

Gila River Basin Native Fish Program - Annual Reporting Meeting
December 9, 2020 1:00 – 5:00pm
Zoom meeting

FINAL MEETING NOTES

Annual Reporting Meeting Objectives

- Provide reports and updates on 2020 accomplishments and 2021 work planned

Next Annual Reporting Meeting

- December 7-9, 2020 at the Sonoran Desert Museum in Tucson, AZ

Participants – see last page

Throughout the afternoon virtual meeting there were 13 computer-based presentations, which will be uploaded for viewing to the Gila River Basin Native Fishes Conservation Program website (<https://www.usbr.gov/lc/phoenix/biology/azfish/>).

ANNUAL REPORTING & UPDATES

Agency representatives presented updates on species recovery and work completed in fiscal year 2020, research project updates from Kansas State University, University of Arizona, University of New Mexico, and USGS were also presented in pre-recorded videos that participants watched before the workshop; there was time after each presentation for question and answer and discussion.

Gila River Basin Monitoring – *Kurt Shollenberger, Marsh and Associates and Kent Mosher, US Bureau of Reclamation*

Marsh & Associates

- Non-native Monitoring (2020)
 - Surveyed 13 of 21 stations in Gila River, San Pedro Rivers and Cienega Creek; 200 meter efforts
 - Gizzard Shad detected in Gila River for first time as part of this monitoring program
- Native Monitoring (2020)
 - Monitored 48 stations across 14 streams
 - Found Loach Minnow further upstream and in higher numbers than in the past at Campbell Blue Creek
 - First chub captured in many years in San Francisco River in New Mexico; possible sign of chub moving from the Blue River into the San Francisco River
 - Mosquito fish may be outcompeting Gila Topminnow at Parker Canyon (0 caught), or may be seeing negative impacts from flooding
 - Hot Springs Canyon had low pool availability which likely affected the sampling
 - Visibility poor in the Lower Blue River due to wildfire impacts, including deep mud
- Suggestion to make this data comparable to other datasets in the future by reporting in fish/100 m² (AFS Standard Method)
 - The 2nd edition of AFS Standard Methods is currently being drafted; stay tuned
- 2021 monitoring
 - Shifting to new protocols developed with partners; no data sheet yet but Kent will have it soon
 - Intended to ensure a consistent frequency of monitoring, and should reduce the amount of contract modifications that need to happen

- Native monitoring will continue to be annual, non-native sites are done every 5 years.

Bureau of Reclamation

- Some monitoring this last year had to be postponed due to COVID-19 restrictions, will be completed next year
- Electrical barrier at Florence-Casa Grande Canal split monitoring data (above/below)
- SRP South Canal - detected Grass Carp for the first time since 2004; would most likely be coming from Salt River, but have not detected them there
- Reclamation's Technical Service Center will be processing all eDNA samples collected; all samples and data remain in-house

Fish Barrier update - Bill Stewart, US Bureau of Reclamation

- Bill reviewed the status of planning for new fish barriers and updates to existing barriers
 - Upper Verde: upper 38 miles of river; two barriers planned; have had 6 outreach meetings Upper barrier construction tentatively scheduled for September 2022 through May 2023
 - Lower barrier construction tentatively scheduled for September 2023 through May 2024
- Interest in West Clear Creek barrier; this will require a more detailed conversation with AGFD (especially Scott Rogers and Matt Rinker) and USBR, and Bill will send a map of considered locations beforehand
 - Point to consider: may not be necessary but would be intended to exclude bass and sunfish from the lower portion of the stream
 - Have lots of data from stock tanks above West Clear Creek
 - Might not be worth the effort if proposed location is below the falls
- Eagle Creek: working on a Memorandum of Understanding with USFWS and Freeport-McMoran
 - Barrier construction tentatively scheduled for Autumn 2022 or Spring 2023
- Blue River: project focused on moving deposited sediment and other repairs
- Bonita Creek repairs planned

I&E Update - Kent Mosher, US Bureau of Reclamation

- 2 new schools incorporated into the Native Fish in the Classroom program: Datil Elementary and Aldo Leopold Charter
- Many tasks/activities altered or canceled due to COVID-19, but still got work done
- New projects funded by USFWS

