Agenda and notes 07/02/2024 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
(add attendance from teams)

Trammell, Melissa
Scott Rogers
Newton, Jess M
David Rogowski
Gibney, Nicole D
Hines, Brian A
Hedwall, Shaula
Shollenberger, Kurtis R
O'neill, Matthew W
Fazio, Buddy B
Hammen, Jeremy J
Omana, Emily
Arnold, Jeff L
Ryan Mann

I. Recent trips and findings

Last meeting/report out was 06/21/2024.

GLCA –

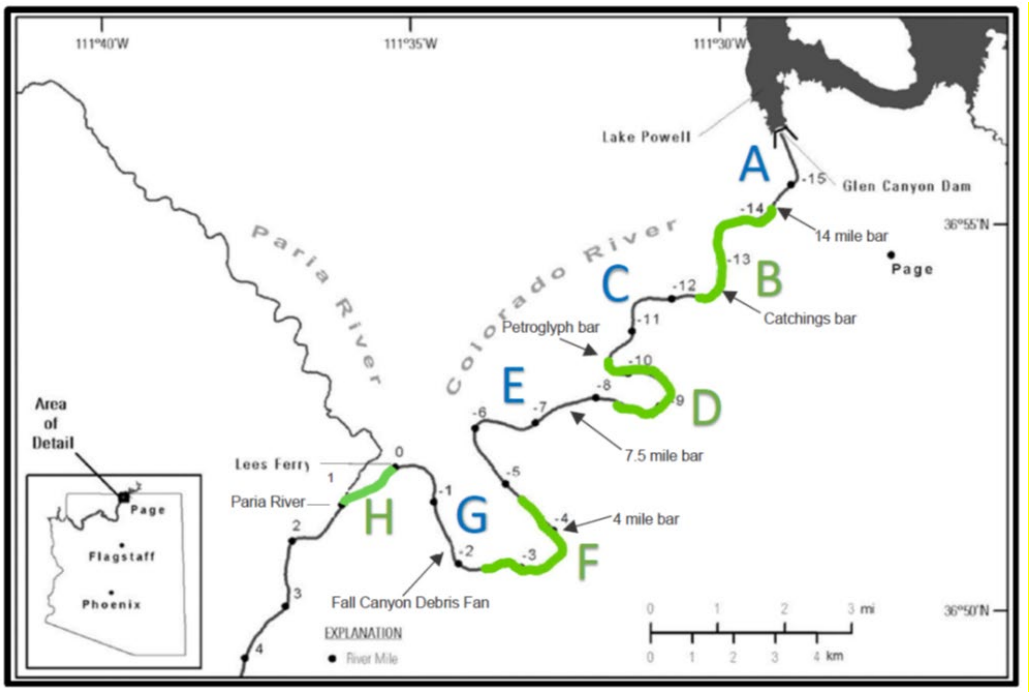
Main

Table 1. Standard monitoring capture totals from electrofishing efforts in GLCA from June 24-28, 2024

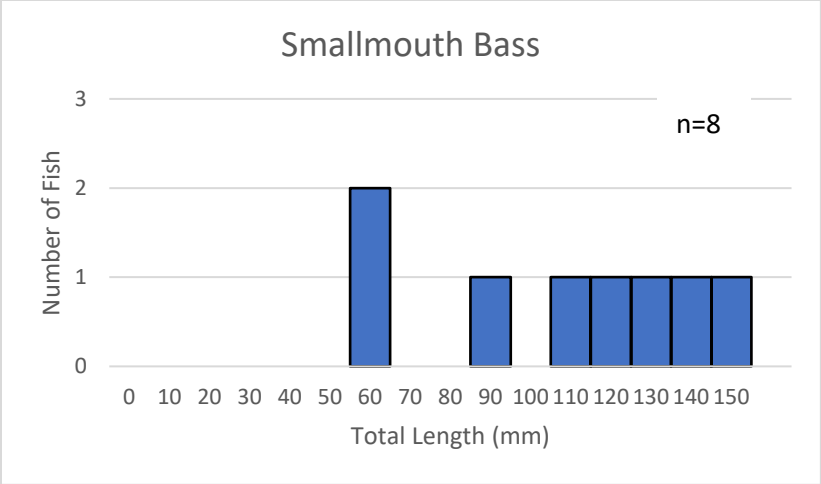
Species	Number of Fish Removed	Size (mm)	Disposition	% of Catch
GSF	740	32-139	BU	87.37
SMB	8	61-157	DP	0.95
BGS	8	52-117	BU	0.95
WAL	2	350-410	DC	0.24
CRP	1	44	BU	0.12
BNT	62	52-497	DC	7.32
RBT	23	46-92	BU	2.72
CRY	1		DP	0.12
TRT sp	2	33-34	BU	0.24
Total	847			

Table 2. Standard and Exploratory capture totals from electrofishing efforts in GLCA from June 24-28, 2024

Start Date	Reach	SMB	GSF	BGS	WAL	BNT	RBT	Trout sp.	CRP	CRY
24-June-24	E	1	131	2	0	6	8	0	0	0
	F	1	44	0	0	11	3	0	0	0
	G	0	42	0	0	3	1	0	0	0
25-June-24	C	2	111	0	0	16	1	0	0	0
	D	2	82	0	0	14	1	0	0	0
	G	0	7	0		1	0	0	0	0
26-June-24	A	1	66	1	2	3	1	0	0	1
	B	0	67	0	0	3	3	0	0	0
27-June-24	A	0	31	0	0	1	1	0	0	0
	B	0	75	0	0	1	3	0	0	0
	C	1	81	5	0	3	1	2	1	0
	D	0	3	0	0	0	0	0	0	0
Total		8	740	8	2	62	23	2	1	1



- Two adult Walleye (350 and 410 mm TL) were caught in reach A.
- All Smallmouth Bass ranged in total length from 61 mm – 157 mm.



