Agenda and notes 07/24/2024 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

Jeff Arnold, Matt O'neill, Dave Rogowski, Emily Omana, Shaula Headwall, Rob Billerbeck, Drew Eppenheimer, Bud Fazio, Ryan Mann, Dan Leavitt

I. Recent trips and findings

Last meeting/report out was 07/02/2024.

GLCA –

Electrofishing July 1-3, 2024

Total number of fish removed for during standard monitoring (3 nights). Disposition of fish are: beneficial use (BU); human consumption (DC), future research (DP)

Table 1. Standard monitoring capture totals from electrofishing efforts in GLCA from July 1-3, 2024

Species	Number of Fish Removed	Size (mm)	Disposition	% of Catch
GSF	404	39-186	BU	80.5
SMB	8	85-149	DP	1.6
BGS	5	38-127	BU	0.9
WAL	3	363-409	DC	0.6
BNT	59	45-375	DC	11.8
RBT	17	51-103	BU	3.4
TRT spp	6	45-51	BU	1.2
Total	502			

STANDARD MONITORING

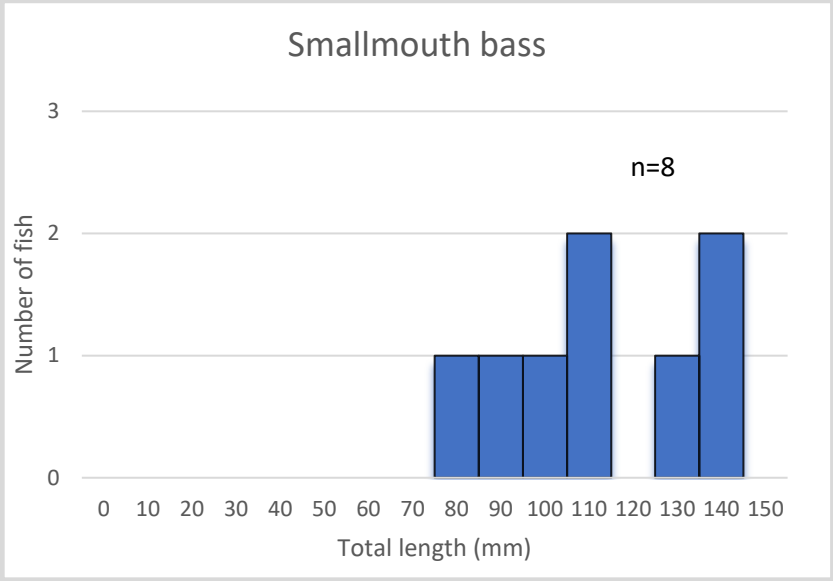
- Rainbow Trout, Flannelmouth Sucker, and adult Common Carp are not actively targeted during sampling. If they are encountered, they are removed from the electric field. All other fish are actively caught and processed for beneficial use (eagle/wildlife food), human consumption, or current research studies.
- We sampled 66 sites between Glen Canyon Dam and Lees Ferry with a total electrofishing effort of 13 hours 11 minutes.
- We caught and processed 502 fish comprised mostly of Green Sunfish.
- Just under half of the fish (47%) were caught in the upstream portions of the Colorado River in reaches A-C (Table 2).

Table 2. Standard capture totals from electrofishing efforts in GLCA from July 1-3, 2024

Start Date	Reach	SMB	GSF	BGS	WAL	BNT	RBT	Trout sp.
1-July-24	E	1	41	0	0	12	3	2
	F	0	44	0	0	28	12	4
	G	1	16	1	0	4	0	0

