

# Smallmouth Bass and other Nonnatives

**Drew Eppehimer, Charles B. Yackulic**

US Department of the Interior

US Geological Survey, Grand Canyon Monitoring and Research Center

**TWG**

**Jul 9, 2025**

**Emily Omana Smith, Kurt Shollenberger**

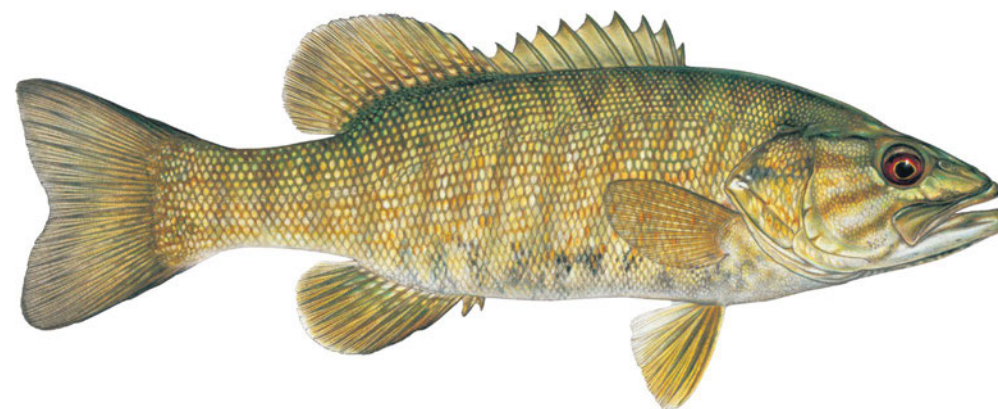
US Department of the Interior

National Park Service

**Matt O'Neill**

US Department of the Interior

Bureau of Reclamation



# Acknowledgements

With lots of help

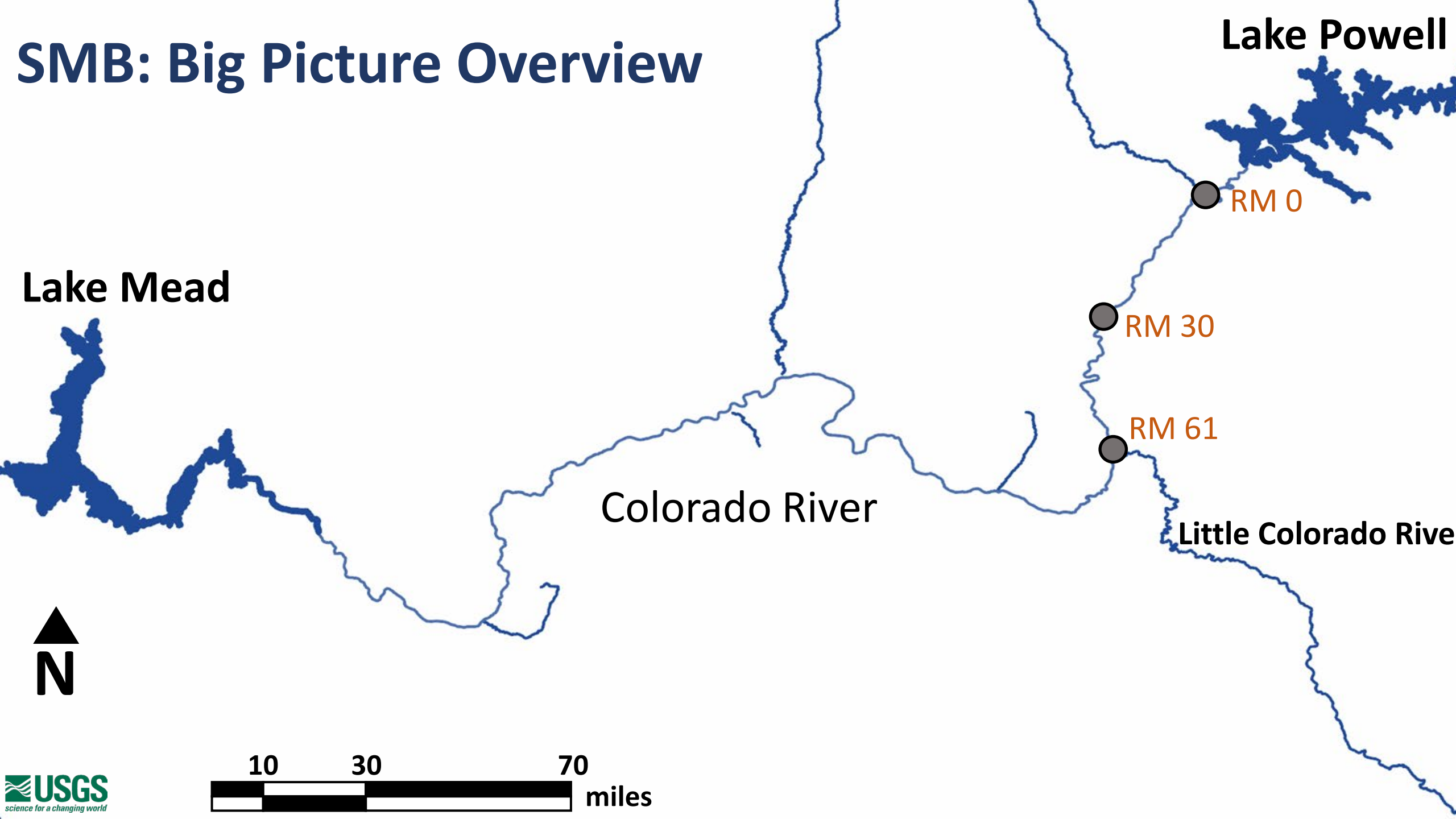
Including:

Kim Dibble, Maria Dzul, Brian Healy, Lindsay Hansen, Ben Miller,  
Tom Gushue, Jeff Arnold, Conor Clancy, Laura Tennant, Brian Hines, Bryce Mihalevich,  
David Ward, Mike Pillow, Pilar Rinker, Tiffany Love-Chezem,  
David Rogowski, Dale Fonken, John Fennell



— BUREAU OF —  
RECLAMATION

# SMB: Big Picture Overview

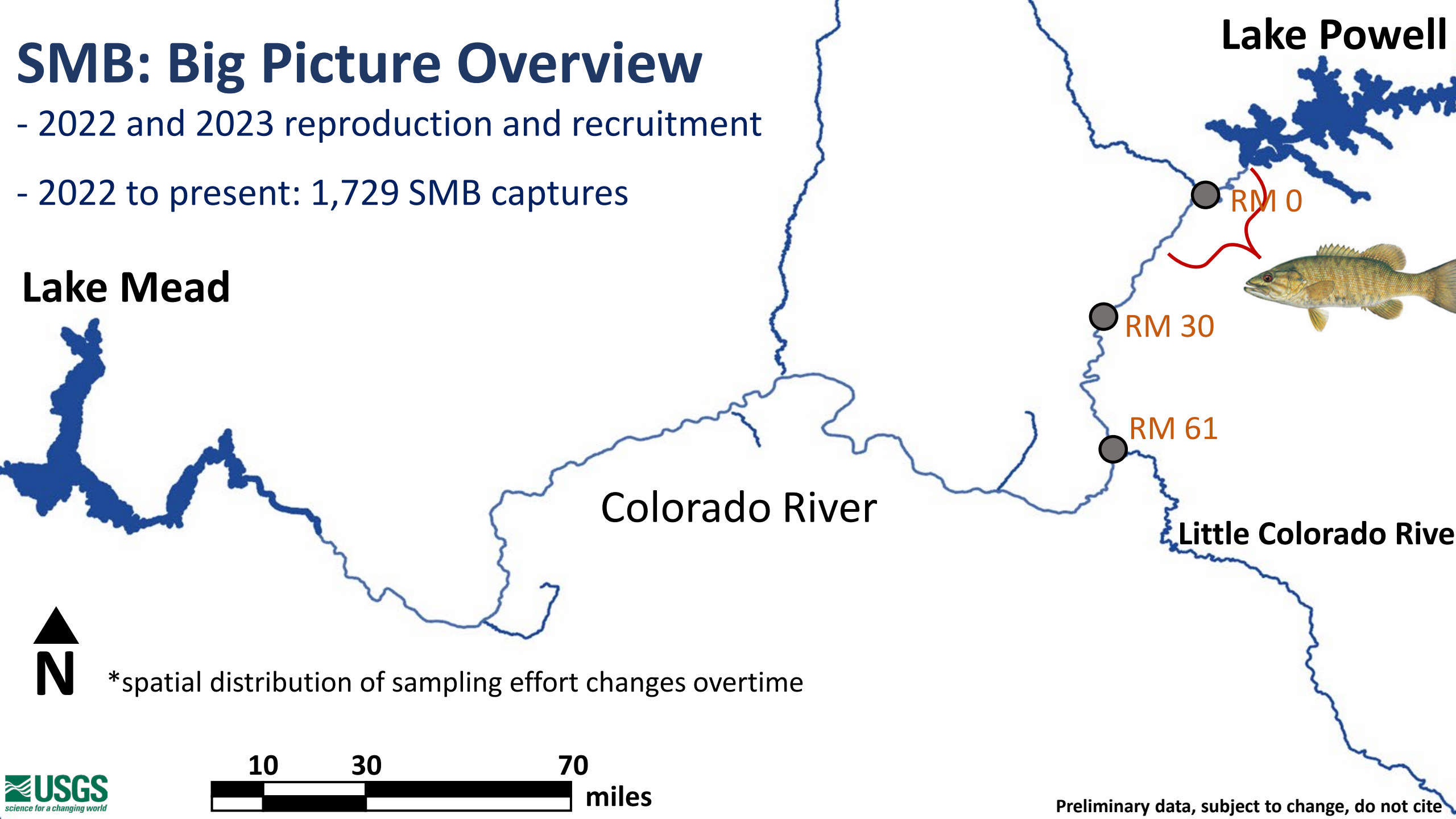


# SMB: Big Picture Overview

- 2022 and 2023 reproduction and recruitment
- 2022 to present: 1,729 SMB captures