- Green Sunfish ranged from 32-139 mm total length.
- Brown trout caught and processed ranged from 52-497 mm total length. Brown trout > 200 mm were processed for human consumption.
- Twenty-three small rainbow trout died during electrofishing efforts and ranged in size from 46-92 mm total length.

EXPLORATORY SITES

- Exploratory sites are subjectively chosen based on previous SMB catches or other fish management actions such as selectively removing carp, flannelmouth suckers, and rainbow trout from the slough (released alive outside the slough).
- Exploratory sites are sampled once all standard monitoring has been completed for the week.
- LOWER SLOUGH (June 27, 2024); sampled with two boats, 1-hour 25 minutes.

Species	Count	% of Catch
Green Sunfish	8	25
Bluegill Sunfish	5	15.625
Common Carp*	19	59.375
Total # Fish	32	100

- ADDITIONAL SITES (11 total)

Species	Count	% of Catch
Green Sunfish	190	93.59
Smallmouth Bass	1	0.50
Bluegill Sunfish	5	2.46
Brown Trout	5	2.46
Trout sp.	2	0.99
Total # Fish	203	100

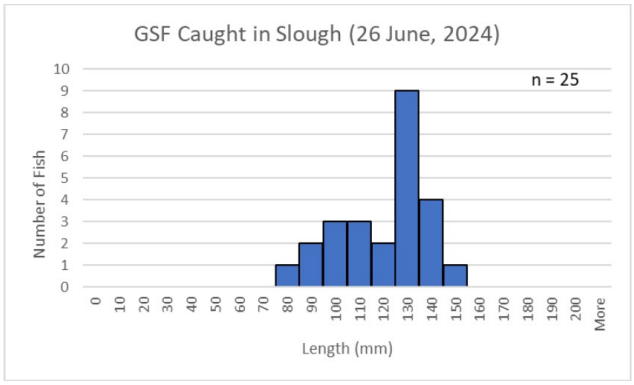
Slough

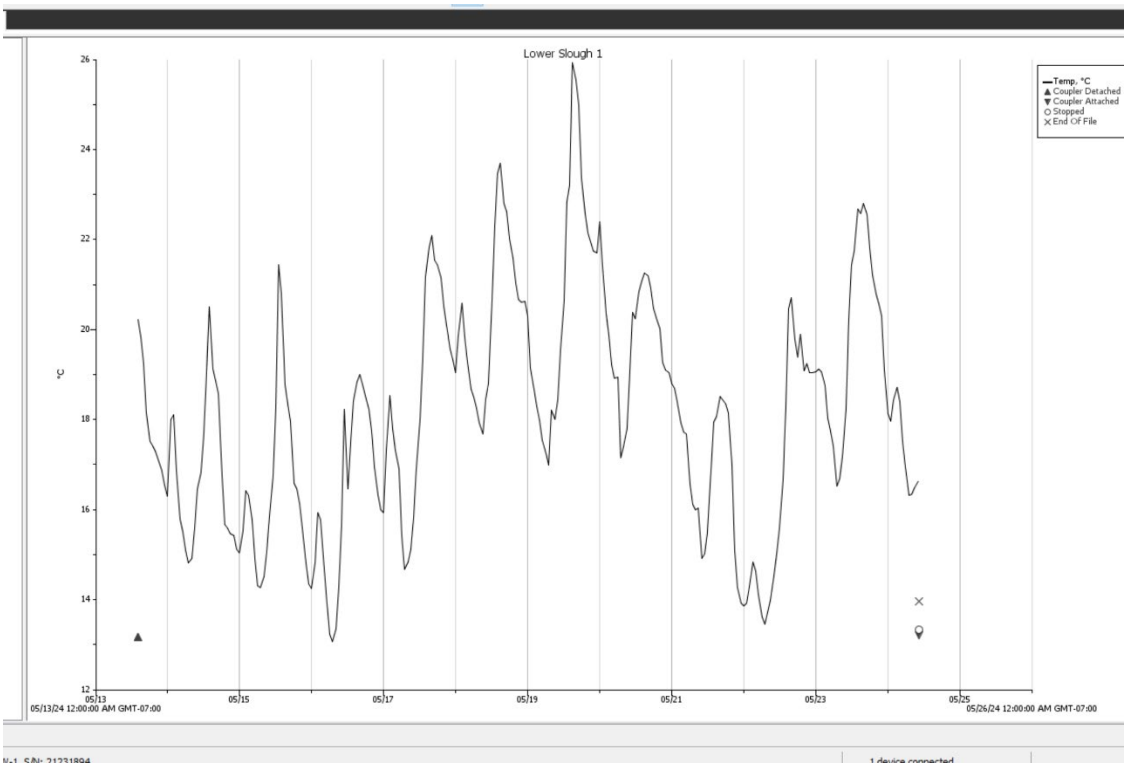
we set two large fyke nets and two small fyke nets in the slough last week. Total catches were:

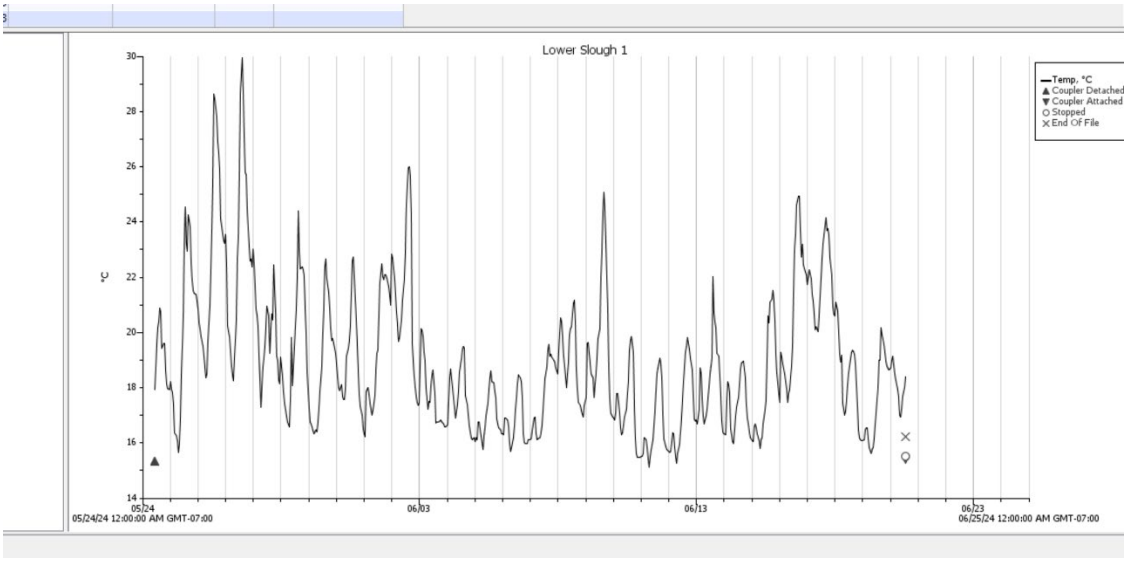
GSF - 25 (75-149 mm)
BGS - 5 (75-124 mm)
CRP - 3 (32-43 mm)
RBT - 1 (59 mm)

Takeaway:

1. YOY GSF have not been observed yet
2. All GSF captured were larger adults (see graph)
3. CRP managed to spawn with very few YOY observed (so far). Still getting carp recaptures so they are getting past the block net. Likely under the net, still working on keeping lead line down. Working for trout and flannelmouth. No adult SMB observed visually.
4. Upper Slough – still a few adult GSF, and there has been reproduction. Will remove before channelization. Pumpout will occur August/Sept (prior to any potential HFE or Slough construction).
    1. No other spp observed except tiger salamander earlier in year
    2. No YOY GSF in lower slough yet. Screen between upper and lower slough was replaced after piscicide last year. Metal screen with 1/8th " mesh net on both sides.







Temperature loggers in Lower Sloughs. Top graph is near the river, bottom graph is near the upper end, and tends to be warmer. Temps in the upper (east) side of slough are above 16.

Planning updates for veg and piscicide treatments

- Potential vegetation and piscicide treatments.
- Herbicide ordered, planned for July 26-29. Still not a lot of vegetation, need more plant to be effective. 1/8 of slough has vegetation, much less than last year. Cool mix, if implemented, might lead to slightly less stable flows as we dial in temperature mix.

- Piscicide Aug 16-19 if needed. Will try to let folks know in a couple of weeks if they need help, if implemented.
- Spawning substrates - hope to deploy one in slough this week, more next week.
- All tech should be signed off on boat ops in a few weeks
    - BPA available for boatmen, but not quick turnaround
    - ACE also available – fast turnaround availability – Emily and Jeff will coordinate.
- Matt asked about slough temps and other hobotemps.
    - Warm east side of lower slough above 16 daily. See above graphs for slough temps. Will download and provide data on other hobotemps by next call.