CCAST: Non-native community of practice – Matt Grabau, US Fish and Wildlife Service

- [Interactive dashboard](#) to view current case studies
 - [Non-native and aquatic case studies](#)
- Shifting from information sharing to getting work done
- Currently working on decision-support tree development to help easily present/select treatment options
 - Potential for program-specific workshops, either distinct or providing multiple subject areas during one workshop
- Technical Committee will discuss ways to integrate the CCAST tool; below are ideas mentioned in the chat during the workshop:
 - Use completed or ongoing projects in the catalog to help set removal or control targets
 - Use decision-support tree to help "screen" for projects that are likely to achieve program goals
 - Guide projects to use "best practices" for the given project setting, which can include specific control/removal techniques

- Prioritize and fund research that is needed
- Use CCAST Case Studies as a way to highlight program successes and lessons learned
- Discuss the possibility of setting non-native removal targets with existing resources based on CCAST

Arizona Game and Fish Department - Tony Robinson and Brian Hickerson, AZ Game and Fish

- Gila topminnow and desert pupfish stocking/results
 - Three topminnow stockings: Rarick Canyon, tortilla Creek, Mattie Canyon
 - Monitoring: 16 sites
 - Catch at 16 sites better or similar to 2019.
 - Likely having a water quality issues at Black Canyon City Heritage Pond; large decline in catch since last year
 - No topminnow captured at four sites (Murray Spring, West Fork Pinto Creek, Harden Cienega Creek, and upper Sabino Canyon
 - Murray Spring population not likely to establish
 - Harden Cienega Creek: did not capture any topminnow. Last year, as topminnow were stocked ek, witnessed chub consuming topminnow
 - Potential post-fire impacts – may see them next year at Edgar Canyon, Sabino Canyon, and Hidden Water Spring
 - Low water conditions were beneficial or resulted in increased catch rates in many locations
- Spikedace and Loach minnow stocking/results
 - Two Spikedace stockings
 - Ahead of schedule with translocation of Spikedace and Roundtail Chub to upper Blue River; fish salvaged to rescue from post-fire effects were translocated to the upper Blue
 - 100 spikedace stocked into Spring Creek as part of the movement-survival study
 - Three Spikedace sites monitored (middle Blue River, spring Creek, Eagle Creek).
- Roundtail Chub stockings/monitorinmg
 - Two translocations: upper Blue River and Rarick Canyon (the latter location previously classified as Gila Chub)
 - Six locations monitored: Blue River, Harden Cienega, Rarick Canyon, Sabino Canyon, Spring Water Wetland, and Eagle Creek.
 - Chub population may have been decimated at Spring Water Wetland due to very low water levels

New Mexico Department of Game and Fish - Jill Wick and Bryan Ferguson

- Spikedace and Loach minnow activities
 - Dealing with fire impacts
 - Negrito Creek: only found 1 loach minnow; SONFISHES dataset should show loach minnow records, some collected farther upstream in the past
 - Translocated Loach Minnow from Bear Creek to ARCC
- Permanent site monitoring
 - Crayfish data collection: count only, but considering expanding; only useful for presence/absence

New Mexico Bureau of Land Management - Tim Frey, Bureau of Land Management

- Permanent site monitoring
 - Sunset Dam
 - Opportunistic survey above

- Cherokee Canyon
- Ash Canyon
- New permanent site at Nichols Canyon; caught Spikedace and Loach Minnow
- Caught 5 natives, 6 non-natives
- Loach Minnow caught in Nichols Canyon area

Favorite Arizona Fish

To break up the presentations, participants were asked what their favorite native Arizona fish is. Below is a word cloud representing their responses.