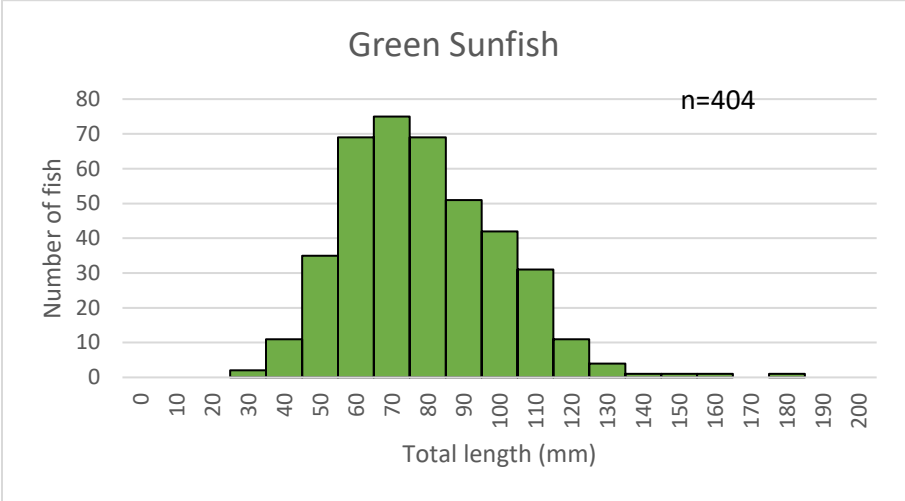
2-July-24	C	0	48	3	0	4	0	0
	D	4	84	0	0	8	1	0
3-July-24	A	0	65	1	2	2	1	0
	B	2	106	0	1	1	0	0
Total		8	404	5	3	59	17	6

- All Smallmouth Bass ranged in total length from 85 mm – 149 mm.



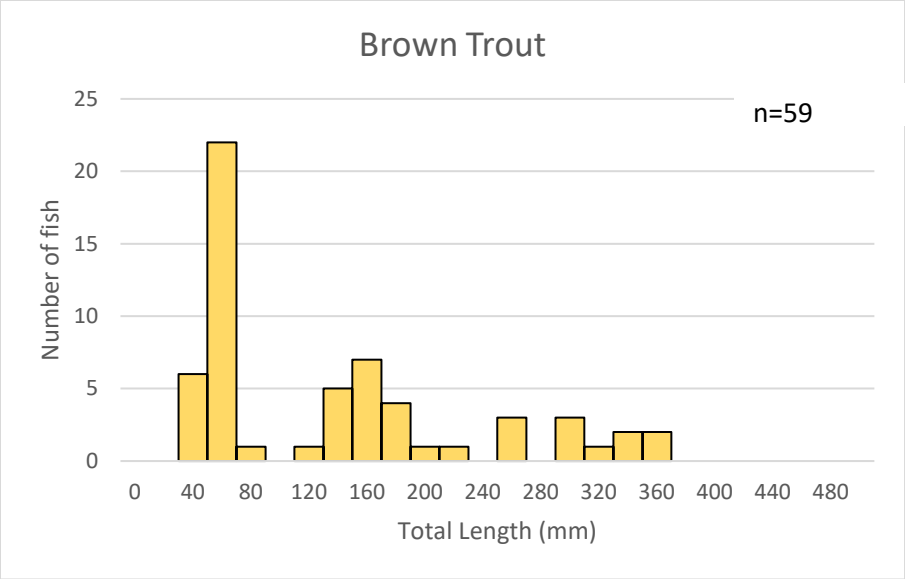
A little fewer than in the past. Appears we are seeing 1 or 2 yr old fish.

- Green Sunfish ranged from 39-186mm total length.



Good thing – not seeing 1000's as years past (same with yoy carp).

- Brown trout caught and processed ranged from 45-375mm total length. Brown trout > 200 mm were processed for human consumption.



- 17 small rainbow trout died during electrofishing efforts and ranged in size from 51-103mm total length.
- There was not a fourth day of exploratory sites due to the 4th of July.

GLCA Electrofishing July 15-18, 2024

*preliminary draft report

Total number of fish removed during standard monitoring (4 nights). Disposition of fish are: beneficial use (BU); human consumption (DC), future research (DP), returned alive (RA).

