**Call 5: Rainbow (and brown) Trout Fishery, GIS, Other Native Fish Species (other than HBC), and Nonnative Invasive Species. 4/17/20**

**=====================================================================================**

* **Roll Call**
	+ Craigs (E & M)
	+ Lee Traynham
	+ Bill Persons
	+ Capron
	+ Cliff Barrett
	+ Dave R.
	+ David Ward
	+ Emily Omana-Smith
	+ Eric Skeie
	+ Helen Fairley
	+ Jacob M
	+ Jeff A
	+ Jessica N
	+ jim Strogen
	+ John Jordan
	+ Cathy
	+ Kim
	+ Ken Hyde
	+ Kirk Young
	+ Melissa Trammell, NPS
	+ Seth Shanahan
	+ Tom Gushue
	+ Sinjin Eberle
	+ Ryan Mann
	+ Michael Yard
	+ Michelle Garrison
	+ Peter Bungart
	+ Peggy Roefer
	+ Paul Harms
	+ Michael Moran
	+ Scott VanderKooi
	+ Theresa Pasqual OWS
	+ Jan Balsom
	+ Ben Reeder
	+ Charles Yackulic
* **Rainbow (and Brown) trout**
	+ Lead researcher: Mike Yard, Dave Rogowski
	+ How is work being done helping us meet:
		- Resource goals as described in LTEMP
			* Achieve a healthy high-quality recreational rainbow trout fishery in GCNRA and reduce or eliminate downstream trout migration consistent with NPS fish management and ESA compliance.
		- Guidance from DOI in the 2019 Petty memo
			* Future research should be tied directly to LTEMP resource goals and objectives
			* Explore the feasibility of conducting a spring HFE, along with modeling for improvements and efficiencies that benefit natural, cultural, recreational, and hydropower resources
		- BO Conservation Measures or PA requirements
			* Investigate the possibility of renovating Bright Angel and Shinumo Creeks with a chemical piscicide or other tools
			* Remove brown trout and other nonnative species
			* Experimental use of TMFs to inhibit brown trout spawning and recruitment in Glen Canyon
		- LTEMP experimentation
			* Trout Management Flows (TMFs)
			* HFEs
				+ Do fall HFEs affect population dynamics of brown trout in Glen Canyon?
			* Mechanical removal of nonnative species
				+ Trout control in Bright Angel Creek
				+ Brown trout control in Glen Canyon
		- Status and Trends
		- Knowledge Assessment recommendations
	+ Describe how this data might be used to adaptively manage the CRE
	+ How long will these studies last?
		- 1-3 years
		- 4-10 years
		- 11-20 years
	+ Do we need to monitor every year?
	+ Prioritization
		- 1) high priority (important and essential) to implement and/or maintain;
		- 2) medium priority (important but not essential) to implement and/or maintain;
* Project Element descriptions (2021-23 TWP Proposal)
	+ **Project H. Salmonid Research and Monitoring Project**
		- *Project Element H.1. Rainbow Trout Monitoring in Glen Canyon*
			* How will AZGFD/NPS administer the brown trout incentivized harvest? CREEL, tagging fish, administer rewards?
				+ Ken Hyde- Have a pretty well outlined draft, working out details with GC Conservancy. Dropping off heads, etc. at Navajo visitor center. Tribal youth program now funded through NPS, $130k funding w/ BOR, GC still working on options. Will be fully funded for the first year (Kickoff September/October for fall spawn)
				+ Jim- Is this draft the same as was presented to TWG several months ago?

Ken- *Still pretty similar, fine details are with Glen Canyon Conservancy. Once those are done, things can be finalized. Per-capita rewards, youth programs still getting ironed out.*

* + - * + Ryan- Still planning on holding the angler meeting, not sure of a rescheduled date.
				+ Eric- Draft on IH already exists: How does Project J.2 add value, or is it something we can put off?

Hyde- *no, we feel this is a critical time. Will provide head numbers, PIT tags, data from collection cards, etc. Definitely need the data analysis, PIT tag data.*

* + - * + Mike Y- Can certainly help NPS by providing PIT data, but one thing we should consider purpose of TRGD program. Is purpose to assess status and trends? Is management style working? Should be careful on mapping hotspots, etc. Only sample ⅓ of reaches.
				+ Scott- on Project J.2: the element is “social side of things”, evaluating effectiveness among anglers, finding the most cost-effective program implementation.

population modeling under Project H

* + - * + Rob B- on question of delay: given brown trout figures, there’s great efficiency in getting the group together and affect BNT as soon as possible. Don’t want to get behind to where mitigation becomes too little, too late.
				+ Ryan- re CREEL integration: AZGFD/NPS meetings, CREEL is only in the field 6 days/mo. Should probably have discussion, continue coordination efficiency for Project benefit.
				+ Jim Strogen- should $ come from this project, or is BNT work designed for Native Fish Contingency Fund?

