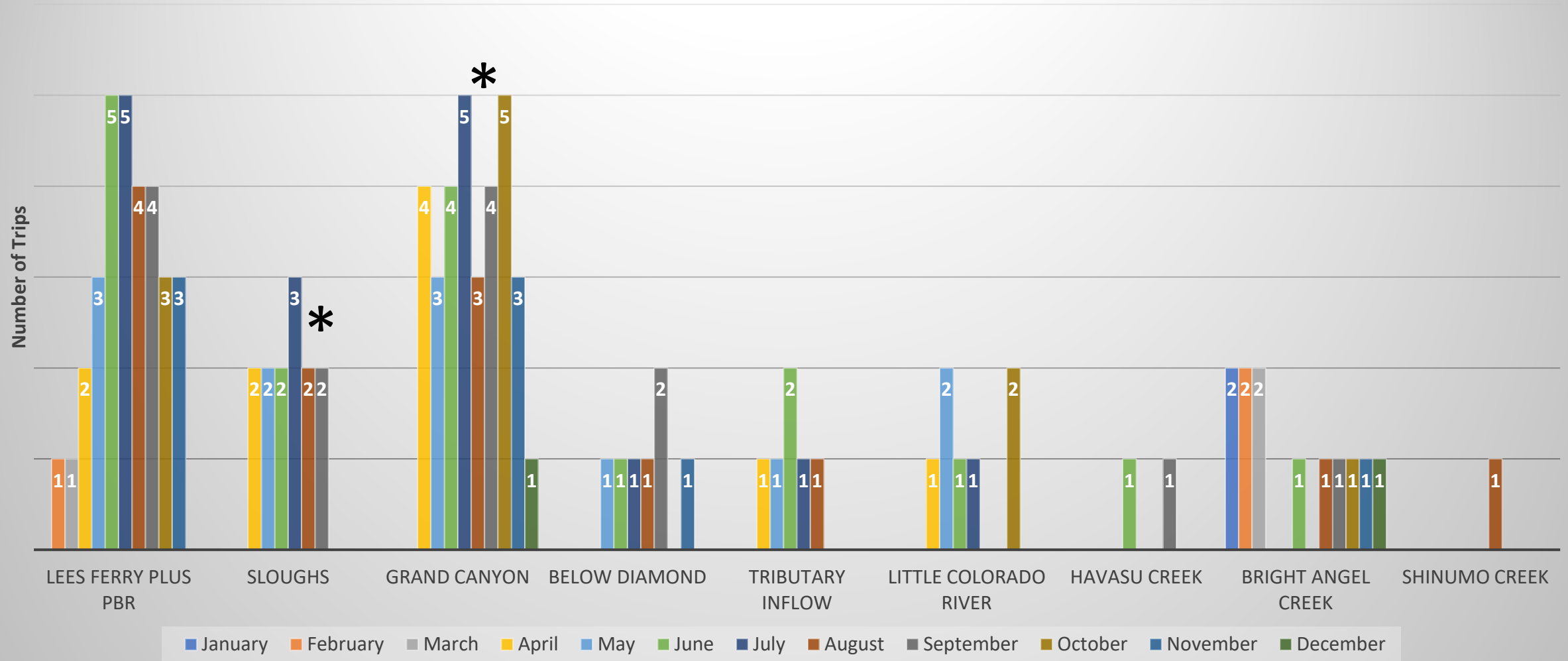


# Rapid Response Technical Team Report August 2024



## 2024 planned Surveillance and Rapid Response



\* NO Chem Treatment in August

\* ADDED three downstream small-bodied sampling in Aug-Sep



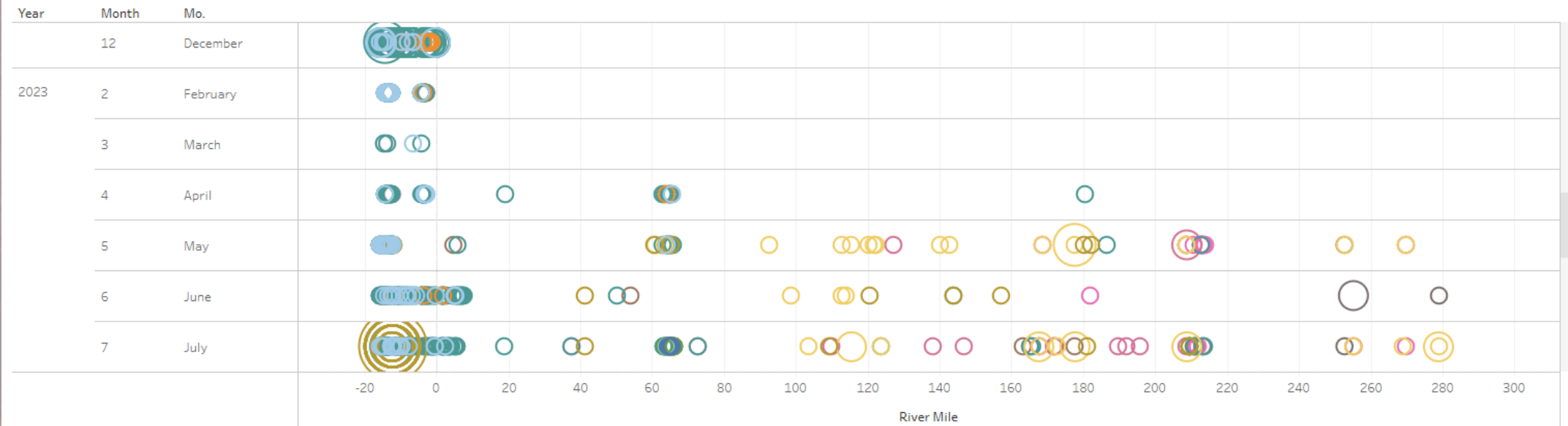
# NNF Distribution per month in 2024

## New Data visualization tool – by Tom Gushue



### Nonnative Fish Dashboard: Catch by Month & River Mile

Rapid Response Nonnative Fish Data: Filter by Date, Location, Count or Species to further explore the data. Preliminary data. Do not cite.



#### Filter by Location

Enter Pass...

#### Geologic Reaches (by RM)

- ☐ (All)
- ☐ Null
- ☒ -0.19
- ☒ -2.1200000000000001
- ☒ -4.75
- ☒ -4.7599999999999998

Cancel Apply

#### River Reaches (by RM)

- ☐ (All)
- ☐ Null
- ☒ 01: Above -12 Mile Slough
- ☒ 02: -12 Mile Slough
- ☒ 03: Below -12 Mile Slough to -9 Mile
- ☒ 04: -9 Mile to -4 Mile Bar
- ☒ 05: -4 Mile Bar to Lees Ferry
- ☒ 06: Lees Ferry to Badger
- ☒ 07: Badger to 30-Mile

#### Filter by Date

Year

- ☒ (All)
- ☒ 2021
- ☒ 2022
- ☒ 2023
- ☒ 2024

Cancel Apply

Month

- ☒ (All)
- ☒ January
- ☒ February
- ☒ March
- ☒ April
- ☒ May
- ☒ June
- ☒ July

Cancel Apply

#### Filter by Species

Species Code Filter

- ☒ (All)
- ☒ BBH
- ☒ BGS
- ☒ BKC
- ☒ BNT
- ☒ CCF
- ☒ CRA
- ☒ CRAY
- ☒ CRP

Cancel Apply

Species Code : Common Name

- ☐ Null
- ☐ BBH : BLACK BULLHEAD
- ☐ BGS : BLUEGILL
- ☐ BKC : BLACK CRAPPIE
- ☐ BNT : BROWN TROUT
- ☐ CCF : CHANNEL CATFISH
- ☐ CRA : CRAYFISH
- ☐ CRP : COMMON CARP
- ☐ FHM : FATHEAD MINNOW