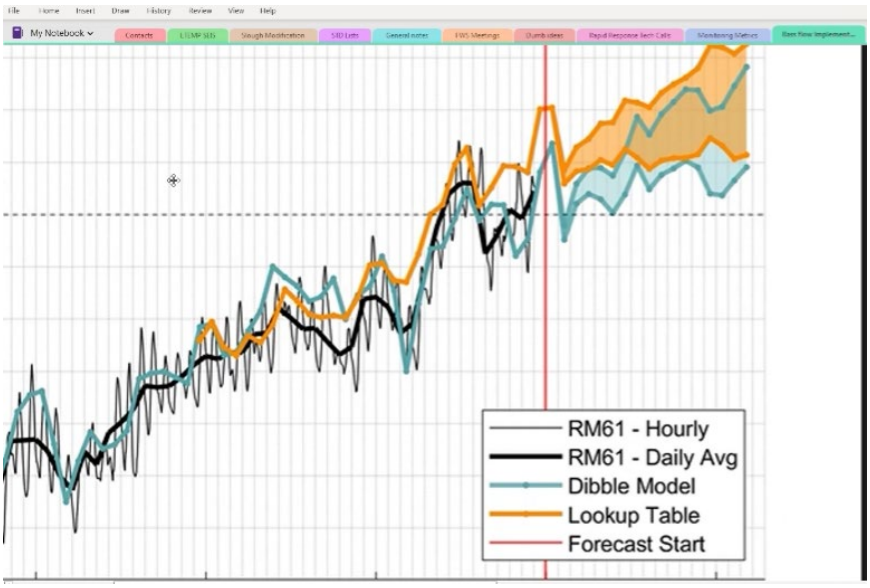
GRCA –
Downstream seining trip – No SMB. Kurt is working on adding our seining captures from our river trip (6/19 – 6/30) today. Mostly GSF and a few BGS.
Focused seining from LF to just below LCR, then shifted to hoop nets, targeting bright angel, shinumo, Havasu. Then below Havasu, shifted back to seining. Turbidity very low, captures were low in general. Captured GSF. Palisades isolated pool – very small, still isolated. Captured only FHM and PKF. No GSF. Winterkill? Winter sampling with dipnets and visual – no GSF observed. Observed some dead fish. Two GSF and a yellow bullhead in and near mouth of Havasu. Spent time at 209 slough. Isolated from mainstem. Very large. Seining not effective, lots of boulders and deep. Many GSF caught despite lack of efficiency. 3 hoops nets 1.5 hours, caught 300 GSF. Very concerning. Also BG, FHM PKF. Observed carp, and other large fish unidentified. Need to do more sampling (trammel nets) to see what else. Need to discuss potential treatments (Ward sodium sulphate?). NPS will follow up.

SMB summit - Emily – Drew and Kim and Emily will compile notes. Will provide update to SBAHG when ready. Discussed upper basin efforts, recommendations for what they could have done with hindsight. It was a good discussion, helpful. Jeff – very good conversation, ways to improve coordination and communication. Anything that might change TWP? Upper Basin early invasion focused on science before moving into removal - should not prioritize assessment over management actions. Tildon – will take more effort than we are currently implementing, but time will be short.

GCMRC. Drew - June LCR – JCM east occurring now.

FWS – Next trip is seining on July 18-Aug 2. No new updates.

Reclamation –
Temperatures in mainstem. Dam temp releases. Bryce's new model.
Downloaded hobotemp from RM61 Monday. See graph below.
We have exceeded LTEMP SEIS threshold June 28, with no indication that temps will decrease. So we have met the trigger for cool mix. Trying to get ROD signed ASAP. Concern we won't be able to start cool mix as soon as needed. Trying to start as soon as we can, and will implement shortly thereafter. A few days to a week or so?
1.25 c warming between dam and RM30. So RM30 is likely above 15 also. Lees Ferry is about 14 right now. Warming up in PBR reach, bass will be getting more active.
All of the math is for 15C threshold, and bass don't spawn until 16 C, so there is a buffer. Bass not likely to spawn immediately, takes some time for nesting, spawning, egg hatching and larval survival, so hopefully this delay will not result in bass near LCR.



II. DISCUSSION OF NEW FINDINGS

Note Bryce look up table
Potential for temps in LF to go up in Oct as coolmix ends
Bass might start moving around as temps rise.
Jeff – do agencies have flowmate (meter) to measure flow at artificial substrates. Dave R says perhaps they do and they will be sampling next in LF and can bring it if we have one. Matt might be able to find one. All will follow up and get back to Jeff and Dave.

III. Upcoming trips and other future plans –

2024 sampling and monitoring
GRCA – See Table 1
GLCA – See Table 2. – Kurt's interactive schedule for trips and volunteers is up and running, all slots filled. Sent template to Jeff for use.

GCMRC – see Table 3 of GCMRC and cooperator trips

AGFD – see Table 3 – sampling next week

FWS – see Table 3 – no updates

Reclamation – no more updates

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

IV. 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
      iii. Melissa sent response to angler concerns to Scott, D. Foster, Bill and Jim
      iv. Scott – science is still important to evaluate success.

v. No plans to move effort from PBR to LF. But reference to conversation in SMB summit to increase effort to focus on SMB density areas, when temps rise. But when/if coolmix implemented temps will remain cool. But no plans. We did move some effort to slough last year, but no plans for that so far this year. Not seeing same numbers of YOY fish this year.

vi. Ryan – what is capacity in detecting spawning this year? Kurt – detected in slough with small fyke nets, first week in July. What about PBR? That is one of the objectives of the monthly backwater effort. Includes snorkeling and netting of RM 3.21 (L) slough below cathedral, likely the only area suitable for spawning. Next such trip is July 23rd. Will be electrofishing the week before.