Lee- *makes sense to budget this into TWP. Talked previously about the Contingency Fund being used for the unanticipated and unforeseen. IH is a bit different: power revenues funding this work lacks a clear linkage to dam operations. BO opinion on IH work provides some openings to manage nonnatives if it seems areas are a source of BNT in Grand reach.* Data would be necessary to provide a link.

* + - * + Charles- What’s the weight of evidence? PIT tags have shown up in LCR itself. What threshold of movement?

Lee- *Mission is to define threshold, would love to tee up NPS to hear perspective.*

* + - * + Melissa- echoes urgency re: weight of evidence - AZGFD triploid testing, migration rates, modelling crucial for decision making
			* Evaluate and prioritize any duplicative monitoring being done in Lees Ferry and in the LCR.
		- *Project Element H.2. TRGD Fieldwork*
			* Can TRGD help with the brown trout incentivized harvest: provide abundance estimates, PIT tag fish, map “hot spots” to fish, etc.
			* Outline what questions are outstanding and what needs to be done to address those questions to be prepared to conduct a TMF trial.
			* Pre- and post-TMF YOY rainbow trout estimate for TMFs
				+ *Trout Early Life Stage Study (TELLS)*: study prior to actions, sampling after.
				+ Experimental Fund vs. current funding?
			* As Korman and Yard say, we should be cautious about doing TMFs without a better understanding of the level of recruitment we are attempting to control. Also, other methods to control impacts of RBT on humpback chub may include a more serious look at turbidity. TMFs should be delayed until we have a better understanding of recruitment trends. Depending on design, TMFs may also enhance downstream movement of trout as evidenced by the Natal Origins work.
			* Do we feel we’re in a position to help develop TMFs, or is it a loose idea to be figured out later?
				+ trying to follow up, finish white paper based on extensive literature review re: stranding. Hoping for further info to use for best design of flow action. How do we measure it, is the existing TRGD sufficient?
			* Rob- Please give clarification of TMF delays:
				+ Scott- *one concern is that, if conditions aren’t present, should we still try to mitigate? Should look at info on trout population, serious consideration of moving forward if consensus is found. Not automatic, but discussion would be necessary. “Delay until conditions are right”.*
			* Shane- Mike: presentation at TWG showed data calculating invertebrate productivity over time. Will this continue? Has it been compared to food base side to see how they look/align
				+ Mike- *secondary invert production, specifically based on prey items. Only time in past productions estimates were made during the late 2000s (07-09). Turnover of biomass made available to fish, some lost to drift. “Bioenergetic approach”. Currently working to put together and publish paper. Research hasn’t been extended since 2016.*
			* Ted- Drift single best predictor of trout growth, more than temp, etc.
				+ Mike- *complements bioenergetic work. Looking at monitoring data, standing invert biomass varies, but not much more than m/in^3. Production maintains stable biomass, excess is what goes into drift, and available for visual feeders (trout)*
				+ Shane- *be interesting to see drift data compared to back-calculated from bioenergetics.*
		- *Project Element H.3. Brown Trout Early Life History Stages in Glen Canyon* <new>
			* What is leading to the pulsed recruitment events of brown trout in Lees Ferry?
			* Are fall HFEs making for better spawning conditions in the Lees Ferry reach? Are they flushing gravel and is there any way to evaluate? Discuss with Grams. Could look at the section below Waterholes, measure what is coming in vs what is going out? Look at pre and post HFE spawning habitat conditions?
			* How will this understand what’s going on with BNT in Glen Canyon?
				+ Mike- *combination effort. Similar project done years ago that gave insight to early RBT life stages. Recognizing the changing landscape with the Petty memo, brought up differently-timed floods to affect survival. Presented that we’re not seeing a lot of BNT in catch when we usually should (Apr, Jul); are they using the same habitat? Suggests study relative to habitat types.*