Arizona Bureau of Land Management - Heidi Blasius, Bureau of Land Management

- Bonito Creek removal
 - 7 removal trips
 - Didn't set as many hoop nets here as they're not as effective for capturing yellow bullhead
 - Removed 622 yellow bullhead, 1,368 western mosquito fish, 359 fathead minnow
 - Caught and released 3,925 Gila chub, 171 Sonora sucker, 5 Gila topminnow, 3 speckled dace, 1 longfin dace
 - Did not capture any green sunfish; last removed in 2017
- Aravaipa Creek removal
 - 10 removal trips; had more planned, but some trips were cancelled due to COVID-19
 - Covered about 54 miles
 - Removed 2791 yellow bullhead with electro-fishing, 2 removed using Promar nets, 102 removed by seine hauls
 - Only 96 removed bullhead would be classified as adults
 - No flooding this year
 - Have already removed many adults, so less predation

Aquatic Research and Conservation Center Josh Walters, AZ Game and Fish

- Very limited spawning this year, especially of loach minnow
- Possible reasons:
 - Lack of rain or some weather cue
 - Maybe water chemistry or other changes in the tanks due to the dry/hot year
 - Hard to tell if there were impacts from the specific spawners
 - Density of spawners in the tanks

- Used PIT tagging to monitor; all of the PIT tagged fishes were in the same age class and had been spawned at the ARCC
- Few stockings were planned this year, but this could impact future stockings
 - UNM doing some genetic studies on this subject

eDNA - *Yvette Paroz, US Forest Service*

- Tissue sample needs
 - Tiffany can provide Flathead Catfish from Havasu; Tony can provide Desert Pupfish and mosquitofish; Alex can provide samples of lots of non-natives
 - Yellow Bullhead is the most common so would make the most sense to use for development of general markers
- Site expansion options
 - Need to know what is left to do
 - Downstream of Aravaipa and other areas recently stocked where dispersion is of interest
 - List already developed that was prioritized based on funding; go back to this list and see if any additions need to be made
- DNA Atlas
 - There are lots of sites that still need sampling, but need to prioritize if we want to try to fill in the map or if there are special questions to ask
 - Bill can follow up and get a list of remaining sites to discuss on a separate call

Habitat Assessment - *Keith Gido and Crosby Hedden, Kansas State University*

- Neither of the presenters were at the workshop, so questions from participants are recorded below:
 - What caused the model to not match the presence data? There were places that the model showed species would not be present based on suitability, but have been found there
 - There is error associated with our model. The model uses all presence-absence data and attempts to identify threshold for habitat variables that predict where a species is found. While we included many important habitat variables in our analysis, there are other variables and processes that likely drive the presence-absence of these species (i.e. groundwater flow, aquatic insect community, nonnative species etc.) that contribute to model error. While our study sets a baseline for habitat variables that should be considered before repatriating these fish, other factors need to be studied and considered.
 - Is it possible to scale-up suitable habitat?
 - Relates to number of individuals that would be held in a stream reach, which could tell us something about genetic diversity in that reach
 - There are multiple ways to scale-up our knowledge on suitable habitat, particularly for loach minnow. Because loach minnow density was positively correlated with the amount of suitable mesohabitat in our 1-km reaches, it is possible that we can predict population sizes or carrying capacity of locations based on suitable habitat. As mentioned above, any scaling should be viewed cautiously because there are likely unmeasured variables that might also limit population sizes.

Genetics Presentation – *Tom Turner et al., University of New Mexico and Steve Mussmann, US Fish and Wildlife Service*

- Using whole-genome markers for Spikedace
 - Combined forces with Berkeley
 - Effective size metrics were a bit higher than those generated with individual markers; very precise
- Waiting on genome for Loach minnow, but preliminary results are similar to previous work
- Shift between Aravaipa and Aravaipa broodstock, and broodstock and Spring Creek

- Biggest change in frequencies when the fishes are stocked; will always see a shift in genetics when moving a smaller population
- Distribution reflects the survey data once the fishes are stocked
- These data help to understand wild-wild transfers v. wild-stock-wild transfers
 - Concern about moving to hatcheries; retain a lot of the diversity
 - Many of the genes are under selection; can give an idea of how locally-adapted these populations are when taken from the wild
- Gila Fork broodstock
 - Examples from the hatchery came from 2016
 - Genetics showed they are admixed between Gila Forks and Blue River
 - Progeny have been stocked out to Little Creek (2017/18/or 19)
 - Other broodstocks that have been mis-assigned to Gila Fork; waiting on additional sequencing
- Topminnow
 - Deer Valley HS and Cienega HS samples may have been mixed
 - Sharp Spring population no longer exists; these could potentially be restocked from a variety of different sites where this population was introduced
 - Genetic differences exist between the Red Rock Canyon and Cienega populations
 - Developing a genetic management plan, but low on capacity to finish the effort any time soon; Steve needs help getting this rolling