Lake Mead

Lake Powell



Colorado River

Little Colorado River

RM 30

RM 61

RM 0



\*spatial distribution of sampling effort changes overtime



# Farthest SMB Captures

2022 - present

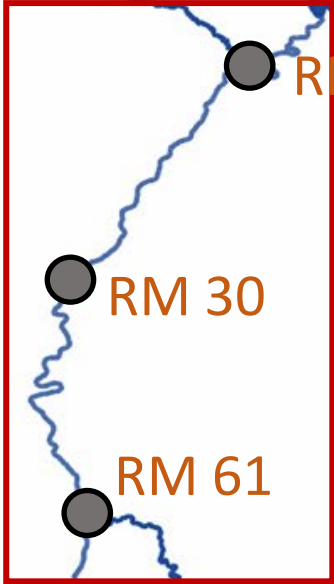
Lake Mead



\*sampling effort changes



Lake Powell



RM 0

RM 30

RM 61

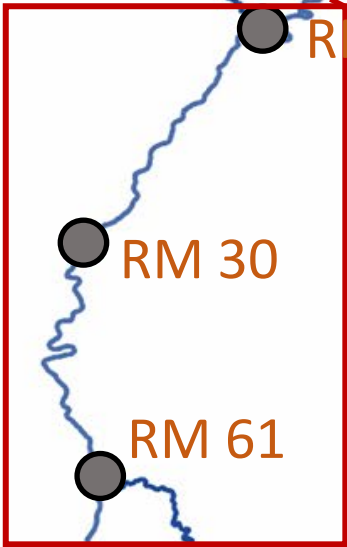
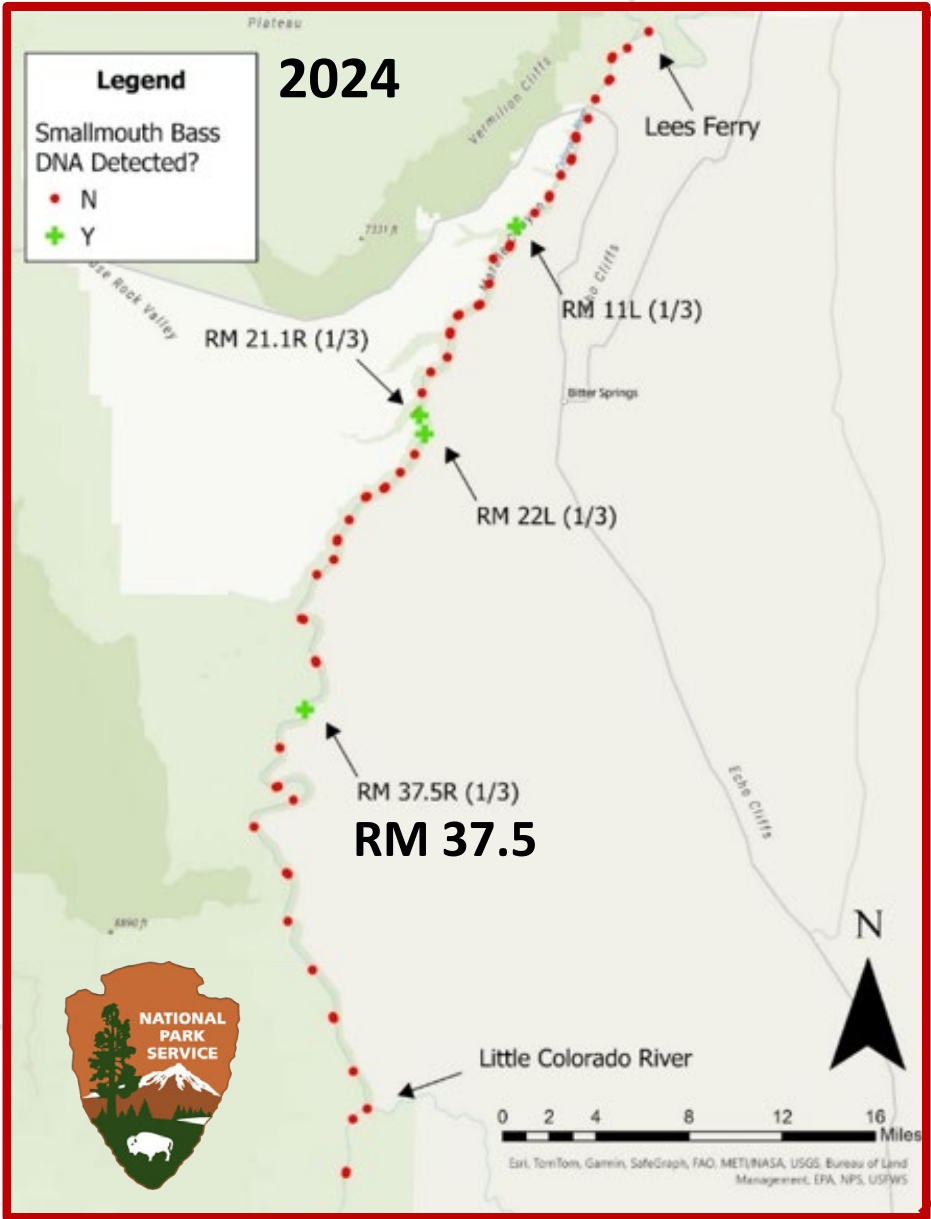
Little Colorado River

Preliminary data, subject to change, do not cite

# 2024 eDNA

Lake Mead

Lake Powell



Little Colorado River

Data and Figure: NPS GRCA, courtesy of Kurt Shollenberger, NPS

# 2025 Sampling Effort: Lees Ferry Tailwater

Gear

Electrofishing

Netting/Seining

## Fisheries- Lees Ferry 2025

GCMRC AZGFD TRGD

GLCA Monitoring

Apr

Jul

Oct

Jan

Time





## Lees Ferry Tailwater Nonnative Monitoring/Removal

- 17 electrofishing trips
- 12 hoop-netting trips
- 4-day duration with changing reaches

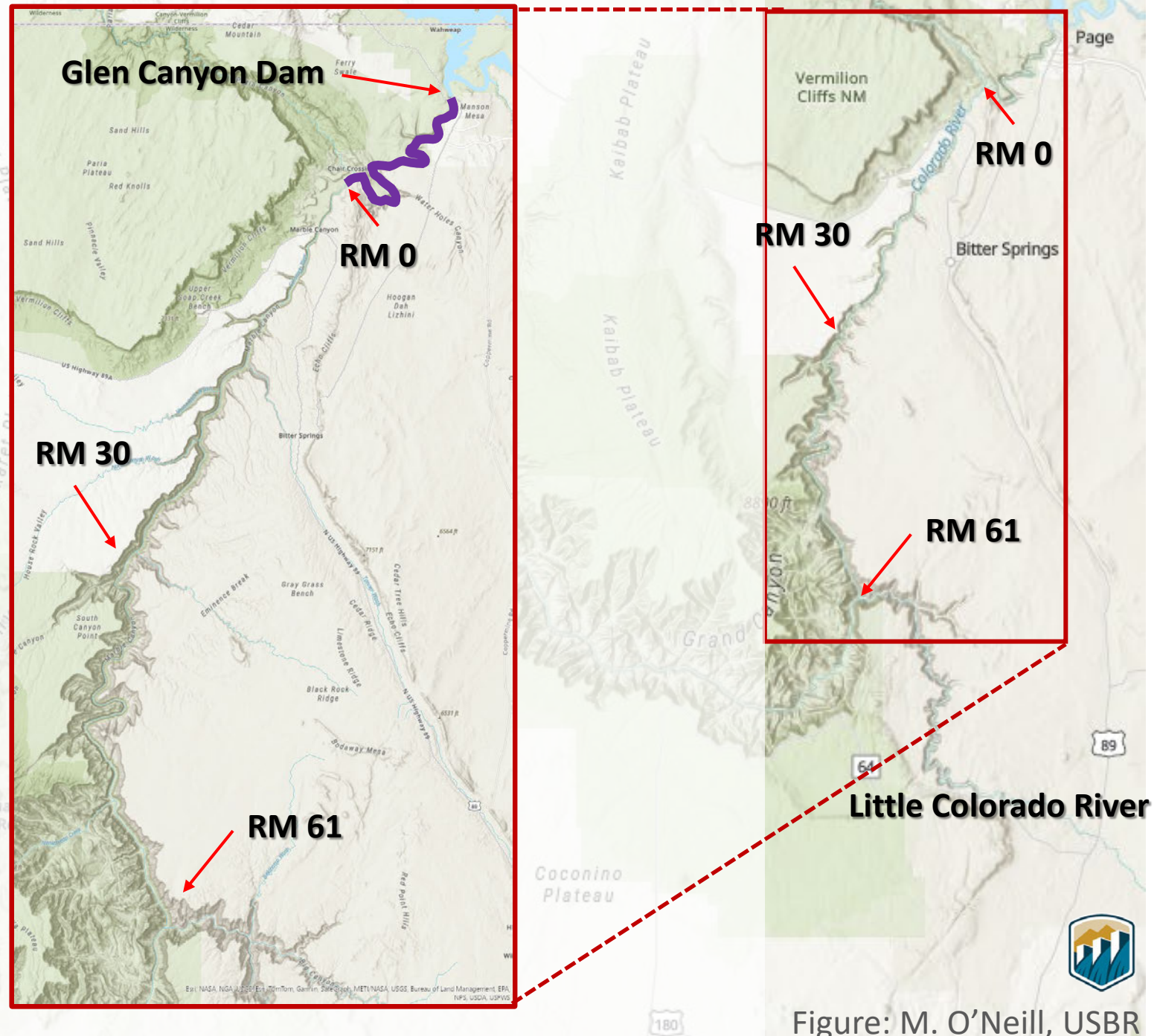
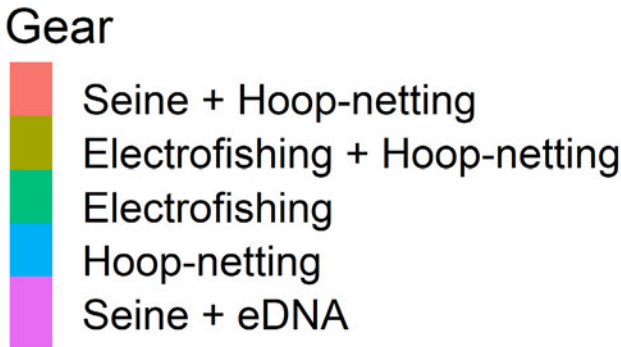
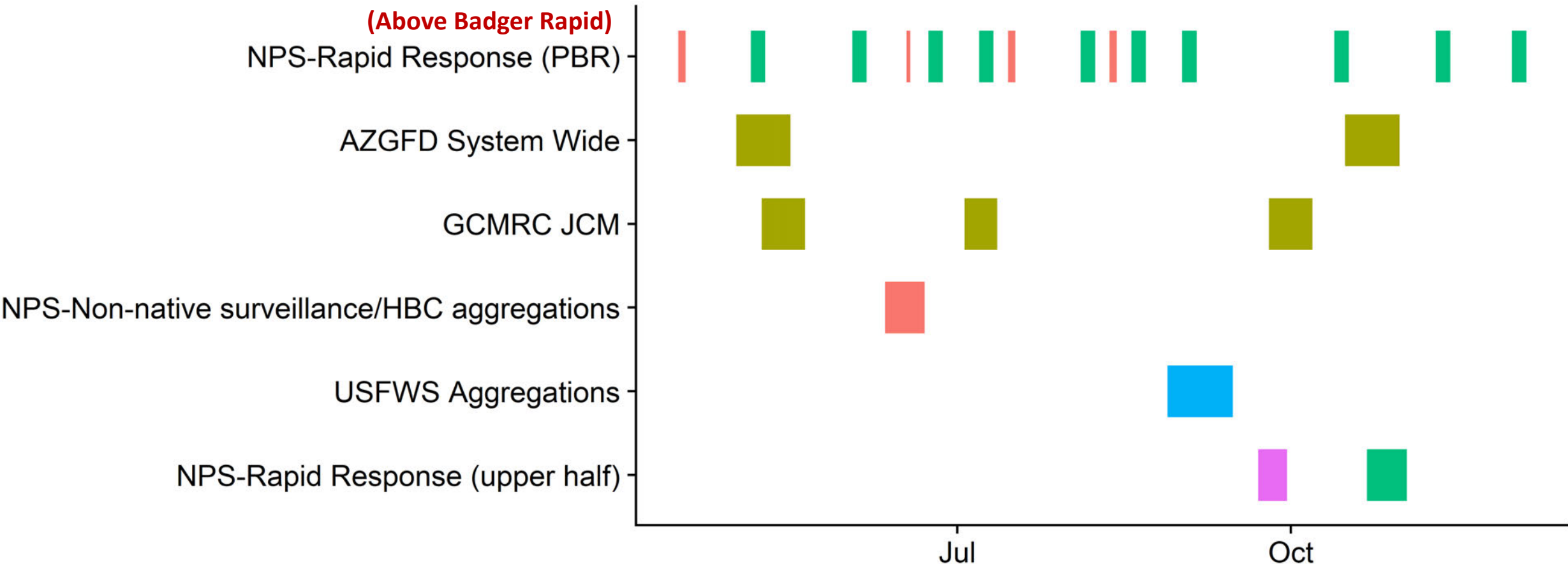


Figure: M. O'Neill, USBR

# 2025 Sampling Effort: Downstream



## Fisheries- Grand Canyon Mainstem 2025





## Paria to Badger Rapid Nonnative Monitoring/Removal

- 10 electrofishing trips
  - 5-day duration
- 4 seining and hoop-netting trips
  - 3-day duration

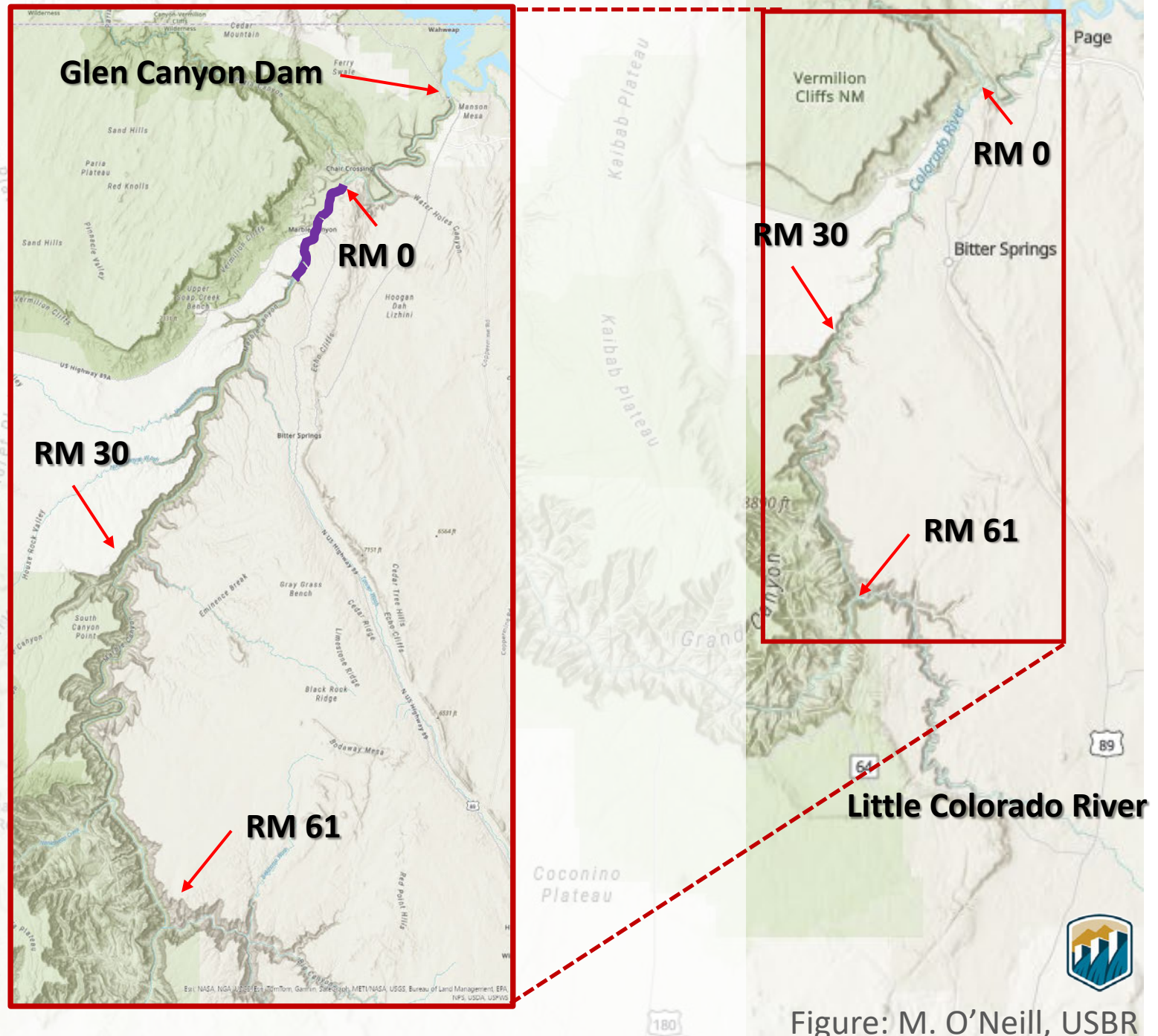


Figure: M. O'Neill, USBR

## Juvenile Chub Monitoring

- 3 electrofishing and hoop-netting trips
  - 13-day duration
- ★ 1 night electrofishing at House Rock