				+ Kim- *Project labeled as new, some elements were in last TWP. Been trying to get juvenile BNT in the construct of existing types. Not usually showing up in catch until later in the year. Looked at designing a more concerted project to see spread of BNT in the Canyon. Consider a pre-peak check in January*, find where the are vulnerable and ‘where they are’.
		- *Project Element H.4. Salmonid Modeling* <new>
			* Further develop the risk assessment to address brown trout population increase at Lees Ferry and effects on humpback chub at the LCR.
			* H versus I: We all know and understand now that Rainbow trout does not impact chub as we worried decades ago.
				+ Question- *how much H and I is to be spent on rainbow trout versus these other efforts*? We should expect less money being appropriated to Rainbow trout projects for this and future ongoing programs. It would be good in the budget to see the breakdown of H and I to see which projects are receiving what part of that $500k pot and to determine if this is adequately being split and put to use.
				+ It is a Catch-22; we need to see how all the small subjects impact the greater whole, but we of course do not have the budget for everything. These are good line items to use as an example for breaking it down clearly and can help show the bigger picture so serve for future budget proposals and projects.
			* Clarity on BNT increases
				+ Why did a lot of adult BNT show up in ‘14-15? Could be HFE, other factors, but is about 50-50. NPS work may suggest that Fall HFE allowed trout to move upstream
				+ What are the drivers of inter-annual variations in BNT reproduction? Will determine future population growth
				+ Population dynamics of RBT at Lees Ferry, how that might be flow-related.
				+ Continue developing models on BNT out-migration.
				+ Rob- Supports modeling, expects to be helpful
			* Movement down to LCR a big issue- what affects RBT out-migration? Large recruitment year would be a likely culprit. Do they come down and stay, or do they go back up? Haven’t heard why they wouldn’t move similarly to RBT.
			* Scott- wouldn’t say RBT is a good surrogate for BNT. Don’t know as much about browns as rainbows, shouldn’t rely on rainbow activity to predict brown activity.
			* Jim- Might there be a study to expand RBT success in hope of inhibiting BNT success?
				+ Scott- *‘17 was second-biggest recruitment we saw in RBT, which was a bad brown year. Perhaps.*
			* Kim- was tasked with tailwater data in W. US, focused on RBT and BNT. In systems with both trout, RBT often had some stocking whereas few BNT stocking records in many systems. Might look at interactions in other systems.
			* Craig E- revisiting projects elements, discussing how long they are forecasted to go. TRGD has long-range scope (to address LTEMP).
				+ Kim- H.3 should last just 1yr, due to costs and field sampling. Were also going to hire technician for project shared with G.
			* David R- Our goal is to monitor all the fishes in Glen Canyon reach, which has been and continues to be primarily RBT. WIth our electrofishing gear and its effectiveness, we are limited to sampling near shore habitat. I am not sure we can modify our sampling to specifically target brown trout, and particularly not without impacting the consistency and comparability of our long term monitoring.
	+ Concerns over meeting goals? What’s being missed on this resource?
		- Concerns over potential DO-driven fishery crash.
		- Interest in identifying spawning areas for BNT
		- Larry- Behavior experiments from Ward. Anything else on that?
			* Ward- some are still going for native fish. referring to experiments on trout from 2 years ago? ( Larry - experiments for *those and other nonnatives)* Ward *-* Part of Project I that will be coming up next
	+ Projects Funded Outside the GCDAMP
		- Brown trout control (Reclamation funds to NPS)
			* BAC
			* Lees Ferry

Stakeholder Discussion

====================================================================================