#### Filter by Number per Catch

Aggregate Count Classes

- ☐ 1
- ☐ 2 TO 25
- ☐ 25 TO 100

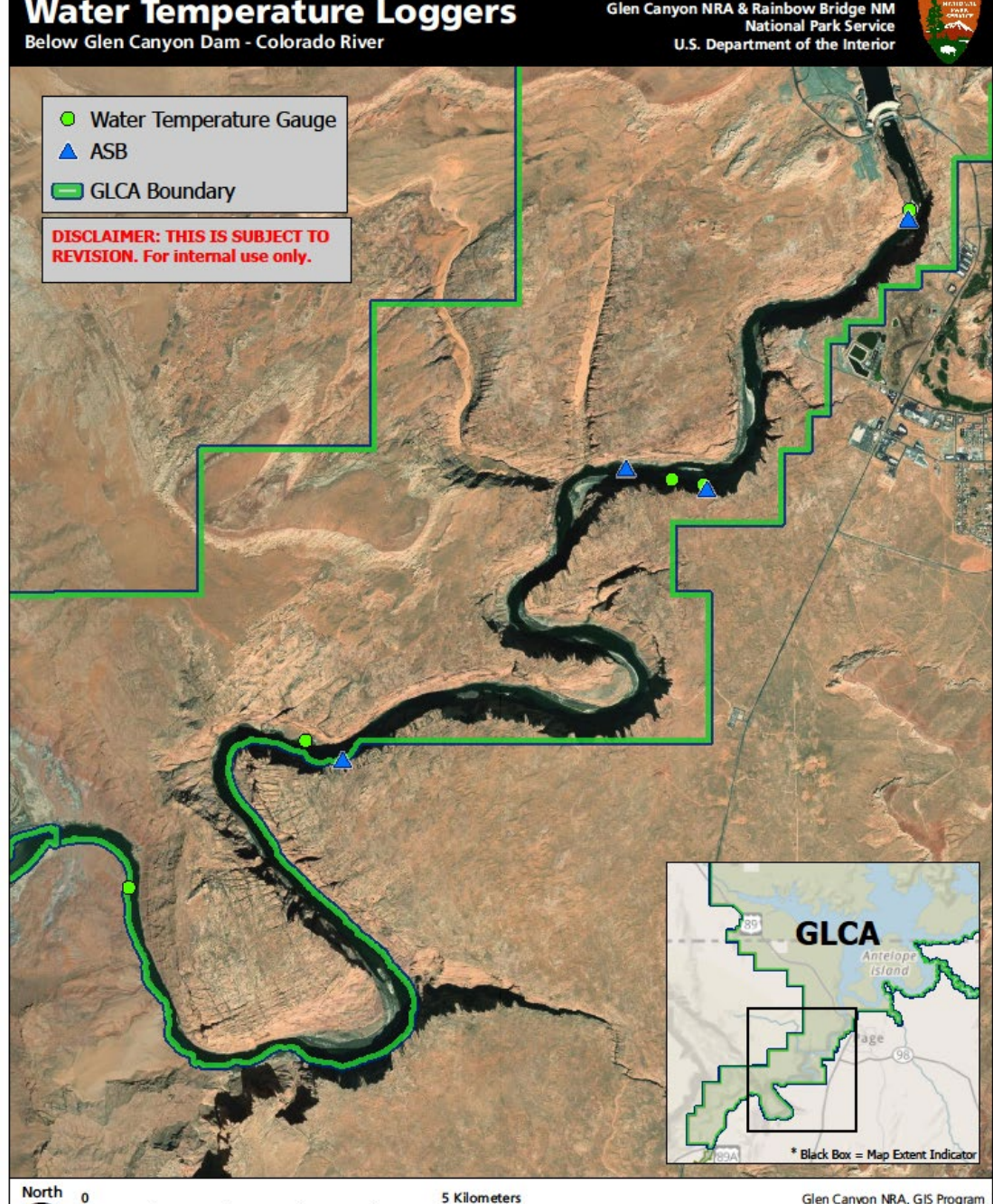
Specimens per Catch

- ☒ (All)
- ☒ Null
- ☒ 0
- ☒ 1



# Water Temperature Loggers and ASBs

- Four ASB locations
  - RM -15.04 R
  - RM -12.3
  - RM -11.5
  - RM -6.9 L
- Six temp logger locations
  - RM -15.04 R
  - RM -12.3 (2 in slough)
  - RM -6.9 L
  - RM -6.59 R
  - RM -.084 L





# Artificial Spawning Beds (ASB)

## Purpose:

- Attract SMB to assess spawning potential and timing
- Increase removal
- Visually checked weekly
  - No Nesting observed
  - No Adults or larvae
  - Tend to fill with algae