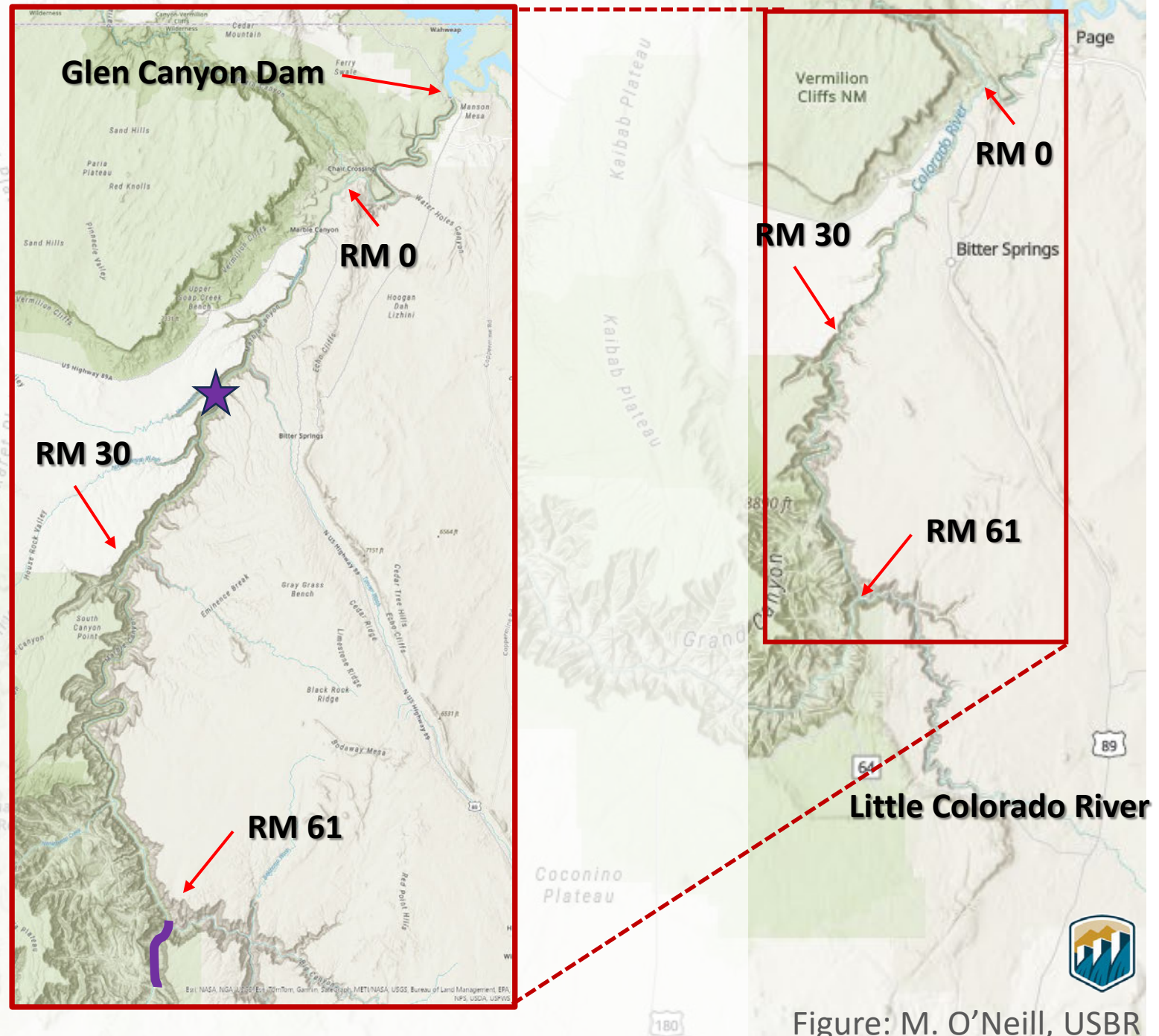


Figure: M. O'Neill, USBR

# NPS GRCA



## Upper Half

- 1 seining and eDNA trip
  - 9-day duration
- 1 electrofishing trip
  - 12-day duration

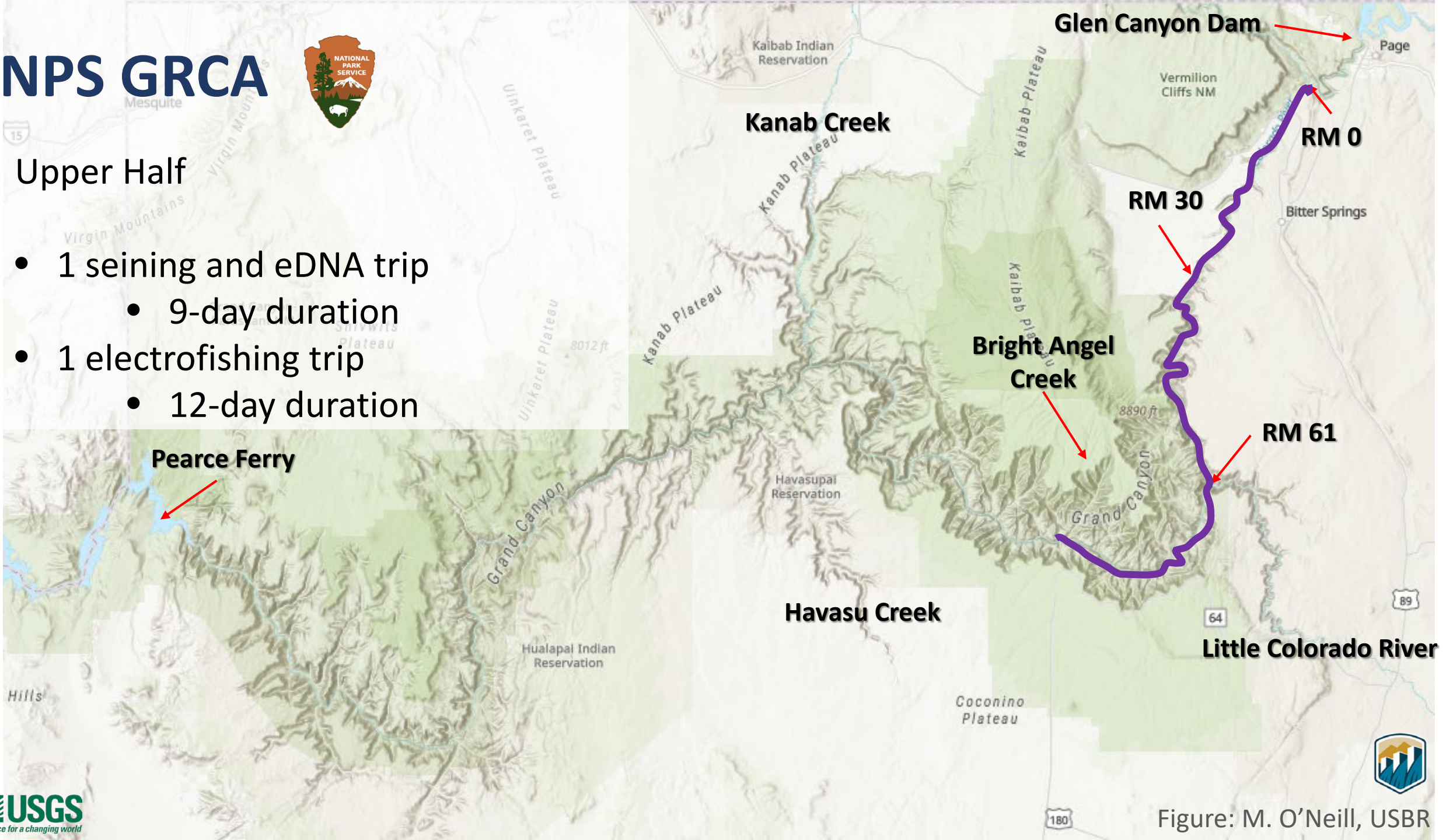


Figure: M. O'Neill, USBR



## Nonnative Surveillance, HBC Aggregations

- 1 seining and hoop-netting trip
  - 12-day duration



Figure: M. O'Neill, USBR

**AZGFD**



## System Wide Monitoring

- 2 electrofishing and hoop-netting trips
  - 16-day duration



# USFWS

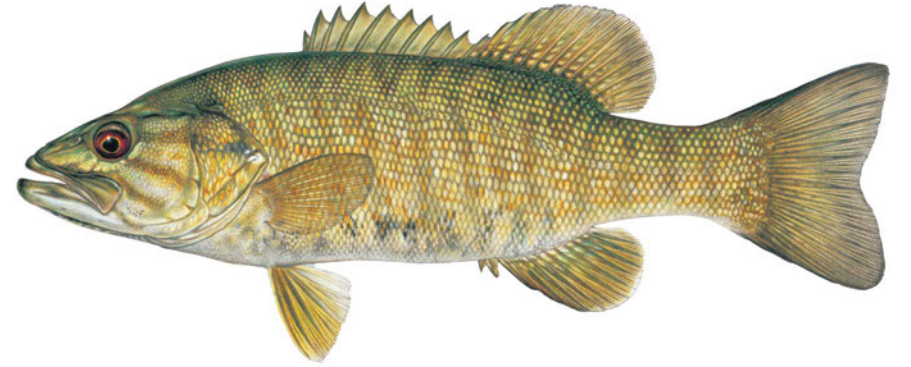


## HBC Aggregations

- 1 hoop-netting and opportunistic seining trip
  - 19-day duration

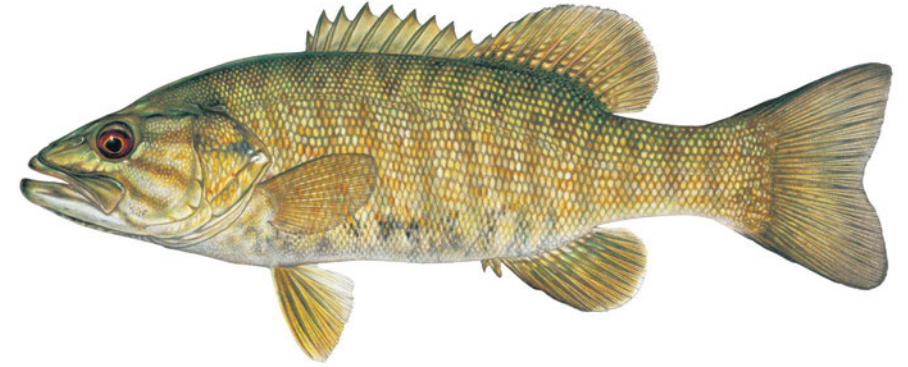


# 2025 Smallmouth Bass Captures



# 2025 Smallmouth Bass Captures

**Total = 14\***



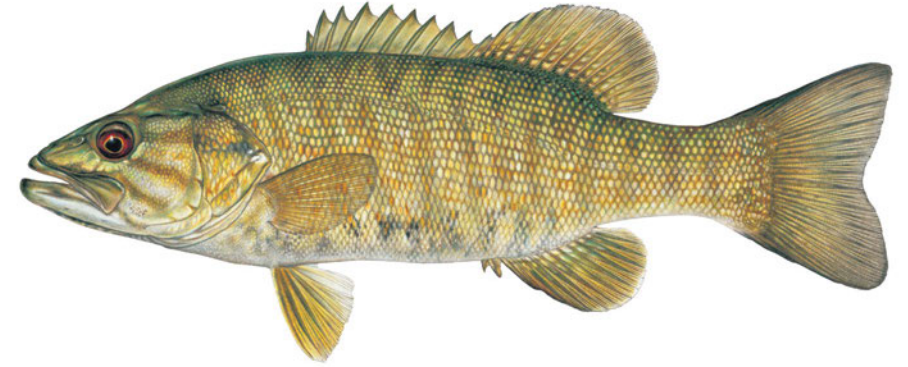
**43% from routine, interagency monitoring**

