

Biology Committee Final Webinar Summary, Monday October 27, 2014

PARTICIPANTS

Biology Committee: Dave Speas, Melissa Trammell, Jerry Wilhite, Harry Crockett, Dale Ryden, Krissy Wilson, Brandon Albrecht, Tom Pitts, and Pete Cavalli.

Others: Kevin Bestgen, Bob Schelly, Katie Creighton, Julie Howard, Koreen Zelasko, Mike Mills, Paul Badame, Tildon Jones, Tom Chart, Kevin McAbee, Tom Czapla, Jana Mohrman, and Angela Kantola.

CONVENE: 9:00 a.m.

1. Status of revised Integrated Stocking Plan and implementation – Tom Czapla said he received good comments from Pete Cavalli and the Program Director’s office (PDO) is reviewing the document in-house again before sending out the revised document (>and also will send it to Krissy and Harry for a final review). Dave Speas asked if we’re going to stock bonytail in floodplains and backwaters as much as possible; Tom Czapla said will depend on water year, but we’ll definitely seek more quiescent water when and where available. Tom Pitts asked about stocking numbers and Tom Czapla said we’ve basically reversed totals, stocking now 30,000-35,000 bonytail and 15,000 razorback per year and increasing the average stocking size of both. Harry Crockett noted the current Tables 1 & 2 don’t show all reaches we’re stocking or may potentially stock (e.g. White River in Utah). Tom Czapla said the tables came from the previous plan and didn’t explicitly name tributaries, but he will annotate that; Krissy and Harry agreed the plan needs to cover *all* potential stocking locations. Dave noted 18 bonytail were entrained in the Green River Canal soon after stocking last spring (May 27). One of these fish traveled 300 miles in 6 days, so it would seem the goal to stock fish in calmer waters makes sense. Melissa noted this could be temperature-related, also. Krissy added that many fish also stayed in the White River, too (based on White River and San Rafael River PIT tag data). Krissy said it’s very difficult to find good backwaters or ponds to stock bonytail. Tom Czapla said the stocking plan indicates bonytail should be stocked when temperatures are increasing and above 15°C (summer).
2. Nonnative fish
 - a. Colorado work group and other activities – Harry said the Colorado work group that Greg Gerlich is convening has been identified (CPW, PDO, water users, UDWR, Brandon Albrecht, Brent Uilenberg, and Burt Clements.) and will have their first meeting November 4 in Denver. (Harry subsequently e-mailed the Committee a draft statement of purpose for the group and informal agenda for the upcoming meeting). Three additional meetings are anticipated through March with recommendations in April. The group will consider a number of nonnative fish management options, including a pilot must-kill, sterile fish options, reservoir operation options, etc. Any regulation changes would have to go through the Wildlife Commission, so if those are recommended, they likely would go into effect in April 2016 unless escalated as emergency regulations. Another option would be to *highly recommend* (as opposed to require) that anglers remove all of the worst-of-the-worst nonnative fish that they catch. Tom Pitts asked if the “waste of game” issue would be a problem in that case and Harry said he doesn’t know at this point. Tom Pitts suggested putting anything that might require a regulatory change first on the group’s agenda so that if recommended, they can go through the process as quickly as possible
 - b. Reservoir Updates
 - i. Starvation Reservoir
 - 1) Paul Badame said Trina Hedrick’s crew completed a very successful 4-5 hour rotenone treatment of the stilling basin below the spillway at Starvation Reservoir on September 17. They netted smallmouth

bass, walleye, carp, green sunfish, and yellow perch from the surface (mostly smallmouth bass and carp). Fish <100mm were only smallmouth and green sunfish (no age-0 or juvenile walleye). Rotenone costs were ~\$2K (a 1 ppm concentration was used). Next year UDWR might also gill net the deeper portion of the basin to compare fish composition with that at the surface. >Paul Badame will share the report on this work with BC & PDO. Melissa asked if ammonia might be a less expensive option in the future (not yet labeled for that use, however).

2) UDWR has contracted with an engineering firm to start the design process for a permanent barrier and they hope to have designs in hand by the end of December. CUWCD and Reclamation require that the barrier is designed to allow 700 cfs to be screened and also to be able to pass a maximum of 16,000 cfs without impeding flow in the event of a serious flood.

3) UDWR will install another temporary screen (1/4" metal hardware cloth modular panels) next spring at a cost of ~\$1,500 (Starvation is very likely to spill again next year).

ii. Ridgway Reservoir – Harry Crockett said CPW will sample the reservoir again next year. The screen and barrier group continues to discuss options at Ridgway, but is focusing more on Elkhead.

iii. Elkhead Reservoir – Harry said Tri-State, Craig, CPW, PDO, water users, anglers, the River District & Reclamation are meeting again this Wednesday in Glenwood Springs. Tom Chart provided draft alternatives analysis for discussion (>will share the draft alternatives with the Biology Committee after the discussion on Wednesday).

iv. Stagecoach Reservoir – With regard to shifting the northern pike tagging study to a netting removal effort (tagging study agreed to in FERC's Biological Opinion when they re-licensed Stagecoach), Harry said CPW held a conference call with FWS' Susan Linner, who thought this would just be a formality. Kevin McAbee is drafting a letter in this regard for the group's review. Kevin McBride and the Upper Yampa District expressed a willingness to try to operate Stagecoach in a way that would help with the netting (not fill until after pike spawning), but can't make firm commitments.

c. Catamount spill duration vs. young pike captures – The Committee discussed Catamount spill duration vs. young pike captures as it relates to the 161b report currently out for BC and peer review: "Abundance and population dynamics of invasive Northern Pike *Esox lucius*, Yampa River, Colorado, 2004–2010" (sent to the BC and peer reviewers on September 12, 2014). In the initial PDO review, Kevin McAbee noted some counterintuitive results: 1) lack of relationship between river discharge and northern pike production; and 2) missing cohorts of pike in a number of years that then showed up later. Wondering if these might be reservoir spills of fish, Kevin asked the authors if they could investigate the spill duration of upstream reservoirs to determine if the lack of a relationship between flow and spawning may be because spawning took place in Catamount Reservoir and then the pike escaped to the river. The Johnson et al. 2014 report indicated that Catamount Reservoir had the highest escapement risk of the reservoirs they reviewed.

The authors looked at the Johnson report and responded to Kevin's initial comments before sending the report to the Biology Committee. They agreed that the spills would be a noteworthy addition to the report, providing possible explanations for the lack of relationship between discharge and reproduction, as well as for the appearance of "missing" cohorts. The authors added paragraphs in Discussion, under both "Recruitment" and "Movement & Immigration" sections. These additions were brief rather than an "analysis" of the available data because as Koreen dug into the data; she only found more uncertainty in the relationship.

Koreen reported that Catamount spill durations were all similar from 2004 on (~185-220 d, except 2008 at 130 d), so we would expect similar capture numbers of young NP across years in the river (w/ assumption that Catamount was full if spilling, so somewhat similar reproductive habitat should have

been available there in all years). However, river capture numbers varied widely. Plus, there were large differences in the numbers of each age-class captured per year in each reach (2004: 1 age-0 in HC, 101 age-0s in SLJ; 2005: 270 age-1s in HC, 12 age-1s in SLJ). Time of year when river sampling ceased also varied greatly by year and reach, so certainly affected what age-classes were captured in each reach. Ultimately, the incidental nature of the young pike catch just doesn't allow for meaningful conclusions and CSU are not comfortable with speculating much about this. Koreen offered to add a recommendation to specifically study those relationships, if the BC thought it was appropriate.