* **GIS**
	+ Lead researcher: Thomas Gushue
	+ How is work being done helping us meet:
		- Resource goals as described in LTEMP
			* Data management, including geographic information systems (GIS), has been a part of GCMRC’s role in GCDAMP since its inception, and was also supported in the 1995 ROD – specifically in *GCDAMP Goal 12: to maintain a high-quality monitoring, research and adaptive management program.*
			* Subsequent documents, including the most recent LTEMP EIS, have reaffirmed this important aspect of the Center and Program.
		- Guidance from DOI in the 2019 Petty memo
			* Project is designed to support the other proposed science projects that are aligned with resource goals identified in the LTEMP EIS and in more recent DOI guidance (2019 memo),
			* Document calls for continuity in resource monitoring and consistency in providing high-quality monitoring and research to the Adaptive Management Program. This project provides the support to make this happen.
		- BO Conservation Measures or PA requirements
		- LTEMP experimentation
		- Status and Trends
		- Knowledge Assessment recommendations
	+ Describe how this data might be used to adaptively manage the CRE
		- This Project is instrumental in sharing important information about trends in resources of the Colorado River ecosystem through web-based, interactive tools, online mapping products, updated website presence, and other GIS-related support
		- Products developed allow for the ability to make better informed, time-sensitive decisions on experimental and management actions under the 2016 LTEMP and the associated ROD
	+ How long will this study last?
		- 1-3 years
		- 4-10 years
		- 11-20 years
	+ Do we need to monitor every year?
	+ Prioritization
		- 1) high priority (important and essential) to implement and/or maintain;
		- 2) medium priority (important but not essential) to implement and/or maintain;
	+ Project Element descriptions (2021-23 TWP Proposal)
		- Project K. Geospatial Science, Data Management and Technology Project
			* Project Element K.1. Enterprise GIS, Geospatial Analysis and Processing
			* Project Element K.2. Data Management and Database Administration
			* Project Element K.3. Remote Monitoring and Advanced Technology Support
		- Stakeholder discussion
			* Request for web-based data applications on online mapping products
			* <https://www.usgs.gov/centers/sbsc/science/gcmrc-data-and-tools>
			* Larry - Is it possible to use GIS as an archive for information? Is there a way to do a bibliographic storyboard?
				+ Gushue- *pipe dream maybe 10y ago, resurrected a lot of the older data 3yrs ago. Trying to get in the right formats/database, working to that end.* Admin history project was cool, using map-driven, exploratory piece would be beneficial.
			* Eric Skieie- Will Project K.3 make its way into this TWP cycle?
				+ *work has been going for quite some time, going back to ~2004 with suspended sediment work, remote technology*. *Not new work, but trying to go after gauges lacking remote capabilities. Might have online before the next work plan starts.*

====================================================================================

* **Other Native Fish Species (other than HBC)**
	+ Lead researcher: David Ward, Dave Rogowski
	+ How is work being done helping us meet:
		- Resource goals as described in LTEMP
			* *Maintain self-sustaining native fish species populations and their habitats in their natural ranges on the Colorado River and its tributaries*
		- Guidance from DOI in the 2019 Petty memo
			* Future research should be tied directly to LTEMP resource goals and objectives
		- BO Conservation Measures or PA requirements
			* Larval and small-bodied fish monitoring (razorback sucker)
		- LTEMP experimentation
			* none
		- Status and Trends
		- Knowledge Assessment recommendations
	+ Describe how this data might be used to adaptively manage the CRE
	+ How long will this study last?
		- 1-3 years
		- 4-10 years
		- 11-20 years
	+ Do we need to monitor every year?
	+ Prioritization
		- 1) high priority (important and essential) to implement and/or maintain;
		- 2) medium priority (important but not essential) to implement and/or maintain;
	+ Project Element descriptions (2021-23 TWP Proposal)
		- **Project I. Warm-water Native and Non-Native Fish Monitoring and Research**
			* *Project Element I.1. System-wide Native Fish and Invasive Aquatic Species Monitoring*
		- Projects Funded Outside the GCDAMP
			* Razorback sucker monitoring and research
	+ Stakeholder discussion
		- Strogen - Understand the idea of the work at the slough. Is there a way to get GSF out of there? Is that a good way to do it?
			* Charles notes smallmouth bass: is there any particular place we worry about it? (*2x/yr sampling below dam, removal of nonnatives*)
		- No records of walleye or smallmouth reproducing below the dam - Dave - not as far as he knows, No record of them being ripe etc. Not something new. Have seen over the last 20 years or so. Infrequent observations of non native high risk. No evidence that they have capability to reproduce. Nothing like GSF.
			* Ward - *Project I.2 is focused on the slough and GSF. Will also tell us what will happen with smallmouth. Cost effectively see how many GSF come through the dam. In the process will learn about smallmouths and how they will behave. Therefore the focus on the slough*. Also evaluates what is coming down the tributaries. Warm-water fish and how they are utilizing the slough and how many are coming through
			* Any way to sample what is coming through the dam?
				+ Yes, but study that looks at above and below the dam are labor- and cost-intensive. I.2 gets a little bit of data about what's coming through the dam without going through the cost intensive studies.
			* Is work being done on BOR side for that?
				+ Lee- technical services center in Denver is doing some work. Looking at cost effective ways looking at fish passage
				+ Larry - eDNA techniques may be useful. Good point. Kim Dibble has an eDNA project funded outside GCDAMP.