**57% from targeted removal effort**

\*Catchability is temperature dependent, and temperatures have been relatively cool

# 2025 Smallmouth Bass Captures

**Total = 14\***



**Farthest downstream capture = RM 5.26**

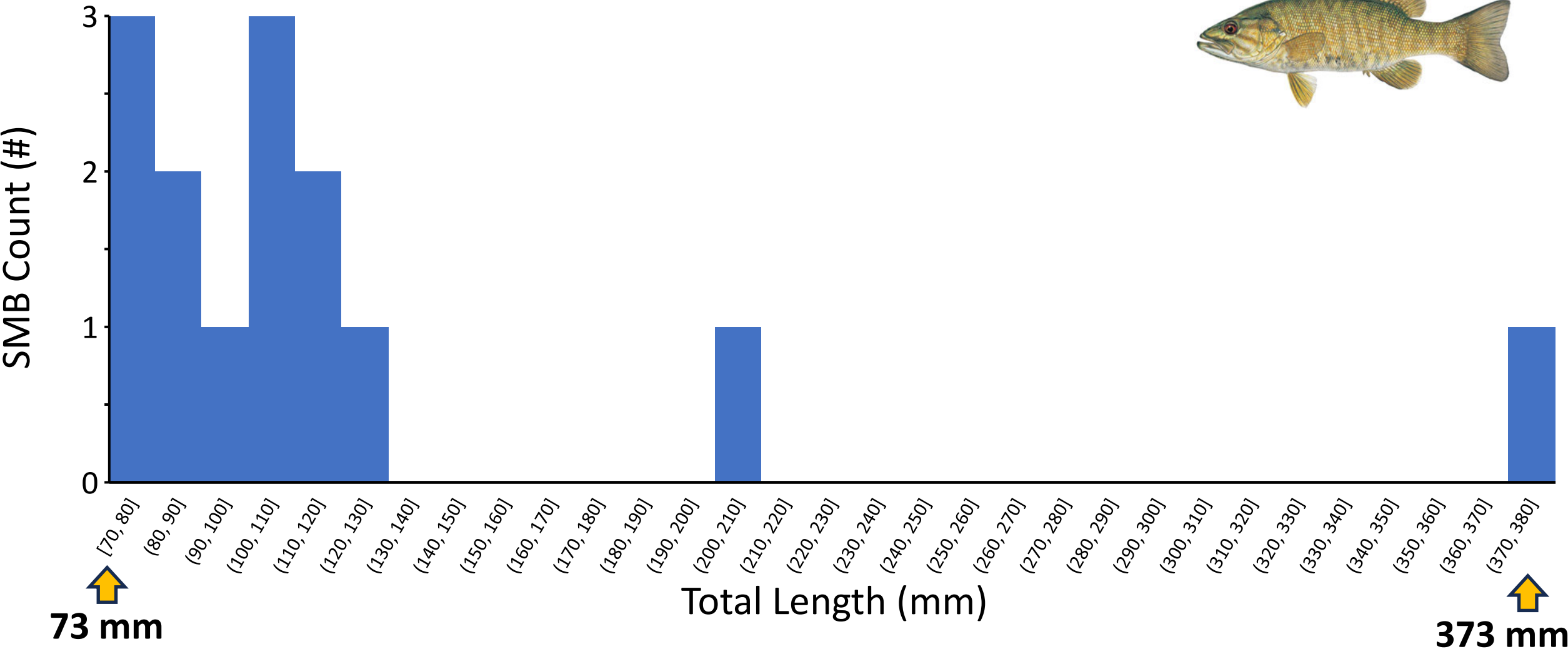
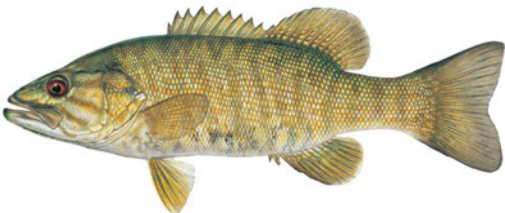
GRCA, May, 99mm TL

**No age-0 fish captured  
(smallest 73mm TL)**

GLCA, May, RM -10

\*Catchability is temperature dependent, and temperatures have been relatively cool

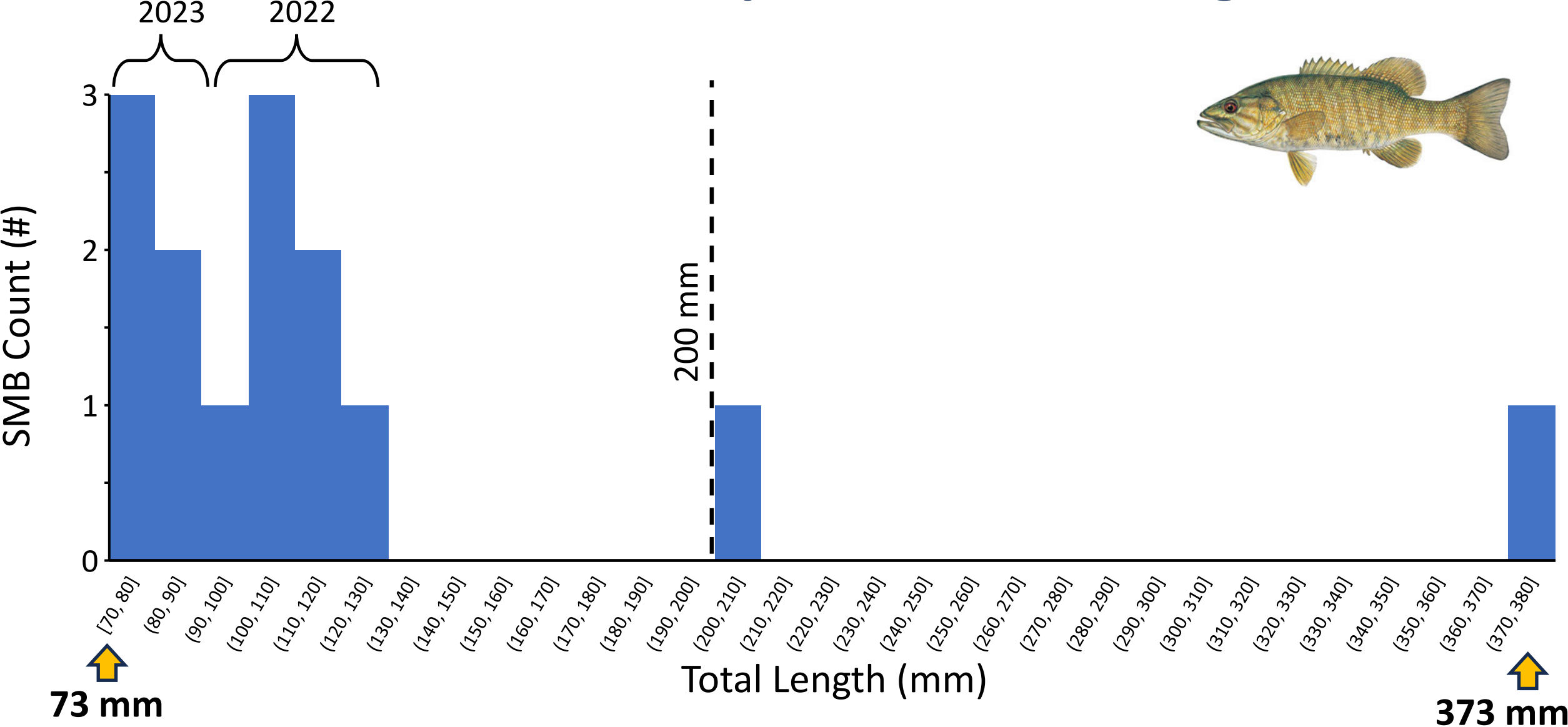
# 2025 Smallmouth Bass Captures: Total Length