Commercial Version at Dam Slough

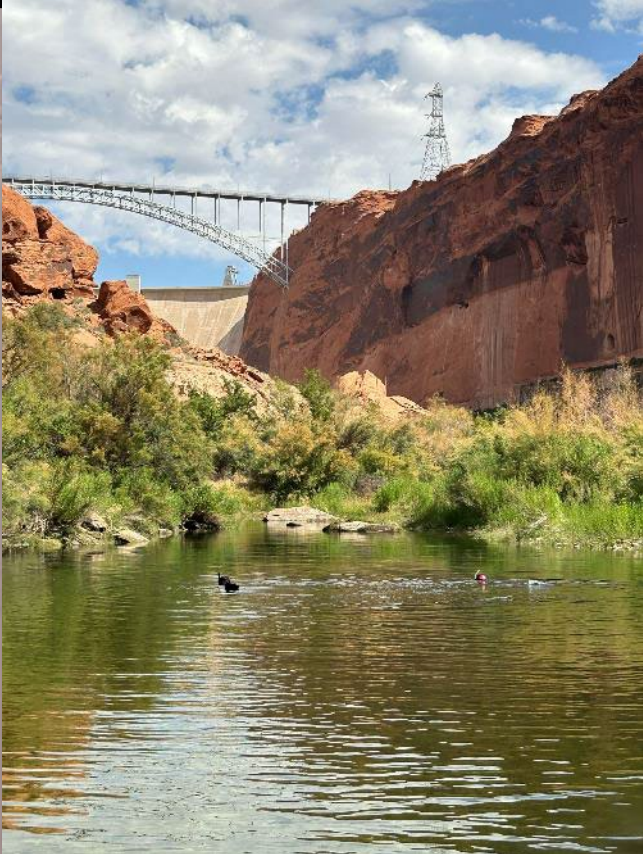


Conor's DIY Version  
West end of Slough





# Snorkel observations



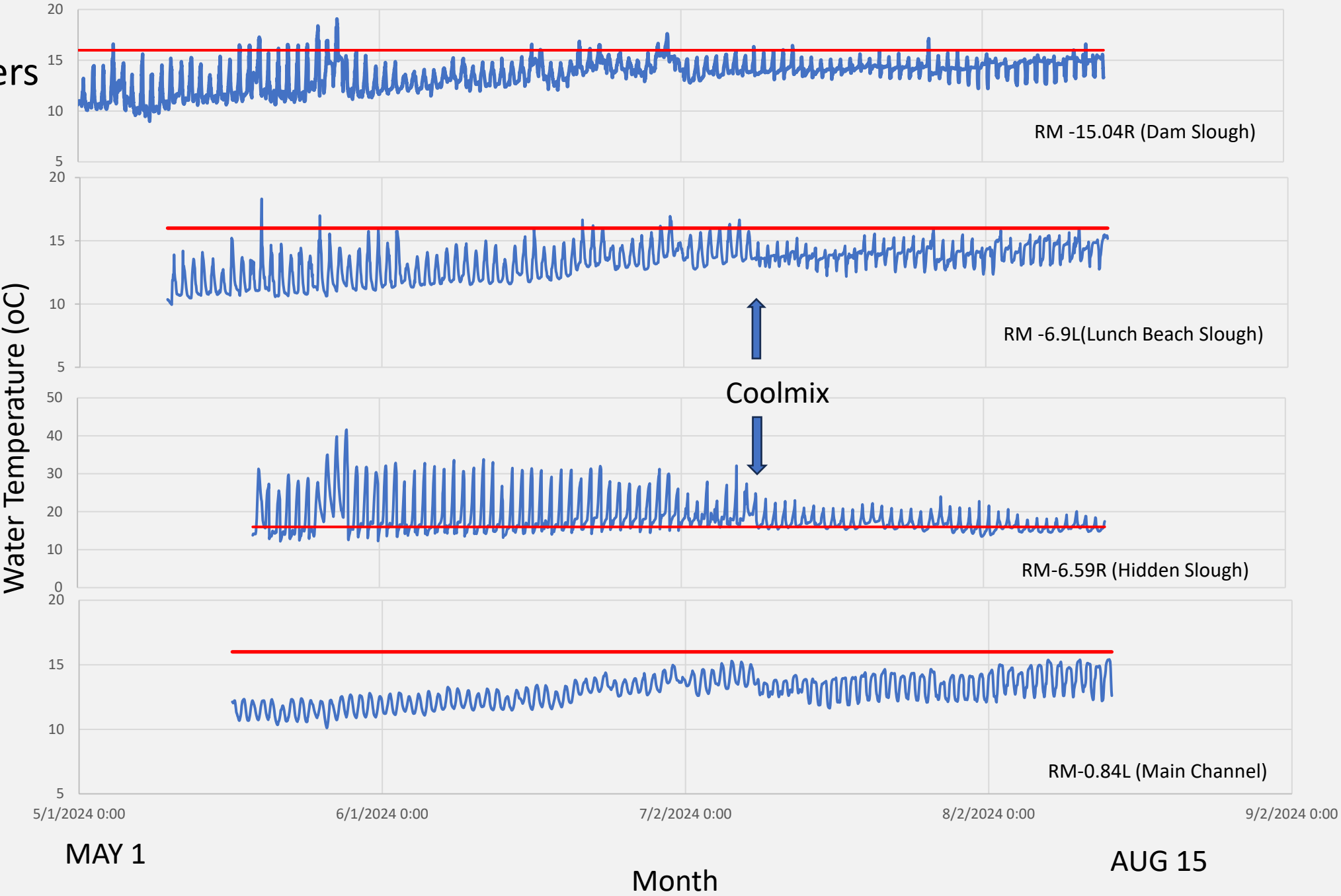
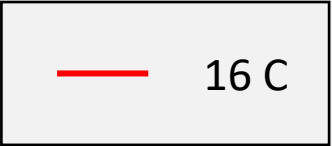
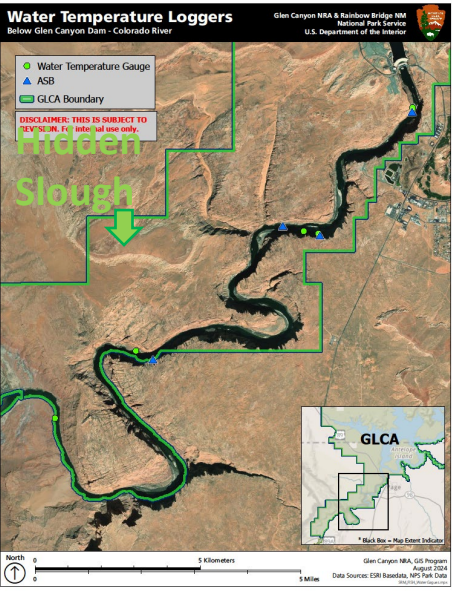
- Snorkeling the Dam Slough
  - No SMB observed
  - No nests observed



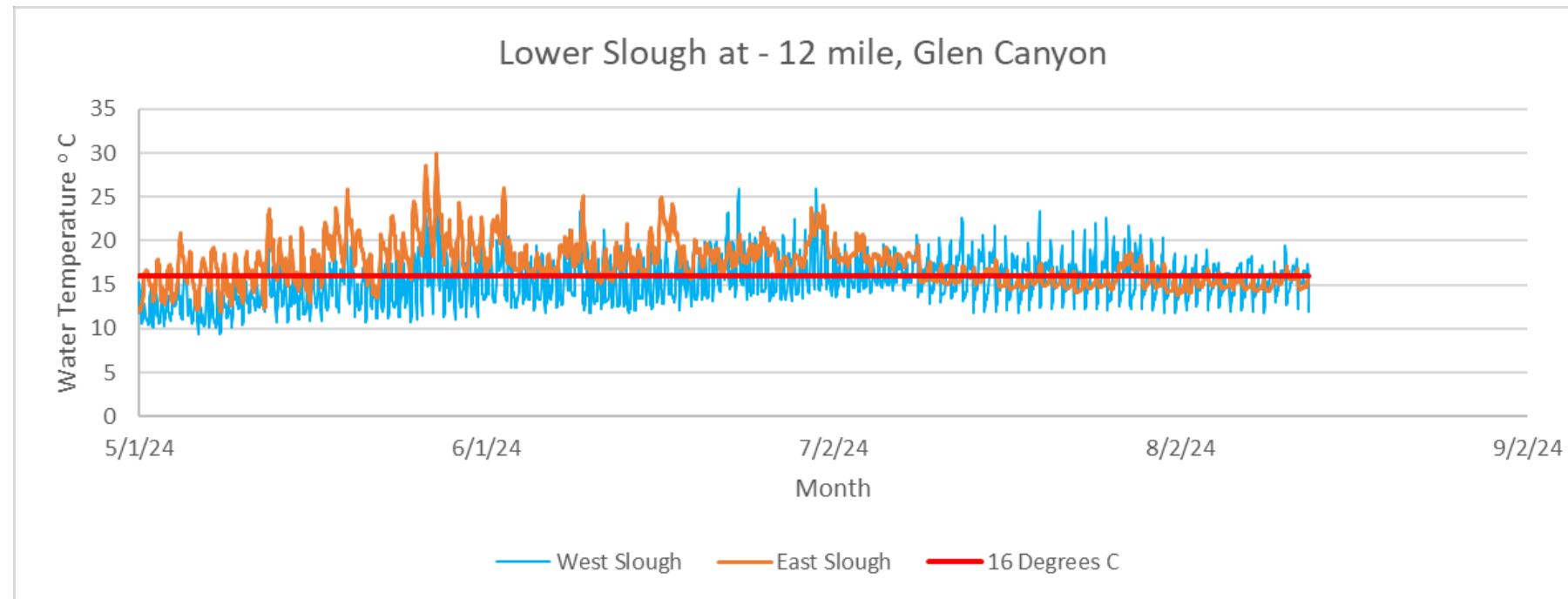


# Water Temp Loggers

- RM -15.04 R
- RM -6.9 L
- RM -6.59 R
- RM -.084 L



# Water Temperature in Lower Slough



- SMB flows began 7/9/2024
- Reduced temperature and fluctuations in east end
- Increased fluctuations in west end
- AVG less than 16

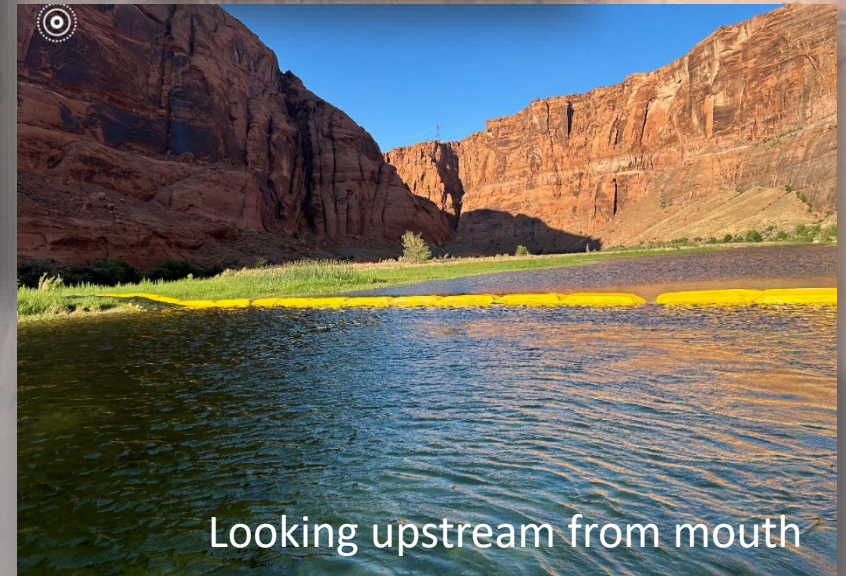






## May 16-17 2024 Installation

- Three block net panels were installed
- Panels each 50-feet in length
- Anchored with fence posts
- After Installation spawning behaviors were observed for common carp and Green sunfish
- Native fish, carp and rainbow trout captured inside net are transferred to river alive
- Warmwater nonnative fish and brown trout are removed for beneficial use
- Only 1 SMB captured in slough behind block net (67 mm, Age 1= 2023)
- Block net swings with fluctuations in dam releases
- A few fish were recaptured inside block net and moved outside again