Kevin McAbee thought the authors' conclusions (similar spill, similar reproductive habitat, etc.) were reasonable, but he also wanted to get the Biology Committee's take on the idea and have Koreen describe the limitations of the analysis he suggested. Koreen reviewed the results with the Committee, emphasizing that smaller fish weren't targeted in the study.

Harry asked about movement analysis. The majority of pike movement was downstream, but the majority of fish still stayed in the same reach. Koreen affirmed that within-reach movement also was mostly downstream. Harry noted that the two upstream reaches only allow downstream movement. Koreen agreed and added that in the reaches below, the lowest percent of downstream movement was 78%. Harry pointed out the need to keep in mind low capture probabilities of small fish; Koreen noted that the end of each discussion section on the young fish clearly states that the sampling did not target these size classes and targeted studies would be needed to further elucidate relationships. Dave Speas and others agreed we're not sampling at this level. Kevin Bestgen noted the importance of distinguishing flow effects and said most pike spawning in the Yampa Valley probably occurs prior to runoff (though this is not necessarily the case in Brown's Park). Fish also may be pushed downstream by high flows in years subsequent to their production. Pike are very mobile in both rivers and lakes. The Committee appreciated Koreen's additional analysis and supported the authors' approach on this issue.

- d. LaFarge (and other) ponds – Harry said the Colorado Division of Reclamation Mining and Safety (CDRMS) refers to this site as the Mamm Creek Pit. CPW and Reclamation made a site visit and thought the notches could be filled. Lori Martin subsequently talked with CDRMS who said they required the notches out of concern the river might capture the pond at higher levels and thereby alter the configuration of the channel. The City of Rifle has a nearby water supply intake, so they will be concerned about any action that could change the river alignment. >Brent Uilenberg will review the plans with Rifle. If we can't the fill notches, we'll need to reconsider annual treatment options. During the recent MC webinar, Brent observed that this is just one of an undetermined number of gravel pits with breaches, which raises questions of total capital costs and how these pits are managed from a fisheries perspective (are they screened, are there take issues, etc.). Harry said if ponds are stocked, owners are required to get a permit (aquaculturists are to be aware of the Stocking Procedures and coordinate with CPW). To stock ponds next to the river, the landowner would be required to berm and would be limited as to what species they can stock. Tom Pitts suggested those restrictions also should be written into their mine reclamation permits if they're not already. Harry said CPW can check with CDRMS on that. Notices go out every spring in all the regional newspapers reminding people they need a permit from CPW before stocking fish. Harry said a number of these ponds haven't been stocked; rather, nonnative fish have entered them when the ponds connected with the river. Tom Chart didn't think anything in Lori's sampling indicates that the landowner stocked the Mamm Creek Pit. Melissa noted that some of these ponds might connect with the river with or without a breach in high water conditions. Tom Chart said CDRMS (and the Service) understands our concerns and has indicated that they will proceed very carefully with recommendations for reclamation in the future. Tom Pitts suggested we need to determine how to address existing ponds and what to do about any future ponds.
- e. Walton Creek rehabilitation project engineering feasibility study – Harry said the PDO contracted with

Stantec via the National Fish and Wildlife Foundation (NFWF) and Stantec is surveying the site now. They will deliver at least three options with cost estimates for river realignment and/or other habitat manipulation to disadvantage pike and present those options at up to three stakeholder meetings next spring. Hopefully one or more option will be acceptable then CPW will move forward, determine funding sources, etc.

- f. Nonnative Fish Workshop – Kevin McAbee announced the dates (December 16-17) on the Upper Colorado and San Juan listservers. The workshop will be preceded by a principal investigators' roundtable the afternoon of December 15). At the workshop, PIs will be encouraged to present shorter powerpoints (e.g., just report trends, etc.) that are more summary-oriented to allow more time for discussion of results, new techniques, brainstorming, etc., since they will give longer presentations at the researchers meeting). >Kevin will send a draft agenda to the Biology Committee for comment. Dave and Melissa suggested that the Nonnative Fish Subcommittee could be reconvened if that would be helpful in crafting the agenda.
3. Tusher Wash – Kevin McAbee said the Service is close to finalizing the biological opinion to NRCS on the diversion rebuild (construction now expected to begin at end of the 2015 irrigation season). Conservation measures include things like inclusion of upstream fish passage with specific design criteria for native fish down to juvenile size classes, notches (instead of the laminar flow over the diversion that currently exists) for downstream movement of fish, placing PIT antennas at the sites where we expect fish to pass (working with BioMark) (Management Committee approved Program funding for 25% of antenna costs), and a fish return on east side to reduce fish and debris entrainment. Also, a water management agreement is being worked out to make sure the river won't be dewatered. Kevin noted a boat passage will be included (which may benefit our fisheries crews).

Green River canal entrainment – The Recovery Program is responsible for the west side entrainment (Green River Canal). We still think a weir wall in the canal with a fish return is the likely option, but are waiting for results of the Hogback Weir test next week before proceeding with design expenses. The electrical barrier study also is on hold until we determine what kind of barrier we'll use. The Biology Committee has recommended conducting annual canal salvage until a permanent barrier is in place. Katie Creighton and Tildon Jones have worked out logistics and made a site visit with the Canal president. The company sluices the canal beginning at the lower end and Katie said they will try to begin salvage when sluicing begins, or wait a couple of days if that doesn't work. They'll start November 10 and sample Monday-Friday for two weeks. They'll need 6-8 crew and have 7 at this point, so if someone else wants to join, they are welcome. Fish will be moved to the Green River and released; Krissy has been working with Utah's Departments of Health and Agriculture to obtain a hardship variance so disease testing isn't required. Instead, endangered or sensitive fish can be inspected by the fish pathologist and moved. >Krissy will talk with Katie and get forms in place and find out if the pathologist will need to be on site.

Preliminary findings on Green River Canal entrainment – Dave Speas described the antenna system. The upper array did not detect about one third of all fish entrained in 2014 and Dave recommends replacing it with upgraded equipment to withstand electrical interference. Pete Cavalli said he'd like to avoid purchasing new equipment every year, if possible, especially since the lower array is the most up-to-date equipment available. Dave reviewed the preliminary PIT detection data (538 razorback detected in 2013 and 247 in 2014; 77 pikeminnow in 2013 and 15 in 2014; 9 bonytail in 2013 and 18 in 2013; 1 humpback chub in 2013). Tom Czaplá said razorbacks are stocked downstream, so their detection indicates they are moving up over the diversion. Dave said the information is preliminary, but he will include it in his annual report. Pete Cavalli asked about the antennas on the Price River; Dave said the Recovery Program doesn't fund that study but Krissy said the information should be in the Three Species report.

4. Peak flow study plan – On August 29, Tom Chart sent the Committee a chronology of how this study plan

was developed. Tom said he's revising the plan to make the purpose more clear and will send the revision to the Water Acquisition and Biology Committees for review shortly. The plan is really a technical supplement to the Green River and Aspinall study plans. Jana said the geomorphology workgroup was convened in part to look at Cory Williams' versus John Pitlick's results, and they now have some preliminary indications from the recent hydrophone study in the Gunnison River that Pitlick's recommendations may be more accurate. The hydrophones didn't capture the ascending limb of the hydrograph, so we don't know when the bedload began to mobilize.

