Approved 11 May 2010

Final Summary
San Juan River Basin Recovery Implementation Program
Biology Committee Meeting – Farmington, NM
23-24 March 2010

Attendees

Biology Committee Members:
Bill Miller, Chair – Southern Ute Indian Tribe
Paul Holden – Jicarilla Apache Nation
Ron Bliesner – Bureau of Indian Affairs
Jason Davis – U.S. Fish and Wildlife Service, Region 2
Mark McKinstry – U.S. Bureau of Reclamation
Dale Ryden – U.S. Fish and Wildlife Service, Region 6
Vincent Lamarra – Navajo Nation
David Propst – State of New Mexico
Tom Wesche – Water Development Interests
State of Colorado – absent
U.S. Bureau of Land Management – absent

Peer Reviewers:
Steve Ross – University of New Mexico
Ron Ryel – Utah State University
Mel Warren – USDA Forest Service

Program Office – U.S. Fish and Wildlife Service, Region 2:
Sharon Whitmore
Scott Durst

Interested Parties:
Darek Elverud – Utah Division of Wildlife Resources
Mike Farrington – American Southwest Icthyological Researchers
Amy Kraft – Southwest Water Conservation District
Howard Brandenburg – American Southwest Icthyological Researchers
Weston Furr – U.S. Fish and Wildlife Service
Michael Howe – U.S. Bureau of Indian Affairs
Ernesto de la Hoz – BIO-WEST

Adam Barralow – American Southwest Icthyological Researchers
Michelle Shaughnessy – U.S. Fish and Wildlife Service
Brandon Albrecht – BIO-WEST
Keith Lawrence – ERI
Justin Barker – ERI
Viola Willeto – Navajo Nation Department of Fish and Wildlife
Steve Lynch – BIA-NIIP
Ben Zimmerman – Southern Ute

23 March 2010

Introductions; Changes to agenda:

- Defer priorities for 2011 program of work, planning for annual meeting, use of Program website for posting reports, and reviewing assigned action items until later in the day tomorrow if time permits or for a later conference call.
- No new items to add to the agenda

Approve 13-14 January 2010 meeting summary:

- Add a bullet under the meetings contamination presentation indicating some BC members' disagreement with some of the conclusions in Lusk's presentation.
- Summary approved with that change.

2009 Project Updates:

2009 Rare fish stocking summary (Furr):

- Furr reviewed Colorado pikeminnow Phase 1 goals and accomplishments. The Program is over target for those 8 years of stocking. In 2009 there were 468,000 age-0 and 8,942 age-1+ fish stocked. Some fish were incorrectly assigned as "hard" versus "soft" stocking.
- Are we over stocking age-0 fish? Revised Augmentation Plan calls for 400,000 age-0 stocked annually; the space that was used to grow age-1+ will be devoted to age-0 production. How are decisions made about stocking extra fish? Analysis Durst conducted indicated that stocking age-0 fish is more cost-effective than age-1+ stocking, but did not examine the number of fish that should be stocked. Are there concerns for dispersal and resource limitation for stocking age-0 pikeminnow? Peer Reviewers indicated that the BC should look at spreading out high density stockings. The BC made the decision to take the age-1+ pond out of production and use that space for age-0 fish. The 400,000 age-0 number is based on Dexter capacity. There needs to be a discussion of what is the appropriate number of fish to stock (this discussion will be added as an Action Item). Ross indicated that the number of fish to stock at any location should be based on the resource availability at those locations. Warren suggested that a recapture analysis needs to be completed for these stocked fish (Durst will complete this). 469 pikeminnow were recaptured from spring stocking (16% recapture rate).
- Furr reviewed razorback sucker stocking. 2009 fish are still being stocked as part of the season-location experimental design for those large razorbacks. Passive and active harvest of NAPI fish continues. Hidden Pond produces smaller fish. Excess vegetation problems continue in West Avocet. Fall and winter experimental stocking has been completed (4000 fish in fall and winter at two locations).