Looking upstream from mouth



# NPS Sampling 2024



## Electrofishing

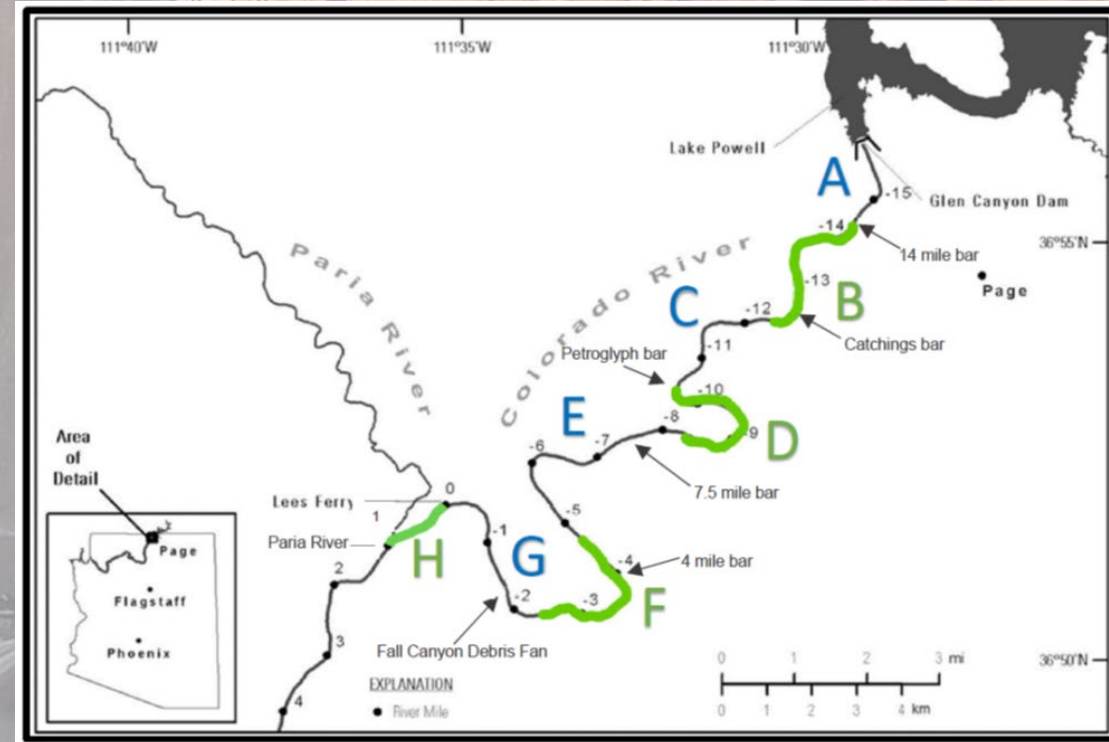
- Two weeks per month April to Nov = 60 nights
- Electrofishing Follows GCMRC protocols and established reaches
- Each reach is subsampled in a week of sampling
- New Random 250 m sites selected from set of standard sites
- About three weeks of sampling to sample each site
- Additional 'hot spots' sampled each trip

## Netting

- Netting two weeks per month May to October
- Netting is conducted with fyke nets and minnow traps in the sloughs, every other week

## PBR

- Electrofishing, backpack electrofishing, seining
- Two weeks per month April to Nov, alternating methods





# NNF captures Jan – August 15, 2024



2024

- Higher catches in Glen Canyon than Grand Canyon
- Increased effort in Glen Canyon in 2024
- **2024 incomplete**

Glen Canyon and Grand Canyon combined

| Spp | 2022 | 2023  | 2024  |
|-----|------|-------|-------|
| SMB | 368  | 1273  | 183   |
| GSF | 5928 | 16488 | 11097 |
| WAL | 15   | 60    | 30    |

NOTE 1: 2024 is NOT COMPLETE

NOTE 2: Rainbow trout are not recorded in the NNF database

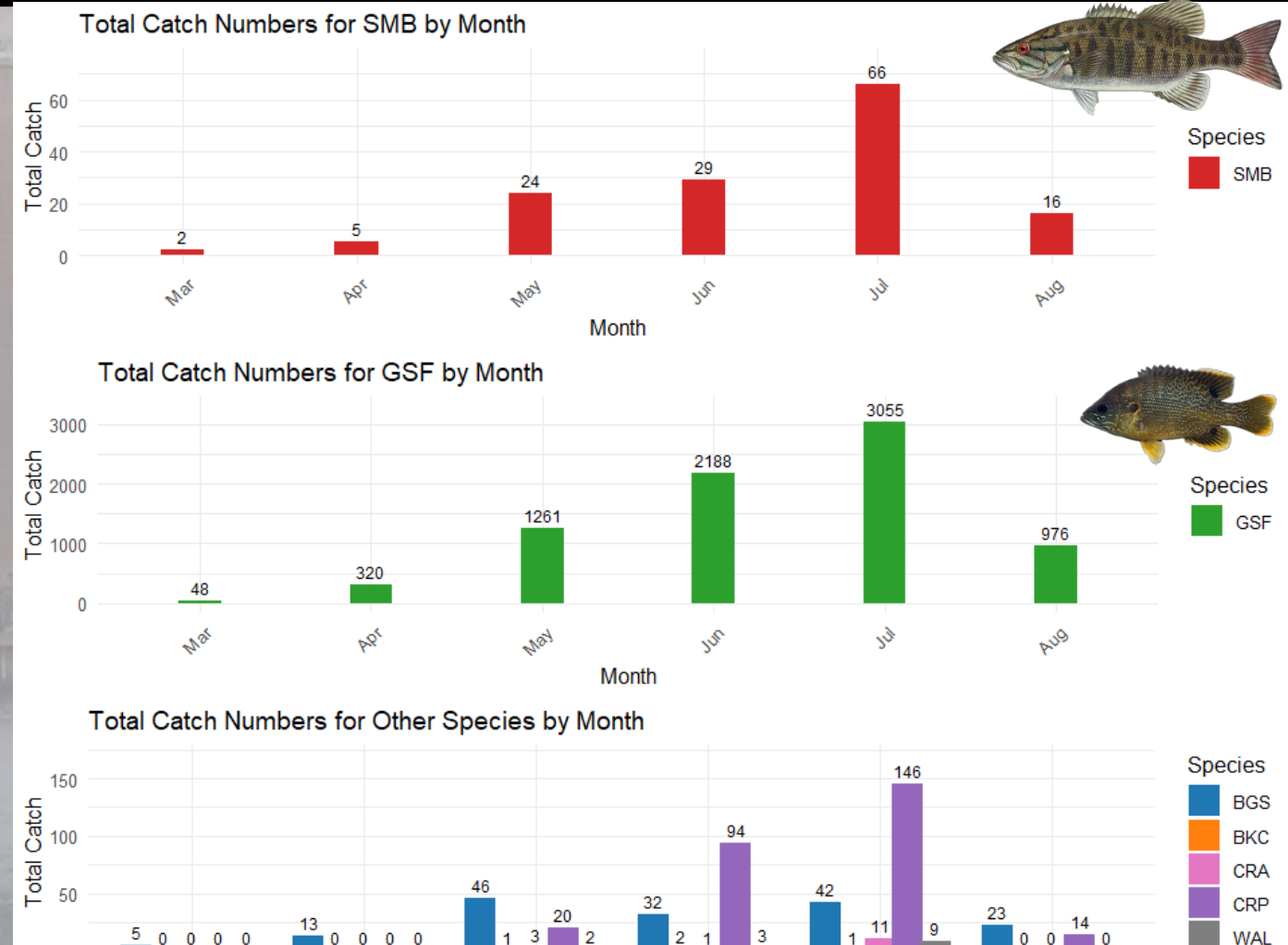
| Spp  | Common name      | GLCA  | GRCA |
|------|------------------|-------|------|
| BBH  | Black Bullhead   | 0     | 15   |
| BGS  | Bluegill         | 182   | 26   |
| BKC  | Black Crappie    | 4     | 3    |
| BNT  | Brown Trout      | 841   | 38   |
| CCF  | Channel catfish  | 0     | 14   |
| CRAY | Crayfish spp     | 14    | 0    |
| CRP  | Carp             | 129   | 38   |
| FHM  | Fathead minnow   | 0     | 948  |
| GSF  | Green Sunfish    | 10022 | 978  |
| PKF  | Plains killifish | 0     | 169  |
| RBT  | Rainbow trout    | NA    | 10   |
| RSH  | Red Shiner       | 0     | 93   |
| SMB  | Smallmouth bass  | 175   | 7    |
| STB  | Striped bass     | 0     | 3    |
| TRT  | trout spp        | 2     | 0    |
| WAL  | Walleye          | 21    | 9    |
| YBH  | Yellow bullhead  | 0     | 5    |
| NFC  | No Fish Caught   | 2     | 0    |
|      | Grand Total      | 11394 | 2356 |