Table 1. Standard monitoring capture totals from electrofishing efforts in GLCA from July 15-18, 2024
* indicates fish that were caught in the -12 miles slough and released alive in the main channel

Species	Number of Fish Removed	Size (mm)	Disposition	% of Catch
GSF	889	35-162	BU	82.5
SMB	20	55-140	DP	1.8
BGS	10	66-135	BU	0.9
WAL	1	475	DC	0.1
BNT	86	51-371	DC/BU	7.9
RBT	26	37-171	BU	2.4
CRP	10	64-81	BU	0.9
CRP*	20	N/A	RA	1.8
FMS*	12	N/A	RA	1.1
CRY	3	N/A	DP	0.3
Total	1077	35-475		

STANDARD MONITORING

- Rainbow Trout, Flannelmouth Sucker, and adult Common Carp are not actively targeted during sampling. If they are encountered, they are removed from the electric field. All other fish are

actively caught and processed for beneficial use (eagle/wildlife food), human consumption, or current research studies.

- We sampled 77 sites between Glen Canyon Dam and Lees Ferry with a total electrofishing effort of 18 hours 18 minutes.
- We caught and processed 1047 fish comprised mostly of Green Sunfish.
- More than half of fish (62%) were caught in the upstream portions of the Colorado River in reaches A-C (Table 2).

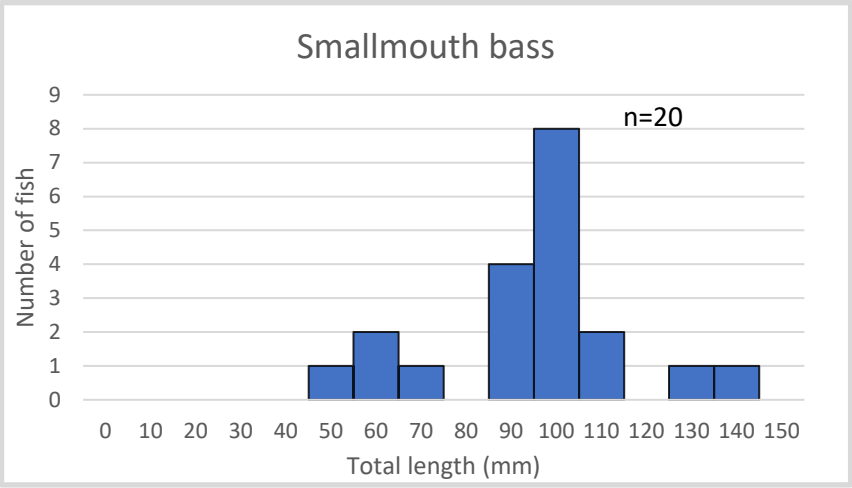
Table 2. Standard capture totals from electrofishing efforts in GLCA from July 15-18, 2024

Start Date	Reach	SMB	GSF	BGS	FMS	WAL	BNT	RBT	CRY	CRP
15-July-24	E	5	64	0	0	0	13	1	0	0
	F	1	33	0	0	0	12	5	0	0
	G	0	31	0	0	0	10	1	0	0
16-July-24	C	3	118	0	0	0	10	3	0	0
	D	1	104	0	0	0	6	2	0	0
	G	0	3	0	0	0	4	0	0	0
17-July-24	B	1	208	1	0	0	8	3	0	0
	A	3	116	9	0	1	4	0	3	0
18-July-24	B	1	51	0	0	0	1	0	0	0
	C	1	79	0	12	0	2	0	0	10
	D	1	19	0	0	0	4	0	0	0
	E	3	63	0	0	0	12	7	0	0
Total		20	889	10	12	1	86	26	3	30

Fewer carp than last couple years

- 1 adult Walleye (475mm TL) was caught in reach A. Still showing up closer to the dam

