamarra asked if keeping RZB in the wetlands for more than one season has been considered. Jones said they have considered that but it is hard to keep the wetlands wetted more than 12 months and it is difficult to keep water quality adequate for that long. Barkalow asked how long are the wetlands kept open? Jones said they are opened when RZB drift is detected using light traps which informs the start of the release from Flaming Gorge. Barkalow asked if the trigger was dependent on densities of RZB or just their presence. Jones replied that it is more nuanced than that and they use a model developed by Kevin Bestgen to predict the timing of the peak and density of RZB larvae that interacts with several hydrological parameters. They also need to notify the public so there are several pieces that need to come together before the dam release is made. Chart added that the chronology of spawning is Flannelmouth Sucker first, then RZB, followed by Bluehead Sucker, so the wetland entrainment period focuses on RZB. Jones was asked if genetics of the recruited RZB have been assessed, he said that work is ongoing but samples were taken from a relatively small number of suspect individuals. Lamarra noted that the total amount of low-velocity habitat in the San Juan River is substantially smaller than most of these wetlands. Lamarra added that Rich Valdez had previously modeled the amount of acreage needed to sustain RZB in the upper Colorado River basin.

Potential capital funded habitat projects – Caswell

Caswell said the list of projects the small group came up with was not exhaustive but were ideas that they all felt were important, can show progress in the near future and/or necessary to lay the groundwork for future work. This is intended to be a living document and can change with changing circumstances. It should be revisited at least annually to summarize progress on individual projects and determine whether the process for additional projects should be started. The four proposed ideas are as follows:

1. The Razorback Sucker Flow Training and Processing Facility at NAPI (December 2020 proposal). NAPI currently does not have much of a facility for flow training and processing razorback suckers. The group believes this project will only help improve rearing and stocking efforts for this species.
2. Feasibility and engineering studies on increasing flow at the entrance of the PNM fish passage and potential for shifting the fish passage to the middle of the river to alleviate current issues with flow and sedimentation.

The group also supported the BC's existing recommendation on fish passage at APS and the existing proposal for rehabilitating fish passage at the Hogback Diversion (submitted for USFWS's National Fish Passage Program Bipartisan Infrastructure Law funding).

3. Rehabilitation of lateral washes and canyons and enhancement of irrigation returns as off-channel zero-velocity habitat.

A number of long-term monitoring sites in lateral washes/canyons were provided by Barkalow that have provided habitat for CPM and RBS larvae. Over the last 10 years, many have faced significant encroachment by nonnative vegetation or have filled in or both. In addition, some irrigation returns may be ideal for building adjacent habitat that can use the same return as a backwater type of entrainment. This group proposes addressing as many of these locations as possible while being cognizant of the realities of accessibility, spoil disposal, permitting, etc. The feasibility of rehabbing each respective site would be part of that process.

4. An in-depth, comprehensive feasibility (and possibly engineering) study on potential sites for off-channel larval nursery habitat that will allow us to apply the most current state of the science (i.e., the Green River model) while trying to minimize long-term O&M and staffing requirements. The group recommends starting with the San Juan River Larval Razorback Sucker Refugia Enhancement Conceptual Design Final Report (Keller-Bliesner Engineering 2018) and assessing additional sites as warranted.

Keith asked about #3 and any ideas of limiting sedimentation in these washes by working in their watersheds. Barkalow said not necessarily but it is something the group should think about. Caswell added that whatever forces degraded these habitats will likely continue so post action monitoring will be important. Keith thought a larger scale watershed approach may be more difficult but could have longer term effects. Miller asked if prey training CPM has been considered. Gilbert said construction of the prey-training facility at SNARRC was making progress. The NAPI pond flow-conditioning facility will likely need a new SOW with more details and estimated operational costs. The PO will send out the original SOW for the BC to review again, comments will be due back in two weeks. Mata and McKinstry will speak with Navajo Nation about next steps.

