

**Agenda and notes 05/15/2024 Rapid Response Tech Team**

Purpose- biweekly technical call including management agencies & GCMRC to relay recent findings and discuss future sampling efforts, needs, and potential actions.

Participants (from Teams app):

- Trammell, Melissa
- Arnold, Jeff L
- O'neill, Matthew W
- Hines, Brian A
- Leavitt, Daniel J
- Rogers, Scott
- Eppheimer, Drew E
- Dibble, Kimberly L
- Shollenberger, Kurt
- Fazio, Buddy B
- Billerbeck, Rob P
- Gibney, Nicole D

**I. Recent trips and findings**

Last meeting/report out was 05/01/2024. This summary shared on AMWG 5/15/24

Fish captured on all trips in Jan-April 2024					
Launch	Reach	Description	Number of SMB	Number of GSF	Number of Wall
3-Apr	Downstream	Mainstem Fish, non-native (electro shocking)-AZGFD	0	12	1
23-Apr	Downstream	Juvenile HBC monitoring*	-	-	-
16-Apr	LCR	LCR HBC, three locations on Little Colorado River	0	0	0
April 9-10	PBR-BW	SMB Removal Lees Ferry to Badger - seines	0	1	0
25-Jan	Lees Ferry	Lees Ferry trout population monitoring - TRGD	7	408	3
11-Mar	Lees Ferry	Lees Ferry fish population monitoring - AZGFD	0	164	0
1-Apr	Lees Ferry	GLCA electrofishing SMB removal	5	146	0
15-Apr	Lees Ferry	GLCA electrofishing SMB removal	2	454	2
4-Apr	Lees Ferry	Lees Ferry trout population monitoring TRGD	2	250	2
5-Mar	Lees Ferry - sloughs	GLCA Netting/EF	0	1	0
21-Mar	Lees Ferry	GLCA Netting/EF	1	46	0
8-Apr	Lees Ferry - sloughs	GLCA Netting	0	10	0
22-Apr	Lees Ferry - sloughs	GLCA Netting	0	14	0
<b>TOTALS</b>			<b>17</b>	<b>1506</b>	<b>8</b>

GLCA –

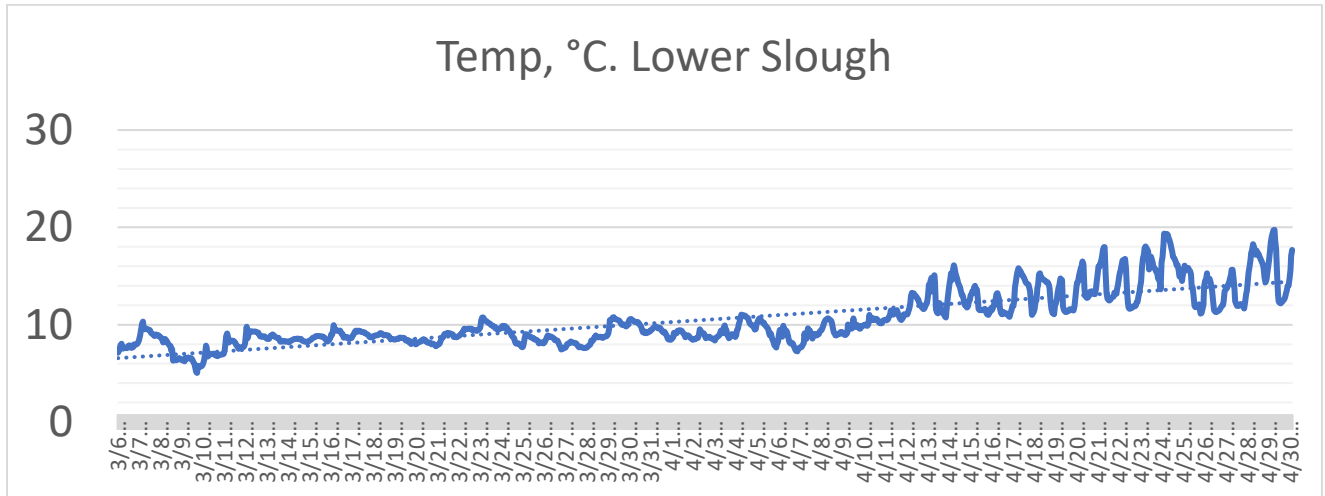


Figure 1. Lower Slough temperature Mar 6-April 30, 2024.