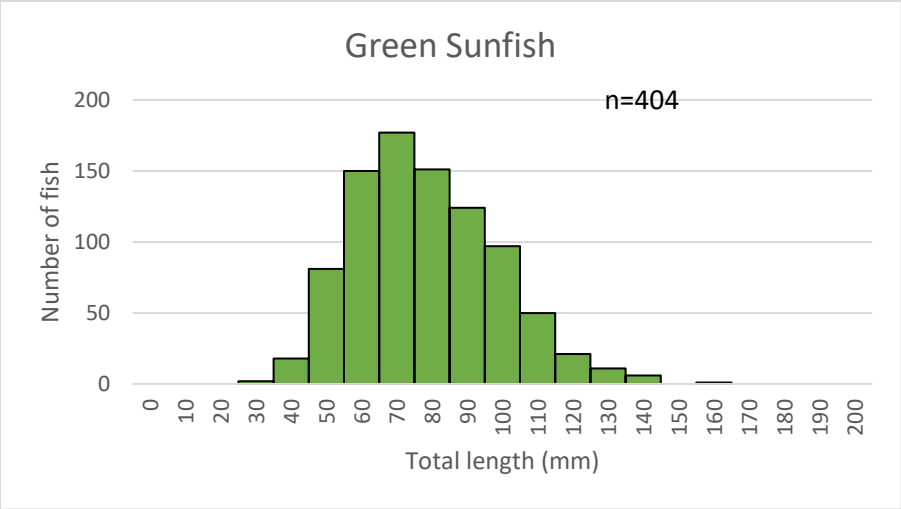
- All Smallmouth Bass ranged in total length from 55 mm – 140 mm.



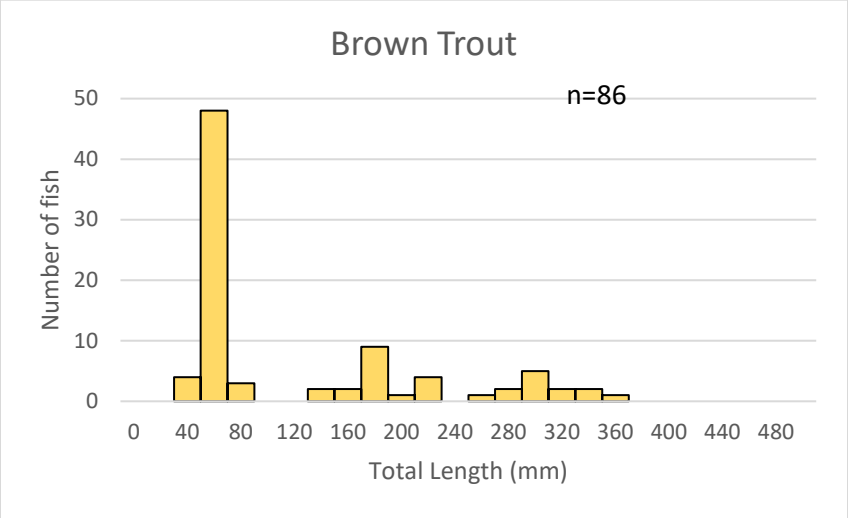
Larger fish around RM-15

Most likely entrained through the dam from previous years. Smaller fish probably haven't grown much due to colder water since last year.

- Green Sunfish ranged from 35-162mm total length.



- Brown trout caught and processed ranged from 51-371mm total length. Brown trout > 200 mm were processed for human consumption.



- 17 small rainbow trout died during electrofishing efforts and ranged in size from 51-103mm total length.
- 3 crayfish were caught. One at RM -15.6R and two at -14.89R.