5. Razorback sucker species status assessment (SSA) – Tom Czapla said the Management Committee approved moving ahead and the PDO is developing scope of work to assess the status of razorback in the upper and lower basins (coordinating with FWS Region 2). The Service believes the current recovery goals are an adequate basis against which to measure current species status. This SSA will get us up to speed with and compile all the new encouraging information we're gathering about increasing numbers of razorback suckers in the system, and then the Service can determine if it is appropriate to consider a change in listing status.
6. Colorado Pikeminnow as a sportfish – Krissy Wilson described Utah's proposal to promote Colorado pikeminnow as a catch and release sportfish in a Utah Reservoir. Anglers get excited when they catch big fish, and if we're going to educate the angling public, we want them to get excited about catching native fishes like Colorado pikeminnow, not about catching northern pike that we're trying to eradicate. Therefore, UDWR is beginning to pursue the idea of introducing Colorado pikeminnow into a reservoir in northeast Utah to allow catch and release (Red Fleet is one option, but others will be considered). The purpose would be to improve angler's views of the endangered fishes and enlist angler assistance with recovery of Colorado pikeminnow. Utah has held a couple of conference calls with Service folks to begin exploring options under Section 10 of the ESA (10(j), 10(a)1(a)), which the Service's Seth Willey identified as most feasible. UDWR likely will contract with Mark Capone (former FWS employee) to assist the Service with the regulatory review/process on these two options. Tom Pitts endorsed the idea and said to let him know if help is needed from water users. Melissa said she's always thought we should try this. Melissa asked if pikeminnow were stocked in Red Fleet, what would happen to any that might be retained in the stilling basin. Krissy agreed we'll need to consider this. Harry supported the idea and noted that when Greg Gerlich talked to their Wildlife Commission about the Recovery Program, Greg mentioned that Colorado might consider something similar. Krissy said reservoirs in Colorado could potentially be included in the proposals/paperwork. Tom Chart clarified that a 10(a)1(a) isn't really regulatory and may be a much simpler approach. 10(j) is a rulemaking process that would take much longer and be more costly. Dave asked if they've yet looked into literature re: how pikeminnow might do in reservoirs. Krissy said they know they can rear them to a large size in a hatchery, but have more work to do to be sure they select the right location and species assemblage. Melissa's graduate work in Kenney Reservoir showed Colorado pikeminnow left as quickly as possible, but if escapement is limited in Red Fleet or similar reservoirs, the results could be different. Dale said the Colorado pikeminnow they've captured in Lake Powell have not had particularly good body condition. Pikeminnow evolved to eat a certain kind of fish (e.g., without spines, long cylindrical shape, etc.), so it will be critical that we select right species assemblage/prey base if they are to thrive in a reservoir. Krissy said they plan to consider what native fish assemblage they might use. Dale said he thinks geologic history indicates pikeminnow could succeed in a reservoir with the right species assemblage. Harry said Colorado has assumed they might have to regularly re-stock a Colorado pikeminnow fishery and it would be a real bonus if such a fishery became sustainable. Kevin Bestgen reminded the PDO that Doug Osmundson's graduate work on pikeminnow in gravel pits could provide valuable information about an appropriate forage base.
7. Informal field updates (Attachment 2)
 - White River (UDWR) – Bob Schelly said they seined a 46 mm Colorado pikeminnow quite a ways up

the White River during Three-Species work (which implies they're spawning in the White).

- Stewart Lake and other floodplains (UDWR, USFWS) – Razorback were first detected by light trapping May 28, Stewart filled to capacity June 1-17. Adult nonnative fishes were excluded from via a picket weir and trap. UDWR drained Stewart September 2-15 and handled 749 juvenile razorback (but not all were counted/handled) that were much larger than last year with a mean total length of 97 mm, largest 168 mm. They sampled Stirrup and Bonanza Bridge just after Stewart was drained and found no razorback but captured 21 untagged bonytail (137-274 mm) in the Stirrup that had been stocked earlier. No native fish were found in Bonanza.
- Humpback chub population estimates (Ryden, UDWR) – Dale said this is an off year for humpback population estimates, but they sampled Black Rocks to bring fish into refugia. They captured almost no small chubs, so they collected 20 larger juvenile and small adult chub (mostly 150-300 mm) which they brought to the Horsethief Canyon Native Fish Facility and placed in a pond after tempering. Dale said they've seen the fish in the pond since as recently as a week ago. We'll see how they overwinter and continue to bring in fish and start sampling again next year. Julie Howard said UDWR conducted 3 passes in Desolation-Gray Canyons in September and October, using trammel and hoop netting and electrofishing. The hoop netting added good results. On the second pass, Dave Speas and Peter Mackinnon deployed submersible PIT antennas that resulted in 4 additional recaptures, so this technique has potential to improve our population estimates.
- Colorado pikeminnow population estimates and Grand Valley fish ladders (Ryden) – Dale said Darek Elverud's crew conducted five passes in the upper reach and four in the lower reach, catching 235 pikeminnow (28 recaptures), of which 109 were juveniles. There was a good distribution across size ranges overall. They also caught 45 bonytail, 5 humpback chub and 835 razorback suckers. A few hundred walleye were caught as well, two of which had 300-350mm Colorado pikeminnow in their stomachs. The Service caught the first Colorado pikeminnow (which was untagged) in the Grand Valley Project ladder this year. 17 young pikeminnow used the Redlands ladder (all young fish 400-600 mm, only one with tag [from this year]). Dale is curious as to whether walleye in the reach below are creating some pressure for the pikeminnow to move upstream out of the Moab reach sooner. Tom Chart asked if Dale thinks all these young pikeminnow are from one or two cohorts and Dale said size range indicates potentially a couple of good cohorts. Kevin Bestgen asked about the walleye; they were all ~450-550 mm. A record high of 24 razorbacks passed through the Grand Valley ladder and we've now had all four endangered fish species use both ladders.
- Lake Powell – Dale said they caught 247 razorback suckers in the Colorado River arm and they'll be sampling again next year. He directed the BC to Travis Francis' field updates sent earlier this year.
- ISMP – age-0 CPM sampling (UDWR)– Bob Schelly reported considerable silt in backwaters this year, but they still collected 66 Colorado pikeminnow from 11 backwaters, most <40 mm. Five razorback suckers were collected from three backwaters, mostly just upstream of Stewart, but one almost 18 miles downstream. Chris (Moab UDWR) said they completed ISMP near the end of September, sampling 14 backwaters and getting really low capture rates (5 young of year pikeminnow on the Green and 8 (much smaller) pikeminnow on the Colorado).
- Fish kill in the lower Green River (UDWR) Brian Hines reported a fish kill observed on their razorback seining trip in late July near Little Grand Wash (~RM 115). They found 50-100 dead fish, mostly catfish, but including 13 razorback suckers and 3 adult Colorado pikeminnow. Likely related to the July 15 flash flood.
- Little Snake – Pete Cavalli said Bobby Compton electrofished and trammel netted the Little Snake River and didn't catch any northern pike.
- Harry Crockett said CPW completed Colorado River nonnative fish removal at the end of September and caught 5 northern pike and ~12 smallmouth bass (similar to the last few years). This effort included extra targeted backwater sampling. CPW also did mark-recapture sampling in a 2-mile stretch from Parachute to Debeque for Three-Species work and caught 2-3 razorbacks as well as a lot of bonytail that had just been stocked. On the Williams Fork of the Yampa where smallmouth bass were documented

through a 25-mile stretch last year, they sampled five stations and didn't catch any until they captured 3 adult bass at the very top (~70 were captured throughout these sampling reaches last year). They caught several age-0 smallmouth bass near the mouth, but thought those came from the Yampa, not the Williams Fork.