- 3,400 roundtail chub were stocked at the Animas confluence by the State of New Mexico in October 2009. This stocking was conducted outside of the Recovery Program and did not use Program funds.

Potential changes for spring razorback sucker stocking:

- Some of the 4,000 large razorback suckers that were supposed to be stocked in spring as part of the previously discussed experimental design are gravid. There is concern that stocking these fish will add more stress and increase the possibility of post-stocking mortality. The status and condition of these fish will be clearer in the future. By the time they were scheduled to be stocked in April, they could be already spent or have reabsorbed the eggs. If so they could be stocked. There was consensus that these fish should not be stocked in a high-stress state. These fish can be stocked in the fall but the Program would lose the three season experimental design. In the end, the fish will be stocked according to what is best to ensure their survival. The responsibility for stocking in the San Juan River ultimately rest with the New Mexico Fish and Wildlife Conservation Office. As more information becomes available, Davis will keep the group up-to-date with information from the hatchery.

Larval fish monitoring (Brandenburg):

- Brandenburg presented the history, goals, and objectives of the project. In 2009 there were 339 collections covering 15,000m^2. One age-0 pikeminnow was collected, 266 age-1 pikeminnow (stocked individuals), and 272 age-0 razorback sucker. No age-0 fish were collected in April (like 2008). Red shiner appeared later than normal and larval catfish were only detected in one sampling event.
- Detection of protolarvae indicates spawning location. Razorbacks spawned above RM 130. Mesolarvae indicate the magnitude of spawning. Razorback larvae are collected in Reaches 1, 2, 3 and 4. Reach 3 appears to have good quality habitat. Tthe big backwaters in Reach 1 and 2 are ephemeral.
- Razorback sucker and other native suckers have similar temporal abundance but have different spatial distribution. Razorbacks are most abundant in Reach 1 but other suckers have highest catch rates further upstream. This highlights the importance of establishing spawning populations of razorback higher in the system so more larvae will have the opportunity to be retained.
- The bead study was revisited. Larvae/beads will take 3-4 days to pass through critical habitat and reach Lake Powell given observed transport rates. Larvae/beads retain in habitats between Shiprock and Clay Hills.
- Is there a habitat shortage? Habitats do not appear to be fully utilized. These backwater habitats are full of non-native fish by the time of small-bodied monitoring. Habitats need to be considered in terms (1) can fish can get into them, (2) persistence, and (3) quality. Do we have enough of the right backwaters? Is there a problem with backwaters in Reach 1 and 2 and are those fish that reach backwaters being flushed out of the system? Backwater persistence is also an issue. Habitats that fish use for overwintering could be an issue. Most backwaters persist less than one month and none persist more than three months following razorback sucker spawning. Later in the year when flows are more stable, backwaters persist longer. Fish use backwaters in a downstream step-wise fashion.
- 2009 was the lowest catch rate for flannelmouth but others are steadier. For razorbacks, the same numbers of adults (controlled for stocking) are producing the same number of larvae. Overall downward trend in red shiner but there was a spike in 2009 catch rate. Fathead minnow declined in 2009. Few larval carp are detected.

Small-bodied monitoring (Propst):

- Prost detailed the objectives of the study. 10 pikeminnow were collected, similar to past years. Native suckers have increased over time in the primary channel. Catfish remain common in secondary channels but native suckers have increased over time. Backwaters continue to be a stronghold of non-native fish. Although red shiner and catfish have declined in small-bodied monitoring there does not appear to be a corresponding native fish response.
- The Program should consider removal of non-native fish from backwater habitats as a specific management activity.
- Propst tracked a cohort of bluehead sucker through larval, small-bodied, and adult monitoring. Tracking cohorts through time could be a valuable part of the integration effort.
- Summer low flows below 900 cfs do not apparently cause problems for native fish, but elevated summer flows appear detrimental to nonnative fishes, especially red shiner.
- Propst presented data on distribution of suitable-sized prey for Colorado pikeminnow and distribution by size-class of Colorado pikeminnow. There appears to be at least a crude or rough correlation of CPM distribution and availability of suitable-sized prey. These data and interpretations are all preliminary and much more rigorous analysis is needed before conclusions can be drawn.