YY Male - *Chad Teal, University of Arizona*

- Have done more research since recording the presentation
 - Have some single-nucleotide markers currently being tested for red shiner; these would be used as a guide for the red shiner sex determination system
 - Also crossing sex-reverse fish with wild-type fish
- Estradiol treatments
 - First treatment was successful enough for red shiner to move forward with spawning
 - Have not looked at results from second treatment yet, but will have them in the next couple of months
 - Will have the results from the green sunfish in the next few months
- The timeline to field test red shiner is dependent on the sex determination system
 - If males are heterogametic, would need to go through another round of selective breeding (YY males crossed with sex-reverse YY females)
 - If ZZZW, then should be able to sex-reverse the males into females and move forward more quickly (within a couple of generations)
- This work has been done with brook trout in Idaho
 - May have a better chance of success using red shiner because of the short life span
- Have not done modeling yet
- Another option would be to stock YY females in future
 - Would require less input to the population from stock

Ammonia – *Eric Frye, USGS*

- Far from registration as they don't have an experimental use permit yet; working on this
 - Were able to collect preliminary data because it was a closed system they used, but need more data
 - Need to see potential impacts on one migratory bird, one non-migratory bird, honeybees, fish; don't know how much data is needed
 - Lots of data already on ammonia toxicity, but less data on the combination of materials or the large quantity proposed

- Salinity could make a huge difference
 - New crayfish treatment project will help with experimental use approval and trying it out
 - Will be tackling how to get to them in their burrows with the help of a grad student soon
- Fluvial systems would be a great application for this tool as there is a natural flow of water to cleanse after treatment
- Sites to pursue testing in (when ready)
 - Upper Verde for roundtail chub
 - Difficult to get permission, so will go wherever able

Tier 2 Projects

- Have a list generated over the past few years of projects to pursue in addition to the work plan
- Additions:
 - Pupfish genetics project
 - The XYTE Verde/Horseshoe project is still under discussion with USFWS and AGFD leadership
 - Impacts of stocking fish into fishless streams on aquatic macroinvertebrates
 - Research on ways to manipulate flowing water for invasive species removal
 - Work on this has already started
 - CCAST could be beneficial when there is a need for large amounts of people to do work like mechanical removal
 - Replace fencing
 - Conservation Corps could work on this, but would have to get creative with the agreement and would take some time to set up
- Bill will send the list out to everyone for review

Final Thoughts

- What went well? What did you like about this year's annual meeting?
 - Great presentations, almost no technical issues
 - Good to be able to watch some presentations before the meeting to digest the information, start discussions, and keep the meeting shorter
 - Meeting stayed on track and great continuity of subjects; well-facilitated
 - Better participation because no travel was required; virtual option would be great for the future
 - Appreciate being able to use the chat box for questions/comments
 - Great discussions
 - Miro is a great new tool
 - Appreciate having peoples' videos turned on; easier to communicate with faces
 - Tim's background and shirt, and Kent's uncombed hair
- What can be improved?
 - Hard to interact/network/happy hour
 - Unable to have side discussions
 - Less time with presentation slides
 - Value in live discussions and questions after presentations rather than just in the chat
 - Some technical difficulties
 - More time for questions (5 minutes) after presentations
 - Hard to manage the higher amount of screen time for this workshop
 - Build in a brief recap of each of the pre-recorded presentations for those who were unable to watch beforehand
 - Provide more time to watch the videos

- A lot of information was crammed into a short time with the monitoring presentations

