

## BIOLOGY COMMITTEE MEETING SUMMARY

December 9-10, 2002

Grand Junction, CO

Biology Committee: Frank Pfeifer, Pat Martinez for Tom Nesler, Tom Pitts, John Hawkins, John Wullschleger, Tom Chart, Mark Wieringa, Mike Hudson and Kevin Christopherson, Paul Dey, and Bill Davis.

Other participants: Chuck McAda, Pat Nelson, Gerry Roehm, Tom Czapla (via phone), Brent Uilenberg, Larry Crist, Yvette Converse, Tim Modde, Rich Valdez, Kirk LaGory, John Hayse, Bob Muth, Angela Kantola, Al Pfister, George Smith, Bob Burdick, Kevin Bestgen, Anita Martinez, Ray Tenney, and Debbie Felker.

Assignments are indicated by “>” and at the end of the document.

1. Revisions / additions to the agenda, review action items from previous meeting summary  
  
Chart: No money obligated for Steamboat Lake lease  
Muth/Anderson: Status of letter to Todd Crowl unknown  
Accounting for floodplain program: BR still working on it.  
Argonne SOW was not reviewed.  
No decision from BR on Aspinall EIS.  
    Roehm: Tributary paper revisions not yet complete.  
Snorkel surveys on Yampa were not done due to rain/turbidity.  
Valdez SOW for completion of floodplain model, status unknown.  
PDF versions of Mike Hudson’s report available.
2. Late Report list - Reports for review during next BC meeting: 105, 25, C-6 (29 Final to BC by 1/15/03). Some members objected to the characterization of the list as a “late reports” list. Some reports are in review or pending due to factors outside the authors’ control. (Note that the list itself is titled “UCRRIP Reports Late, In Review, or Pending.”)
3. Review: *Assessment of electrofishing injury of Colorado pikeminnow*, Hawkins - X-rayed CPM caught with EF apparatus. Doug Osmundson and Larry Ziegenfus were peer reviewers. Davis: Need to better differentiate acute from chronic and congenital vertebral compression. Hawkins: Chronic injury may be cumulative from earlier EF captures. Davis: Given CPM longevity, observed EF injury rate (26%) may be significant with repeated exposure. Chart: Recognized that the author had discussed and recommended looking at hatchery fish as a control for congenital defects. Hawkins: Could experimentally expose hatchery fish to EF and examine effects. Davis: Are CPM more susceptible than other fish to being caught with EF? Hudson: His experience is that CPM are more readily captured with EF than carp or catfish. Approved with minor changes. No need for further BC review. Related discussion: Recommendations in the report should be acted on by the Program. Offer/require formal EF training for field

staff–Program could sponsor through NCTC. Develop standardized fish handling protocols to minimize post-capture stress. Encourage researchers to share EF experience–topic for researchers’ meeting.

4. Price / Stubb fish passage (CREDA request) - Davis: Proposed rock ramp “ladder” is non-selective and its efficacy is untested. Given our experience at Redlands, is a conventional fish ladder a better option? Pfeifer: BC preferred selective passage at most downstream dam (Price-Stubb), but RBS use of conventional ladder was uncertain. Since then, RBS use of Redlands has been documented. However, rock passage is likely to be at least as effective, if not more so. BC was cognizant that there were other, non-biological, considerations at Price-Stubb. Davis: Exclusion of nonnatives between Price-Stubb and Grand Valley Project Dam may be important. Non-selective passage would allow NNF to colonize previously unoccupied 5-mile reach and access to a small tributary, Plateau Creek. Uilenberg: There are both institutional and engineering obstacles to installing a conventional ladder. Rock ramp is most easily implemented. Program has no condemnation authority. Davis: BC recommendation should be based on biology. Pfeifer: Agreed, but decision has been elevated to MC which has to consider non-biological factors. BC should go on record that given our current knowledge of RBS, removal of Price-Stubb is NOT recommended; selective passage, if possible, IS recommended. Pitts: Further delay would give opponents of passage an opportunity to block project. BC adopted Pfeifer’s recommendation that BR explore options for selective passage in conjunction with rock ramp structure.
5. Review: *Flow Recommendations for the Endangered Fish in the Duchesne River*, Modde et al. Members suggested that when dealing with a report of this size that the PI arrange to have hard copies sent to the BC. Gerry Roehm thought they had been sent out.