8. Special PIT/data acquisition session for Researchers Meeting – Dave said that he, Kevin McAbee, Mark McKinstry, Peter McKinnon, and others have been discussing a special workshop on PIT technology and PIT data acquisition for the researchers meeting. >Dave will convene a conference call to plan the session. The PDO has said a ~1/2-day session might be appropriate. The Colorado Natural Heritage Program (CNHP, developing the database) will present at the session. Kevin McAbee said this session can cover a wide spectrum from where to put antennas, how to collect data, what conclusions can you draw, and more. Dave Speas said we might consider some kind of panel discussion, also. Tom Czaplá has asked BioMark to show some field applications.
9. Database Manager – Tom Chart discussed the need for a new position in the PDO to support the database when it's provided to the Program. The Management and Implementation committees are in support. At minimum, a FTE will be needed to manage the database and queries. Since it takes quite a while to create a new position, the PDO will start working on it sooner rather than later so we can get someone on board by FY16. Tom would like to meet with Dave Speas and the group that worked on the database RFP to make sure we correctly identify roles and responsibilities. CNHP might still provide some support for server maintenance. Pete Cavalli said that when WY had a database manager, that person's programming background was very helpful. Dave Speas thinks the database manager will have to focus quite a bit on implementing and validating QA/QC protocols.
10. Review previous meeting assignments – See Attachment 1.
11. Review reports due list.
12. Schedule next meeting (January 15 in Moab) and outline agenda – The northern pike synthesis report and nonnative fish scope of work modifications will be on the agenda. The meeting likely will go at least ¾ of the day, so some folks may need to return home on January 16th. The next meeting will include review of draft FY16-17 Program guidance and RIPRAP revisions/assessment, so will need to be held over two days; the Committee scheduled this for March. 3-4, convening at 8:30 a.m. on March 3 and adjourning at noon on the 4th in Grand Junction. The PDO will arrange a meeting room (preferably at the Clarion).
13. Consent item: Review and approve August 26, 2014 webinar summary – No comments received, so the summary is considered final.

ADJOURN: 2:45 p.m.

Attachment 1: Assignments

(Asterisked items were on the meeting agenda; items preceded by a “-“ can be deleted after this summary)

Note: the order of some assignments has been changed to group similar items together.

For earlier history of items preceded by an ampersand “&”, please see [previous meeting summaries](#).

1. *&Tusher Wash Screening:

- **Kevin McAbee** will keep the BC updated on developing a recommendation for how to accomplish an Electric Barrier Study to complement the proposed entrainment prevention solution at the Green River Canal (determine the minimum electric gradients needed to prevent downstream passage while minimizing the risk of injury).
 - *>Kevin McAbee will send SOW to BC once it is received from Jackson. To be discussed at October 2014 BC meeting. 10/6/14: Deferred pending USBR review and information on effectiveness of Hogback weir.*
 - **Krissy Wilson** will talk with Katie and get forms in place needed to move fish salvaged from the Green River Canal and find out if the pathologist will need to be on site.

2. *& Revise the Integrated Stocking Plan (ISP) and related issues. (See agenda item #1) The **PDO** is reviewing this in-house again before sending out the revised document (>and also will send it to **Krissy Wilson** and **Harry Crockett** for a final review).

3. Humpback Chub (population estimates)

- & Humpback chub combined population estimate from Gary White. 6/28/13: *Three reports are pending: a 2011-2012 Black Rocks report, a 2011-2012 Westwater report, and a 1998-2012 combined analysis report. Previous discussion indicated the combined analysis would be provided by LFL and tacked onto the Black Rocks report, but it doesn't fit neatly into either the 2011-2012 Black Rocks or 2011-2012 Westwater reports because it has data from both. Further, Grand Junction CRFP's SOW only covered writing a Black Rocks report, not a combined report. 1/16/14: What Kevin Bestgen presented was the joint report and parts of it will appear in the individual reports. A young-of-year sampling effort may need to be added back to the fieldwork. Czapla said we have new due dates of January 2015 for the Black Rocks and Westwater reports.*

& Humpback Chub (broodstock development / genetics)

- 3/6/12: **Tom Czapla** will remind the humpback chub genetics ad hoc group to submit comments (7/13/12 comments still pending). 1/17/13: *Some comments received and incorporated; comments still pending from Trammell.*
- As identified in the 2012 sufficient progress assessment and requested by the Management Committee, the **Program** will develop an action plan for establishing refugia for humpback chub (avoiding getting bogged down in genetic analysis). Mike Roberts has recommended building in limiting factor/life history studies to better understand what's going on in the system that's affecting humpback chub populations. *After Wade's report is received, a workshop should be held to include discussion of when and where fish would be stocked. Tom Chart recommended outlining questions for a workshop, conducting the workshop, and then finalizing the action plan. 2/21/14: No deliverable on Upper Basin fin clips; cost would be ~\$37K (Committee considering, but not our highest priority; see 2/21/14 meeting summary). 8/26/14: Reclamation is working on the funding agreement (may inform index of effective population size different than that for the Grand Canyon population). Tom Czapla said Moab handled at least 25 Deso and WW humpback chubs during smallmouth bass removal and got fin clips from all of them. Tom Czapla said he thinks the priority for analysis should be the Desolation, Westwater, and Black Rocks fish. Moab may still collect some more in Westwater this year. The roundtail chub would be a lower priority. 10/27/14: Reclamation awarded contract to SNARRC for analyzing remaining fin clips and completing report (including lower basin data).*