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.
- Exploratory sites are sampled once all standard monitoring has been completed for the week.
- LOWER SLOUGH (May 30, 2024); sampled with two boats, 1-hour 56 minutes

Table 3. Lower Slough GLCA electrofishing May 30, 2024
* indicates fish that were fin clipped and moved to main channel

Species	CPUE	Count	% of Catch
Green Sunfish	0.0517	6	16.67
Smallmouth Bass	0.0172	2	5.56
Bluegill Sunfish	0.0086	1	2.78
Brown Trout	0.0258	3	8.33
Rainbow Trout*	0.0344	4	11.11
Common Carp*	0.1724	20	55.56
Crayfish		1	
Total # Fish		36	100

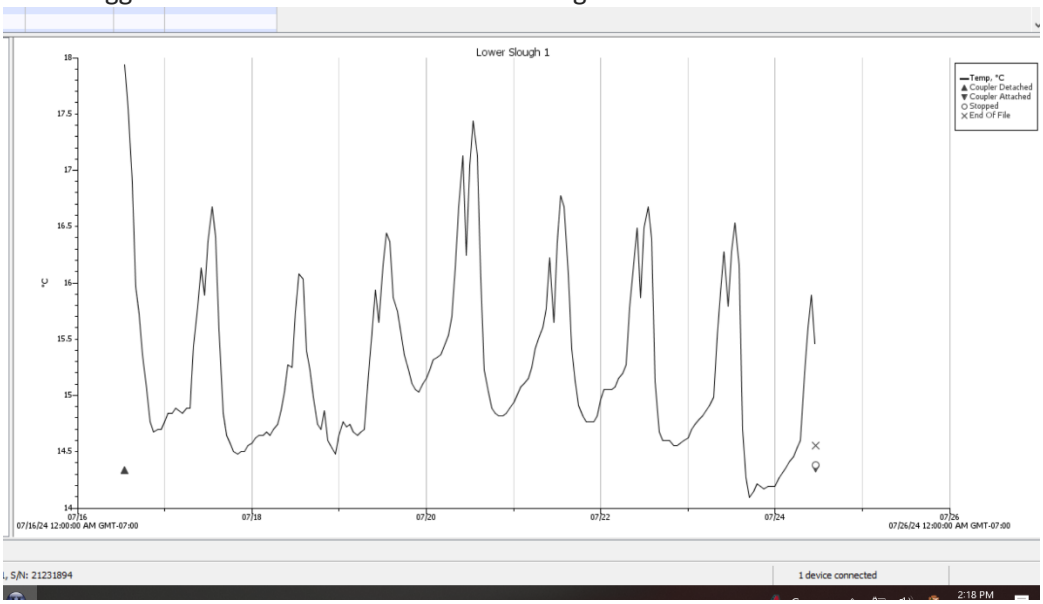
- ADDITIONAL SITES (14 total)

Table 4. Summary results of electrofishing 14 additional exploratory sites

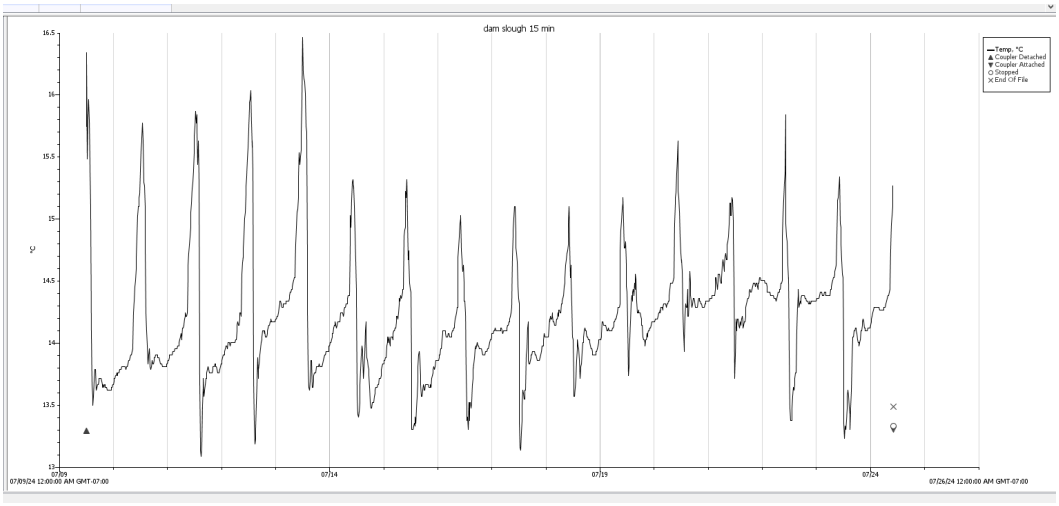
Species	CPUE	Count	% of Catch
Green Sunfish	0.85549491	221	89.8374
Smallmouth Bass	0.015484071	4	1.6260
Bluegill Sunfish	0.019355088	5	2.0325
Brown Trout	0.061936283	16	6.5041
Trout sp.	0.003871018	1	0.4065
Total # Fish		246	100