Pitts: Objects to “stand-alone” format of chapters. Prefers single table of contents. Modde: Can put a master TOC in front, with separate TOC’s for each chapter to allow authors to cite their chapters individually. Pitts: Program is the client; report should follow whatever format the Program specifies. BC: Follow the format of the Flaming Gorge Flow and Temperature Recommendations report, integrating disparate documents into one report.

Chapter 1: Better integration of chapters is needed, including specific justification for flow recommendations. Need more historical context. Modde: MC directive was to work with available water, not maximize fish habitat.

Chapter 2: Tentative larval RBS in Duchesne may indicate spawning, though other evidence is lacking. What is suitable nursery habitat? Is it defined solely by the presence of larvae? Need to break third conclusion into two parts and identify how flows affect composition of native and nonnative fish communities. Needs more quantitative analysis, e.g., CPUE, if possible.

Chapter 3: Need to be consistent within and between chapters (e.g., cfs vs. ft<sup>3</sup>/s). Need to describe locations by river mile.

Chart: Need to provide a better description of the fish community: size structure (length frequencies) and abundances (CPE's if available) of all species. Consider comparing those data with data collected in other tributary systems and the main channel Green River.

Chapter 4: Does not appear to meet objective 6 of the SOW, which is to assess contribution of Duchesne to recovery based on current and future hydrologic limitations (i.e., depletions). Modde: Diversions do not severely impact channel-forming peak flows in high-flow years due to the limited capacity of diversions. However, Schmidt did not look at future scenarios, only current and recent past. Need to define terms (e.g., cfs-days) better and/or earlier in chapter. Pitts: Page 128—no apparent justification for peak-flow recommendation of 4,000 cfs with a recurrence interval of 2.4 years. Define “suggests.” Page 130—define “reserved.”

The Committee did not have enough time to complete their discussion of this report. The PI's will revise the Chapters 2-4 based on comments presented at the meeting. **NOTE: In light of the incomplete review and subsequent to the meeting, Modde / Pfeifer agreed to accept any additional comments on Chaps 2-4 as well as comments on Chap 5 through January 3.** The general process suggested by committee was to revise Chapters 2-5 and then work toward a better integration of the physical and biological data to develop flow recommendations.

6. Integrated Stocking Plans Progress Report and a discussion of mixing lots of razorback sucker in grow out ponds to free up pond space. Pfeifer: Thinks plan succinctly accomplishes the objectives within the parameters set by the BC.

Chart: Page 2—paragraph about stocking humpback chub is unclear. Should delete everything after the first sentence. Davis: Disagrees. We should expect to stock humpbacks and start planning accordingly. Pfeifer: Perhaps, but there are no specific stocking plans to cite in this document.

Hawkins: Page 9--Excess fish should be disposed of in accordance with previously approved fish disposition policy. Every time there are excess fish, the BC is asked to allow them to be stocked out. We need to be consistent with policy. Christopherson: May need to modify stocking plans based on recent experience that shows smaller fish can survive if not stocked directly into the river. “Excess fish” may exceed the capacity of fish hatcheries to maintain them, but could still fit within a stocking plan. Pfeifer: If there is a legitimate need/use for “excess” fish, then these fish should be specifically identified in a stocking plan and hatchery production adjusted accordingly. Chart: Stocking larval fish serves a research need at this point in time. Christopherson: With experience, we can reduce the numbers of excess fish, perhaps to our detriment.

Hawkins: If these fish have a valuable purpose, they should be programmed into the stocking plan.

Mixing RBS lots: Segregation of family lots was required to account for differential mortality. However, some family lots were stocked into larger grow-out ponds than other family lots, so their survival may be due to factors other than genetics. Mike Baker proposes that differential mortality between lots of the same size/age is insignificant. Stock equal numbers of different lots into a grow-out pond. Family lot survivors should be equally represented in fish stocked out to river. Uilenberg: How would this affect the acreage of grow-out ponds needed? Baker: This shouldn't influence decisions with regard to grow-out needs. The committee agreed to the preferred approach (Proposed Resolution No. 1 in ISSUE: MIXING OF RAZORBACK SUCKER LOTS AT GRAND JUNCTION (see attached)