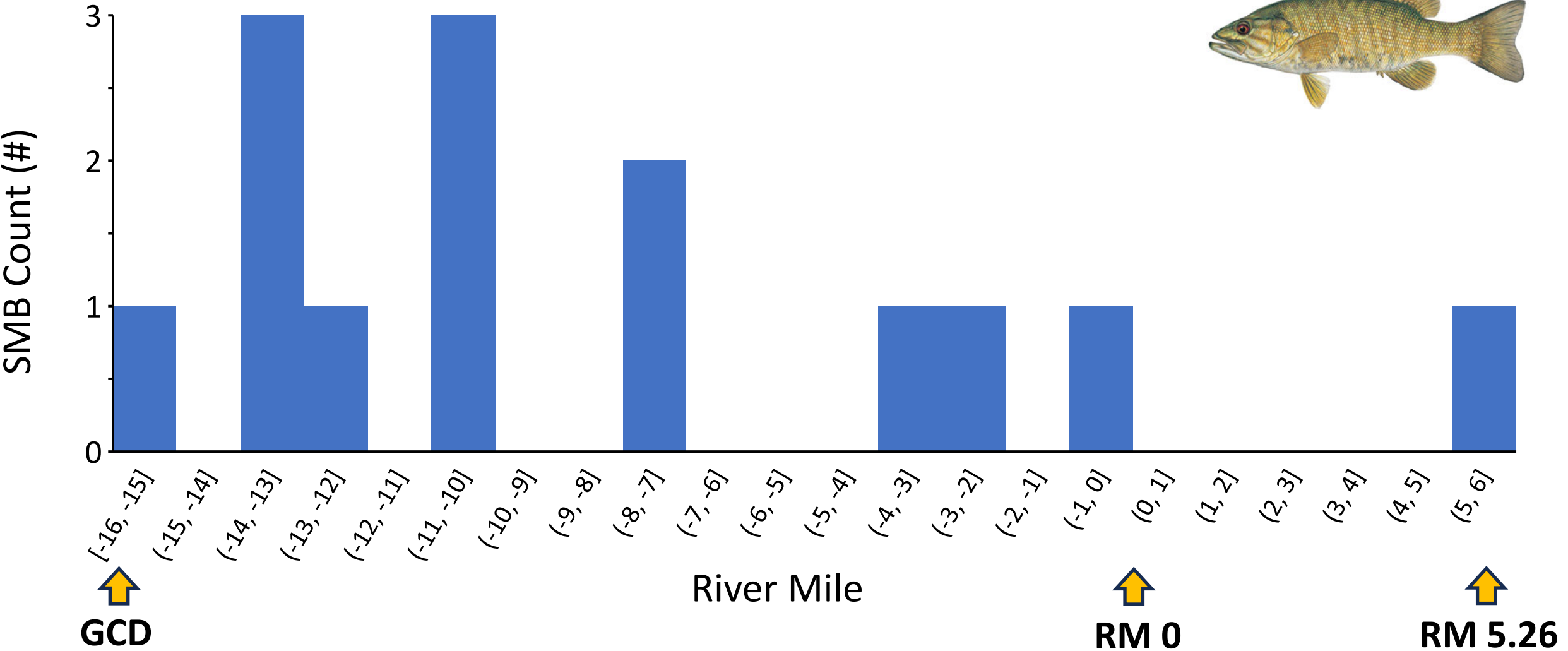
73 mm

373 mm

# 2025 Smallmouth Bass Captures: Total Length

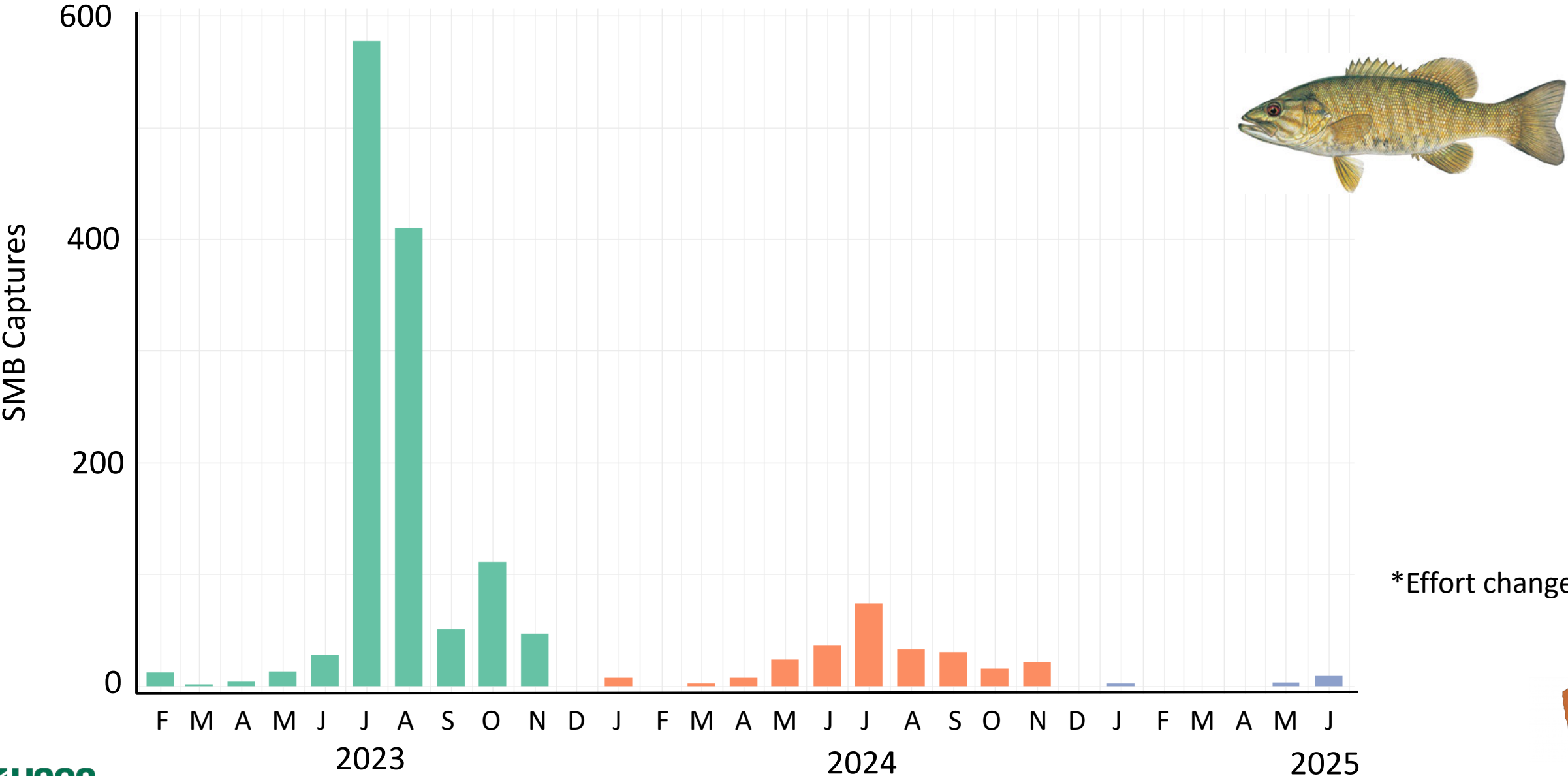


# 2025 Smallmouth Bass Captures: Location



\*Spatial distribution of effort differs through time

# SMB Captures: Glen Canyon Dam to RM 8

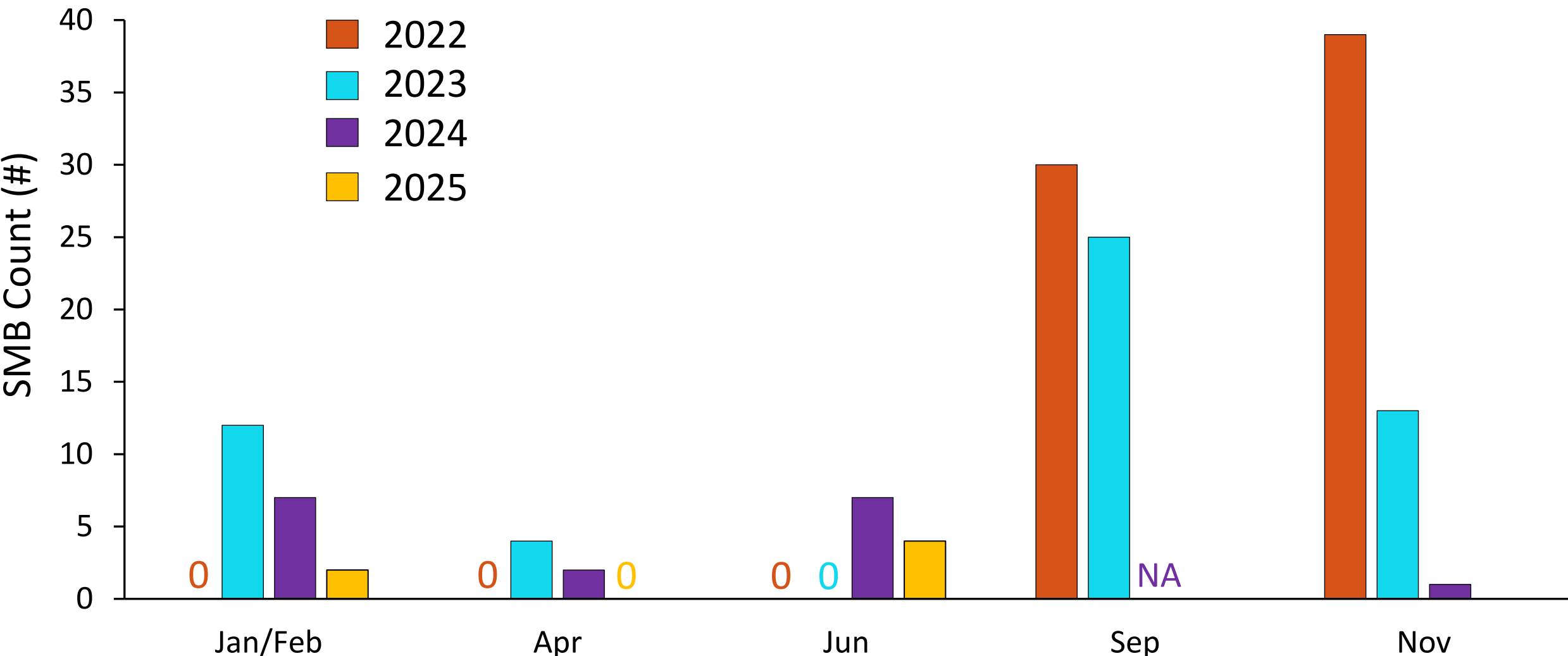


\*Effort changes

# SMB Captures: Lees Ferry, GCMRC AZGFD TRGD



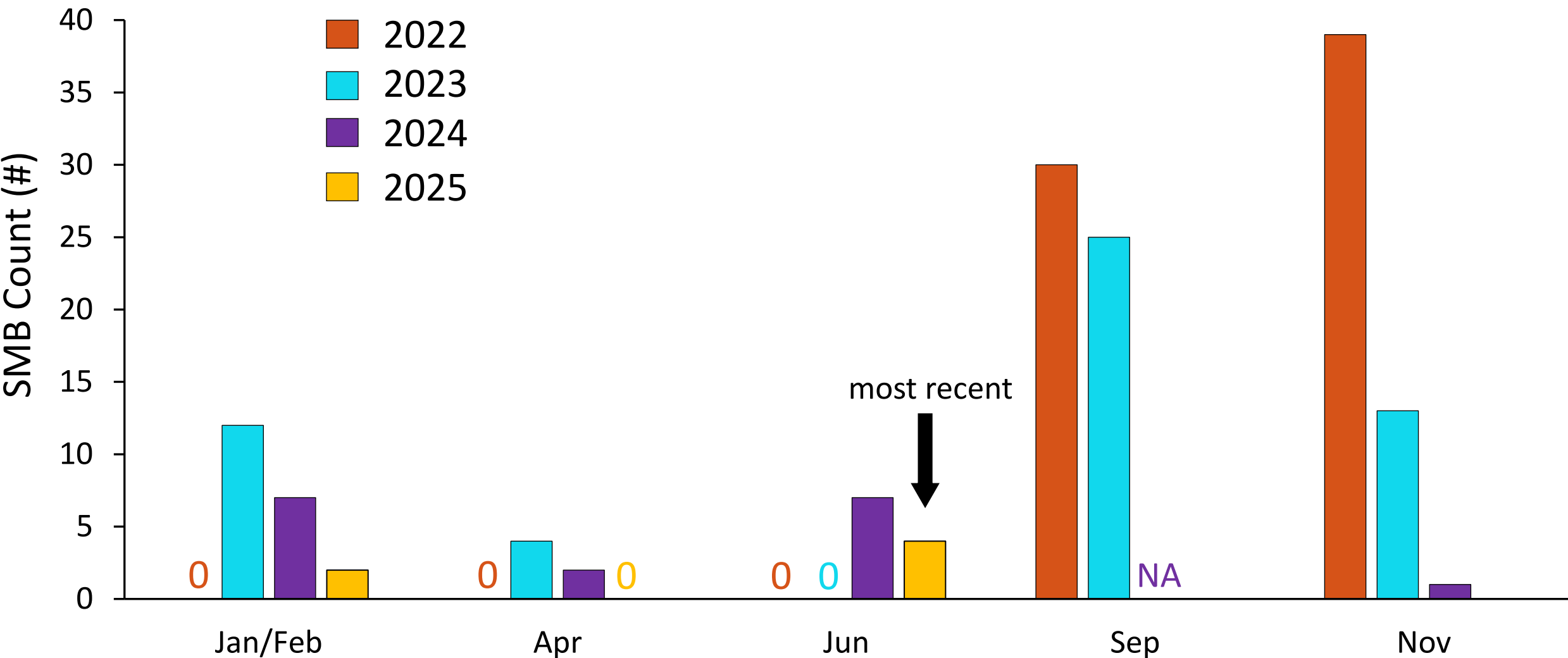
Boat electrofishing, fixed sites (near RM -13 and RM -4)



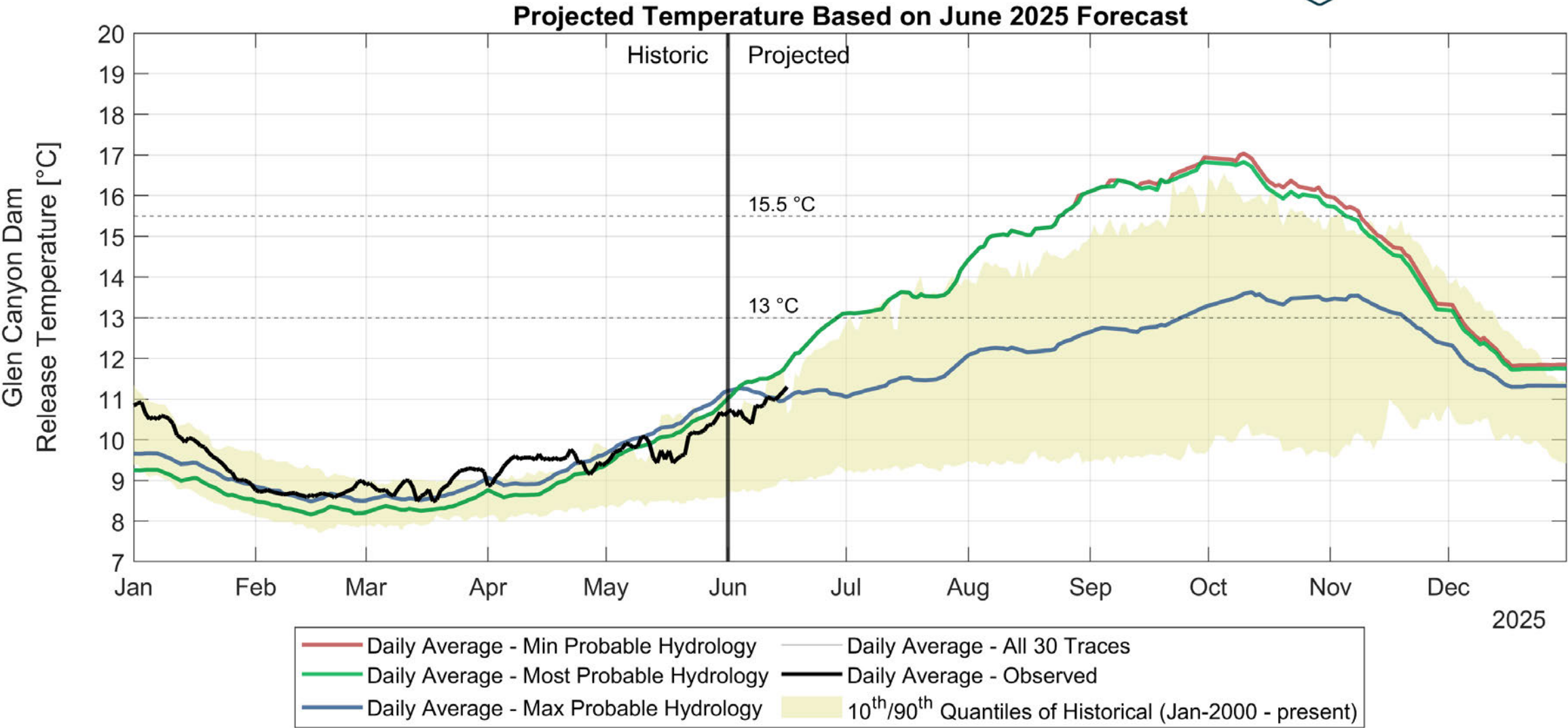
# SMB Captures: Lees Ferry, GCMRC AZGFD TRGD



Boat electrofishing, fixed sites (near RM -13 and RM -4)



# 2025 Water Temperature Forecast



# SMB Research and Monitoring

Determining the effectiveness of removals & flow experiments

**Abundance/  
Catch**

**Distribution/  
Dispersal**

**Growth**

**Diet**

**Kinship**

**Reproduction?**

No evidence of  
Age-0

Evidence of  
Age-0

Age-0 Growth  
Rate

**Recruitment?**

Entrained  
from Lake?