# NNF captures Jan – August 8, 2024



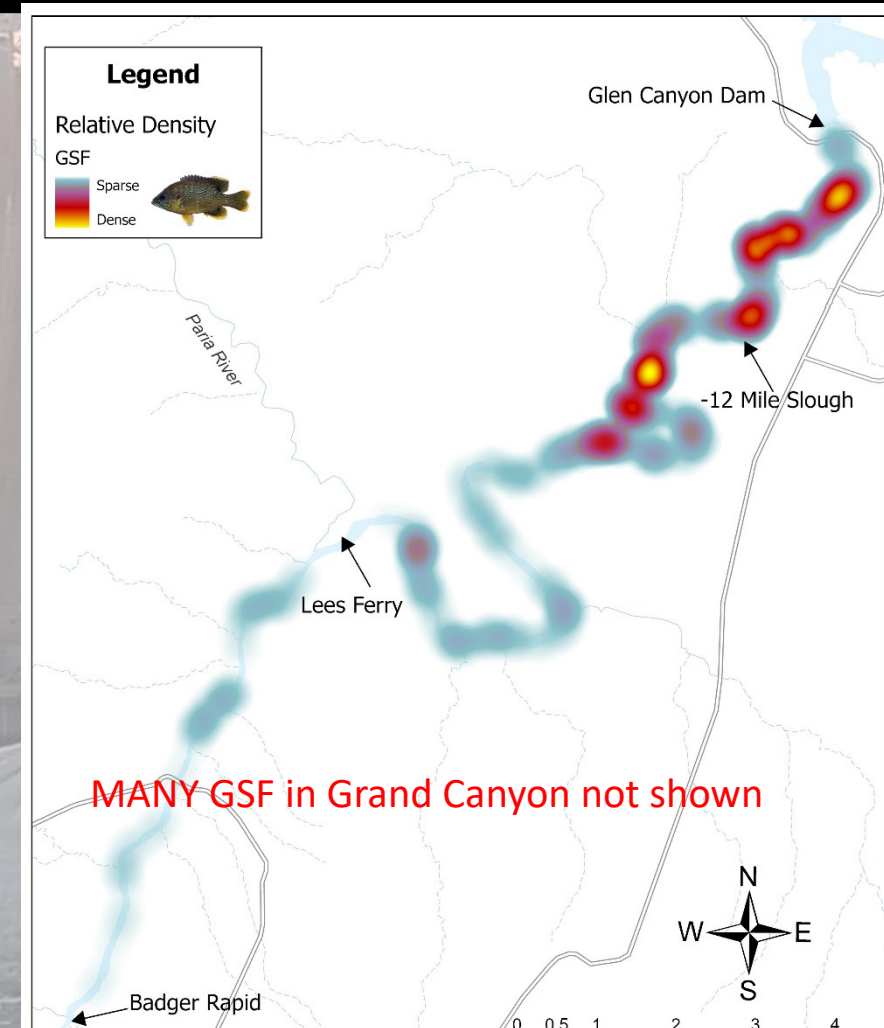
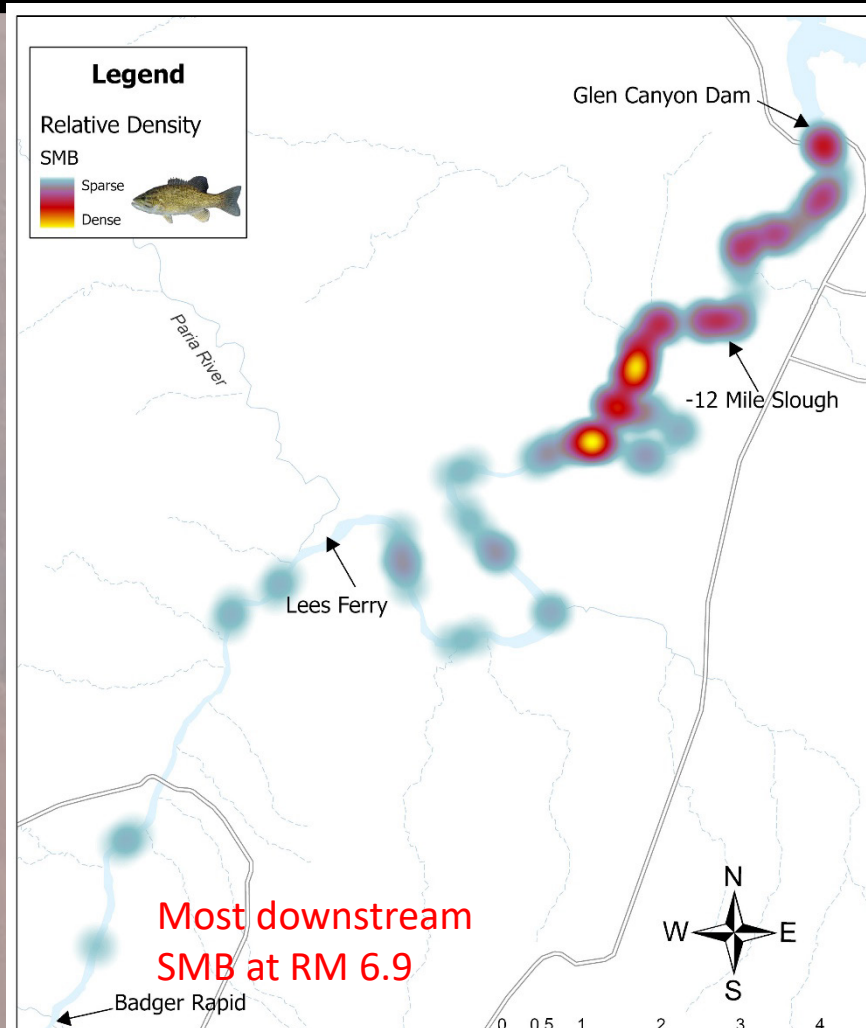
- Catch tends to increase monthly as water warms
- August only 1 week of sampling input
- Note different Y-axes
  - GSF most abundant NNF







# SMB and GSF Distribution in LF and PBR



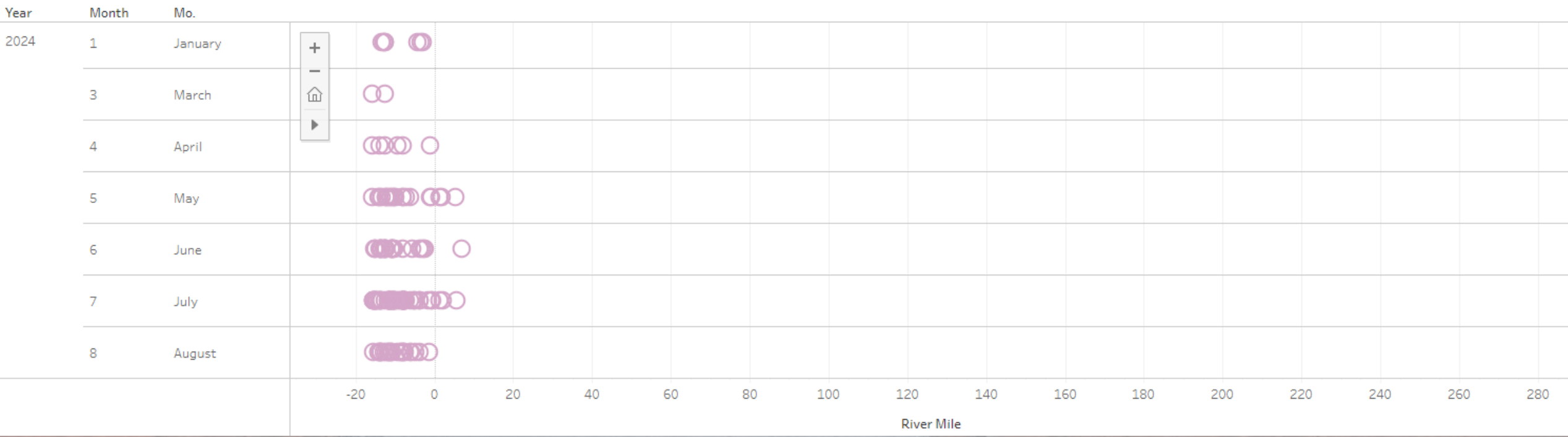


# SMB Distribution per month

## – Data Viz tool T. Gushue

### Nonnative Fish Dashboard: Catch by Month & River Mile

Rapid Response Nonnative Fish Data: Filter by Date, Location, Count or Species to further explore the data. Preliminary data. Do not cite.