Adult monitoring (Ryden):

- Ryden focused his presentation on pikeminnow, razorbacks, and catfish. Rare fish are detected throughout the study area.
- Pikeminnow stocked as age-0 are not recaptured after age-4. A total of 376 pikeminnow were captured in 2009 and 337 after at least one overwinter period. Pikeminnow stocked as age-1+ are recaptured the same year that they are stocked but after two overwinter periods these fish are no longer detected. There do not appear to be any differences between hard and soft releases. Only 11 adult pikeminnow were captured in 2009; based on Ryden's analysis the adult monitoring project should collect 131 adult pikeminnow to indicate that the population of these fish is close to 1,000 individuals, thus we are not close to be needing to conduct mark-recapture population estimates. Recaptures appear to be entirely based on what is stocked into the river (i.e., no pikeminnow recruitment has been detected).
- Razorback sucker persist longer in the San Juan River but the number of fish captured after one overwinter period has not changed through time. Although more fish are being stocked in to the system, the number of adults detected or the number of larvae they produce does not appear to be increasing. Are there limits in spawning habitat or some other carrying capacity issues? Is there too much competition from the native sucker community? We don't know much about these communities in other basins. The adult monitoring effort should be collecting 761 razorbacks (based on the 20% rule) if the population is getting close to delisting size. There is very little evidence of recruitment over time. Trends in fish population size can be detected, but this monitoring effort cannot determine the number of spawning fish. Recruitment should be detected once there are enough fish. Identifying critical limiting factors is an integration issue. Spawning locations need to be identified in a different sampling effort.
- Channel catfish numbers increased 3-4 times 2008 numbers. Most of these are small individuals and catfish were the most numerous species in 2009. The high abundance of small catfish might be a response to non-native fish removal efforts. There were 8 pikeminnow with catfish lodged in their mouth and there is some evidence that pikeminnow learn to avoid eating catfish.

Detailed reach study (de la Hoz and Bliesner):

- Pikeminnow < 100mm selected backwaters, embayments, and pools. Analysis of adjacent habitats indicated selection for pools and sand shoals at the smallest scale but had no evidence of selection at larger scales. Pikeminnow > 100mm selected riffle habitat. Analysis of adjacent habitats indicated that cobble shoals appeared to be most important and was also evident at larger spatial scales. Based on GPS locations, larger fish preferred complexity and complex habitats. Habitat complexity is independent of flow, so habitats with complex features are present under a variety of flow conditions.
- Most backwaters last less than a month and none last more than three months following razorback sucker spawning, so fish are looking for successive habitats downstream as habitats change. Many backwaters need to exist at a range of flows to provide sufficient habitat.
- Larval pikeminnow habitat is low in abundance, covering only 2-3% of total wetted area, juvenile habitat is low in abundance but it is not being fully utilized so it does not appear to be limiting. Habitat for older fish is ubiquitous and is not limiting. Spawning habitats are probably not limiting. If these habitats are not limiting what are the other factors are preventing rare fish from being detected in these habitats?
- Razorback sucker larval habitat is in low abundance but these habitats are not fully utilized. However these habitats are not persistent and could be limiting. Length of available habitat could be an issue because other native suckers spawn above the Animas confluence in colder waters influenced by the dam and these fish do not appear to have limited larval and juvenile habitats.
- Flow and non-native vegetation both influence habitat.