Will know a little bit more about eDNA. Won't have results in time to incorporate in this work plan. related to downstream fish. Info will be helpful in answering those questions

* + - * Larry - Reviewing NV nonnative species management process, they’re on lookout for no less than 5 species of invasive crayfish. May be coming through the dam or up from Mead. They're a tremendous threat to pristine GC tribs, which are some of the only that don’t have crayfish in the SW.
				+ threats *are* large. When monitoring we’ll document them, but they aren’t on the radar at the moment.
			* Non native fish parasites: what is the story?
				+ No of non native fish parasites. won't have the impacts. Asian fish tapeworm and learnea (LCR and spot checks in mainstem and few places) not extensive monitoring but just spot checks
				+ Warmer water may be a spot for non native parasites. may show up in the lower portion of the canyon - One sample of asian tapeworm from the year before last. no others. If we start to see high #’s will need to readdress the area.
				+ Non lethal treatment for asian tapeworm: No treatment that could be applied on a systemwide scale. #s of them relative to env. conditions. No mitigation: would know there is a problem. would not be able to do anything about either of them.
				+ BO requirement to monitor learnea -thats why its done.
			* Channel catfish on LCR - assess the impacts of CCF on HBC.
				+ “Wow, there are a lot of quite large channel catfish in here”. Refine: how many really are there and what is their impact on native fish?

includes population estimates in LCR and lab work on predation impacts on native fish, behavioral interaction aspects.

* + - * + How will we find them? (*angling. We find volunteers and go catfishing. would include extensive hiking*)
				+ If it’s an extensive problem, then what? (*angling would also be preferred. Tribal concerns re: taking of life, will need to coordinate with the Tribes. LCR is a sensitive area and we need to be respectful of that*)
			* How do we stay nimble as a program to stay focused on the right things? (*Monitoring that AZGFD does in a good way to stay nimble*)
			* Do we need to schedule a program, to ensure we aren’t missing anything?
				+ disturbing that we have gone this long. CCF has always been there. There could be other things like that out there that could have big impacts. Monitoring will hopefully turn them up. AZGFD system wide monitoring does electrofishing but also hoop-netting, angling, basically target ccf. This data gives imp information. AZGFD is also doing work starting this summer to look at Lees Ferry to look more closely and set up studies to understand that barriers are acting as they are. Planning on recording that as part of the monitoring

====================================================================================

* **Nonnative Invasive Species**
	+ Lead researcher: David Ward, Dave Rogowski
	+ How is work being done helping us meet:
		- Resource goals as described in LTEMP
			* *Minimize or reduce the presence and expansion of aquatic nonnative invasive species*
		- Guidance from DOI in the 2019 Petty memo
			* Future research should be tied directly to LTEMP resource goals and objectives
			* Activities associated with the Endangered Species Act
			* Evaluate the threat posed by invasive non-native species
		- BO Conservation Measures or PA requirements
			* **Explore the efficacy of a temperature control device to limit nonnative fish establishment** (Lee - *have the ongoing work at technical services center in Denver, work that may be more broadly applicable at GCD. white paper, with summary of existing work and approaches. Still discussing what to do specifically at GCD. Need to further define the problem, need goals and objectives.)*
				+ Timeline as far as GCD specific *- (will do that in parallel, tech services timeline is 1-2 years. currently doing a tech search for applications. GCDAMP work to really determine what do we really need, reaches, times of the year, those are things that we could be doing now*)
				+ Kirk- As far as conservation measures, risk may be that system is going to be too warm. Could explore into the future. Makes more sense to continue what has worked in the past down there. Only been overrun with GSF only recently, probably because it has been too cold. Need to keep that system inhospitable, can start to refine some of the information needs, options, figure out how to use the bypass tubes more frequently. Can things be cooled off overnight etc. Several questions that can be thought of and prioritized. Using some of the expert staff and engineers can start to explore some of the options that are under the list of considerations

Lee- *Think that’s correct. We have a lot of good work and references from the early 2000s, going through EAs for potential solutions. Dusting off, updating studies for current problem statement & conditions. Also have been requests for more background on effectiveness of bypass tubes; presented preliminary conditions on efficacy, a lot would go into such an alternative - might want to revisit.*

* + - * + Larry - TCDs was discussed in 1985. topics, options need to be discussed. Are we committed to solving this problem in the near term? Timeframe?