Participants

Pat Beyh	unknown
Julie Carter	Arizona Game and Fish Department
Betsy Grube	Arizona Game and Fish Department
Shaula Hedwell	Arizona Game and Fish Department
Brian Hickerson	Arizona Game and Fish Department
Ryan Mann	Arizona Game and Fish Department
Joshua Walters	Arizona Game and Fish Department
Tony Robinson (Committee Member)	Arizona Game and Fish Department
Heidi Blasius (Ex-officio Member)	Bureau of Land Management
Timothy Frey (Ex-officio Member)	Bureau of Land Management
Kurt Shollenbuger	Marsh & Associates
Brian Kesner	Marsh & Associates
Bryan Ferguson	New Mexico Department of Game and Fish
Kirk Patten	New Mexico Department of Game and Fish
Jill Wick (Committee Member)	New Mexico Department of Game and Fish
Eric Frye	Northern Arizona University
Doug Duncan (Committee Member)	US Fish and Wildlife Service
Ryan Gordon	US Fish and Wildlife Service
Matt Grabau	US Fish and Wildlife Service
Tiffany Love-Chezem	US Fish and Wildlife Service
Steve Mussmann	US Fish and Wildlife Service
Angela Palacios	US Fish and Wildlife Service
Mary Richardson	US Fish and Wildlife Service
Wade Wilson	US Fish and Wildlife Service
Stephanie Coleman	US Forest Service
Dustin Myers	US Forest Service
Yvette Paroz (Ex-officio Member)	US Forest Service
Matt O'Neill	US Forest Service
Albert Sillas	US Forest Service
David Ward	US Geological Survey
Scott Bonar	University of Arizona
Chad Teal	University of Arizona
Alex Cameron	University of New Mexico
David Propst	University of New Mexico
Tom Turner	University of New Mexico
Kent Mosher	US Bureau of Reclamation
Bill Stewart (Committee Member)	US Bureau of Reclamation
Andi Rogers (Facilitator)	Southwest Decision Resources
Lisa Clark (Facilitator)	Southwest Decision Resources

**Gila River Basin Native Fish Program -Technical Committee Meeting
December 10, 2020 8:30am – 12:00pm
Zoom Meeting**

FINAL MEETING NOTES

Technical Committee Meeting Objectives

- Provide updates on 2020 accomplishments and changes to 2021 work planned
- Discuss 2022 proposed projects and Tier 2 projects
- Provide updates on other projects

Participants – see last page

Next Meeting(s)

- March 30, 2021 – Technical Committee Meeting/Call
- December 7-9, 2021 – Annual Reporting and Technical Committee Meeting

Immediate Action Items

- Send out timeline for committee guidance revision (**Bill**)
- Follow up on Safford BLM relationship with Redfield landowner (**Heidi**)
- Follow up on status of NEPA for Sharp Spring (**Bill**)
- Contact Heidi if interested in helping with the Aravaipa Creek removal
- Follow up on possibility of a fish barrier at Pleasanton Diversion (**Bill**)
- Follow up call with Steve Mussmann, Josh, Tony, Bill, Mary, Ryan Mann, Tom Turner to discuss Little Creek/West Fork/Blue River issue at ARCC: **Jill will organize**

FY 2021 Workplan

Program guidance review, timeline and discussion – Doug Duncan, USFWS

- Conflict of interest section to add into the strategic plan (in committee roles section)
 - No one ranks their own projects
 - BLM will provide one set of rankings between AZ and NM
 - USBR and USFWS will make final decisions rather than by consensus
 - Policy Committee will discuss this further at some point
 - Have already gotten feedback from them which has been incorporated
- Role of Policy Committee: set the policy of what this group does and set broad goals as needed; only real change is that there will be no voting/consensus on projects to fund
- Timeline
 - Revising the process so that there is only one Policy Committee meeting and provide comments beforehand, rather than scoring, meeting to discuss, re-scoring, and meeting again
 - **Bill will be emailing the timeline out to everyone**

2021 Work Plan Adjustments

Project	Description of change	April 2020 Cost	May 2020 revision	Dec 2020 revision
Project 5: Muleshoe ecosystem stream and spring repatriations	Redfield Reach 3: at least three trap passes or until 33% of pass 1 catch is achieved.	\$28,100	same	same