Slough update – no adult SMB, 2 age 1 and 1 yoy (69mm) when curtain failed. Curtain failed for a short period when cool mix started, but fixed quickly.

HOBO logger data from the east side of the slough



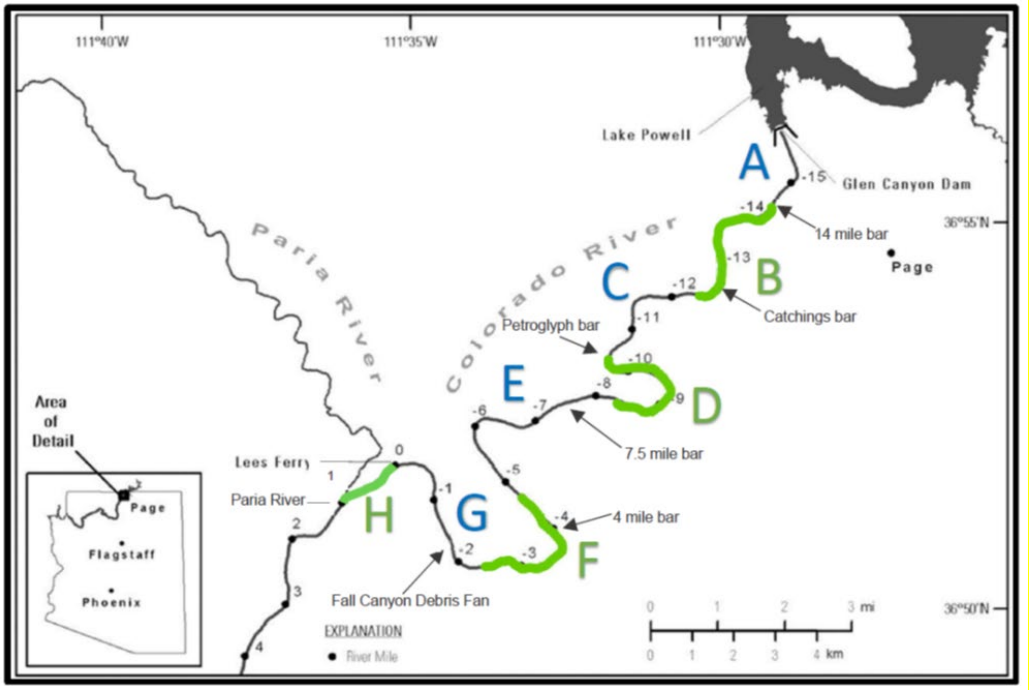
HOBO logger data from dam slough



Cold water is getting all the way up into slough – good sign for spawning

Artificial substrates set up at 4 sites – dam slough, lower slough, back side of prop bar, lunch beach (river left). Includes temp loggers (staying in 14-15 deg range). Dam slough does spike quickly up to 16, but drops back down to 13 from cool mix flows. Good news – BOR wasn't expecting

Checked vegetation for potential treatment. Only 30% covered, much less than last year at about 90%. Will still keep an eye to see if they can do a treatment. Could still keep cool mix going and keep flows stable, if needed. Originally wanted to do this weekend, but canceled. Sometime between now and 8/19. Will coordinate with BOR.