# Length-frequency histogram for Smallmouth Bass captured from all gear types and reaches in Glen Canyon and Grand Canyon in 2024.

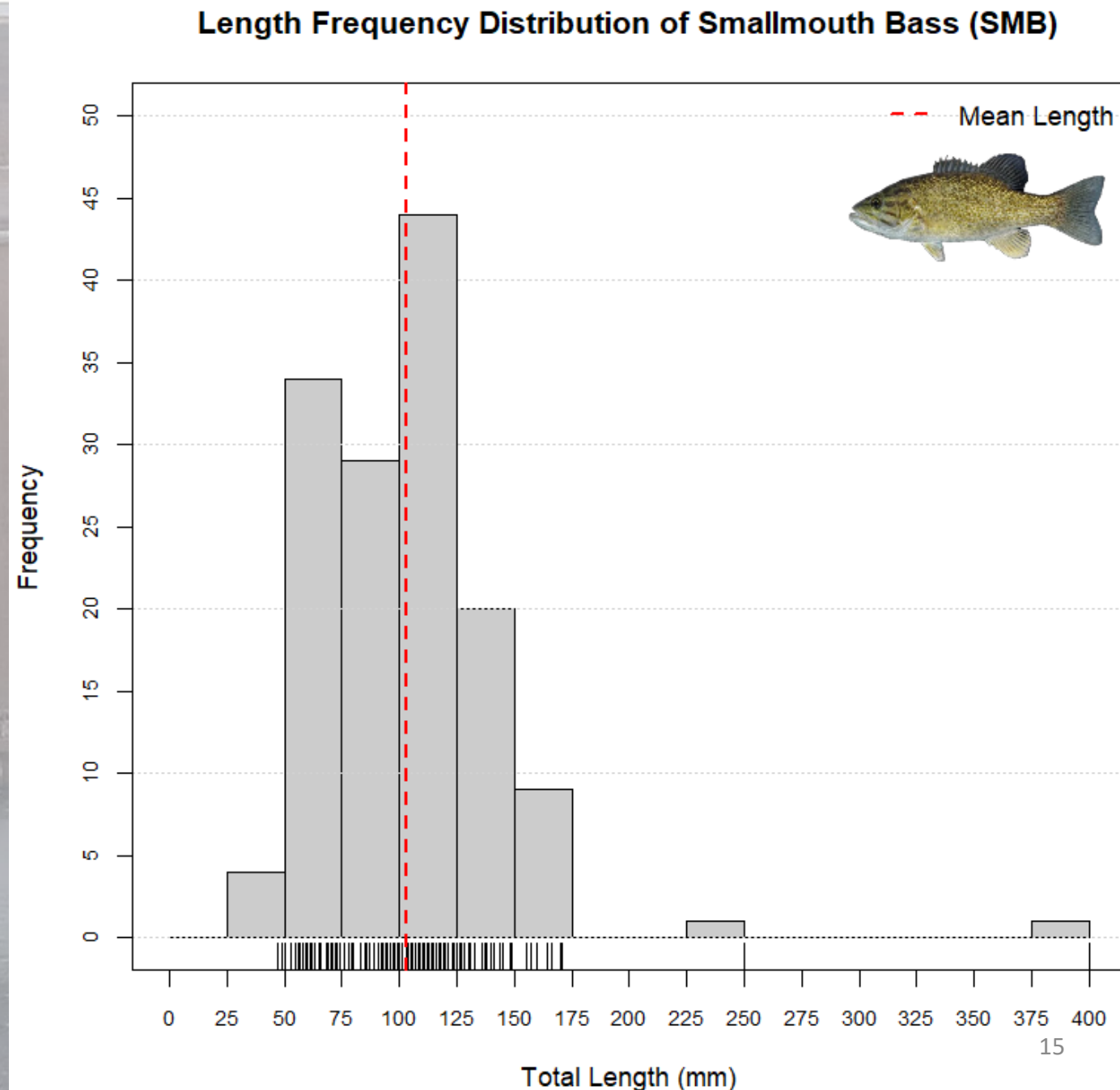
(Note different Y-axes from 2023)

2023

95 SMB less than 40 mm TL in July and August

2024

0 SMB less than 40 mm TL in July and August



# GSF captures Jan-Aug, 2024; New Data Visualization tool

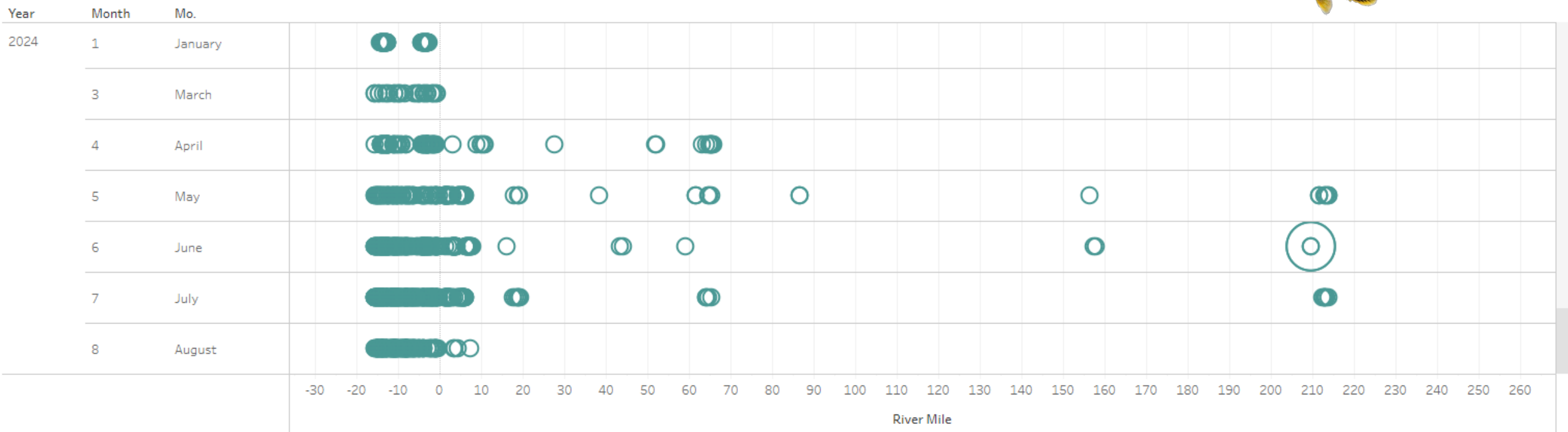
by T. Gushue

## N=11,097



### Nonnative Fish Dashboard: Catch by Month & River Mile

Rapid Response Nonnative Fish Data: Filter by Date, Location, Count or Species to further explore the data. Preliminary data. Do not cite.