Reproduced  
locally?

When?  
(relative to  
experimental  
actions)

**Pop Growth?**

**Entrainment?**

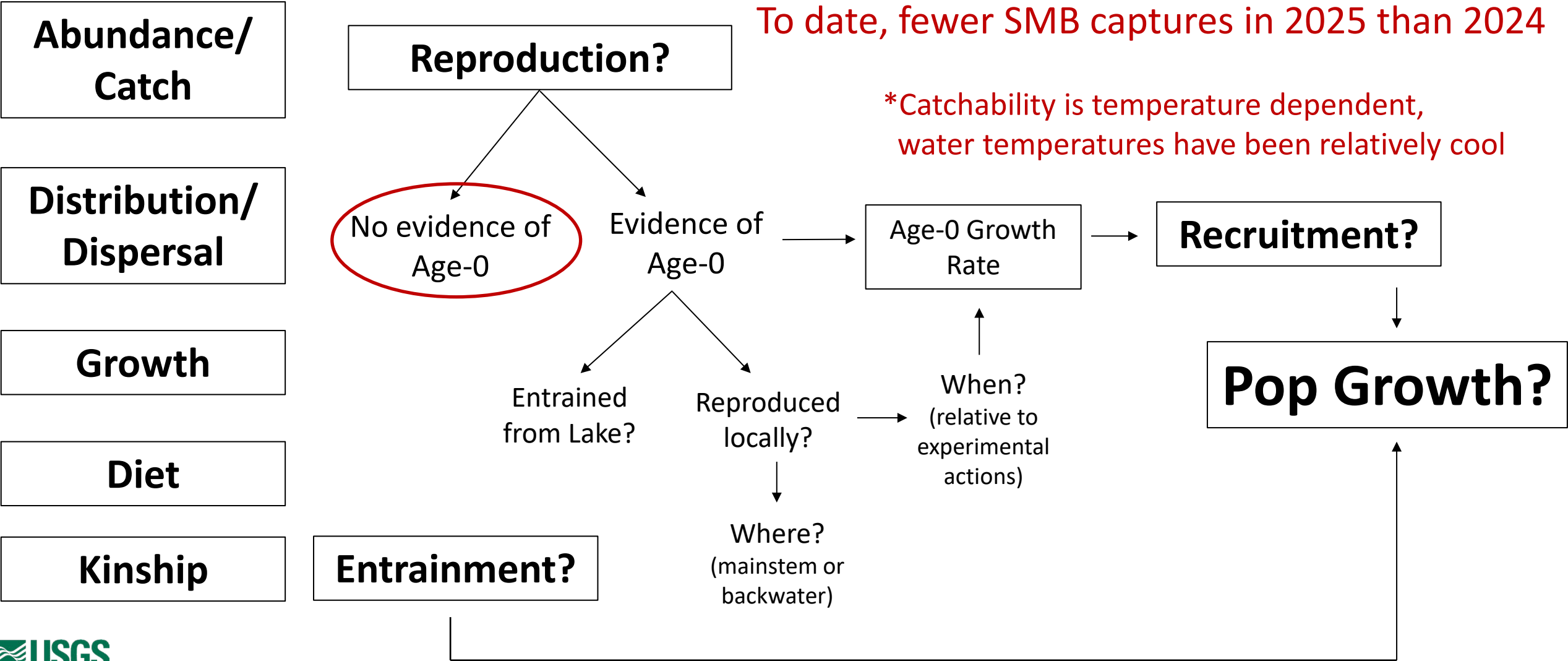
Where?  
(mainstem or  
backwater)

# SMB Research and Monitoring

Determining the effectiveness of removals & flow experiments

To date, fewer SMB captures in 2025 than 2024

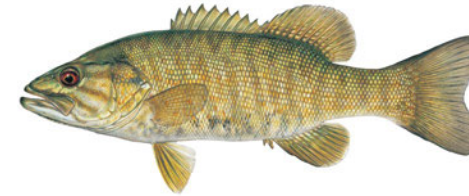
\*Catchability is temperature dependent,  
water temperatures have been relatively cool



# 2025 Other Nonnative Fishes Captures (System Wide)

# 2025 Other Nonnative Fishes Captures (System Wide)

**14      Smallmouth Bass**



**1,436      Green Sunfish**



**91      Bluegill**



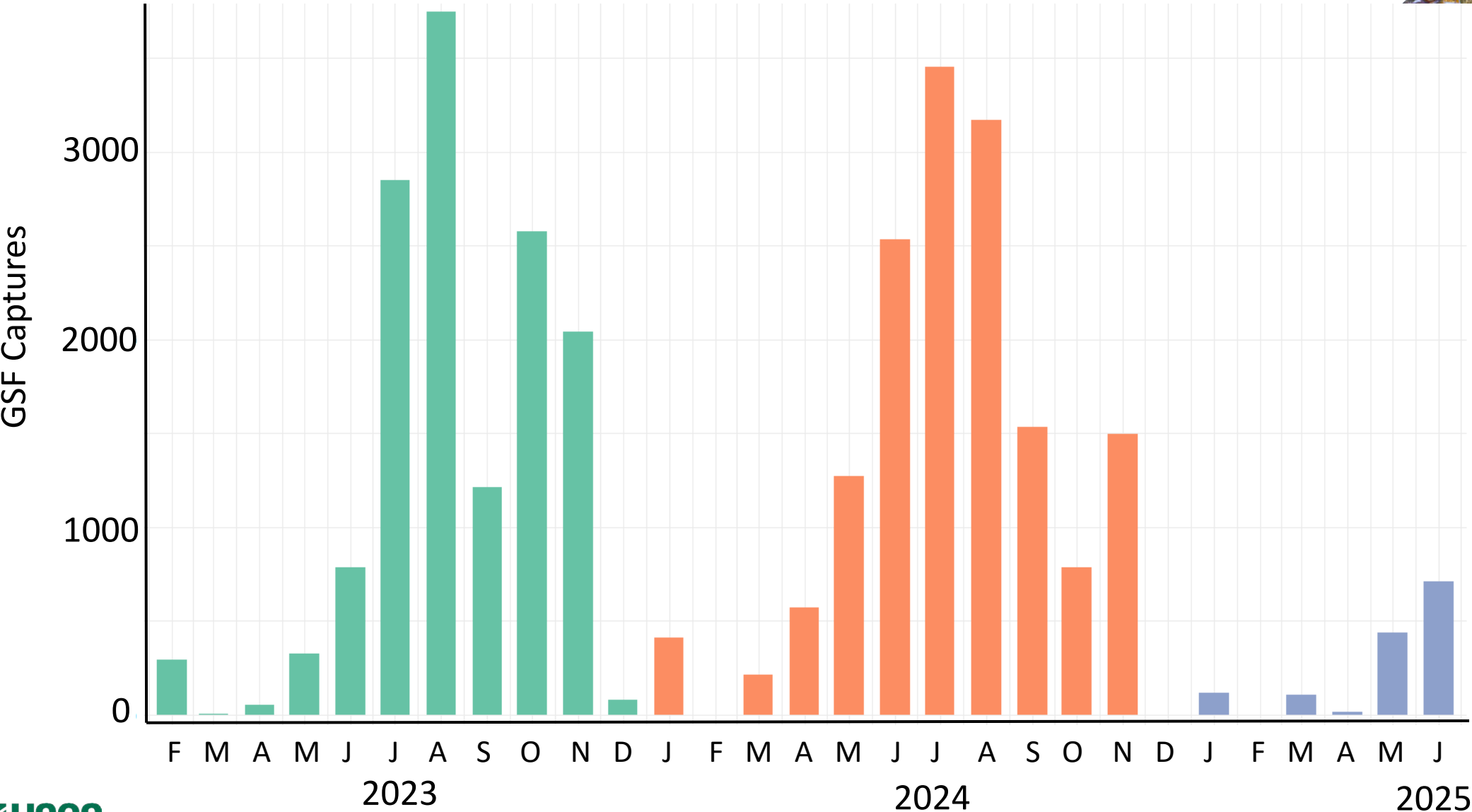
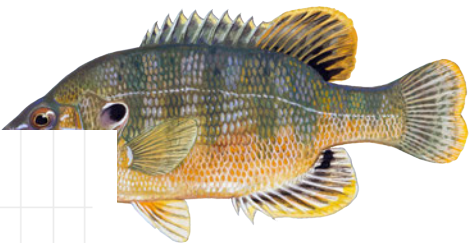
**25      Walleye**



**6      Striped Bass**



# GSF Captures: Glen Canyon Dam to RM 8



\*Effort changes

# Impacts to Fish Monitoring by Federal Agencies

- **USFWS**



- **GCMRC**



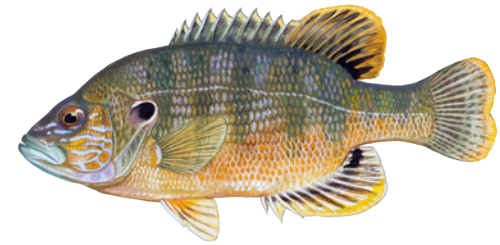
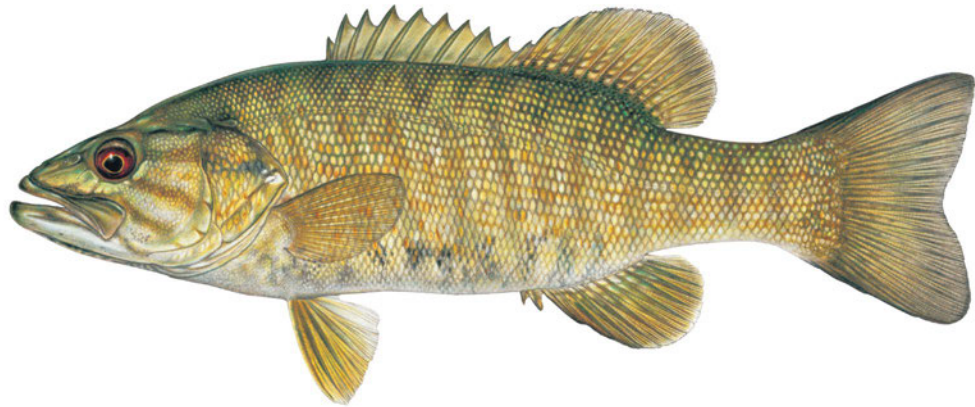
- **GLCA**



- **GRCA**



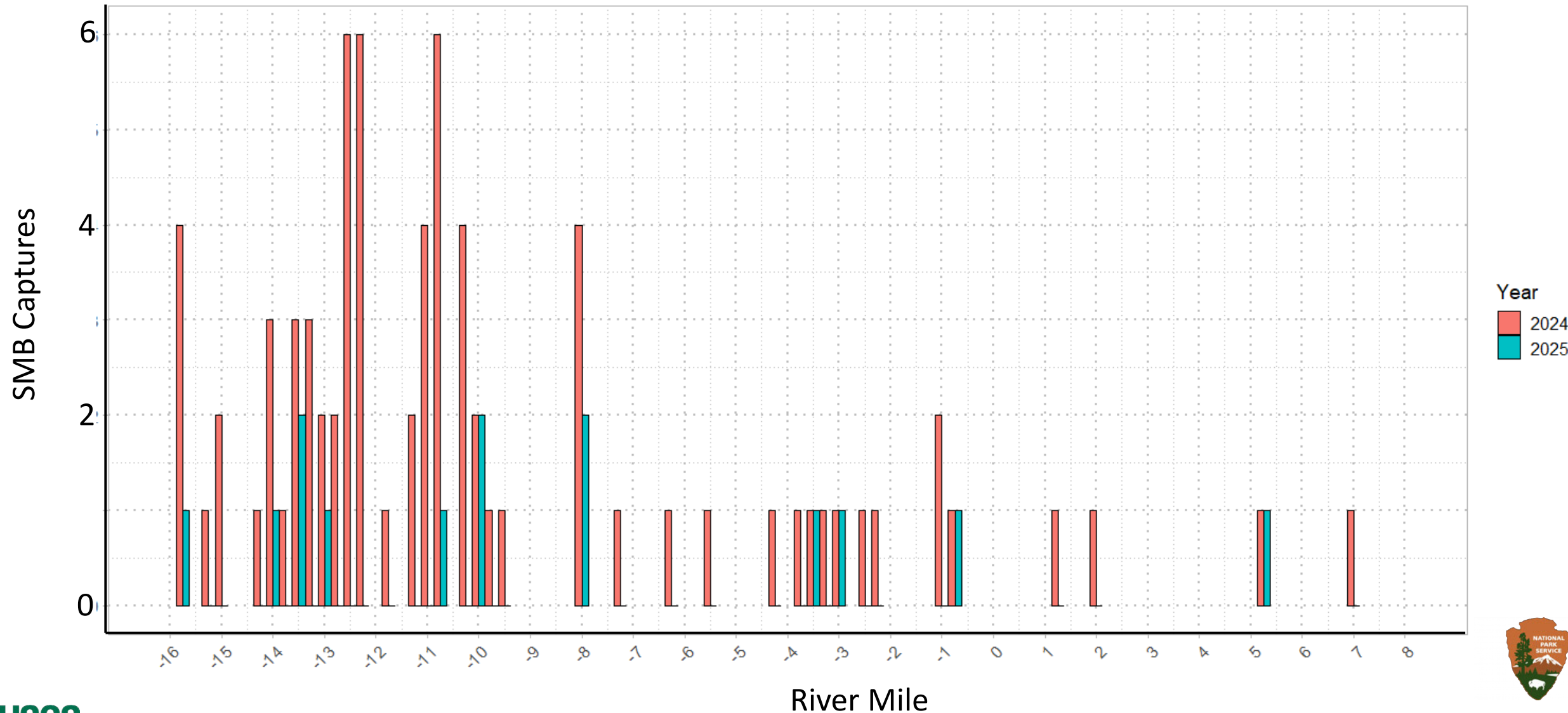
# Questions?