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7. Standardized monitoring under CAP 18/19 - Pat Martinez reviewed the history of backwater monitoring for centrarchids that was part of this scope of work. Pat endorsed a separate scope of work (~\$40K/year) to continue to develop an adequate standardized monitoring protocol for centrarchids (2002-2004). Information also would be gathered on other nonnative fishes. Frank asked why we need to monitor centrarchids when we don't yet have an effective way of controlling them. Pat responded that it would provide a quantitative baseline and that the nonnative fish stocking procedures call for monitoring. The current isotope analysis will hopefully provide direction for future centrarchid control. Completing development of a standardized centrarchid monitoring protocol will allow us to have that tool in place when we begin control efforts. Frank and Bob Muth argued that we don't need to monitor centrarchids until we learn whether or not they are coming from ponds where they've been stocked. Tom Chart asked if some progress could be made by looking at existing data and the Committee asked Pat to discuss this with Kevin Bestgen. >Pat and Kevin will develop a scope of work, for future BC review, to look at the existing data to begin to develop a protocol for site-specific sampling and to provide a forecast of additional sampling needed to complete protocol development. Pat Martinez and John Hawkins pointed out that the nonnative fish stocking procedures require evaluation of existing protocol and subsequent implementation of a revised protocol to monitor nonnative fishes.
8. Review: *Habitat Restoration Program*, Nelson and Soker - Pat said he received good comments on the May version of the report. Pat outlined how he reformatted the report and the additions he made in response to reviewer comments. Sections 2 and 3 of the main body of the report summarize what we've done to date and why, what we've learned, and where we should go from here. Frank Pfeifer said he thinks chapter 3 (where we go from here) is the most important part of this report. John Hawkins said he thinks the body of the text tells a story that's easier to understand than the previous report, but questioned the need for Appendix A (contains duplicate information) and Appendix B (no real need to track reviewer comments). Pat said he could separate the

appendix (or just A & B) from the summary and only provide those appendices to people who request them. Paul Dey agreed that appendices A and B could be dropped. Kevin said he'd like more information in appendix D on the status of growout pond (management, etc.) (and perhaps also in appendix C for floodplain easements). Frank said growout pond status changes too much to put it in this report, but it can be found in the annual propagation reports. Kevin said he just wants to be sure there's a feedback loop in place so we know what management techniques are working, etc. In reference to the "What Currently Floods?" section, Tom Chart suggested including in the recommendations a determination of what floods at additional flow levels (e.g., 13,000-20,000 cfs) and also what floods at various levels in the Colorado and Gunnison rivers. Bob Muth noted that some of this information for the Green River is in the Flaming Gorge report. Mike Hudson asked why bonytail aren't included in section 3.3.2 (under recruitment from floodplain into the river) and Pat said that at this point we're not sure what role floodplain habitat may play in bonytail recovery. Mike said he thinks an important question will be "will bonytail stocked in the floodplain move into the river and when?" These fish also could contribute to the stocking plan in the future. Frank suggested that bonytail also should be included in larval/juvenile survival. In the third paragraph on page 6, Tim Modde noted that 157 fish that voluntarily left the floodplain is probably an underestimate (Tim will provide language to Pat on this). With regard to costs and problems with drainability, Tim said the report should point out that for management purposes, areas may be drained just to a foot or so to reset (at less expense and difficulty).

Tom Pitts said he will submit his comments in writing, but reviewed some highlights. Section 2 would be helped by maps to show the sites being discussed. Table 2.1 on page 5 (correction that Bonanza Bridge, not Baeser Bend was breached both upstream and downstream). Tom suggested adding from the Gunnison River flow report the number of acres that would be inundated at a given flow at Escalante (see page 6). Also with regard to Escalante, Tom asked if "the site will not become a major source of nonnative fishes to the mainstem because it does not hold enough water to sustain fishes year-round" is accurate. Tom suggested that section 2.2.6 should point out that one thing we've learned is that these sites will require some kind of maintenance (and our goal of naturally functioning flooded bottomlands may not be entirely achievable). The section on deep depressions on page 8 and elsewhere discusses habitat complexes, but does not adequately explain how (and if) they wouldn't have many of the same problems as other floodplain sites. Tom suggested adding discussion regarding the distinction of the current role of habitat complexes. With regard to page 14, Tom said it's hard to know what habitat we need on the Colorado and Gunnison rivers without some information on what now floods. Tom asked that if we can't acquire more habitat on the Gunnison and the Green rivers and we don't know how much floods, what floodplain restoration should we do there? Tom Pitts noted that possible pursuit of Moab Slough isn't mentioned, but perhaps should be (in chapter 3). Mark Wieringa asked how much benefit a 70 acre site on the Green River will provide if have more than 5,900 acres already flood. Tim said that the majority of the sites that currently flooded only flood in the spring, but don't provide needed nursery habitat. This needs to be more clearly discussed in the document. Tom Pitts and Bob Muth urged that the report recommend that Ouray NWR emphasize