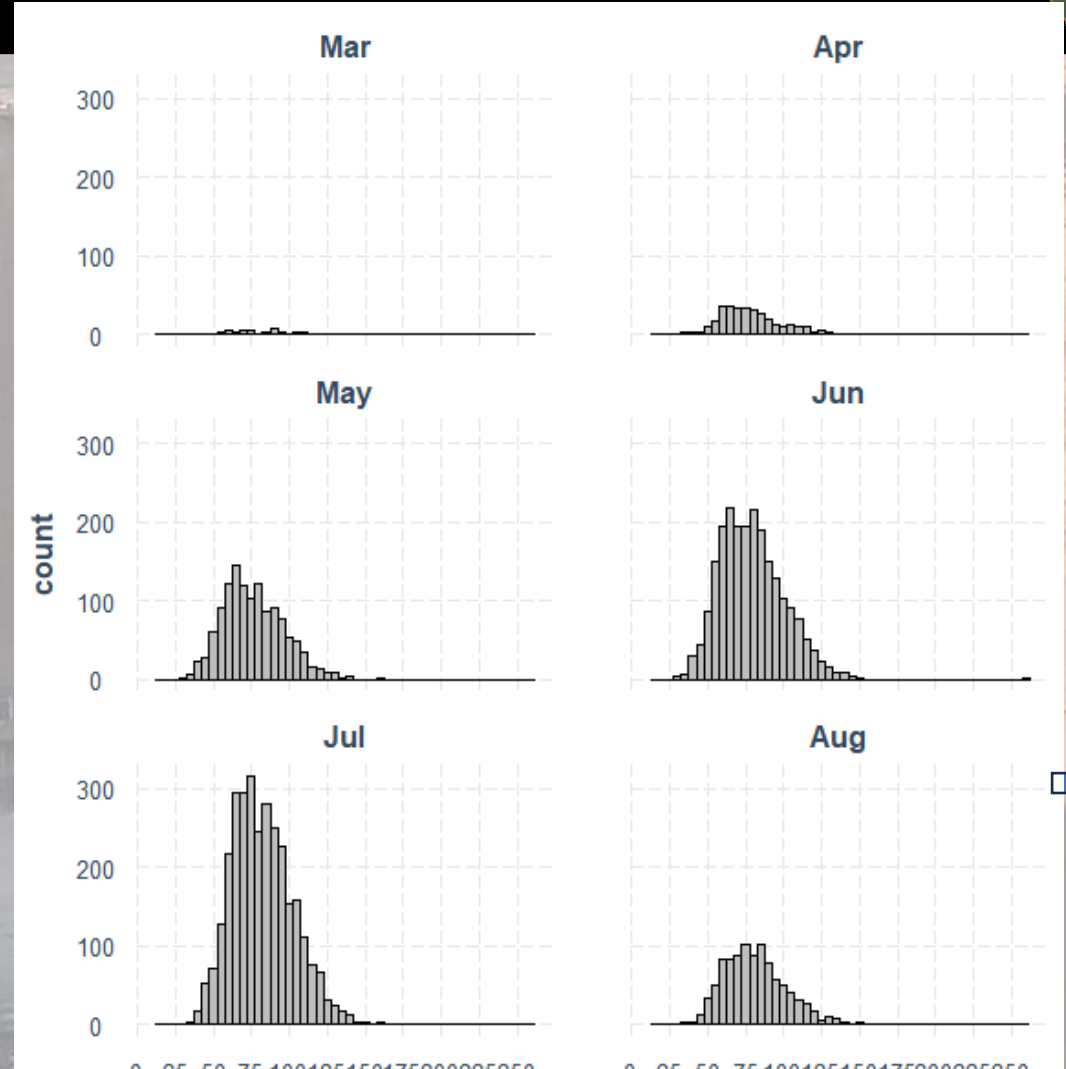




# GSF captures Jan-Aug, 2024

## N=11,097

- Most captured OUTSIDE the sloughs
  - 96 in main slough
  - 10,022 in Lees Ferry mainstem
  - 556 in PBR
  - 422 in Grand Canyon (308 in RM209 BW)
- Evidence of Reproduction in LF
- Little growth
- Mature at 50-75 mm TL

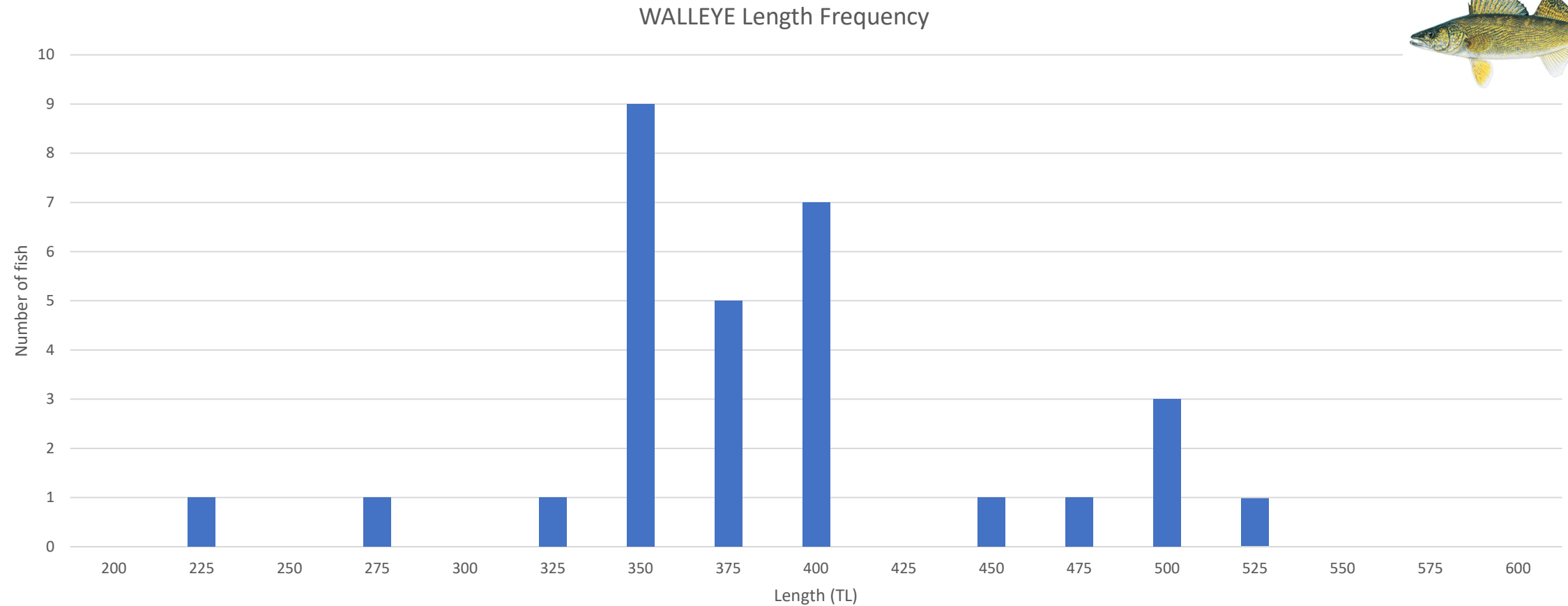








# WAL captures Jan-Aug 2024





# Remaining NNF Surveillance Trips in 2024

NPS Lees Ferry Rapid Response Removal  
4 netting  
6 electrofishing mainstem

|         |                     |
|---------|---------------------|
| 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 |

NPS Paria to Badger Rapid Response Removal  
5 electrofishing, seining

|           |        |                 |
|-----------|--------|-----------------|
| Aug 19 23 | PBR EF | Paria to Badger |
| Sept 9 12 | PBR-EF | Paria to Badger |
| Oct 7 10  | PBR EF | Paria to Badger |
| Nov 11 15 | PBR EF | Paria to Badger |
| Nov 25 29 | PBR-EF | Paria to Badger |

FWS Grand Canyon HBC aggregations  
1 Seining, Hoopnets

|        |        |   |
|--------|--------|---|
| 28 Aug | 16 Sep | Mainstem Fish, HBC aggregations (netting) |
|--------|--------|---|

NEW Grand Canyon - Bio-West small bodied fish  
3 Seining

|           |                                |                               |
|-----------|--------------------------------|-------------------------------|
| Aug 13    | Bio West small bodied sampling | Phantom Ranch to Pearce Ferry |
| August 27 | Bio-West small bodied sampling | Lees Ferry to Phantom Ranch   |
| Sept 10   | Bio-West small bodied sampling | Phantom Ranch to Pearce Ferry |

NPS Grand Canyon NN surveillance /eDNA  
2 Seining, backpack EF, hoops, eDNA

|              |                                       |                   |
|--------------|---------------------------------------|-------------------|
| Sept 23 30   | NN Surveillance SN/eDNA<br>Downstream | Lees Ferry to LCR |
| Oct 21 Nov 1 | NN Surveillance EF Downstream         | Lees Ferry to LCR |