This logger is at the upper end of the lower slough, which is warmer than the bottom end (near river). There is a temperature gradient, and most carp and GSF are at upper end. Electrofished last week, only one GSF. Carp not expressing gametes. Shocked again Monday – a doz GSF, carp still not expressing.

Block nets parts should all be in soon, will install next week.

Will begin artificial spawning substrates next week. In slough, and in other river locations. Near Dam, and then select based on velocity map that Drew and others developed for other locations. Intend to check twice a week, since eggs can hatch 2-7 days. Mondays, and Thursday/Friday. Visually examine by snorkeling or underwater drone, or from above surface.

Deployed more temp loggers, another in dam slough, Also two just below dam, Just below lunch beach, on River Left. And hidden slough, RM 1 (near where substrates will go).

**GRCA** – Last week PBR backwater seining, 8 locations, 2 hoop net sites, RM 3.2 RL and Paria Beach RR. Temps are creeping up. At 3.2 14C in afternoon, 10 in morning.

Have caught 11 GSF. Have temp loggers in these two locations. Collected eDNA samples at RM 1.2 and 3.2. Electrofishing can begin under contract next week. Will schedule through the end of June for now.

**PBR BW Sampling 5/7/24 - 5/8/24**

<b>Gear</b>	<b>RM</b>	<b>FMS</b>	<b>GSF Total</b>	
SN	1.27		1	1
HN	3.18	1	6	7
HN	3.21		4	4
<b>Total</b>		1	11	12

**GCMRC.** Shared by Kim Dibble. No SMB. Did not sample House Rock. First site was near LCR. Did capture one beautiful large untagged female razorback sucker near RM212 and two RZ/FM hybrids, also untagged.

**JCM-East (April/May 2024 trip)**

species	n	mean FL (mm)	range FL (mm)
GSF	13	82.4	52-109
STB	2	135.5	135-136
WAL	1	217	NA
BGS	1	79	NA

**JCM-West (April/May 2024 trip)**

species	n	mean FL (mm)	range FL (mm)
GSF	8	87	58-159
STB	1	195	NA
WAL	3	317	261-350

AGFD – Trip going next week – Lees Ferry monitoring.

FWS – currently on the river, update next time

**I. DISCUSSION OF NEW FINDINGS**

AMWG met today, someone asked when SMB caught in LF would be reproductively mature. Fish caught in 2022 and 2023 are still less than 200 mostly, max of 180, average 84 mm TL so far in 2024., some likely to mature next summer, group agreed.

Kerri heard back from Tom Turner doing DNA kinship study – results 94 pairs contributed, 105 Ne. Not huge population [but larger than expected].

Kim – met with Tom Turner, Megan – study does not show whether those parents are in lake or in Lees Ferry, need more SMB samples from the lake. As well as in river.

Brian and Kim shared a poster of the analysis from Turner. Looked at sibship – 94 distinct pairs. Based on 2022 samples only. All from EF sampling, mostly Dam to slough (above RM -12.5) but not in the slough. Because all clumped below dam, and if 94 pairs, don't think they could all come from in river nests. Seem more likely entrained. 2023 samples will be more revealing. To tease out entrainment vs in river reproduction. Author is graduating, need another, or a dedicated research technician. Turner is pursuing. This project is funded by I.2. in TWP. Hopefully will make it through current TWP process. Reclamation is picking up some costs for 2023. Brian and Kim will pursue.

Jeff – Monday, set some gillnets and light traps in forebay. Did not catch any fish. Planning on additional netting in conjunction with hydroacoustic studies. Talking with Freissen about net sets. Assistance from BOR.