GRCA – GRCA personnel completed electrofishing efforts in the Paria River to Badger Rapids (PBR) reach from 7/8 – 7/12. A total of 45 unique, 250-m sites were completed in Reaches I (Paria Beach to Cathedral) and K (Navajo Bridge to 6 Mile). Two additional passes were completed on 10 sites within each reach as part of depletion efforts. Netters were targeting warm-water invasive species. Any observed Brown Trout were also netted and preserved for beneficial use. Non-target fishes, such as Rainbow Trout and native species, were removed from the electric field and not processed. The "Cool-mix" from the dam was enacted at midnight on 7/9/2024 which may have influenced capture probabilities as temps in the mainstem began to drop. It did appear that Green Sunfish were more concentrated near warmer backwater habitats compared to shoreline habitat as the week went on. A total of three Smallmouth Bass were captured. Two were captured on Pass #2 of the selected depletion sites. Total lengths ranged from 49 – 65 mm. All Smallmouth Bass captured during these efforts are preserved individually in ethanol and given to GCMRC for diet, genetic, and other analyses. Captures per night and individual SMB data are included in the tables below.

GRCA personnel are currently conducting backwater sampling (7/23 – 7/24). We seined 7 backwaters 7/23, conditions are turbid. We captured 8 GSF via seine hauls and set 13 hoop nets which will be pulled on 7/24 (7 within 3.21 slough, 6 at other hotspots identified during efishing efforts).

Date	RMs	BGS	BNT	GSF	SMB
7/8/2024	1.18 - 2.63	0	2	52	1
7/9/2024	1.21 - 2.49	1	9	44	1
7/10/2024	4.39 - 6.05	0	6	35	0
7/11/2024	4.99 - 6.05	0	5	28	1
Total		**1**	**22**	**159**	**3**

Date	River Mile	Side	Gear	Species Code	TL (mm)	Weight (g)	Disposition

5/22/2024	1.21	L	EF	SMB	157	50	DP
5/22/2024	1.95	R	EF	SMB	56	2	DP
5/23/2024	5.33	R	EF	SMB	62	2	DP
6/12/2024	6.93	R	EF	SMB	55	1	DP
7/8/2024	2.21	R	EF	SMB	61	3	DP
7/10/2024	1.37	L	EF	SMB	65	3	DP
7/11/2024	5.48	R	EF	SMB	49	1	DP

*New additions in red

Farthest downstream SMB at RM6.93

GCMRC – No updates for non-natives. Won't be able to input data into database until early next week.

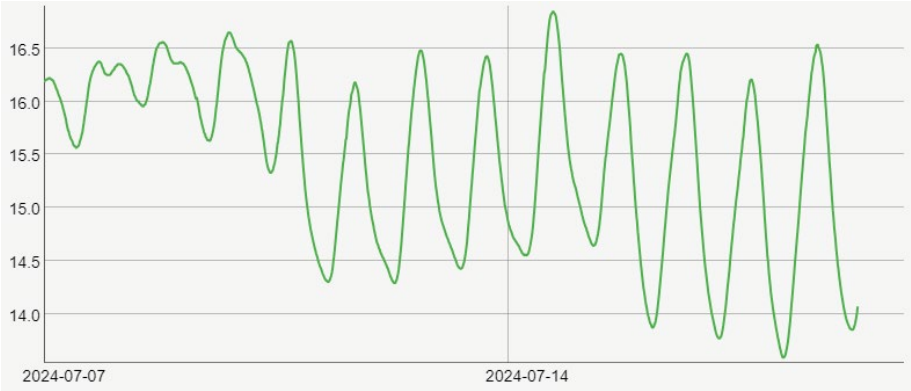
FWS – Next trip is seining on July 18-Aug 2.