The Bureau of Reclamation and the Service will work on a SOW to get 30% designs from the Technical Services Center for the two ideas for #2. The group clarified that the "middle of the river" option at PNM would likely be a non-selective passage.

Barkalow asked about #3 and who would be doing the work. Mata said she has been looking into outside sources but has not found a specific path forward. She noted FWS has an indefinite delivery/indefinite quantity (IDIQ) contract capability. This is a type of contract that provides for an indefinite quantity of supplies or services during a fixed period. She also found a short list of contractors that could do this type of work through IDIQ, but we will need engineering experts to



help with the planning. These could be people currently associated with the Program or BOR. Cunningham asked if most sites are on Navajo Nation, yes, they are. Cunningham noted that it would be a good idea to contact landowners before planning proceeds too far. Chart asked if the group would recommend some of the ideas from Stamp et al. over others. Caswell said what type of work will likely be site-specific. Westfall suggested ideas #3 and #4 be combined into one SOW, the group thought that was a good idea. Mata said she will work to get funds preapproved to get these potential sites investigated from the CC.

#### Discuss best use of off-channel wetland in Bluff – BC

McKinstry gave an overview of the Bluff wetland site idea. The current plan would be to build the wetland and stock larval RZB, but wild entrainment could potentially occur. Quinn Donnelly is a Physical Engineer at River Restoration and they work with Trout Unlimited (TU). TU has agreed to help with the project. Donnelly and McKinstry are currently working on a SOW and they have settled on site assessment but still want to look at the available LiDAR data, do some in water surveys and come up with conceptual alternatives. They also need to do some aquatic resource inventories, cultural resource surveys, and obtain soil samples from the pond area for analysis. They plan to have the SOW out for BC review by next week. Westfall asked if the wetland should focus on a downstream connection rather than an upstream entrainment design. McKinstry said the two alternatives will likely be 1) an upstream inflow and pond, and 2) a downstream connection that would allow larvae to freely move into the pond. Miller asked if the elevation between the proposed wetland and the river is reasonable to excavate a channel, Connelly affirmed. Miller asked if this is just going to be another grow out pond like at NAPI and asked if the Program needed it. McKinstry said he couldn't answer that, but this could be an opportunity to see if fish reared from larvae could have higher survival in the river. Chart indicated that for the downstream connection alternative it would be important to be able to drain the wetland completely to recover the endangered fishes and remove nonnatives, i.e. 'reset' the wetland. And that screening the inflow to preclude access of large-bodied fishes will be equally important. Jones noted that the wetlands in the upper basin have screens to keep large-bodied fishes out and RZB grow fast enough to avoid predation by small-bodied fishes. Jones added that the RZB don't want to leave the wetlands when they are being drained. Keith asked if the SOW will include permitting costs. McKinstry said probably not all of them because we will not know what will be required until a final design is settled on. There will at least be a Cultural Resources Review needed for the US Army Corp of Engineers permitting process. McKinstry and Connelly will wait to receive comments from the BC before moving on to next steps.

Durst asked about best use of wetland, perhaps the proposal may help flesh that out. Lamarra thought this is an opportunity to think outside of the box and wondered if we could provide some habitat that could be multi-generational. Jones noted that is the strategy used in the lower basin. Saltzgeber added that she has been involved in some of that work where 100 males and 100 females are stocked in habitats but the annual recruitment has been highly variable.