- & Age-0 Gila from Westwater were going to be brought to the Horsethief Canyon ponds fall 2012, but river conditions didn't allow safe transport. 10/10/13: Dale said they brought ~25 fish they caught into ponds, but have less than a dozen at this point. They will try to build these numbers in future years. Travis hopes to capture some larger fish from Black Rocks using hoop nets. (If we continue this in future years, we may want to alternate taking fish from Westwater and Black Rocks to avoid hitting either sub-population too hard. However, it's harder to transport fish from Westwater, so that may remain a concern.) 10/27/14: FWS collected 20 juvenile and small adult chub (mostly 150-300mm) from Black Rocks this fall and put them in a pond at Horsethief. We'll see how they overwinter and continue to bring in fish as start sampling again next year.
4. & Nonnative fish management follow-up:
- **Melissa Trammell** offered to work with **Travis** in summer 2013 and report other nonnative fish data (e.g. gizzard shad, nonnative fish captured during Colorado pikeminnow estimates to the Committee each year). *Pending*. The **Committee** will review the information Melissa provides in working with Travis and then discuss what further analysis may be needed.
 - In 2013, population estimates for smallmouth bass will only occur in Project 125. The **Committee** will reconsider resuming the smallmouth bass population estimates throughout the current Yampa River population estimate reaches in 2014, based on an analysis from André. 1/16/14: *To be revisited after workshop on projection tool.* 6/11/14: *Pending*.
 - The **Committee** agreed to suspend all mark / release of northern pike Program-wide in 2013. They made a **firm agreement** to revisit this issue (northern pike population estimates) when results of the northern pike synthesis are available.
 - **Harry Crockett** will check to see if Colorado's Parks folks might be interested in administering a harvest incentive program. 7/10/13: *response pending.* 10/10/13: *Harry said CPW is open to considering this in some situations and will discuss further with the Program Director's office (Kevin McAbee, Harry, and Vernal CRFP to discuss and consider bringing proposal on this and a potential White River incentive program to the nonnative fish workshop).* 1/16/14: *Harry said CPW is discussing this and thinks it may be implemented in one or more places in 2014 (though not on the White River).* *Ongoing.* 8/26/14: *Harry prepared a white paper and CPW is discussing broad agency response to illegal stocking (harvest incentives, must-kill, etc.). >Harry will ask if he can provide a draft to Kevin McAbee.*
 - Walleye: >**Kevin McAbee and Paul Badame** will work on organizing a "walleye summit" with appropriate outside expertise. *Pending*. **PI's** should fully document walleye captures (date/time, length/weight, and river mile). 10/27/14: *Still trying to get some outside funds to support this effort.*
 - & *Private (LaFarge, aka Snyder) Pond near Rifle: **Harry Crockett** will find out if the landowner will allow and if CPW can reclaim the pond before spring runoff (considering a seismic gun option); >**Tom Chart** will coordinate with **Harry** and **Brent Uilenberg/Bob Norman** on repairing the notches after runoff. 6/11/14: *Sampling ongoing and Reclamation will work with CPW on filling the old notches. Harry said rotenone is still an option (and more likely than a seismic water gun approach at this point).* 8/26/14: *Harry said they couldn't arrange a site visit (CPW, Reclamation) before spring runoff, but that could happen now that flows have receded (>Tom Chart will contact Brent about this).* **Harry Crockett** will contact **Jackson Gross** and let him know the Committee appreciate Smith-Root's interest in the Snyder Pond work (and willingness to bring considerable cost-share) (*done*), but would like to see a proposal that includes evaluation of success and a report. 6/11/14 *Jackson indicated that the availability of hydraulic pumps had been a problem this spring, but that pumps are now available from Smith Root.* 8/26/14: *CPW is more interested in the rotenone option at this point. Dave said sonic water guns might be useful in the Yampa wetland areas.* 10/27/14: **Reclamation** will review plans for filling the notches with the city of Rifle, which has a nearby water intake.

- & *Starvation Reservoir escapement: UDWR treat the spillway stilling basin in September 2014; **Paul Badame** will share the report with BC & PDO.
 - **Kevin McAbee** will send a draft nonnative fish workshop agenda to the Biology Committee for comment.
5. **The Program Director's office** will work with States to compile all the Lake Management Plans. *Pending — McAbee. 2/21/14: Kevin received a number of plans from Utah (though three still under review are outstanding), Pete and Harry are working on compiling Wyoming and Colorado's. 6/11/14: Harry has almost completed his list and Pete Cavalli just sent Kevin a large number of plans. 10/27/14: Harry said he has these almost ready to send. Pete Cavalli and Krissy Wilson will send new versions to Kevin as theirs are updated.*
 6. The **Program Director's office** will recommend boilerplate language (including identifying reduction targets) to be used across applicable nonnative fish management scopes of work. *Pending (PD to include in FY16-17 Program Guidance in February 2015).*
 7. **Kevin Bestgen** and Dale Ryden will work up estimated costs for addressing additional razorback data being collected (need for additional data analysis on both Green and Colorado rivers). *Dale said Kevin wants to wait until after the end of the field season to ascertain the number of records to be analyzed (probably ~150,000 fish records). This may be a fairly involved effort. 2/6/14: FWS project #163 has task for razorback pop. est. in Gunnison and Colorado, though not enough razorback captures/recaptures to do much with the Gunnison River data. Osmundson developed razorback matrix for 2008-2010 and Gary White ran this data through Program MARK in 2013 (data to be reported in 2015). PIs recommend also including 2013 razorback data (from the Colorado River pikeminnow population estimate study) in this analysis (\$2K in SOW for White to help with data analysis in 2015, adding 2013 razorback data shouldn't add to cost). Developing razorback population estimates in the Green and Yampa will be more difficult, probably not in existing SOWs, and probably should be separate effort. PD's office will discuss costs/mechanism (e.g., add-on to #128) with LFL. 2/21/14, cost estimate pending from LFL). 10/27/14: Dale said some of this will be included in the Aspinall report next fall.*
 8. ***Brent Uilenberg** and **Harry Crockett** will be working with CPW and Reclamation engineers to evaluate the potential for a permanent barrier downstream of Ridgway Reservoir. *6/11/14: Harry said Brent would like to define the sideboards before committing time to this. The Program Director's office will begin the conversation on this and Elkhead with Brent. Meeting/conference call was held on August 6th in Glenwood Springs. 8/26/14: a meeting is scheduled September 4. Dale Ryden said they sampled from Delta to Redlands and didn't find any bass, so that's good news. 10/27/14: Tom Chart provided Elkhead draft alternatives analysis for discussion and will see if he can share that with the Biology Committee).*
 9. The **Program Director's office** (Czapla) will discuss Ouray electric repairs with Reclamation and Dave Schnoor. *6/11/14: Tom Czapla reported the hatchery also has had well problems, and Reclamation has drilled two new wells. 8/26/15: Tom thinks the Service was able to fund some of these repairs and will report on this after his visit there next week. 10/27/14: Czapla said the electrical issue as identified by the contractor hasn't been resolved yet, but two new wells were dug. 10/28/14: The Service's Engineer reviewed the contractor's electrical report and spoke with the contractor and concluded there are no major human safety issues, but several operational and equipment protection areas should be addressed. . Service engineers may thoroughly review the report and hatchery operations and develop a systematic approach for replacing pumps, motor starters, variable frequency drives, control systems, etc.*
 10. Regarding white sucker hybrids, **Harry Crockett** will talk to **Kevin Bestgen** about any further work needed subsequent to the identification guide that Pat Martinez distributed last year. *8/26/14: Ongoing (very complex issue that really deserves a combined genetics and morphological study). This could be put into the next round of Program Guidance (>PD's office will do) and we should be considering potential outside*

funding sources, as well, since this relates to more than listed fish.