## II. Upcoming trips and other future plans –

### 2024 sampling and monitoring

**GRCA** – on track with schedule below – BW sampling May 7-8, PBR EF on May 20

**GLCA** – next week block net install, then will EF and Net all larger fish out of the interior slough and put outside the block net, and PIT tag all the fish put outside net to see if they get back in. If there's a flow spike, will have to pull and reset. Net may be subject to vandalism, will check weekly.

**See below for updated sampling schedules for Glen Canyon NRA and Grand Canyon NP, Tables 1 and 2.**

**GCMRC** – see below table 3 of GCMRC and cooperator trips

**AGFD** – see below table 3

**FWS** – see below table 3

**Reclamation** – Jeremy – will be a release of IRA budget soon, so can move forward with hydroacoustics study – transducers on penstocks to monitor what's going through – in January, should be operational by next spring.

Temperature projections provided by Bryce Mihalevich (Figures 2 and 3, below)

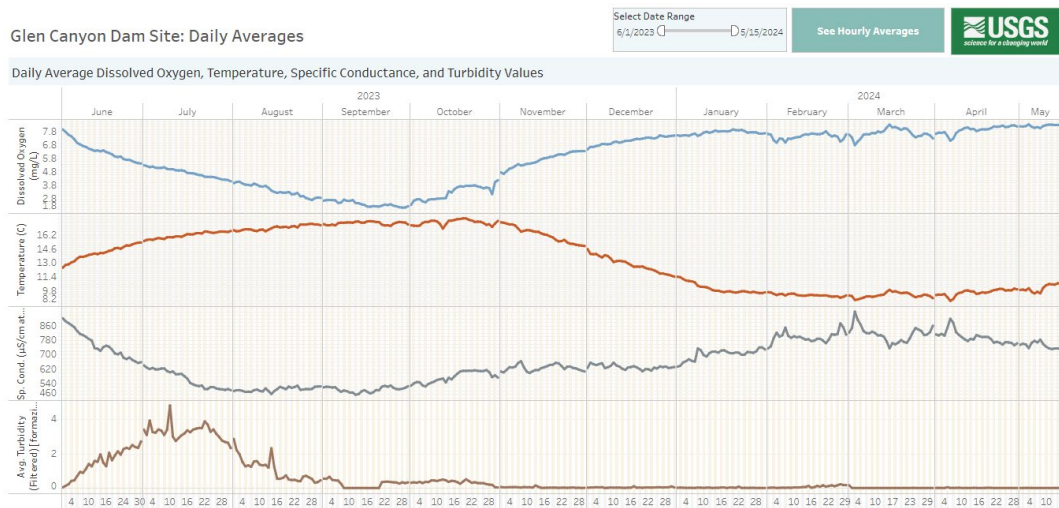
## III. Old Business –

- a. Concerns from anglers – trout fishery in GLCA.
  - i. dates and locations of electrofishing – Jeff will work with Scott
  - ii. need for more outreach
- b. GLCA, Jeff needs help Probably in June. Jeff in contact with Emily (FWS). Will schedule soon.
- c. Report out on slough channelization discussion. – NPS still discussing but moving forward. The IDT has met several times, and has addressed questions with Reclamation to the extent possible. Matt is working with park and engineers on final design. The decision is to move forward with NEPA, and do an EA. We think design now will give us a good shot at discouraging breeding with velocity and cooler temps. We will have no action, and one action alternative (BOR design). Construction will occur between Oct – Mar, before next spawning season. Discussion of division of labor for the EA.
- d. Jen Pelz from Grand Canyon Trust asking for data They would like data to create their own graphs/prepare background materials to educate people on smallmouth bass
  - i. Matt and Melissa will meet with Jen to explain. We want to be very transparent, and happy to share existing maps, but FOIA v data release timelines are both long. *(no response from Jen yet)*

- e. Coordinated effort between NPS and GCMRC regarding sampling protocols for both GLCA and GRCA (email from Bill Stewart) – clarification
  - i. Kurt, Jeff, Drew working on standardizing
  - ii. In PBR hoping to include some depletion passes. Will select sites dynamically each week depending on results of first pass. Will do 2 of 4 PBR reaches in entirety. Then choose 10 sites to do 3 pass depletions based on highest capture of SMB and then GSF, on the next night. Any concerns about timing? Should we spread them out more evenly? This works logistically, but timing is not standard among passes. Drew, Kim and Charles will discuss and share with Kurt.
  