Project 6: Gila Topminnow Stockings	Sabino Canyon: assess post-fire habitat near East Fork, and stock more if deemed suitable.	\$25,500	same	same
Project 10: Eagle Creek repatriations	Conduct full pre-barrier monitoring in 2021. Collect eDNA from middle Eagle Creek on FS property to confirm absence of TICO and MEFU. Shift timeline forward 1 year, as barrier will likely be constructed in late 2021 or early 2022.	\$33,800	same	same
Project 12: Upper Verde River native fish restoration	Increase cost to cover about 2 months of tank surveys	\$40,500	same	\$54,200
Project 13: West Fork Black River Nonnative Fish Removals	Downgraded cost from \$67,200 to \$33,800 on May 19 after Policy Comm. Meeting. But did not shift \$33,400 to any other projects.	\$67,200	\$33,800	same
Sharp Spring Nonnative Removal	Finish planning for Sharp Spring Chemical Treatment. Treatment would occur in early FY2022	\$0	same	\$19,700

*Proposed changes in purple

- Redfield Canyon
 - largest focus on Reach 1 and 2, but want to put some effort into Reach 3 to help mitigate the sunfish population in the other two areas. Propose to target a 33% reduction in Reach 3
 - Caught a lot more sunfish in Reach 3 this last year than in previous years
 - 33% has been achievable in the past but arbitrary number; depends on re-colonization from downstream private land reaches
 - Need a percentage rather than fixed catch rate because it's more adaptable to changing conditions and catchability
 - Still trying to get feedback from downstream landowner
 - Previous discussions with him have been positive, but just not getting any response right now
 - Heidi will try reaching out to Safford BLM office to see if anyone has an existing relationship with landowner
- West Fork Black River
 - Region 1 did not hire a new biologist, but should not affect the plan (will conduct up to 4 removal passes each year)
 - USFWS and White Mountain Apache are planning on doing extensive removal on reservation
 - USFWS plans to block off smaller sections (100 – 200 m) and then to do 3-4 passes.
 - USFWS and AGFD will coordinate timing of removals
- Request to bring Sharp Spring back into the work plan for treatment in FY2022
 - Started phase 1 piscicide planning process already, but needs to be approved by executive staff
 - We will need to complete a research application with State Parks
 - Will need public meetings

- Expecting the planning process to be relatively simple
 - Not sure if NEPA will be required; there may already be a broader NEPA in place for USBR for non-native control work
 - [Bill will follow up](#)
 - If NEPA needs to get done, would be helpful to have a timeline
- Total amount same as originally proposed

ASU Topminnow Update – *Kent Mosher, Bureau of Reclamation*

- Bylas Spring stock at ASU was one of 4 lineages intended for research. The wild Bylas Spring population was extirpated soon after, and the research stock was used for reintroduction. ASU holding then became a genetic refuge.
 - Genetic data from SNARCC/Steve Mussmann
- Current status:
 - Try and augment populations every other year; usually try and bring in at least 50 new individuals each time
 - Bylas Spring refuge population gone; there were plans to augment it this year, but complicated by COVID-19 restrictions
 - All Monkey Spring stock transferred to USGS for research
 - Sharp Spring experiencing a slow decline
 - Red Rock Canyon population never augmented as the wild population was extirpated
 - Parker Canyon only temporarily housed pending genetics.
- 5-year agreement with ASU that ends April 2021; cost per day is higher than in 2016 (\$13,414 up to \$26,232)
 - Consider whether these stocks need to be maintained
 - ASU populations and re-introduced populations seem to be similar in success rate
 - Low risk of extirpation for most of these lineages in the wild; consider thresholds, though, as many of these populations are still threatened in various ways
 - May not be successfully serving as a genetic refuge as intended
 - Have not pursued stocking reintroduced populations at ASU rather than wild/natural
 - Stock populations do reproduce in the tanks (6-8' diameter)
 - ASU may be too costly to be just replicate populations (rather than intended genetic refuge); money may be better spent in finding locations to reintroduce these populations to the wild
 - ASU program may not be around long-term, so may not be able to continue to rely on it
 - ASU has been needing to cover these costs for the past 6 months because the approval process has been significantly slowed at BOR; potential to pay by credit card
- Maintain these lineages in 2021: Cienega Creek, Santa Cruz (unique alleles, possible hybrid population), Red Rock
- Don't augment Bylas, Sharp
- [Follow up call next week – Kent, Paul, Doug, Betsy, Bill, Tony \(only M-W\)](#)
 - Maybe have another call with Mateos and SNARCC folks
 - Call with San Bernadino about the Yaqui lineage