Lower river non-native fish removal (Elverud):

- In 2009 1,309 Colorado pikeminnow were captured. Catfish numbers increased overall with very high capture rates of adults pre-runoff. Catfish averaged 185mm.
- Abundance estimate for catfish > 200mm was lower than 2006 but the same as 2008. Exploitation rates varied with size (greater exploitation rates for larger fish). Exploitation averaged 31%. Since fish are marked in the first pass and not all marked fish are subsequently removed, is the opportunity to remove these fish lost? This marking effort allows the Program to get data that would otherwise be unavailable. The population model can determine the appropriate exploitation rate to cause harm to the catfish population. Tag retention over 1.5 months is 99.4% but drops to 60.9% over 8 months. So population estimates are still valid but exploitation rates are likely underestimated.
- There are few carp and these are mostly young fish.
- Significant increase in pikeminnow captures compared to previous years. Capturing lots of fish in all size classes. Population estimate for all passes was 1,452 and pre-runoff surveys had high capture probability.
- Razorback sucker CPUE was similar to 2008.
- Sampling immediately below waterfall does not appear to be productive and should be phased out. However additional work into the San Juan Arm of Lake Powell may be pursued as part of a different Scope of Work.

Upper river non-native fish removal (Davis):

- Removed a total of 37,735 catfish in 2009 including Adult Monitoring trip. Increase in catfish later in the season downstream of RM 120. Suspected spawning area for catfish in the area around Aneth, UT.
- In just non-native removal data, collected a total of 1,983 pikeminnow, 451 were too small to PIT tag and 21 fish were > 400mm. Riverwide pikeminnow population estimates were 4,666 (95% CI 3500-6500) and p-hat = 0.05. Why are these estimates so much larger than those reported by Ryden?

- There were 720 razorback sucker detected in the non-native fish effort. In some cases there were gaps of four years between razorback detections. Population estimate for razorback sucker was 2,047 (95% CI = 1000-5000) and p-hat = 0.04.

PNM Weir (Lapahie):

- Only 139 non-native fish used the structure in 2009. Native fish dominate the use of this structure.
- Problems persist with high and low flows and sedimentation. There is not enough water in the river to operate the structure at the beginning and end of the season.
- Since 2003 a total of 48 pikeminnow, 27 razorbacks, and 3 roundtail chub have been collected in the structure.
- Request to PNM for an additional electrical outlet for lift structure.
- Confirm that PNM weir data is in the PIT tag database

24 March 2010

General discussion from yesterday's presentations:

- The high number of pikeminnow recaptures across electrofishing projects might be due to effort. This can be looked at by making year-year comparisons while controlling for effort.
- Will the pulse of young catfish pose a problem in the future? Are there ways to disrupt catfish reproduction; like flow or habitat manipulation? Non-native removal trip cannot be reasonably timed to coincide to when catfish are on their nest because electrofishing is not effective at high flows. Consider moving more trips into the early part of the season on the lower river when catfish exploitation rates are higher.
- While it is important to do cross-project analysis use caution because of the different sampling methods. In tracking cohorts from larval, to small-bodied, to adult monitoring try to tease apart why some cohorts succeed and some fail. Use common species to drawn inferences about the rare fish. Data should ideally be in a common format so it can be analyzed across projects. Data should be analyzed in terms of the response to management actions that are happening on the San Juan.
- In 2009 there were no summer flow spikes. Flow was constant from July to September.
- What level of catfish exploitation is needed to crash the population?
- Discussion of important highlights to make during the annual meeting and the order of presentations for the annual meeting.

Monitoring protocols and questions discussion:

- Does the Program have the data available to answer the questions in Table 12?
- Are there sufficient habitats for all life stages to recover species in the San Juan River?
- How do we regain lost complexity in the river?
- Ryel and the Peer Reviewers will summarize comments for reorganizing and restructuring the monitoring protocol and integration analysis document. The next draft of the document will be out by 1 May any comments should made before the Annual Meeting.
- It does not appear that there are additional protocols needed to address questions in this document.

Navajo Dam and operations and flow scenarios (Ryan Christianson BOR):

- 2009 was not a perturbation year.
- Historically tried to center peak on 4 June.