floodplain management for endangered fish. Mark Wieringa said he has concerns about long-term sustainability of management of these areas with changes in the river over time and suggested that the report should at least raise this issue. Mark said he's not sure the Recovery Program participants can make decisions about the future of floodplain restoration efforts until we have cost estimates (what we've spent to date and what it will cost to maintain these areas). Mark said he thinks the document still leans towards being a justification of the floodplain restoration program rather than a synthesis of information (the potential to disproportionately benefit nonnative fish issues is generally understated, etc.). The recommendations should discuss the need to look at effects on nonnative fishes. Tom Pitts suggested that the recommendation regarding private land point out that these acquisitions are going to be opportunistic rather than something we actively pursue. Tom asked about the recommendation to acquire/restore/protect habitat complexes. John Hawkins recommended narrowing the focus to the most important habitat complexes and those that are most threatened. Mark said he will want to see the cost analysis and this report together before he'll be ready to approve it. Tom Pitts said he believes the recommendations are too open-ended and need to be better defined in terms of level of effort, cost, number of habitats to be pursued, etc. Mark added that it's not clear which recommendations would have future scopes of work and what they might cost. Tom suggested that larval entrainment rates may not require the extensive research outlined in the recommendations. Tom asked why we have recommendations for research for various sites on pages 22-23, but no recommendations for how we will manage these sites (at least until we no longer believe we need to manage them). Pat said he'd like to determine the relative contribution of each site to recovery, thus we need to determine entrainment, recruitment, and survival rates for each site. This ties in to Rich's floodplain model, and should get us to what sites we need to achieve recovery. Pat said he believes it's too early to determine management costs because we're still determining how we need to manage them, and that may change over time. >Additional comments on this document will be submitted to Pat Nelson and Bob Muth by December 31.

9. Review: *Monitoring and evaluating various sizes of domestic reared razorback sucker stocked in the Upper Colorado and Gunnison rivers: 1995 – 2001* (Burdick) - Frank Pfeifer suggested changing "immediately" in recommendation #2 (monitor fish immediately after stocking). Bob agreed. On page 45, recommendation #9 says to site acclimate stocked fish, but the last sentence is really the recommendation: test site acclimation. Bob will change that. Tom Pitts asked if the criteria for continued stocking is consistent with the stocking plans and recovery goals, noting that he understood we would stock until the recovery goal numbers are met. Bob will change it to "fulfill stocking plans" and take out the other rationale. Tom Chart suggested recommendation #1b should identify a target stocking size. Bob will change this to "greater than 200mm." Frank suggested that the sentence about susceptibility to downstream drift be changed to simply say the fish primarily dispersed downstream. Bob Burdick will footnote why figure 4 says the confluence of the Colorado and Gunnison rivers is at 0.7 river miles. Tom Chart noted that the reference on page 37 about the flow-training work should use Crowl 2000 citation (Crowl's report that was accepted by the Program as incomplete). >The Program Director's office will provide copies of the report to the Biology

Committee. Tom Chart will e-mail some additional comments to Bob. The Committee approved the report with the foregoing revisions.