11. The **Nonnative Fish Subcommittee** should discuss the need for completing long-term syntheses for Yampa River native fish response and Lodore/Whirlpool Canyon (funding has not been available so these syntheses had been placed on hold).
12. - ***Harry Crocket** will let the Committee know when CPW will make their draft Elkhead plan available. *6/11/14: CPW and CRWCD don't have date yet, but are planning public meetings in September. 8/26/14: Harry said this is still pending. 10/27/14 Harry said this is somewhat obsolete now that a larger group is working on this issue collectively.*
13. - **Doug Osmundson** will revise recommendation #3 and finalize his Colorado pikeminnow population estimate report. *8/26/14: Pending; >Dale will check on this. 10/27/14: Complete.*
14. The **Program Director's office** will attach an errata sheet to Appendix C of the Basinwide Strategy. *Pending.*
15. *Related to the peak flow study plan, **Jana Mohrman** will look into cost estimates for additional aerial photography analysis. **Committee members** will continue their review of the draft plan and provide comments by the end of September (the same will be requested of the WAC). >Within two weeks, **Tom Chart et al.** will prepare a short background outlining the genesis of this work and restate the objectives *(done)*. *10/27/14 PDO will send revised plan to BC & WAC for review.*
16. Dale Ryden will follow up on the untagged bonytail caught during the electrofishing course that may have escaped from the CDOT pond. *10/27/14: Based on recapture location and size, Dale said this 250mm bonytail caught just downstream of Fruita was likely a stocked fish that didn't get tagged or lost its tag. The fish in the CDOT pond were considerably smaller last time they sampled it.*
17. **Dave Speas** will convene a conference call to plan the PIT/data acquisition session for the Researchers Meeting.

UDWR-Moab Fall Field Work Updates: Projects 129, 138 and Lower Green Fish Kill

Project 129: Humpback chub population estimates in Desolation and Gray Canyons

Julie Howard

Three sampling passes were completed through Desolation/Gray canyons on September 1–8, September 16–23, and October 1–8, 2014. Mean daily flows during sampling ranged from 2,940–6,170 cfs (USGS gage #09315000, Green River at Green River gauge). A total of 6 sites were sampled including four long-term trend sites and two sites randomly selected from those previously sampled during the 2001–2007 population estimates.

Total effort included 1,276 trammel net hours, 346 hoop net hours and 9.3 hours of electrofishing over three passes. Sampling efforts resulted in 98 adult humpback chub and 1 juvenile *Gila* captured; of the individuals encountered hoop nets captured 12%, electrofishing captured 6%, and trammel netting captured 82%. During the second pass, submersible PIT tag antennas contributed by Biomark (Peter MacKinnon and Dave Speas) were also deployed for a total of 471 hours and recorded 35 unique tags, 10 of which were humpback chub, 4 of which will be useful with mark-recapture population estimates.

Observed site fidelity by humpback chub during the 2014 sampling was close to 100% with only one fish moving between sites. Since 2006 almost all within year and between year recaptures have occurred in their site of original capture. In 2006–07, 2010 site specific population estimates were calculated due to very high fall site fidelity among humpback chubs. The site specific estimates were then used to determine an average site density for each year. The average site density was extrapolated across the 63 available habitats found in Desolation/Gray Canyons to provide a total population estimate for each year. Population estimates for 2014 will be completed and available in the annual report due in November.

Project 138: ISMP: YOY Pikeminnow Monitoring on Lower Green and Lower Colorado Rivers

Chris Michaud

Moab Field Office completed ISMP on 25 September 2014. As Matt Breen mentioned in his update, backwater conditions were unfavorable at best. On the lower Green River the majority of backwaters, embayments and flooded tributaries were completely silted in. On both the Green and Colorado rivers much of the available habitat was shallow and extremely muddy. Deep mud made seining very difficult through much of the survey, impossible on several occasions.

On the lower Green (reach 3) only 14 backwaters (out of 48 possible) were seined. Five YOY pikeminnow were captured in 2 backwaters, 7 flannelmouth were also noted. No other endangered or native fish were collected. On the lower Colorado River (reach 1) 26 backwaters (out of 44 possible) were sampled. Eight YOY pikeminnow were collected from 3 backwaters, 3 flannelmouth suckers were also noted. No other endangered or native fish were encountered.

YOY Colorado pikeminnow numbers have been down through 2013 and 2014 within reaches 1 and 3. Unique weather patterns, prior to the ISMP sampling interval, reduced the amount of low velocity habitat in these reaches (both years) and (in the case of 2014) produced exceedingly difficult seining conditions. Both of these factors likely influenced the catch rates of small bodied fishes documented during ISMP.

Lower Green Fish Kill

Brian Hines

Personnel from UDWR Moab conducted a razorback seining trip on 20–23 July 2014 in Labyrinth/Stillwater Canyons and found thousands dead fish of various sizes and species. Most of the fish were channel fish and carp, but we also found walleye, razorback sucker, flannelmouth sucker and Colorado pikeminnow. We were

able to identify 20 adult razorback and three adult pikeminnow. All three of the pikeminnow and 13 of the razorbacks were found at the mouth of Little Grand Wash and it appeared that it had recently flashed because of the laid over vegetation in and around the wash. The remaining razorback were found just a few miles downstream of Little Grand Wash. We didn't start noticing/smelling dead fish until we were in the Little Grand Wash area. We had many conversations with groups on the river and the cause of the kill seems likely it was from a wash that flashed on 7/15. There was a fairly large storm system that moved through Moab area on 7/15 and all of the groups mentioned a lot of debris in the river and color of the water changing to a red/orange. We are not exactly sure which wash caused the fish kill, but all of the dead endangered fish at the mouth of Little Grand Wash could not have been deposited where we found them if they floated down the Green River.

Stewart Lake (FR165):

This year razorback sucker larvae were detected on May 28th, and Stewart Lake was filled from from **June 1st through June 17th**, a period in which daily average Green River flows at Jensen were above 17,000 cfs for 10 consecutive days (with a peak daily average of 19,500 cfs on June 8th). A picket weir and fish trap were used to exclude adult nonnative fishes from entering the wetland during filling. Flows were sufficiently high this year to fill Stewart Lake to capacity, allowing for a longer retention time before draining, and giving the razorbacks an additional month of growth in the wetland as compared to 2013. Draining took place from **September 2-15**, during which time **749 juvenile razorback suckers (from 47-168 mm total length)** were sampled as they returned to the Green River.

Wetlands (part of FR165):

Stirrup: L=482 m, ave W=177 m, ave Depth= 1.2 m. (~80 Acre feet)

5 trammels, 10 fykes, 6 baited hoop nets. Overnight sets.

Only natives were **21 bonytail (137-274mm)**; 3 fatalities; other 18 were PIT tagged).

Rest were Black bullhead, carp, fatheads, green sunfish, and red shiners.

Bonanza: heavily vegetated area around open water pool of L=233 m, ave W=47 m, ave Depth= .3 m. (2.7 Acre feet)

5 seine pulls (12 m ave pull of ~3m seine). Just **fatheads, carp, and green sunfish**.

ISMP (#138):

Here's an update following the completion of our fall ISMP monitoring for YOY pikeminnow in the middle Green River. Backwater conditions were quite poor following several severe storm events in August and September in the upper basin. Areas that would typically provide excellent habitat for YOY natives were either completely silted in or close to it (up to several feet of silt, only a few inches of standing water remaining). In all, we sampled **48 backwaters** and despite limited availability of good rearing habitat, it seems like natives still had a decent year. A quick tally below:

Colorado pikeminnow - 66 collected from 11 backwaters (most were < 40 mm TL)

Gila spp. - 12 collected from 8 backwaters

Flannelmouth sucker - 29 collected from 20 backwaters

Bluehead sucker - 36 collected from 6 backwaters

Razorback sucker - 5 collected from 3 backwaters (TL = 73, 90, 91, 101, 128 mm)

The last one is not a typo; much is possible for razorback sucker recovery with the implementation of the Larval Trigger Study Plan. These razorbacks may have been refugees from Stewart Lake, which we finished draining just prior to the beginning of ISMP sampling, but there's no way to know for sure. Four razorbacks were collected within 0.3 miles upstream of the outlet channel, and one was found 17.8 miles downstream.