b. GLCA, Jeff needs help Probably in June update? Need any additional help? Will be in touch.

c. Report out on slough channelization discussion. – NPS and Reclamation are proceeding with EA.

i. On track. Park will lead compliance with Reclamation. Intent is to have EA done this calendar year. Anticipate entire project complete before next summer.

ii. Bud – we have a draft schedule for EA and Project. Working with NPS DSC – plan for EA about to be finalized. Working with Matt oNiell on writing. Plan to complete EA this fall, construction in colder months. Still on track to complete before next summer.

d. Jen Pelz from Grand Canyon Trust asking for data to create their own graphs/prepare background materials to educate people on smallmouth bass

i. resolved

e. Coordinated effort between NPS and GCMRC regarding sampling protocols for both GLCA and GRCA – effort ongoing, no updates, everyone on the river.

f. Rescheduling several future meetings. *Thanks for being flexible and confirming changes.*

Old date	New Date
12-Jun	June 21, combine June 12 and 26 into one mtg on 21st
26-Jun	June 21 - confirmed
10-Jul (TWG)	2-Jul - confirmed
24-Jul	keep date but get alternate call leader
Aug 7	keep
Aug 21 (AMWG)	Cancel
Sept 4	keep

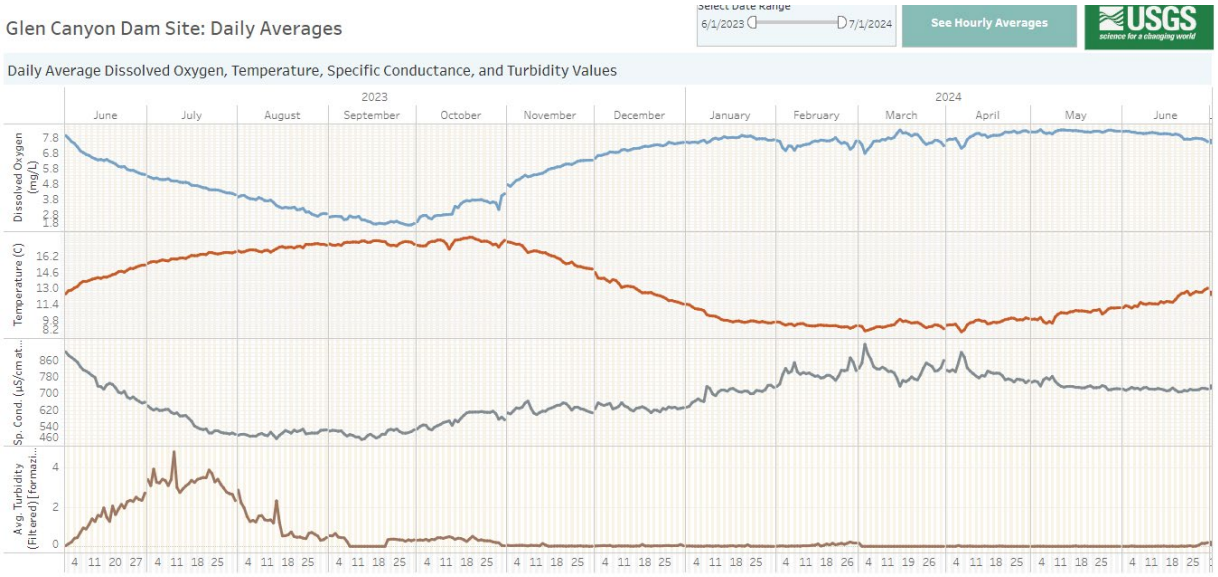
V. Anything else?

a. June is when SMB spawned in 2022 and 2023, with first YOY detected in sloughs in early July. So everyone be on the alert for SMB reproductive activity, particularly in hot spots.