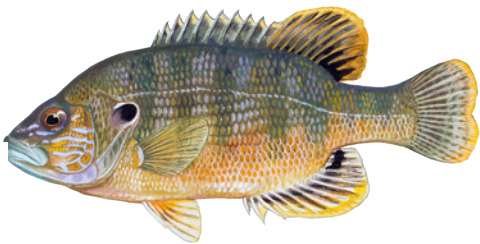
# Extra Slides

# SMB Captures: Glen Canyon Dam to RM 8

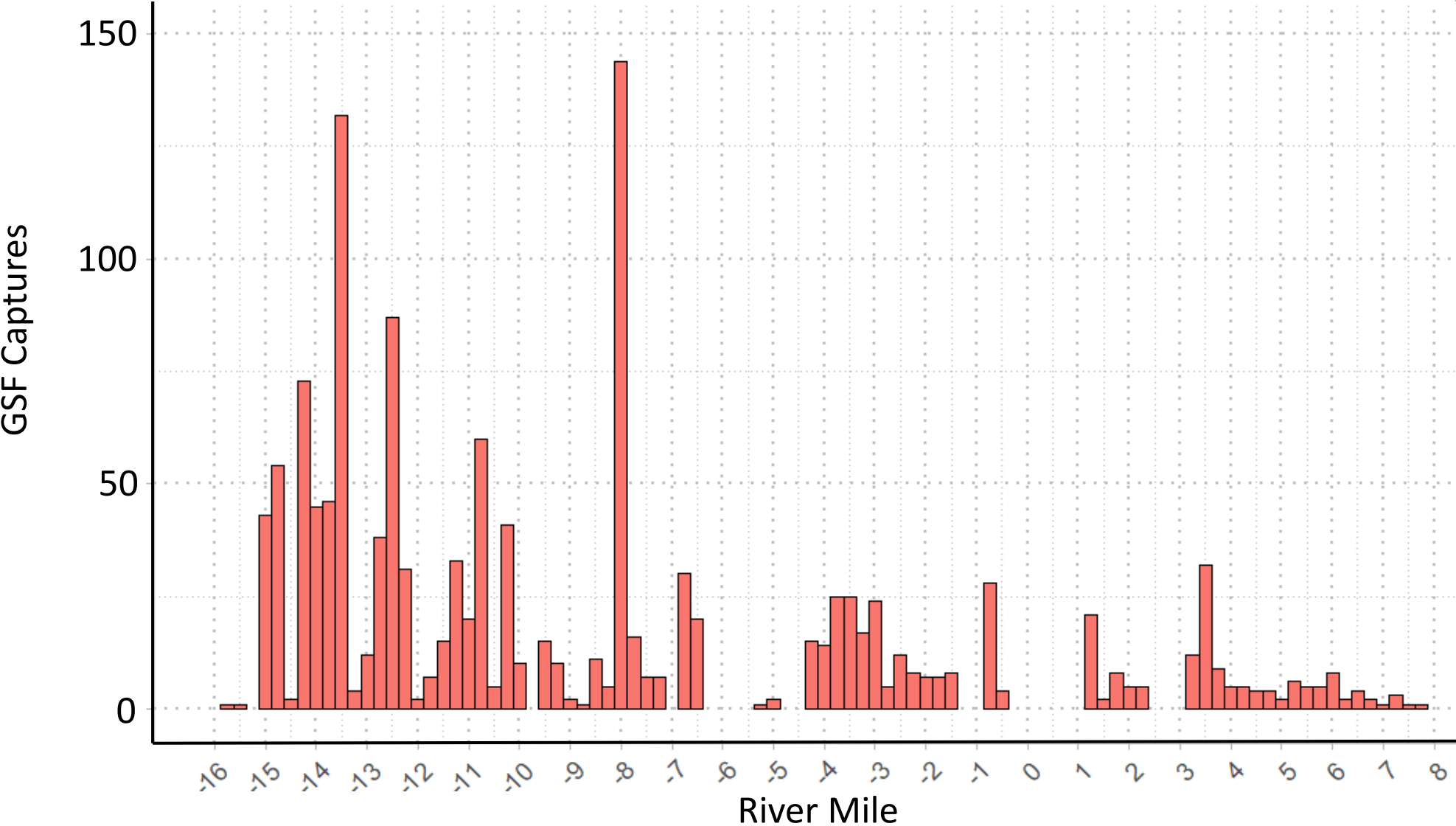
Captures until July 1<sup>st</sup> for each year



# GSF Captures: Glen Canyon Dam to RM 8

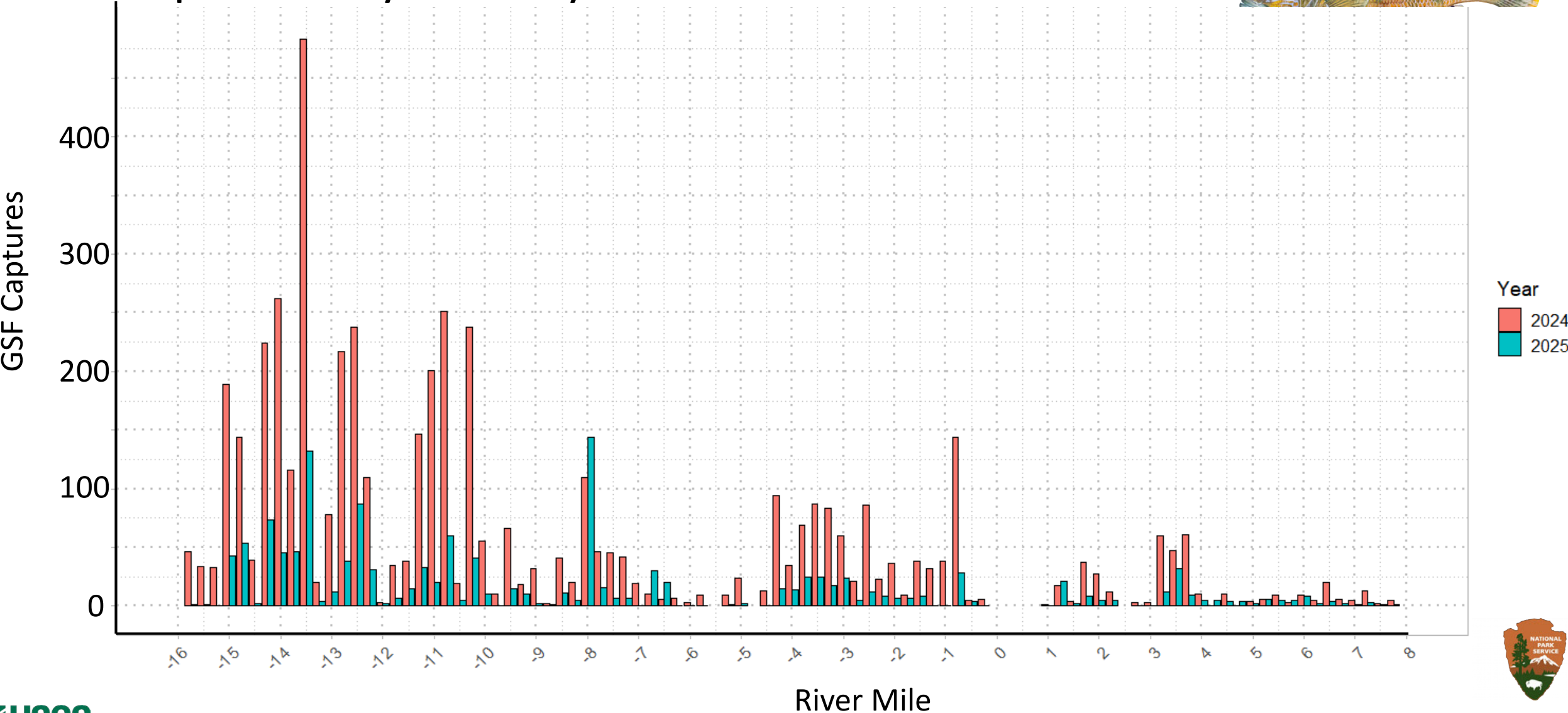


2025



# GSF Captures: Glen Canyon Dam to RM 8

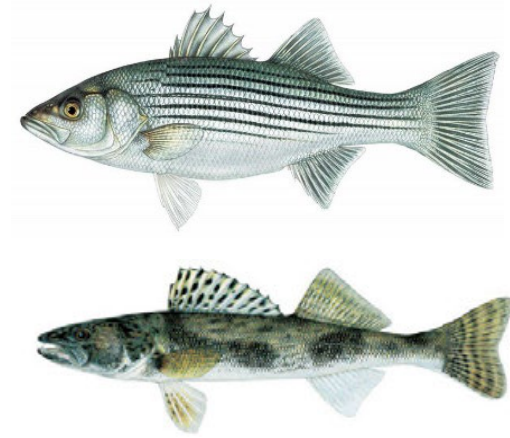
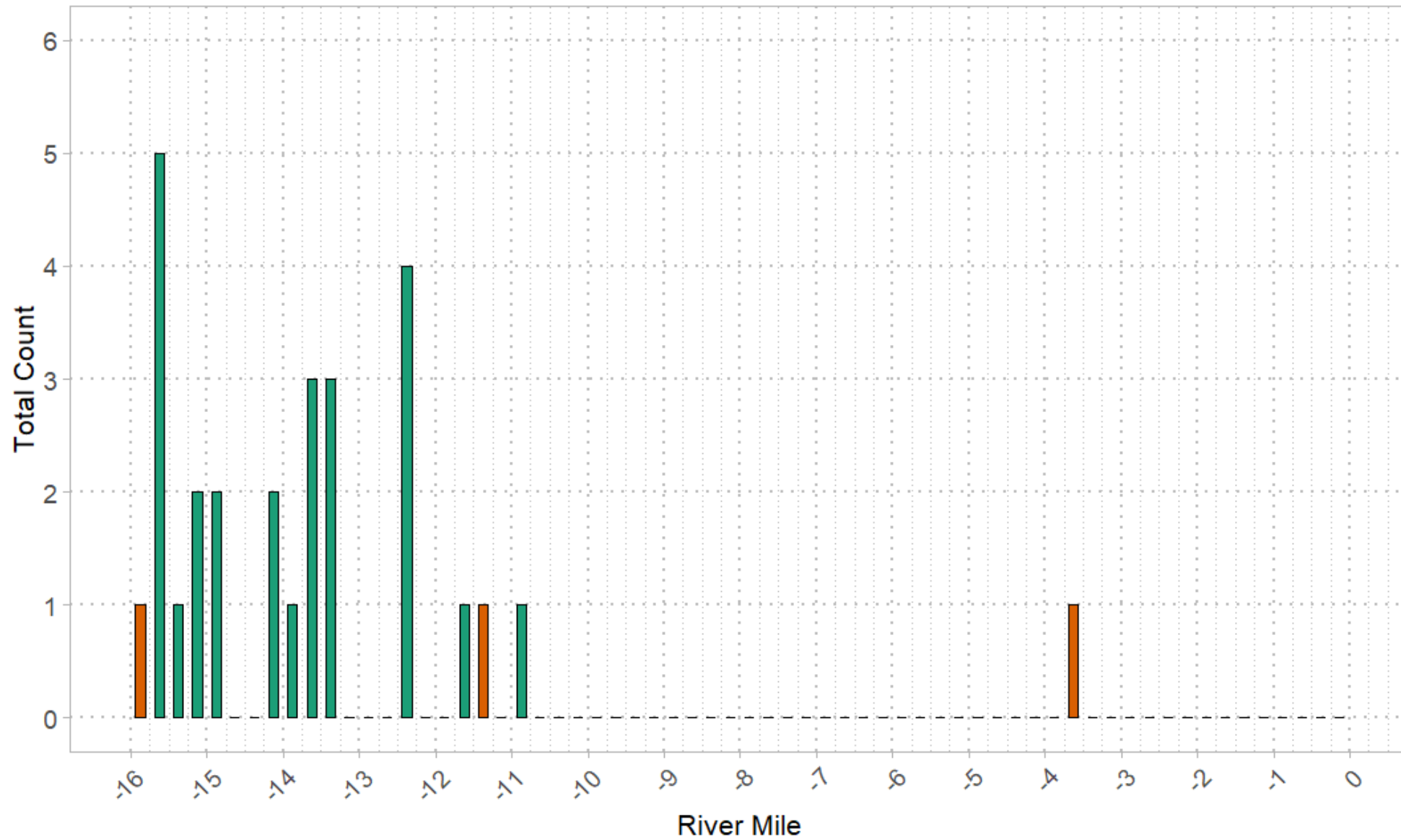
Captures until July 1<sup>st</sup> for each year