- IV. New Business – Would like to take this group opinion on ‘where we are’ with invasion curve
  - a. Kim – have discussed internally, but was not included on TWP.
  - b. Dan – regarding the scope of the question of where we are on curve – depends on where we are in the system - we should think about it on different scales. Lees Ferry, v entire river below dam.
  
- V. Anything else?
  - Matt will get Bryce Mihalevitch’ presentation on temperature modeling to include in the notes.
  - a. Let Melissa know if there is anything you’d like to see on next agenda.

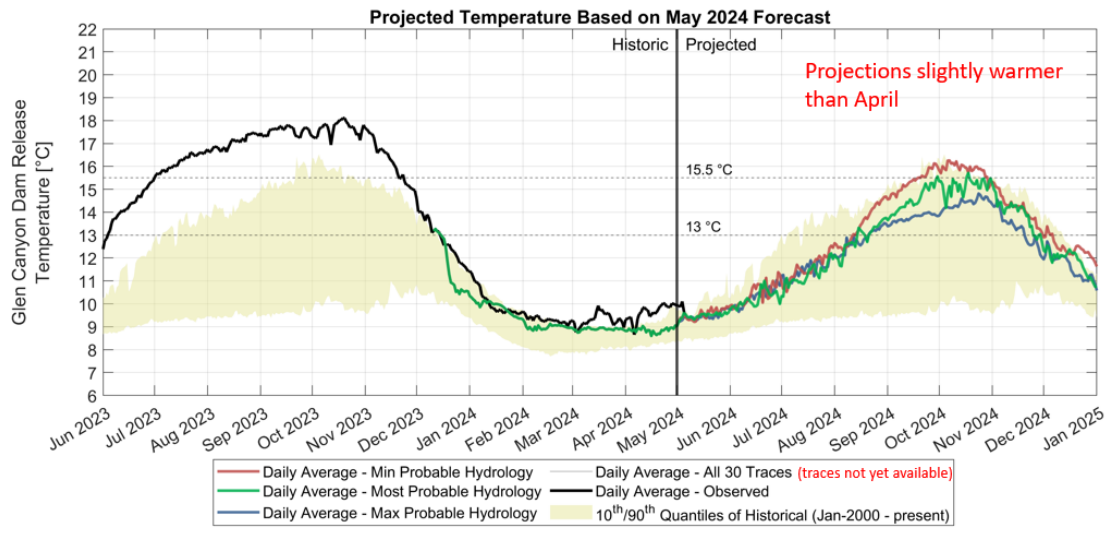
**Adjourn 1655 MDT**

**May 15 outflow temp 10.7**

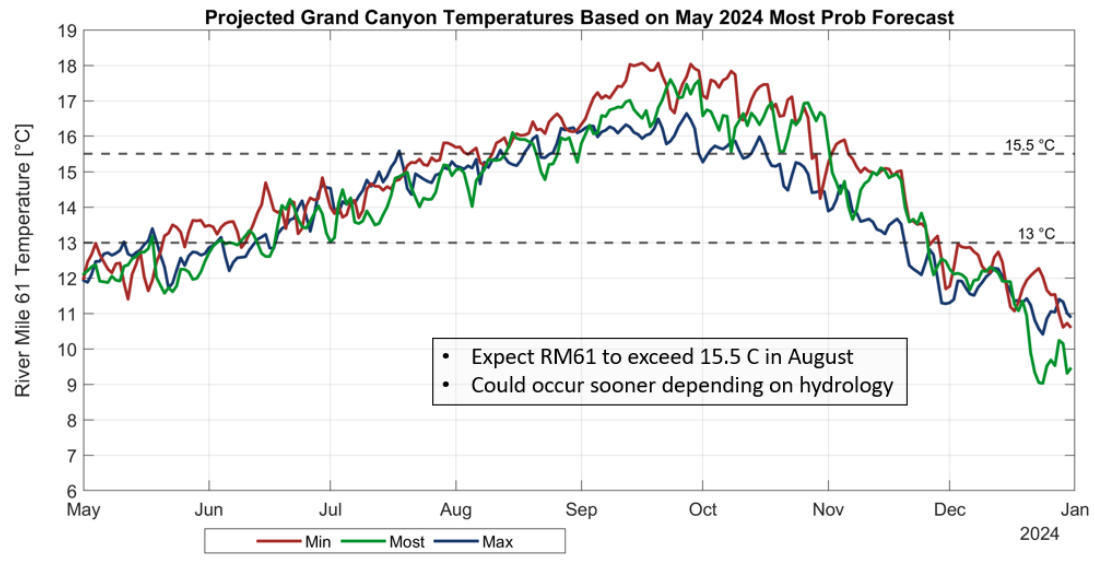


The water quality data shown here are filtered raw values and are subject to revision through quality control / quality assurance procedures. These data are being provided to meet the need for timely best science. The data have not received final approval by the U.S. Geological Survey (USGS) and are provided on the condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the data. Please visit GCMRC's Discharge, Sediment and Water Quality web site to plot or download the processed measurements from this station: [https://www.gcmrc.gov/discharge\\_gw\\_sediment/station/GCDAMP/09379901](https://www.gcmrc.gov/discharge_gw_sediment/station/GCDAMP/09379901)