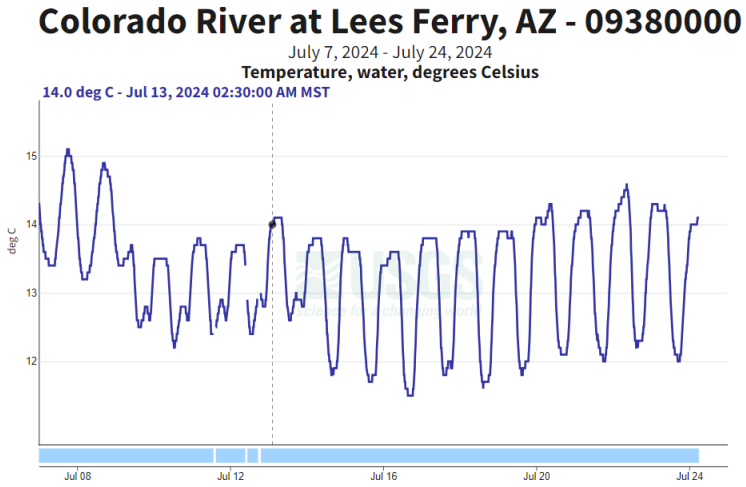
AZGF – Trip report from 7/8-7/11. Caught more GSF than in the past. 9 SMB (1 or 2 ~120mm, ~30-70mm).

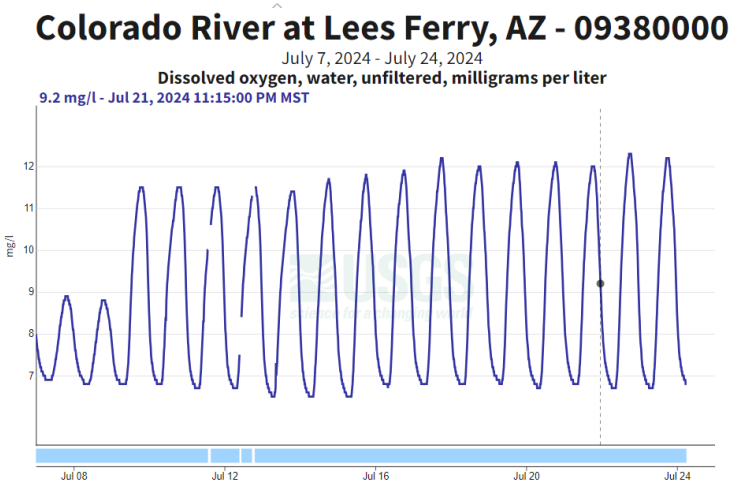
Reclamation – Modeling is working really well for hitting target avg daily temps at RM61.
WAPA helping with modeling.
Rob – curious if a few hours above 15 is a cause for concern?
Drew – Current literature focuses on daily avg temperatures (which we are meeting) without focus on daily variability. So, some uncertainty. Will be watching for spawning.

Colorado River above Little Colorado River near Desert View, AZ (RM 61)

Water Temp – Deg C from 7/7/24-7/19/24







II. DISCUSSION OF NEW FINDINGS

III. Upcoming trips and other future plans –

2024 sampling and monitoring

GRCA – See Table 1. Set 13 hoop nets which will be pulled on 7/24 (7 within 3.21 slough, 6 at other hotspots identified during efishing efforts). Our next PBR electrofishing trip will take place next week (7/29 – 8/2)

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 –

FWS – see Table 3 –

Reclamation –

IV. Old Business –

a. Help needed by GLCA or anyone?
b. 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. NOI for EA and pre-NEPA open houses posted on 7/12/24 https://www.nps.gov/glca/learn/news/20240712.htm
    iii. Draft EA planning to finish this fall
    iv. 14 people attended first public meeting 7/23. Local concessionaire asked for coordination, but no other major comments.
    v. Next public meeting tomorrow.

c. Coordinated effort between NPS and GCMRC regarding sampling protocols for both GLCA and GRCA –

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

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