White River:

No recovery program projects since bass removal discussed at last meeting. During State funded 3 spp surveys, a **46 mm TL pikeminnow** was seined on 9/23/14 (silt, silt; 25 deg C, UTM 650729 4423766).

Dale Ryden – Humpback chub population estimate

2014 was an off year for humpback chub population estimates in the Colorado River. This study will begin again in fall (September/October) 2015.

In early September 2014, a crew led by Travis Francis electrofished, seined, and hoop-netted in and around the Black Rocks area of the Colorado River for the purpose of collecting young humpback chub to be brought into captivity as a refugia population, to be held at the Horsethief Native Fish Facility (HCNFF), near Fruita, CO. Sampling took place for three days. Unfortunately, only one YOY chub was collected. At that time the decision was made to collect and bring in larger juvenile and/or adult humpback chub. Since Travis' last point estimate for adult humpback chub in the Black Rocks area was approximately 300 fish, the decision was made not to bring in more than 30 fish of the larger juvenile and/or adult size-classes (i.e., no more than 10% of the wild population). Over three days, a total of 20 chub (19 larger fish and one YOY chub) were collected and transported to HCNFF. These fish were tempered for several hours and put straight into a grow-out pond to prevent them jumping out of circular tanks in an indoor environment. These fish will be held at HCNFF and additional humpback chub will be collected to add to this refugia population in fall 2015, when the Black Rocks humpback chub population estimate study recommences.

Dale Ryden - Grand Valley fish passage structures

Summer 2014 has seen a very high number of young, wild Colorado pikeminnow utilizing two selective fish passage facilities located near Grand Junction, CO. The fish passage facility at the Redlands Water and Power diversion dam on the Gunnison River is located 2.3 miles upstream of its confluence with the Colorado River in Grand Junction, CO. Construction of this dam was completed in 1918. The Redlands diversion dam is 8.5 feet high and spans the entire width of the Gunnison River (312 feet wide). The Redlands fish ladder was completed in and has been operated since 1996, providing access to roughly 60 miles of additional habitat upstream of this diversion dam. This selective fish passage facility, which diverts 75 CFS total (50 CFS through attraction flow and 25 through the ladder itself), allows researchers to handle and sort all fish utilizing this fish passage facility on a daily basis during its operating season (mid-April through mid-October). From 1996 through October 2013, the Redlands fish ladder has passed 153,275 total fish, including all four native, endangered fishes (124 Colorado pikeminnow, 29 razorback sucker, 8 bonytail, and 1 humpback chub). Of that total, 128,834 (84.0%) were native fish.

During calendar year 2014, 17 Colorado pikeminnow used the Redlands fish ladder (range = 403-543 mm TL). While this is only the fourth highest total ever recorded for this species in the Redlands ladder (1997 = 18, 1998 = 23, and 2007 = 21), 2014 was different than previous years, in that all 17 of these fish were either large sub-adults (n = 2 fish) or young adults (n = 15 fish). An adult Colorado pikeminnow is classified as ≥ 450 mm TL. In addition, all but one of these 17 fish were untagged when collected in the Redlands fish ladder, and the one that was tagged had only recently been tagged by a separate study in spring 2014. This relatively large number of untagged, wild fish indicates a good reproductive year in the not too distant past (approx. 5-8 years prior to 2014). All of these fish were implanted with Passive Integrated Transponder (PIT) tags prior to being released. While higher numbers of Colorado pikeminnow had been collected in previous years, never had so many wild, young fish been collected moving upstream in a single year. In order to help facilitate retention of these fish in the Gunnison River upstream of the Redlands diversion dam, all 17 Colorado pikeminnow collected were transported 39.5 miles upstream via stocking truck and stocked at the Escalante boat launch. It is hoped that these young fish will retain and establish home ranges in the Gunnison River, where only a few, very old, wild pikeminnow now reside. The Gunnison River upstream of Grand Junction has one of the more populous and pristine native fish communities in the upper Colorado River basin.

In addition bonytail, razorback sucker, and a razorback X flannelmouth sucker hybrid were collected in 2014 in the Redlands fish ladder. The data for other species collected in the fish ladder in calendar year 2014 is still being entered and totaled.

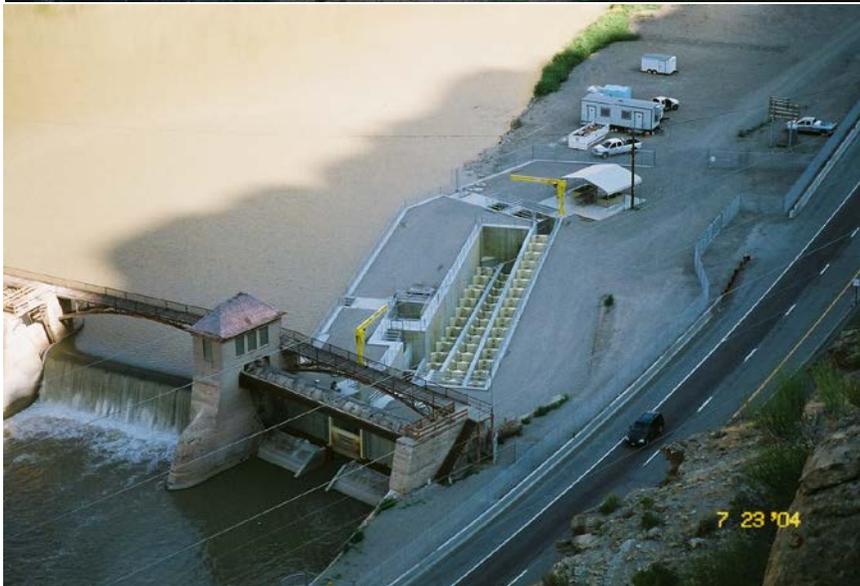


The fish passage facility at the Redlands Water and Power diversion dam (Photo Credit: U.S. Bureau of Reclamation).

A second fish passage facility is located at the Grand Valley Water Users (GVWU) Association dam on the Colorado River in DeBeque Canyon, just upstream of Grand Junction, CO. Construction of the GVWU diversion dam was completed in 1917. It is 14 feet high and spans the entire width of the Colorado River. The GVWU fish passage was constructed in 2004 and has operated since 2005, providing access to approximately 40-60 miles of additional habitat upstream of this diversion dam. Like the Redlands ladder, the GVWU fish ladder, which diverts 130 CFS total (90 through attraction flow and 40 through the ladder itself), is also a selective fish passage facility. It is also operated from mid-April through mid-October. Between 2005 and October 2013, the GVWU fish ladder passed 80,472 total fish, including three of the four native endangered fishes (4 razorback sucker, 22 bonytail, and 6 humpback chub). Of that total, 68,493 (85.1%) were native fish.