## CE-QUAL-W2 Modeled Temperature



## Dibble et al. Grand Canyon Modeled Temperature



Figures 2 and 3. Provided by Bryce Mihalevich, Reclamation, presentation to AMWG May 15.

Table 1. Grand Canyon NP Sampling Schedule 2024

<b>Dates</b>	<b>Trip</b>	<b>Location</b>
April 9-10	PBR-BW	Paria to Badger
<del>April 15-19</del>	<del>PBR-EF</del>	Paria to Badger
May 7-8	PBR-BW	Paria to Badger
May 20-24	PBR-EF	Paria to Badger
June 4-5	PBR-BW	Paria to Badger
June 10-13	PBR-EF	Paria to Badger
June 19-30	HBC AGG/NN Surveillance Downstream	Lees Ferry to Diamond Creek
July 8-12	PBR-EF	Paria to Badger
July 23-24	PBR-BW	Paria to Badger
July 29- Aug 2	PBR-EF	Paria to Badger
Aug 13-14	PBR-BW	Paria to Badger
Aug 19-23	PBR-EF	Paria to Badger
Sept 9-12	PBR-EF	Paria to Badger
Sept 23-30	NN Surveillance SN/eDNA Downstream	Lees Ferry to LCR
Oct 7-10	PBR-EF	Paria to Badger
Oct 21-Nov 1	NN Surveillance EF Downstream	Lees Ferry to LCR
Nov 11-15	PBR-EF	Paria to Badger
Nov 25-29	PBR-EF	Paria to Badger

Occurred, Canceled due to low water temperature

Table 2. Glen Canyon NRA Sampling Schedule 2024. Electrofishing occurs mostly at night. Dates and locations may change in response to monitoring results to focus on high density areas. Trip length is 3 to 4 days/nights. Netting trips focus on the sloughs. Nets are set overnight. Undesired warmwater fishes are removed for beneficial use (except for carp). Rainbow trout are not captured or handled during electrofishing. Brown trout are removed for beneficial use.