- Auxiliary spillway has issue that would limit release from dam to 3500 cfs. Best to use auxiliary spillway with whatever inspection criteria are needed in order to have the magnitude of flow needed from the dam. Ability to reach flow recommendations will largely depend on flows from the Animas and timing flows from Navajo to match those flows.
- Since Animas peak has been earlier than 4 June over the last 10 years, make an effort to "chase" the peak in order to maximize the magnitude of flow through critical habitat.
- BC recommends that the timing of the Navajo peak should be adjusted to match the Animas peak based on the May final forecast and that it would be best to err on the descending limb of the Animas if the peak cannot be matched.

Long Range Plan:

- Whitmore is changing the structure of the Long Range Plan document to reduce the redundancy and improve clarity.
- Completed work elements will be moved to Appendix B.
- Timeline still need to be revised.
- BC comments on the table should come in by the end of next week.

2011 Workplan priorities:

- Efforts to stock fish higher in the river. Need to evaluate the possibility of stocking fish further upstream in the San Juan or Animas River. Davis will address this evaluation.
- Over the last few years there have been Colorado pikeminnow detected in Yellow jacket Creek (Mancos drainage). Ryden will ensure that a PIT tag reader is out on the next sampling effort in this location.
- Can larval fish be sampled for selenium? Need to determine if preserved fish can be sampled for contaminants.
- Bliesner will work with Lusk to come up with a sampling plan for opportunistically collected muscle tissue.
- Targeted catfish control will be discussed at the upcoming workshop.
- Should the Program pursue work in Lake Powell? Should we be specifically looking for a population of razorback sucker in Lake Powell? Is there value in having a population of razorback sucker in Lake Powell? Is there a possibility of getting NPS involved with this effort? Ryden will communicate with Melissa Trammel. The BC supports moving this forward. Ryden and Elverud will further develop the existing proposal for 2011 work that will be discussed at the BC's May meeting and the Annual Meeting in May.
- Ongoing proposals will be prioritized at the May meeting.
- Discussion of revisiting radiotelemetry work. Miller will use old proposal in order to get a ballpark cost of such a study. The objectives of this study will have to be fleshed out.
- The population model can be used to deal with some of the integration questions. The model could also be updated with additional data. Miller and Lamarra will revive the model for discussion with 2011 priorities.

Additional growout pond in Upper Basin (Shaughnessy):

- Additional fish can be produced by ponds in the Upper Basin. These new ponds would replace existing ponds that are currently being used for growout. Some of the current ponds do not produce fish so there is a need to upgrade these to avoid future fish mortalities. Four ponds could be devoted to use by the San Juan Program. The CC asked the BC for pros and cons on recommendations for this proposal. Construction would be covered under capital costs. There were question on the operations costs for these facilities. Although it is unclear what the future stocking needs of the San Juan Program will be, this would be an

opportunity to have at minimum backup rearing facilities. The San Juan Program is currently broodstock limited.

RERI grant:

- Oglesby previously distributed this proposal. The proposal is conceptual and need to be refined both in terms of work and the location of restoration activities.
- A smaller group from the BC should work with Oglesby to move this forward (McKinstry, Bliesner, Brandenburg, Propst, and Durst).

Non-native fish workshop:

- The workshop will be held at the New Mexico Ecological Services Field Office in Albuquerque over 26-27 May 2010.
- McKinstry has distributed the agenda.
- The workshop will focus on predators and not hybridizers.
- There was discussion of changes to the agenda. McKinstry will revise the agenda and distribute to the group.

Bliesner's seat on BC:

- The process to have Keith Lawrence take over Bliesner's representation of BIA on the BC is underway.

Program website:

- Gustina sent a request to have documents sent to the Program's website than be distributed via email. Because of possible delays in having items posted to the website and the inability of the FWS to house a true FTP site, documents will continue to be distributed via email.

Next meeting:

- The next Biology Committee meeting will be 11 May 2010 in Durango, CO, followed by the Annual Meeting on 12 May.