2022 Proposed Projects

New Mexico Partners

- Continuation of projects

- Remote site monitoring
 - Complete West Fork Gila (if needed) or move on to San Francisco
- Lower Tularosa Loach Minnow suggestion – Bryan needs to get clarification on this
- Sapillo Creek – did not get monitored in 2020 due to COVID, but planning on it in 2021; stock Gila trout, but not much data from Gila confluence; don't know much about this area
- New Mexico BLM
 - Amount for Gila Permanent Site Monitoring higher than in the last version, but no issues with is (now \$9850); [Bill will update the amount for 2021 as well](#)

Arizona BLM

- Aravaipa – non-native removal
 - Requesting \$50,000; increased just in case the 2021 work doesn't get completed
 - Hoping to get a large amount of this done all at once at the end of March/early April 2021: divide into 79 50m sections, 3 passes per section, and 2-3 people on each side of the bank in each section (around 30 people total). [Need experienced volunteers!](#)
 - [Bill and Mary can help with logistics](#)
 - [Volunteers: Simms, Minckley, Timmons](#)
 - [Heidi and Kent will follow up on the timing of other funding for 2021](#)

Arizona Game and Fish Department

- Continuation of projects
 - If Sharp Spring planning in 2021 gets approved, this would get added to the list for 2022 to implement
 - Decrease in cost for many projects except for Upper Verde which has increased
 - Need to consider costs of paperwork/NEPA/etc. for federal agencies (Upper Verde), may also slow timelines
 - Put together overall implementation plan to organize all of the steps/permissions needed
 - Spring Creek:
 - Only monitoring for spikedace now, project completed in 2023 if no more spikedace are stocked.
 - Need to decide whether to stock more; may need to remove chub before stocking spikedace
 - Follow up with Kent on Marsh & Associates assistance needs with monitoring
 - [Take off Spring Creek and Harden Cienega Creek from the monitoring list as that will already be done](#)

Non-Workplan Project Updates and Discussion

Tier 2

- Revisit Annual Reporting Meeting discussion
- Project updates
 - Removable weirs: looking for locations to test; places with razorback sucker recruitment and in-flows into larger rivers
 - Look at habitat characteristics
 - Bill waiting to hear back with direction; Chris Jenny is the grad student who will be working on this
 - Gila chub habitat suitability study
 - Funded by GRBNFCP

- Confusion about the goal of the study; NMSU moving forward now, and will start data collection next year
- Start discussing these projects throughout the year, rather than only once
- Funding
 - General timeframe for how/when to allocate these funds
 - May/June, but need a full proposal to USBR and need to be able to implement quickly
 - ESA fund earmarked for spikedace and garter snakes, but may be used for other projects as well

Other

Barrier locations

- Criteria
 - Cost, location, geology, public access, potential for invasion
 - Clarkson put together a big list that was distributed in the past
- Past locations: Wet Beaver Creek, Fish Creek (Salt River Drainage), Spring Creek (Tonto Creek drainage)
- West Clear Creek
 - Need to discuss with Scott Rogers
 - Map out specific sites for possible barrier locations
 - Below Bullpen Campground, some better locations in terms of access
 - Areas like this and Upper Verde are the most challenging to tackle, and barriers are the easiest way
 - Most of the habitat in the upper portion of the creek is not suitable for spikedace and loach minnow, but some of the tributaries may be
 - Worthwhile looking into this as there are already natural barriers
 - Scott Rogers did not think there was much in that area; Matt Rinker was recently in the area and may have a good idea as well
 - Challenges:
 - Landowner issues to consider
 - Area is managed as a trout fishery, so would not want or be able to remove the trout (AGFD) and would only be able to do mechanical treatment which is challenging due to stream morphology
 - High use area for fishing, particularly right now
- Pleasanton Diversion on the San Francisco
 - Look into areas that are publicly owned downstream
 - Challenges:
 - May be a challenge with the landowner
 - Access is difficult because of the private land
 - Not a great location because it's upstream of where the spikedace are located
 - Kent has a list of investigated locations from Rob with notes, but does not include Pleasanton
 - [Bill will follow up](#)