10. Update on razorback sucker habitat model - Rich Valdez outlined the changes he's made to the model, making it more flexible and incorporating a number of other changes the Committee requested. He's added a routine that shows the number of larvae entering each river mile (which changes based on the number of drifting larvae and the survival rate). At each river mile, you can specify the percentage of larval entrainment. Rich discussed various details of the model and the Committee discussed potential model outcomes based on changing different variables. Rich emphasized the value of running the model for 100-200 years or so to see the long-term effects. The Committee would like Rich to construct a separate recruitment model to make this possible (this will require additional funding and time). >Rich will build in a component to take the fish through to recruitment from the floodplain to the mainstem. This part will be done by March.
11. Review: *Population Size and Structure of Humpback Chub in Black Rocks, 1998-2000*, McAda. Chuck said he sensed a real difference in 1998 and 1999 versus 2000. Chuck also commented on the magnitude of change when three fish <200 mm were removed from the analysis. Tim Modde suggested that the first recommendation be more specific (i.e., on the recommended Program schedule). Mike Hudson suggested that pooling the Black Rocks and Westwater data will give the most accurate population estimate (viewing Black Rocks as an additional sampling site). Mike suggested this could be done by producing a separate annual report that combines the data for Black Rocks and Westwater. Mike said he needs guidance from Tom Czaplak on how this will proceed in the future. Chuck said he still has concerns about the impact of trammel netting on the fish. Mike said he is concerned that the Black Rocks confidence intervals and CV's may be viewed as a precedent (they're not possible in Desolation or Westwater canyons). Several members pointed out that we need to discuss how these and all the other estimates will feed into the recovery goals. The Committee discussed what to do in terms of model selection in light of the low recapture rates. Kevin Bestgen suggested that instead of using model selection, it may be more appropriate to use intuition and biological information to choose the appropriate model. Kevin and others expressed reservations about annual estimates, noting that it would be better to have the ability to refine those estimates as we gain additional information (both in terms of additional sampling data as well as information about behavior, etc., that would lead the investigator to select a different model). The Committee approved the report with the one modification recommended by Tim Modde.
12. Review: *Communications / Public Involvement plan for Nonnative Fish Management FY 2003*, and update on recent progress - Debbie Felker outlined upcoming nonnative fish removal efforts, the communications/public involvement plan, and highlights of planning teams meetings. The Yampa planning team met last week. Concerns in the Yampa River basin include: 1) expected opposition to smallmouth bass removal; 2) need for follow-up communication about the effectiveness of northern pike removal; 3) need for

improved communication from top-level representatives of CDOW (e.g., Greg Walcher and Russell George), water users (e.g., Tom Pitts or someone from CWCB), and the Program Director to explain why the fish are being removed and to emphasize the connection to continued water development; and 4) need for landowner permission for access. The Yampa River planning team recommended: 1) inviting landowners to a meeting in Jan/Feb to explain the upcoming work and to request access to their property; 2) in the same timeframe, meeting separately with Routt and Moffat County commissioners, local sheriffs, and news media to explain the work and why it's being done; 3) shortly thereafter, holding three public meetings in Craig, Steamboat Springs, and Maybell (these will be information meetings, not opportunities to provide input). Paul Dey asked if a public meeting may be the best way to reach landowners, and recommended a more strategic approach. Debbie stressed that at all of these meetings, high level people from CDNR/CDOW, the Program Director, the water users, and perhaps the chair of the Yampa River Partnership will be needed. Biologists in charge of the removal effort also would be part of the program. Time is critical in the Yampa, because removal is scheduled to begin in April. Noting that opposition could affect our ability to get population estimates, as well, John Hawkins said we need to be sure to do this public involvement right (and if we don't have enough time, we may have to delay the new part of the work by a year). Debbie said that the Colorado River planning team met yesterday to discuss Colorado River catfish removal and identified similar concerns. We have not yet communicated to the public that catfish may be a threat to the endangered fish. The public views catfish as native because they've been in the river for at least 100 years. Further, we do not have the kind of scientific data for catfish in the Colorado River that we do for pike in the Yampa River. The team recommended public meetings or open houses, as well as Mesa County Commissioners and Club 20 representatives. CDOW would ask the Recovery Program to participate in its Angler's Roundtable, also. In both the Colorado and Yampa meetings, it was pointed out that the public doesn't discern the difference between our agencies (i.e., CDOW and USFWS) and that few people have heard of the Recovery Program. Some meeting participants expressed concern that strong negative public reaction could prevent us from doing this work. The Utah team has yet to meet, but Mike Hudson said they do not expect to encounter the kind of concerns expected on the Yampa and the Colorado. Ray Tenney said Chris Treese asked why we're removing channel catfish in the Colorado River if we don't have the data to support it. Pat Martinez said the information that Tom Nesler prepared from Rick Anderson's data that show missing year classes on the Yampa compared to the Colorado may be viewed to support our nonnative fish removal work on the Yampa, but may be viewed not to support removal on the Colorado. John Hawkins recommended that we clearly identify our goals for nonnative fish removal (along the lines of what we've asked for from the floodplain restoration program). Mike Hudson said we have the responsibility to sell the public on these projects. We don't have all the data we'd like at this point because up to this point we've only done short-term projects (2 years, etc.), thus, what we need to embark on now are these longer term removal efforts. Further, Mike said he thinks there's data from the San Juan River program that would support catfish removal. Tim noted there's data from the lower basin, as well. Tom Pitts suggested the >Program staff needs to develop a clear message on why we're



removing fish and include in that what data we do have. These messages should come back to the Biology Committee for review. With regard to the Utah plan, Mike Hudson said they've discussed developing a leaflet for anglers and another one for recreational river users. The Utah group spent the most time discussing how to dispose of fish removed. Pat Martinez said that translocation of nonnative fish to Highline Reservoir is an important part of the success of removal from the Colorado River, and this would require that the net be replaced. Pat said they would prefer to replace the net in late 2003 (this isn't on the budget until FY 2004).