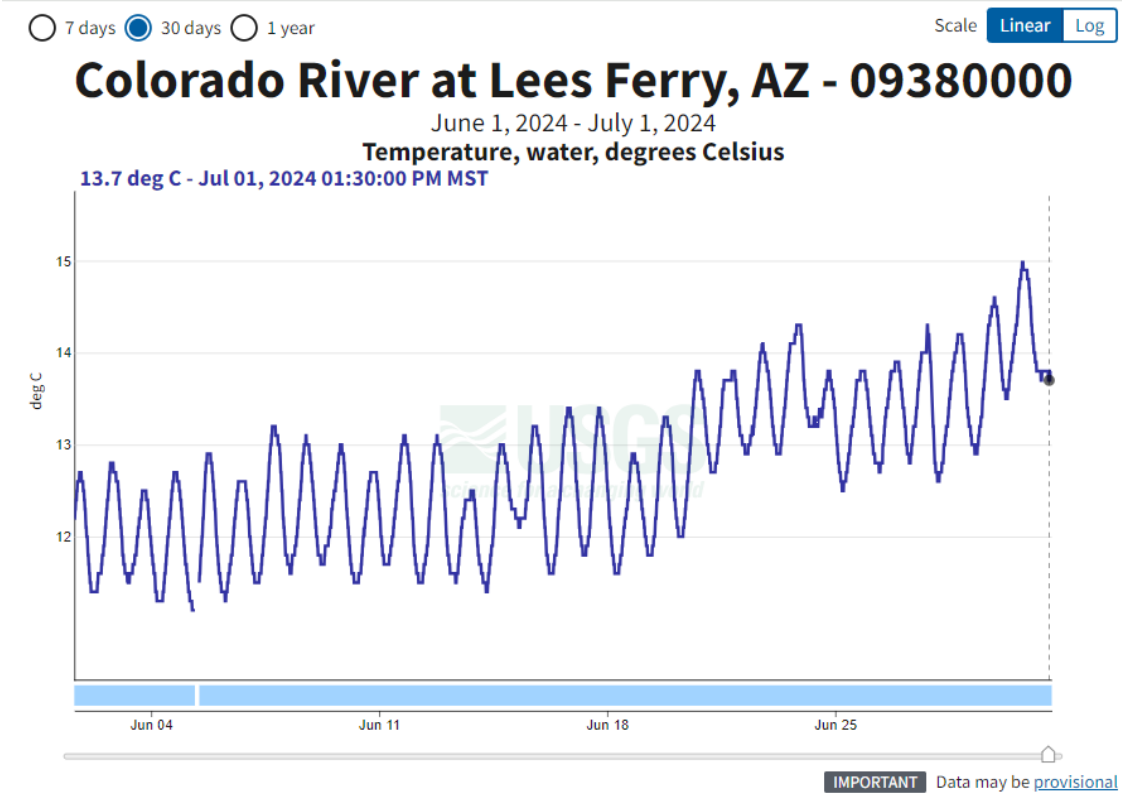
b. Let Melissa know if there is anything you'd like to see on next agenda.

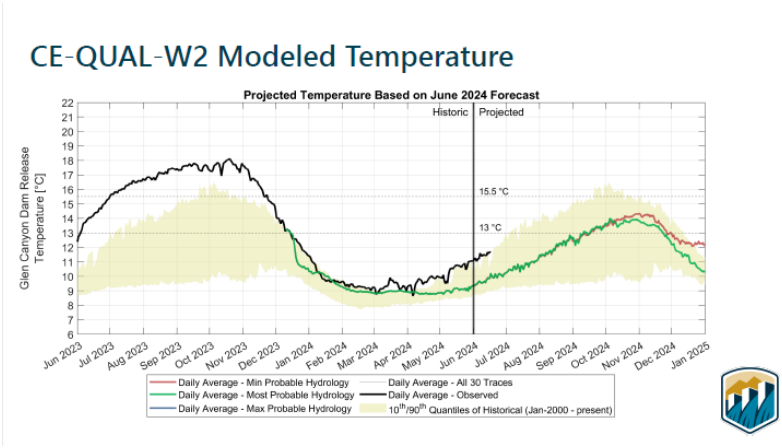
Adjourn 4:42

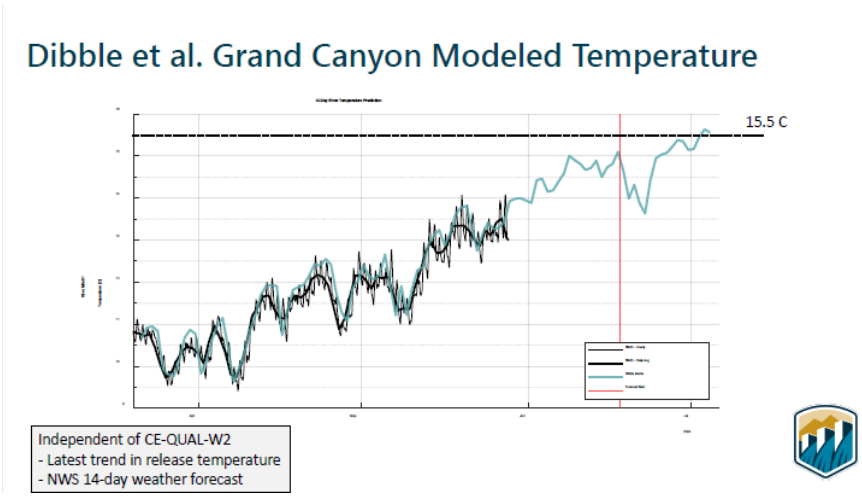
July 1 outflow temp 12.6
Lees Ferry avg about 14

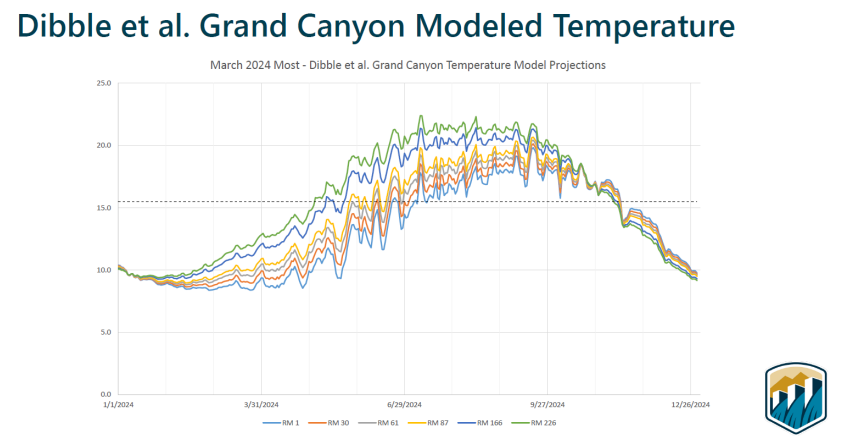


The water quality data shown here are filtered raw values and are subject to revision through quality control / quality assurance procedures. These data are being provided to meet the need for timely best science. The data have not received final approval by the U.S. Geological Survey (USGS) and are 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_qw_sediment/station/GCDAMP/09379901*