ARCC Phase III renovation

- Funding has not gone through because USFWS staff did not get to it; Doug hoping to get it turned in before going on leave
- Met the April submittal deadline, but has had no action since then
- USBR funding runs out for this by August 2023

Other Spikedace/Loachminnow/Gila Topminnow/Gila Chub work (AZGFD/NMDGF)

- Bear Wallow
 - Genetic analysis showed trout were pure Apache trout, so treatment is not necessary
 - CAMP project; funding ends August 2021
 - Hoping to get loachminnow in before that
 - Still need to determine source population (lineage); have to consider habitat, balance genetic lineages across the area
 - White Mountain Apache not willing to give any loachminnow, as there are not many in White River
 - Need I&E co-op agreements to put loachminnow in the system
- Region 1 moved some loachminnow into KP Creek and next year plan to translocate some to Raspberry Creek

Bureau of Reclamation projects

- Minor Flat Dam (White River)
 - New reservoir; diversion and pipeline downstream that will go through tribal lands
 - NEPA: need to have recorded decision by 2023, but already behind schedule
 - Still in the works; having conversations with the tribal liaison
- Verde sediment appraisal
 - Leading with SRP
 - Build-up behind Horseshoe Reservoir
 - Will get sent to Congress to get feasibility approved before going through NEPA process
 - Alternatives: raise Bartlett, or dredge Horseshoe
 - Sediment management upstream
- Spikedace
 - ESA Fund: fish screen design on Willow Springs, below the lake
 - Agreement through December
- Fish barrier on Big Bonito Creek
 - By next year, on schedule
 - Potential benefits to loachminnow, spinedace
 - By a road crossing; about 22 miles upstream protected
 - On tribal land

Strategic Plan – Now and Ahead

Strategic Plan goals update

- Provide feedback after the meeting on the goals and objectives spreadsheet; want to present to Policy Committee
 - [Send reminder between Christmas and New Year's Day](#)
- Timeframe for Recovery Plan
 - Would hopefully feed into the strategic plan
 - No clear deadline for when those will be completed

Process for revision

- Current plan goes through 2022; start discussions in May 2021
- Good feedback from Policy Committee to consider
- May not need a workshop, but at least some dedicated meetings
- Elements to revise:
 - Conflict of interest language
 - Policy Committee role
 - Types of projects: more large-scale habitat-based projects rather than low-hanging fruit

Wrap-up & Next Steps

- Next steps from now until March technical committee call
 - Make edits to FY2022 work plans
 - Provide feedback on goals and objectives before Policy Committee Meeting
 - Technical Committee Meeting: **March 30, 2020 (time TBD)**
 - Potential to align with the Aravaipa project
 - Policy Committee Meeting: **SDR to doodle**

Participants

Julie Carter	Arizona Game and Fish Department
Brian Hickerson	Arizona Game and Fish Department
Tony Robinson (Committee Member)	Arizona Game and Fish Department
Heidi Blasius (Ex-officio Member)	Bureau of Land Management
Timothy Frey (Ex-officio Member)	Bureau of Land Management
Bryan Ferguson	New Mexico Department of Game and Fish
Jill Wick (Committee Member)	New Mexico Department of Game and Fish
Doug Duncan (Committee Member)	US Fish and Wildlife Service
Mary Richardson	US Fish and Wildlife Service
Yvette Paroz (Ex-officio Member)	US Forest Service
Kent Mosher	US Bureau of Reclamation
Bill Stewart (Committee Member)	US Bureau of Reclamation
Andi Rogers (Facilitator)	Southwest Decision Resources
Lisa Clark (Facilitator)	Southwest Decision Resources