# Rapid Response - Time is Still Critical

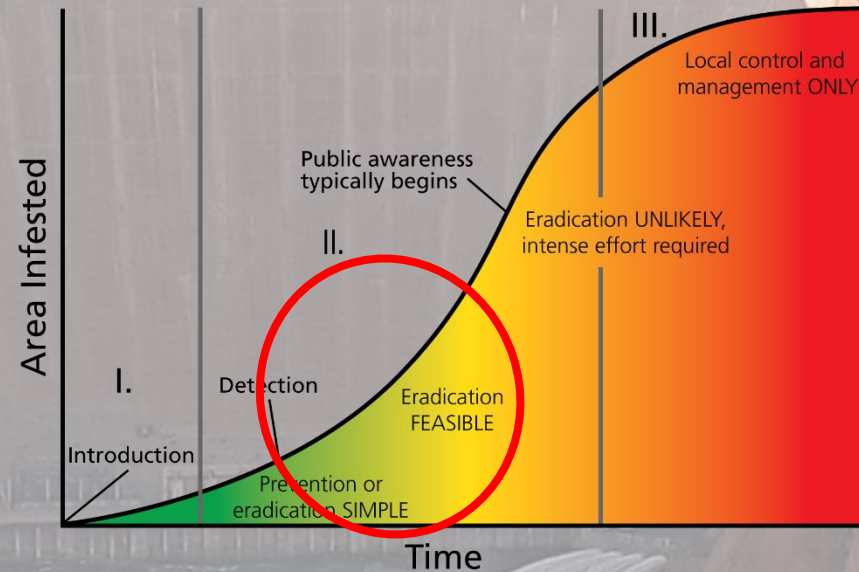


## Rapid Response

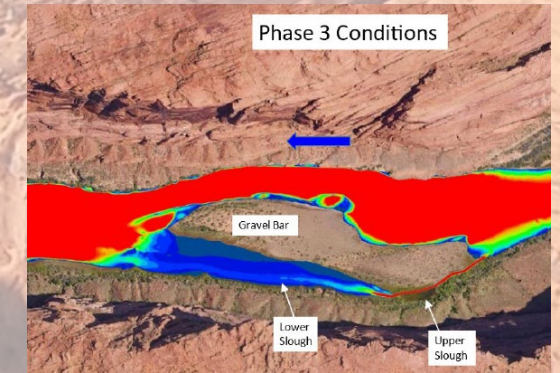


## Invasion Curve

Modified from Southwest Montana Science Partnership



## Slough Modification



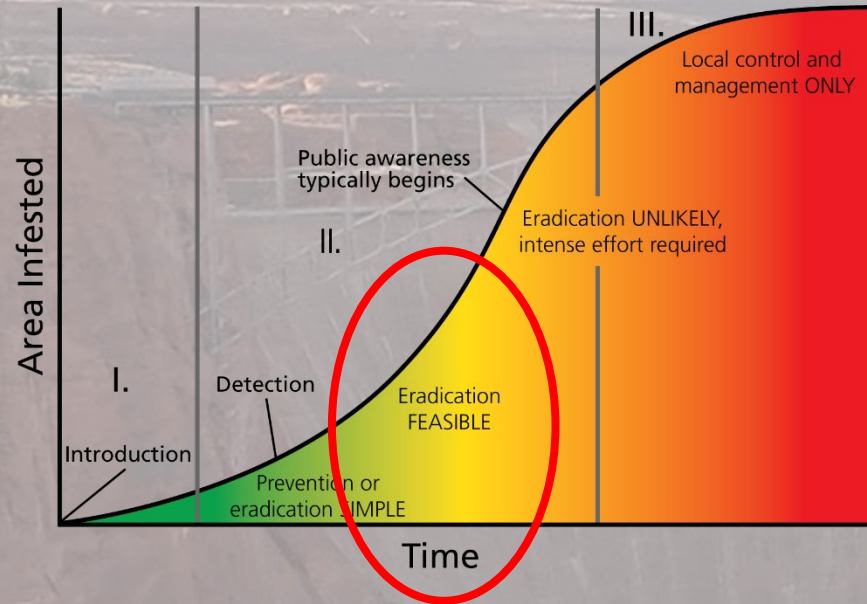
## Dam Operations



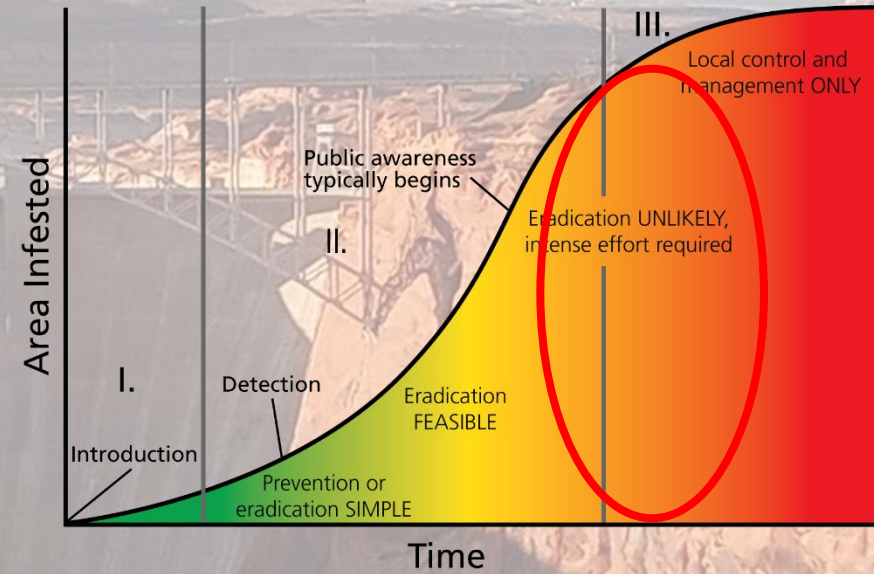
- We have a limited time to act while it is efficient and less expensive
- If we wait, then the numbers of **warmwater invasives will increase exponentially.**
- We can still prevent establishment of SMB if we use multiple actions now



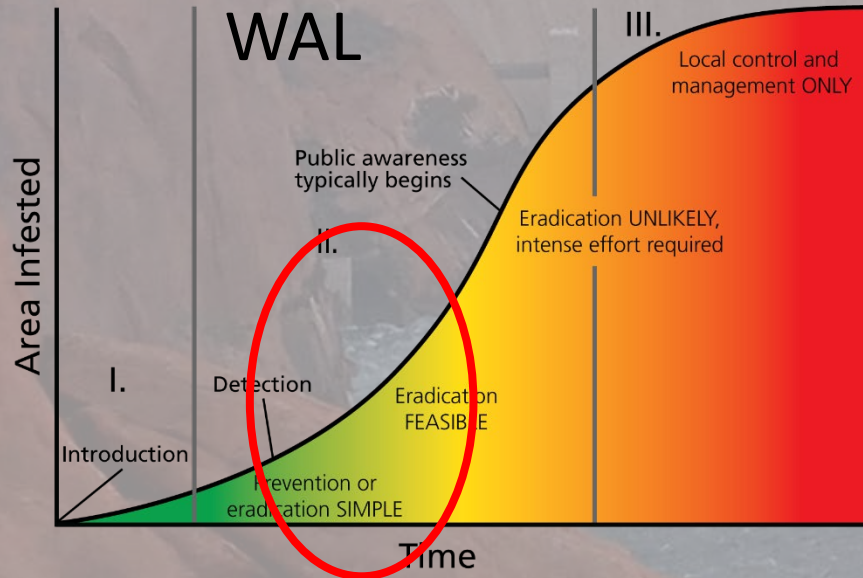
## SMB



## GSF



## WAL



## INVASION CURVE

- Conceptual
- Not uni-directional
- Best Guess



# Thank You Rapid Response Tech Team!

Mark Anderson, Jeff Arnold, Rob Billerbeck, Tara Blake, Conor Clancy, Kim Dibble, Drew Eppehimer, Bud Fazio, Nicki Gibney, Jeremy Hammen, Lindsay Hansen, Shaula Hedwall, Brian Hines, Julie Carter, Jess Newton, Matt O'Neill, Emily Omana, Kerri Pedersen, Taryn Preston, Pilar Rinker, Ryan Mann, Andrew Schultz, Sky Hedden, Kurt Shollenberger, Maxwell Randels, Scott Rogers, Dave Rogowski, Bill Stewart, Laura Tennant, Melissa Trammell, Katherine Tucker, David Ward, Charles Yackulic