WEEK OF:	Description
March 5	GLCA electrofishing
April 1	GLCA electrofishing
April 8	GLCA Netting
April 15	GLCA electrofishing
April 22	GLCA Netting
April 29	GLCA electrofishing
May 6	GLCA Netting
May 13	GLCA electrofishing
May 20	GLCA Netting and Slough Block Net Installation
May 27	GLCA electrofishing
June 3	GLCA Electrofishing
June 10	GLCA Netting
June 17	GLCA Netting
June 24	GLCA electrofishing/Maybe only one boat
July 1	GLCA Electrofishing
July 8	GLCA Netting
July 15	GLCA Electrofishing
July 22	GLCA electrofishing/Maybe only one boat
July 29	GLCA Netting
Aug 5	GLCA electrofishing
Aug 12	GLCA Electrofishing/maybe only one boat
Aug 16-19	Potential chemical treatment of slough if needed
Aug 19	GLCA Netting
Aug 26	GLCA Netting
Sept 3	GLCA electrofishing
Sept 9	GLCA Netting
Sept 16	GLCA electrofishing
Sept 23	GLCA Netting
Sept 30	GLCA electrofishing
Oct 15	GLCA electrofishing
Oct 28	GLCA electrofishing
Nov 18	GLCA electrofishing



**Table 3. GCMRC, Cooperator, and Tribal River Trips and Field Activities**

VI. **Occurred** or **Planned** 2024

Launch	Take out	Description
25-Jan	30-Jan	Lees Ferry trout population monitoring
14-Feb	1-Mar	Quality of Water/fine sediment monitoring
11-Mar	14-Mar	Lees Ferry fish population monitoring
3-Apr	17-Apr	Mainstem Fish, non-native (electro shocking)-AZGFD
4-Apr	9-Apr	Lees Ferry trout population monitoring
9-Apr	26-Apr	Aquatic Foodbase monitoring (drift)
15-Apr	26-Apr	LCR HBC, camps at three locations on Little Colorado River
20-Apr	29-Apr	Hopi Cultural Monitoring
23-Apr	12-May	Juvenile HBC monitoring-April 27 Launch downstream Lees Ferry
27-Apr	6-May	Navajo Cultural Monitoring
2-May	21-May	Survey Control Network
13-May	30-May	Cultural Resource Monitoring
17-May	31-May	Mainstem Fish, non-native (electro shocking)-AZGFD
21-May	31-May	LCR HBC, camps at 4 locations on Little Colorado River
25-May	3-Jun	Zuni of Pueblo Cultural Monitoring
6-Jun	20-Jun	Grand Canyon Youth-"Partners in Science"
8-Jun	17-Jun	Southern Paiute Consortium Cultural Monitoring
12-Jun	21-Jun	Hualapai Cultural Monitoring
26-Jun	5-Jul	Grand Canyon Youth-"Partners in Science"
27-Jun	8-Jul	LCR Juvenile HBC monitoring (3 camps)
3-Jul	18-Jul	Grand Canyon Youth-"Partners in Science"
3-Jul	4-Jul	TRGD
5-Jul	24-Jul	Juvenile HBC monitoring
8-Jul	12-Jul	Lees Ferry trout population monitoring
18-Jul	30-Jul	Mainstem Fish, HBC-Seining
13-Aug	16-Aug	Lees Ferry-Terrestrial Vegetation Monitoring
14-Aug	30-Aug	Fine Grain sediment monitoring
24-Aug	9-Sep	Terrestrial Vegetation Monitoring
9-Sep	11-Sep	Terrestrial Vegetation Monitoring
28-Aug	16-Sep	Mainstem Fish, HBC-aggregations (netting)
5-Sep	10-Sep	Juvenile HBC Monitoring in Glen Canyon

Yackulic, C.B., Bair, L.S., Eppehimer, D.E., Salter, G.L., Butterfield, B.J., Caster, J.J., Deemer, B.R., Fairley, H., Grams, P.E., Kasprak, A., Palmquist, E.C., and Sankey, J.B., 2024, Modeling the impacts of Glen Canyon Dam operations on Colorado River resources [presentation], LTEMP SEIS meeting (virtual), January 31, 2024: Flagstaff, Ariz., US Geological Survey, Southwest Biological Science Center, Grand Canyon Monitoring and Research Center, <https://www.usgs.gov/centers/southwest-biological-science-center/science/modeling-impacts-glen-canyon-dam-operations>