In 2014, the first ever Colorado pikeminnow made its way up through this fish ladder. Like the Colorado pikeminnow observed in the Redlands ladder in summer 2014, this fish was also a wild, young adult fish (582 mm TL) that was untagged. This fish was PIT-tagged prior to being released several hundred yards upstream of the GVWU dam. This collection was especially important, because until just a few years ago, access to upstream habitat for this highly migratory fish species had been blocked by two additional downstream irrigation diversion dams on the Colorado River -- the Price-Stubb diversion dam (about 5 miles downstream from the GVWU dam) and the Grand Valley Irrigation Company (GVIC) diversion dam (about 9 miles downstream from the GVWU dam). The collection of the Colorado pikeminnow in summer 2014 shows that access to upstream habitats has now been successfully restored to all four endangered fish species. As if to put an exclamation point on this, > 20 native endangered razorback sucker were also collected in the GVWU fish ladder as of August 2014. The previous high in any one year was two individuals for this species.

In addition, bonytail were also collected in 2014 in the GVWU fish ladder. The data for other species collected in the fish ladder in calendar year 2014 is still being entered and totaled.



Two views of Grand Valley Water User Association diversion dam and fish passage facility (Photo Credits: U.S. Bureau of Reclamation).



Ryan Schleicher poses with the first ever Colorado pikeminnow collected in the Grand Valley Water Users fish passage facility, upstream of Grand Junction, CO (Photo Credit: Joshua Turner - USFWS)

Travis Francis – 2014 Lake Powell razorback sucker survey

As of the 7th of June - Twenty of the razorback sucker (RZ's) were caught without a PIT tag. Six of the RZ's captured were fish stocked by the Lake Powell 2014 crew during March. Two of the RZ's had tags that were not distributed by the program and the data has yet to be sent to the database. Thirty four of these captures were 2014 recaptures (10 were within trip recaptures and 24 were recaptures from previous trips). Two hundred thirteen of these RZ's were stocked by the UCRRP Ouray National Fish Hatchery Randlett Unit (n=154; 72%) and Grand Valley Unit (n=59; 28%) in the Green (GR: n=193; 91%), of which 86% were stocked at Green River State Park), Colorado (CO: n=18; 9%), and Gunnison (GU: n=2; 1%) rivers from 2002 through 2013 (see table).

Stock Year	# Captured in Powell 2014	Approximate Distance Traveled (miles)	Source Hatchery	Stock River	Stock RMI	Location Description	Notes
2002	2	-235.1	Grand Jct.	CO	152.6	Loma Boat Launch	
2003	3	-202.5	Grand Jct.	GR	120	Green River State Park	
2003	1	-235.1	Grand Jct.	CO	152.6	Loma Boat Launch	
2004	1	-259.9	Grand Jct.	CO	177.4	Corn Lake Boat Launch near Clifton	
2004	1	-235.1	Grand Jct.	CO	152.6	Loma Boat Launch	
2004	5	-202.5	Grand Jct.	GR	120	Green River State Park	
2004	5	-202.5	Vernal	GR	120	Green River State Park	
2005	2	-249.2	Grand Jct.	CO	166.7	Redlands Parkway boat launch	
2005	1	-344.5	Vernal	GR	262	Ouray National Fish Hatchery	
2005	6	-202.5	Grand Jct.	GR	120	Green River State Park	
2005	1		Grand Jct.	See Notes	See Notes	See Notes	Tag distributed to Grand Jct Hatchery - data not submitted to database
2006	3	-267.4	Grand Jct.	CO	184.9	Henderson Launch near GVIC	
2006	1	-294.5	Vernal	GR	212	Downstream of Sand Wash	
2006	2	-401.8	Vernal	GR	319.3		
2006	1	-202.5	Grand Jct.	GR	120	Green River State Park	
2007	1	-310.6	Grand Jct.	GU	57.1	Confluence Park Boat Launch in Delta	
2007	5	-249.2	Grand Jct.	CO	166.7	Redlands Parkway boat launch	
2007	2	-344.5	Vernal	GR	262	Ouray National Fish Hatchery	
2007	2	-202.5	Grand Jct.	GR	120	Green River State Park	
2007	14	-202.5	Vernal	GR	120	Green River State Park	
2008	1	-259.9	Grand Jct.	CO	177.4	Corn Lake Boat Launch near Clifton	
2008	2	-344.5	Vernal	GR	262	Ouray National Fish Hatchery	
2008	7	-202.5	Grand Jct.	GR	120	Green River State Park	
2008	10	-202.5	Vernal	GR	120	Green River State Park	
2009	4	-344.5	Vernal	GR	262	Ouray National Fish Hatchery	
2009	26	-202.5	Vernal	GR	120	Green River State Park	
2010	8	-337.9	Vernal	GR	255.4	Ouray National Wildlife Refuge near Wyasket Bottom	
2010	1	-202.5	Grand Jct.	GR	120	Green River State Park	
2010	25	-202.5	Vernal	GR	120	Green River State Park	
2011	1	-310.6	Grand Jct.	GU	57.1	Confluence Park Boat Launch in Delta	
2011	12	-202.5	Grand Jct.	GR	120	Green River State Park	
2011	27	-202.5	Vernal	GR	120	Green River State Park	
2012	1	-337.9	Vernal	GR	255.4	Ouray National Wildlife Refuge near Wyasket Bottom	
2012	20	-202.5	Vernal	GR	120	Green River State Park	
2012	2	-202.5	Grand Jct.	GR	120	Green River State Park	
2013	1	-239.6	Grand Jct.	CO	157.1	Fruita State Park Launch	
2013	6		Vernal	GR	See Notes	See Notes	Tags distributed to ONFH, data hasn't been submitted yet

The first bonytail (BT) was stocked in the Colorado River by Wahweap at RMI 111.0 (Cisco Boat Launch) in 2007 and traveled 193.5 miles to Lake Powell for capture in 2014.

BT number two was stocked by Wahweap on 5/29/2014 at the lower Bridge in the San Rafael River traveled downstream to the confluence of the Green River and then 97 miles to the confluence of the Colorado and then another 82.5 miles (total of 179.5 river miles) **to be captured four days later** (6/2/2014) in the inflow area of Lake Powell.

BT number three was stocked by Mumma (Colorado native fish Hatchery) 8/13/2013 in Debeque Canyon in the Colorado River and traveled approximately 277.5 river miles for capture in Powell 2014.

BT number four was stocked by Wahweap on 5/21/2014 near the Rio Mesa Center in the Dolores River traveled downstream to the confluence of the Colorado River and then 96.5 miles to the confluence of the Green and then another 90.5 miles (total of 187 river miles) **to be captured sixteen days later** (6/6/2014) in the inflow area of Lake Powell.

The first Colorado pikeminnow (CS) was tagged by the UDWR Moab crew on the Green River at RMI 55.3 in 2011 and traveled 143.8 miles to where it was captured in Powell 2014.

The second CS was most recently captured in the Colorado River by our office at RMI 54.8 on 6/13/2013 traveling 143.3 miles before being captured by our Lake Powell crew in 2014.

Another interesting result is the success that we are having with electrofishing. Out of 278 RZ captures 107 (39%) were collected with electrofishing.

Out of the 241 individual RZ's captured 20 (8.3%) were without a PIT tag, a drastic difference when comparing to the San Juan arm where nearly 40% of our catch were without a PIT tag.

Tally from 14th of April to the 7th of June:

- 247 individual razorback sucker captures (26 recaptures)
- 4 bonytail captures
- 2 Colorado pikeminnow captures
- 3 flannelmouth sucker captures
- thousands of carp and gizzard shad

2014 Lake Powell RZ Length Frequency (n= 247 individuals)