13. CAP 18/19 project direction and revised SOW - This scope of work is now just for stable isotope analysis. Angela Kantola asked if the proposed \$122.9K would be Program funds or if it would include some CDOW in kind; Pat replied that \$122K would be Program funds (and there is some additional CDOW in-kind [Pat's involvement] that's not reflected in the scope). Tim suggested that the budget should be broken into three tasks: a) negotiate access; b) field work; and c) isotope analysis. Bill Davis asked if there would be potential cost savings by having this work done by an entity other than the university and Pat said he thinks the university avenue is the most cost effective method. >Pat Martinez will revise the scope of work and submit it to the Program Director's office for Management Committee review. Pat Nelson asked Pat Martinez to clarify the statement in the rationale (under "Relationship to RIPRAP") regarding fish seeking backwater or slow habitats upon escapement from ponds.
14. Elect new vice chairman, other suggested topics (next day's habitat work shop (expectations / concerns), program guidance, etc.). John Wullschlaeger will take over as chair at the next meeting; Kevin Christopherson was nominated as the new vice-chair. Angela Kantola reminded the Committee that the Program Director's office had sent out early Program guidance for comment. Bill Davis referenced a recent article in *Fisheries* regarding the role of turbidity in growth rates of natives versus sight-feeding nonnatives. Bill suggested that we might want to investigate managing turbidity as a way of helping small native fishes survive and grow in the presence of nonnative sight predators. Kevin Bestgen said they did some of that work on red shiner predation on pikeminnow larvae. Tim Modde noted that turbidity also affects zooplankton and macrophyte production. >The Program Director's office will consider including this in FY 2004-2005 Program guidance. Pat said he would like to review what's in the literature before trying to manage turbidity in floodplain wetlands. John Hawkins said Darrel Snyder is likely to submit a proposal to complete the cyprinid key. Mike Hudson said there will be stocked bonytail and razorback in the river in 2004-2005 when there will be no population estimates in the Yampa and middle and lower Green will not be occurring. Angela noted that the early Program guidance said we do anticipate a need for bonytail and razorback monitoring in 2004-2005.
15. Next meeting - Reports for review will include: 105, 25, C-6, and 29. The Committee also will consider scopes of work for floodplain restoration (due to the Biology Committee by February 6). Kevin Christopherson distributed drafts and asked for comments as soon as possible (then that feedback will be considered in the revisions that

will come out by February 6). Other agenda items will include review of the Program Director's recommended RIPRAP revisions and FY 2004-2005 Program Guidance. The meeting will be February 20-21 in Denver (starting early on the 20th). The meeting will be near DIA if an adequate room is available. >The Program Director's office will arrange a meeting room.

## ASSIGNMENTS

Pat Martinez and Kevin Bestgen will develop a scope of work to look at the existing data on monitoring nonnative fishes to begin to develop a protocol for site-specific nonnative fish sampling and to provide a forecast of additional sampling needed to complete protocol development.

Committee members will submit additional comments on the floodplain report to Pat Nelson and Bob Muth by December 31.

The Program Director's office will provide copies of the incomplete Crowl 2000 bonytail report to the Biology Committee.

The Committee would like Rich Valdez to construct a separate recruitment model to allow running the razorback floodplain model for 100-200 years or so to see the long-term effects (this will require additional funding and time). Rich will build a component into the current to take the fish through to recruitment from the floodplain to the mainstem. This part will be done by March.

Program staff will develop a clear message on why we're removing fish and include in that what data we do have. This will come back to the Biology Committee for review.

Pat Martinez will revise the nonnative fish isotope scope of work and submit it to the Program Director's office for Management Committee review.

The Program Director's office will consider including in FY 2004-2005 Program guidance research on managing turbidity as a way of helping small native fishes survive and grow in the presence of nonnative sight predators.

FY 2003 scopes of work for floodplain restoration work will be submitted to the Biology Committee by February 6.

The Program Director's office will arrange a meeting room for the February 20-21 meeting.