#### Jicarilla water lease – Cunningham

The Jicarilla Apache Nation, New Mexico Interstate Stream Commission, and The Nature Conservancy have reached an agreement to lease 20,000 acre-feet of water for a 10-year period if funding can be obtained. Cunningham said the goal of this presentation was to share details of the lease and receive feedback on how the water could be used in 2023, discuss potential future applications of the leased water, and discuss a monitoring program and potential monitoring locations. The plan for the water in 2023 will be to first assess if it can help with a spring peak release

if it can, otherwise baseflows will be increased by 200 cfs for 50 days. Gilbert asked how soon they needed any recommendations from the Program, Cunningham thought the normal decision-making process for flows will be fine. They are struggling more with figuring out how to monitor the effects of any use of the water. Westfall thought 200 cfs is not going to change the river's stage that much and asked if they could bank the water to use it later. Cunningham thought they could hold it over one year but probably not longer. However, they wanted to release the water during the first year of the lease agreement. Trungale said the water could be used to keep the river from experiencing extreme dips in discharge to maintain backwater habitats. Durst asked what involvement they wanted from the Program. Cunningham said it is hard for NMISC to contract for monitoring work so they would be open to the Program conducting some of the monitoring. Farrington said they will have some data from the sites they monitor annually. He also thought elevating baseflows to limit dewatering of backwaters could help CPM. Franssen asked how baseflows could be elevated, following the 3 gauge rule. Cunningham was going to meet with Behery soon to discuss those details. Furr asked if they would have to account for evaporation in the available water if they did hold over water for more than one year, most likely. Chart asked if they will work with the Program when the water is delivered to meet compact compliances, i.e., time the releases to benefit the native fishes. Cunningham thought so, at least so they wouldn't cause harm to the endangered fishes. The main question now is how to monitor any effects of the extra water. Valdez said they interviewed at least 15 people from the SJRIP and many thought the water could be used to assess changes to baseflows and the effects on low-velocity habitats. Mazzone noted an additional 200 cfs is a 40% increase and is significant. McKinstry thought flows between 500 and 700 cfs showed increases in backwater habitats. Gilbert asked what the Program could do to help. Cunningham said any monitoring from current projects this year would be great but it would be good to figure out other monitoring in out years. ASIR's monitoring data could help this year.

Lamarra thought we could install monitoring devices in every secondary channel to assess changes in baseflow. Westfall thought it will be hard to evaluate effects of 200 cfs but liked the idea of using the water to evaluate changes to habitats at a range of flows. Chart thought elevating baseflows could improve survival of juvenile CPM, and hoped that the Program consider developing an experimental study plan to test that and other potential benefits. Durst asked about the status for funding in out years. Cunningham said the water for 2023 is already covered but not for outyears, but they are very committed to getting those funds. Mata reminded the group that capital funds can be used to lease water.

The following is the list of potential FY 2024 SOWs or project ideas. This will be provided to the group soon after the meeting.

- Colorado broodstock collection
- Build location to stock CPM
- Waterfall to inflow surveys (~3-year period) that might include observations of habitat for investigation of
  - RZB recruitment,
  - Life history of T&E fishes,
  - Targeting CPM in summer at waterfall,
  - General fish community
- 30% design of the TSC alternatives developed for the waterfall
- YY Catfish experimental broodstock development and sex marker testing

- Add PITPASS to adult monitoring to test how well the technology could work to produce better demographic monitoring estimates
- Program purchase of PITPASS boats
- PITPASS surveys upstream of PNM with a possible Animas focus and/or focus on the fish that pass PNM (CPM, RZB, and Channel Catfish)
- Fund genetics assessment for Nb and contribution of translocated fish
- Scale up woodpile experiment and/or to create backwater habitat
- Monitor backwater response to increased baseflows

New Action Items:

1. Mata will investigate the Biology Committee's oversight of Four Corners Power Plant mitigation funds.
2. Gilbert will prepare a SOW for 30% designs by TSC for passage ideas at the waterfall. Capital funds will be used so don't need to follow the Annual Workplan process.
3. The Program Office will send out the original NAPI flow-conditioning SOW to the BC. Two weeks for review.
4. BOR and the Service will develop a SOW to obtain 30% designs for improvements at PNM weir.

The next meeting will be on May 9, at Fort Lewis College in Durango, CO the Annual meeting will be in the Public Library in the morning of May 10 and the Coordination Committee will meet there in the afternoon.