Lee - *dependent on having a feasible solution. For 10-20 years, we're trying to figure out how to get warmer water. Spent a lot of time and money trying to figure out a solution. Things changed and the solution is no longer feasible. Now we need to cool the warmer water - conditions have changed. Trying to respond to a new set of constraints.*

* + - * + Kirk- had we implemented one of those preferred alternatives for TCD, probably wouldn’t be very useful right now. Without an instrument to do both cooling and warming, “my money would be to cool it.” *(Larry- think we’ve had enough experience with array of options)*
				+ Craig- can we do anything in this TWP to move the needle over the next few years?

Lee- hope so, we welcome feedback and suggestions

* + - * **Prevent the passage of deleterious invasive nonnative fish through Glen Canyon Dam**
				+ Jim- When they’re trying to keep carp out of midwest, they use some kind of electrical field. Would that be possible above or below the dam to control invasives?

*Think that only works in a migration scenario, usually a barrier to upstream migration*

* + - * Alter the backwater slough at River Mile (RM) 12
			* Rapid response control plan for newly establishing or existing deleterious invasive nonnative species
			* Disease and parasite monitoring
		- LTEMP experimentation
			* Mechanical removal of nonnative species
				+ Green sunfish control in the -12 mile slough
		- Status and Trends:
			* 2017: Good condition and unchanging with medium confidence
		- Knowledge Assessment recommendations:
	+ Describe how this data might be used to adaptively manage the CRE
	+ How long will this study last?
		- 1-3 years
		- 4-10 years
		- 11-20 years
	+ Do we need to monitor every year?
	+ Prioritization
		- 1) high priority (important and essential) to implement and/or maintain;
		- 2) medium priority (important but not essential) to implement and/or maintain;
	+ 2021-23 TWP Proposal
		- Project Element descriptions
			* Project Element I.1. System-wide Native Fish and Invasive Aquatic Species Monitoring
			* Project Element I.2. Invasion and Colonization Dynamics of Warm-water Invasive Fish
				+ Is Pierce Ferry a barrier to nonnative fish?
				+ Invasive species coming down the LCR. Pools between Grand Falls and Blue Spring produce a lot of fish that get flushed into the LCR every monsoon season. Who is addressing this? Navajo Nation land. Is this “in” the program as “mitigation of dam ops in the ecosystem?” Is there flexibility on research to figure out what is going on? Who is responsible for management of that area?
			* *Project Element I.3. Impacts of Channel Catfish on Native Fish in the Little Colorado River* <new>
				+ With tribal approval, consider removing catfish and green sunfish from the LCR.
				+ Will probably take one more work plan. If we can get good estimates, that there’s a high potential for impact to HBC, would probably turn management over to someone else. Removal through angling due to vulnerability sounds preferred.
				+ Craig E- with what you saw re: catfish populations, is that something that keeps you up at night? (*Yes, has the potential to be an important driver. If so, mitigation could be done cost-effectively*)

Any sense of how far up the LCR they have gotten? - *will get refined this year. Have been found all the way up to Chute Falls, Atomizer.Aggregated in certain sections.*

* + - * + Ryan Mann- idea only to quantify # of fish, or also impacts on HBC populations? Both, diet analysis and lab work to iron out impacts to HBC
	+ Stakeholder discussion
		- At what interval should we be conducting reviews of what nonnative fish pose the greatest current risk to humpback chub recovery and other native fish populations? Example: should we be shifting focus from rainbow trout to brown trout/other?
		- Include monitoring and reporting of crayfish.
		- What came of the eDNA proposal? Can eDNA detect population size?
		- Is Pierce Ferry a barrier to nonnative fish? Has it contributed to the shift from a non-native to a native fish community by reducing connectivity to Lake Mead (especially for channel catfish)?
		- Turbidity and predation: Will this continue? Lab vs field inconsistencies. Lab: as turbidity goes up predation goes down for sight feeding fish (rainbow trout). Field: when turbidity goes up predation by rainbow trout actually goes up. Is this because chub are moving more when turbidity is higher? Making them more susceptible to predation?
		- Consider funding David Ward’s study of the predator/prey dynamic for all native fish.
		- Consider funding additional non-native fish eDNA trips if this analytical method proves helpful.