BIOLOGY COMMITTEE ACTION ITEM LOG (Updated March 26, 2010)						
Item No.*	Action Item	Meeting/Origination Date	Responsible Party(s)	Due Date	Revised Date	Date Completed
1	Provide RBS/CPM stocking/capture/recapture data		P.I.'s to the Program Office	Annually before Jan. 1		
2	Provide Preliminary Draft Report Presentations		Project Leads (authors)	Annually at Feb. meeting		
3	Review LRP		BC	Annually at fall meeting		
4	Review Peer Review Comments from the February and May meetings		BC	Annually at fall meeting		
5	Provide Draft Final Reports		Project Leads (authors) to Program Office	Annually by end of March		
6	Scopes of Work		Project Leads to Program Office	Annually by end of March		
7	Provide Final Reports		Project Leads (authors) to Program Office	Annually by end of June		
8	Annual Data Delivery		PIs to Program Office	Annually by June 30		
9	T&E Species Data		BC to Program Office	Annually by Dec. 31		

BIOLOGY COMMITTEE ACTION ITEM LOG (Updated March 26, 2010)						
Item No.*	Action Item	Meeting/Origination Date	Responsible Party(s)	Due Date	Revised Date	Date Completed
10	Annually compile T&E data and Program progress into summary to address overall Program recovery goals/objectives for presentation at annual meeting		Program Office/BC	By Annual Meeting in May		
11	Distribute Consolidated Data and list of annual data collected and available in the Program's database		Program Office to BC	Annually by Jan. 31		
12	Coordinate CPM stocking closely with Reclamation to avoid negative impact due to high flows/releases		Project Leads	Annually		
13	Waterfall Inundation Whitepaper – review past meeting summaries, determine what is needed, and provide report at the next meeting.	05/18/07	Program Office	12/07/07	Not a current priority	
14	Revise CPM and RBS Augmentation Goals	5/7/08	FWS Fisheries/Program Office	11/30/08	1/31/10	
15	Provide specifics of selenium sampling procedures and analysis	1/26/09	Bliesner/Osmundson	2/18/2009		On hold
16	Develop a detailed outline for San Juan River Recovery Program case history manuscript	11-5-08	Propst/Miller			On hold
17	Remote PIT tag reader white-paper	BC 13 may 2009	McKinstry			
18	Non-native fish stocking procedure to States and Tribes	11/5/09	Nesler	12/1/09		

BIOLOGY COMMITTEE ACTION ITEM LOG (Updated March 26, 2010)						
Item No.*	Action Item	Meeting/Origination Date	Responsible Party(s)	Due Date	Revised Date	Date Completed
19	Pursue effects study on Hg/pikeminnow with other groups/programs	1/14/10	Program Office lead			
20	PIT tag protocol SOP	1/14/10	Davis/Furr	2/17/10		
21	Blank database structure for data integration	1/13/10	Durst	3/23/10		
22	Compile list of references and literature available at Program Office	1/13/10	Program Office	3/23/10		
23	Discussion of what is the appropriate number of fish to stock	3/23/10	BC			
24	Recapture analysis on stocked fish	3/23/10	Durst			
25	Monitoring protocols and integration analysis document	3/24/10	BC	5/10/10		
26	Comments on Long Range Plan document	3/24/10	BC	4/2/10		
27	Evaluate stocking locations upstream of Animas confluence	3/24/10	Davis			

BIOLOGY COMMITTEE ACTION ITEM LOG (Updated March 26, 2010)						
Item No.*	Action Item	Meeting/Origination Date	Responsible Party(s)	Due Date	Revised Date	Date Completed
28	Sampling plan for opportunistically collected muscle plugs	3/24/10	Bliesner			
29	Further develop proposal for work in Lake Powell	3/24/10	Ryden and Elverud	5/10/10		
30	Radiotelemetry proposal	3/24/10	Miller	5/10/10		
31	Revive population model for discussion as 2011 proposal	3/24/10	Miller and Lamarra	5/10/10		
32	Revise non-native fish workshop agenda	3/24/10	McKinstry			

* Items were re-numbered after changes were made