7 days
30 days
1 year
Scale
Linear
Log
Colorado River at Lees Ferry, AZ - 09380000
June 1, 2024 - July 1, 2024
Temperature, water, degrees Celsius
13.7 deg C - Jul 01, 2024 01:30:00 PM MST
deg C
15
14
13
12
Jun 04
Jun 11
Jun 18
Jun 25
IMPORTANT
Data may be provisional


CE-QUAL-W2 Modeled Temperature
Projected Temperature Based on June 2024 Forecast
Historic
Projected
15.5 °C
13 °C
Glen Canyon Dam Release Temperature [°C]
Daily Average - Min Probable Hydrology
Daily Average - Most Probable Hydrology
Daily Average - Max Probable Hydrology
Daily Average - All 30 Traces
Daily Average - Observed
10th/90th Quantiles of Historical (Jan-2000 - present)





Figures 2, 3 and 4. Provided by Kim Dibble and Bryce Mihalevich, Reclamation, presentation to AMWG March and May 2024.

		Temperature delta between GCD and RM61											
		Release Temperature									RM61 Target =	15.5	
Month	Hour	10	10.5	11	11.5	12	12.5	13	13.5	14	Maximum GCD	Release Temperature	
7	0	3.34114	3.2995	3.25755	3.21526	3.17265	3.12971	3.08642	3.0428	2.99882	12.3581		
7	1	3.31529	3.27357	3.23154	3.18918	3.1465	3.10349	3.06015	3.01647	2.97245	12.3868		
7	2	3.3695	3.32863	3.28745	3.24596	3.20415	3.16201	3.11955	3.07676	3.03364	12.3231		
7	3	3.42017	3.37965	3.33883	3.2977	3.25625	3.21449	3.17242	3.13001	3.08728	12.2660		
7	4	3.45588	3.41481	3.37344	3.33177	3.2898	3.24752	3.20492	3.16201	3.11877	12.2296		
7	5	3.53283	3.4915	3.44989	3.40798	3.36577	3.32326	3.28044	3.2373	3.19385	12.1467		
7	6	3.64151	3.60035	3.55891	3.51717	3.47514	3.43281	3.39017	3.34723	3.30398	12.0272		
7	7	3.74595	3.70452	3.66281	3.62081	3.57852	3.53594	3.49305	3.44987	3.40638	11.9142		
7	8	3.82245	3.77988	3.73702	3.69388	3.65046	3.60673	3.56272	3.5184	3.47378	11.8352		
7	9	3.88896	3.84528	3.80132	3.75707	3.71254	3.66771	3.62258	3.57716	3.53143	11.7667		
7	10	3.9411	3.89683	3.85227	3.80742	3.76229	3.71686	3.67113	3.6251	3.57877	11.7117		
7	11	3.86499	3.81993	3.77459	3.72895	3.68302	3.63679	3.59025	3.54341	3.49626	11.7985		
7	12	3.71954	3.67391	3.62799	3.58177	3.53524	3.48841	3.44127	3.39382	3.34605	11.9611		
7	13	3.55551	3.50911	3.4624	3.41539	3.36807	3.32044	3.2725	3.22423	3.17564	12.1458		
7	14	3.5298	3.48399	3.43788	3.39146	3.34472	3.29765	3.25027	3.20255	3.15451	12.1714		
7	15	3.77415	3.7328	3.69114	3.64914	3.60681	3.56414	3.52113	3.47777	3.43407	11.8833		
7	16	3.73516	3.69439	3.6533	3.61187	3.5701	3.52799	3.48553	3.44272	3.39956	11.9235		
7	17	3.64691	3.60601	3.56477	3.5232	3.48129	3.43903	3.39642	3.35347	3.31015	12.0204		
7	18	3.61268	3.57232	3.53162	3.49059	3.44922	3.4075	3.36543	3.323	3.28022	12.0554		
7	19	3.58758	3.54758	3.50724	3.46656	3.42554	3.38417	3.34246	3.30039	3.25796	12.0812		
7	20	3.55878	3.51895	3.47879	3.43829	3.39745	3.35626	3.31473	3.27284	3.23059	12.1118		
7	21	3.5222	3.48238	3.44222	3.40173	3.36089	3.31972	3.27819	3.23631	3.19408	12.1516		
7	22	3.4807	3.44079	3.40056	3.35999	3.31909	3.27784	3.23625	3.19431	3.15201	12.1972		
7	23	3.40111	3.36025	3.31908	3.27757	3.23573	3.19355	3.15103	3.10817	3.06495	12.2886	12.0731	
8	0	3.04119	3.0028	2.96412	2.92513	2.88584	2.84623	2.80631	2.76607	2.72551	12.6671		
8	1	3.00448	2.96649	2.9282	2.88962	2.85074	2.81155	2.77206	2.73225	2.69212	12.7046		
8	2	2.98876	2.95148	2.91392	2.87607	2.83792	2.79948	2.76073	2.72168	2.68232	12.7174		
8	3	2.96963	2.93229	2.89467	2.85677	2.81859	2.78011	2.74134	2.70227	2.6629	12.7384		
8	4	2.95363	2.91575	2.8776	2.83918	2.80048	2.76149	2.72222	2.68266	2.6428	12.7588		
8	5	2.9765	2.93811	2.89945	2.86053	2.82133	2.78185	2.74209	2.70205	2.66173	12.7370		
8	6	3.05344	3.01517	2.97664	2.93784	2.89878	2.85945	2.81984	2.77995	2.73978	12.6526		
8	7	3.1596	3.12146	3.08306	3.0444	3.00548	2.96629	2.92683	2.88709	2.84708	12.5366		
8	8	3.26301	3.22429	3.18531	3.14608	3.10659	3.06683	3.02681	2.98651	2.94593	12.4274		
8	9	3.34877	3.30885	3.26868	3.22825	3.18756	3.14661	3.10538	3.06389	3.02212	12.3403		
8	10	3.4405	3.39996	3.35915	3.31809	3.27676	3.23516	3.1933	3.15116	3.10874	12.2435		

Figure 5. Temperature differences between Dam release and RM 61, and expected release temperature to keep temperature at RM61 at or below 15.5. Modeling and table provided by Bryce Mihalevich. Release temp max is less than 14C through early October.

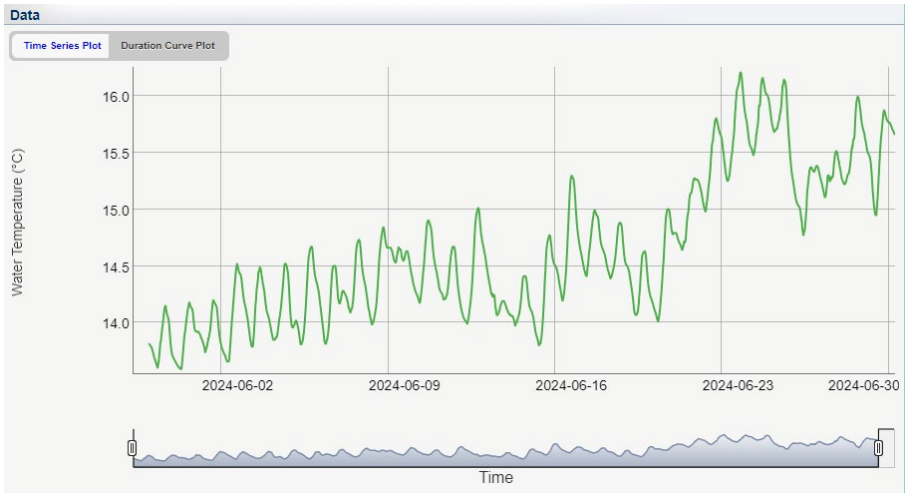


Figure 6. Last 30 days temperature at RM 61. June 1 – July 1, 2024.

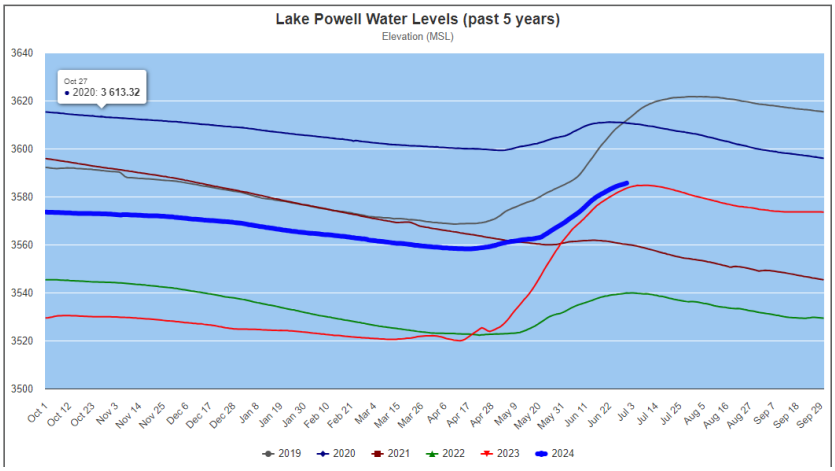


Figure 7. Last 5 years Lake Powell surface elevation. Current elevation 3685' on 07/01/2024.

Table 1. Grand Canyon NP Sampling Schedule 2024

Dates	Trip	Location
April 9-10	PBR-BW	Paria to Badger
~~April 15-19~~	~~PBR-EF~~	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)
16-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"
13-Jun	17-Jun	TRGD – note dates changed from July 4th
27-Jun	8-Jul	LCR Juvenile HBC monitoring (3 camps)
3-Jul	18-Jul	Grand Canyon Youth-"Partners in Science"
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	TRGD (Cancelled due to likely high water temps and low DO)

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