Preliminary data, subject to change, do not cite

Figure: K. Shollenberger, NPS

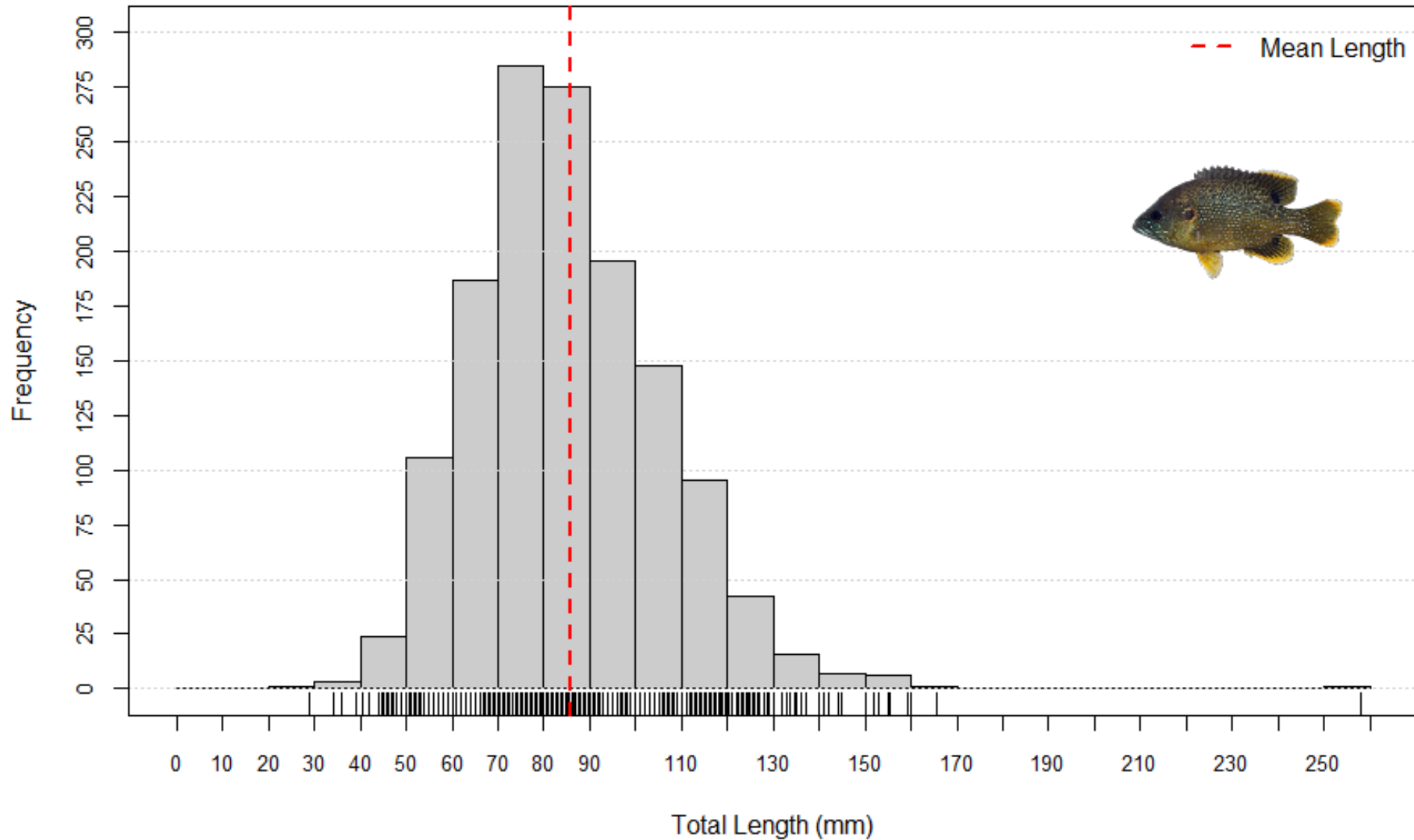
## Other High Risk Non-Native Captures by River Mile



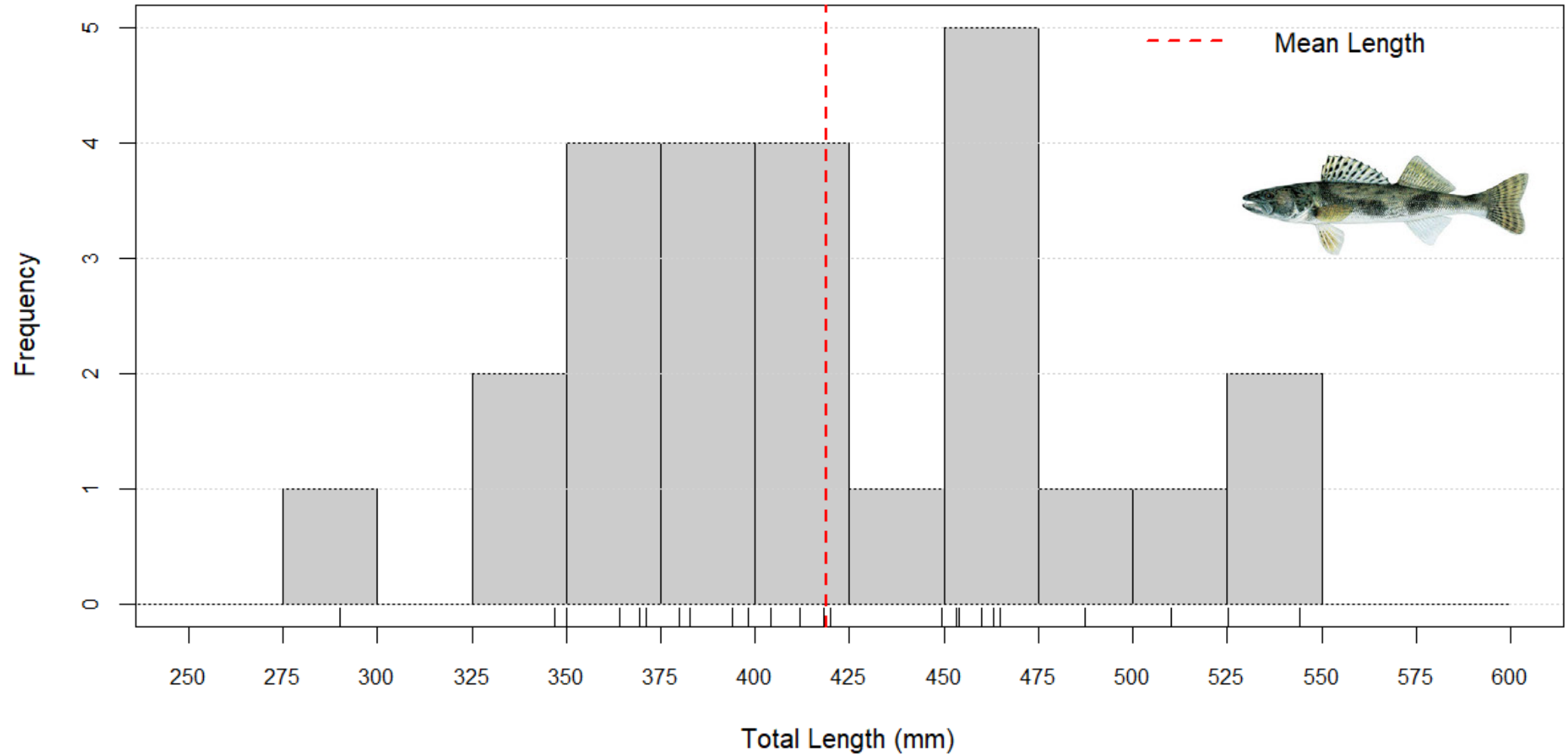
Species

STB  
WAL

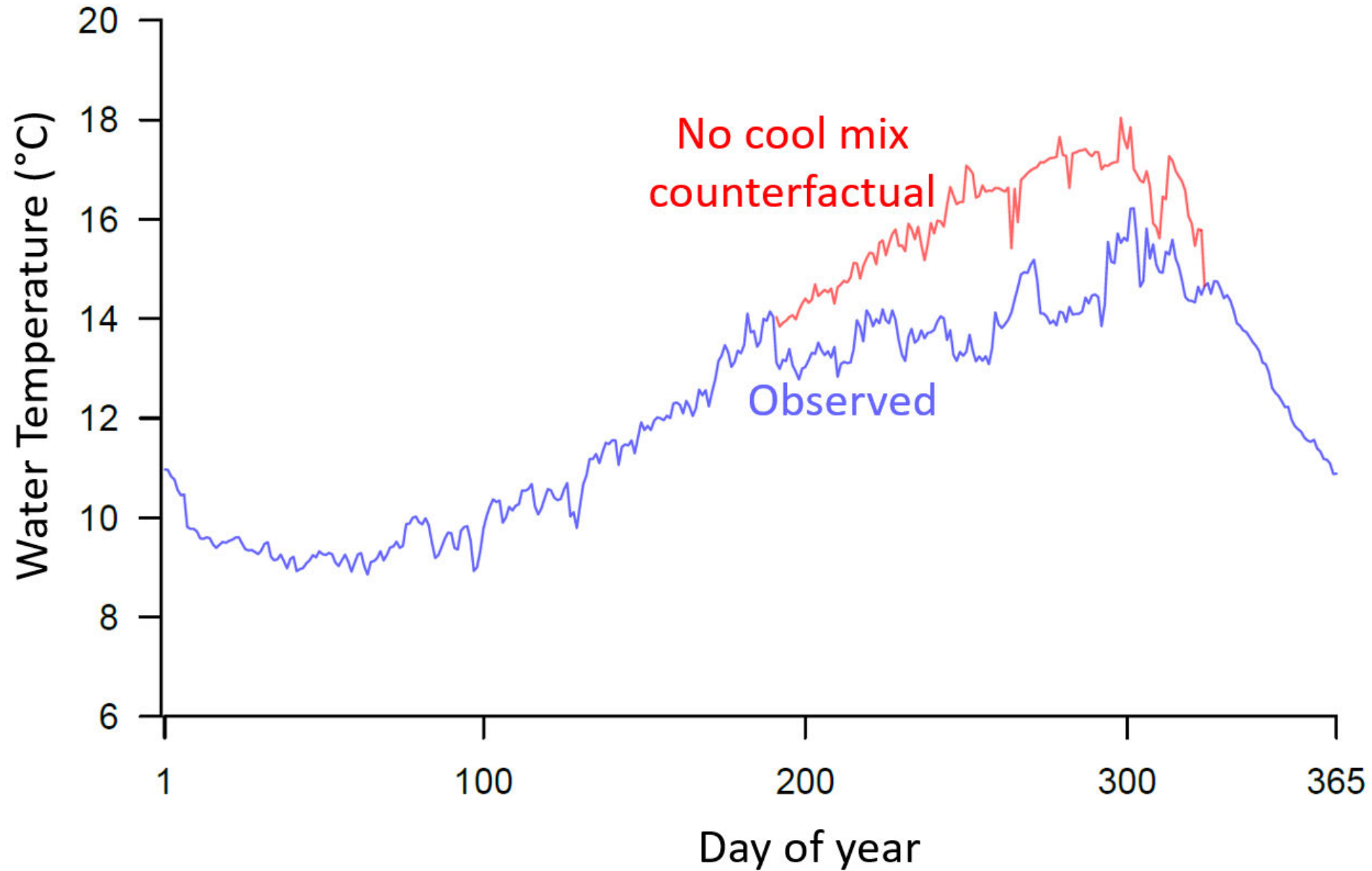
## Length Frequency Distribution of Green Sunfish (GSF)



## Length Frequency Distribution of Walleye (WAL)



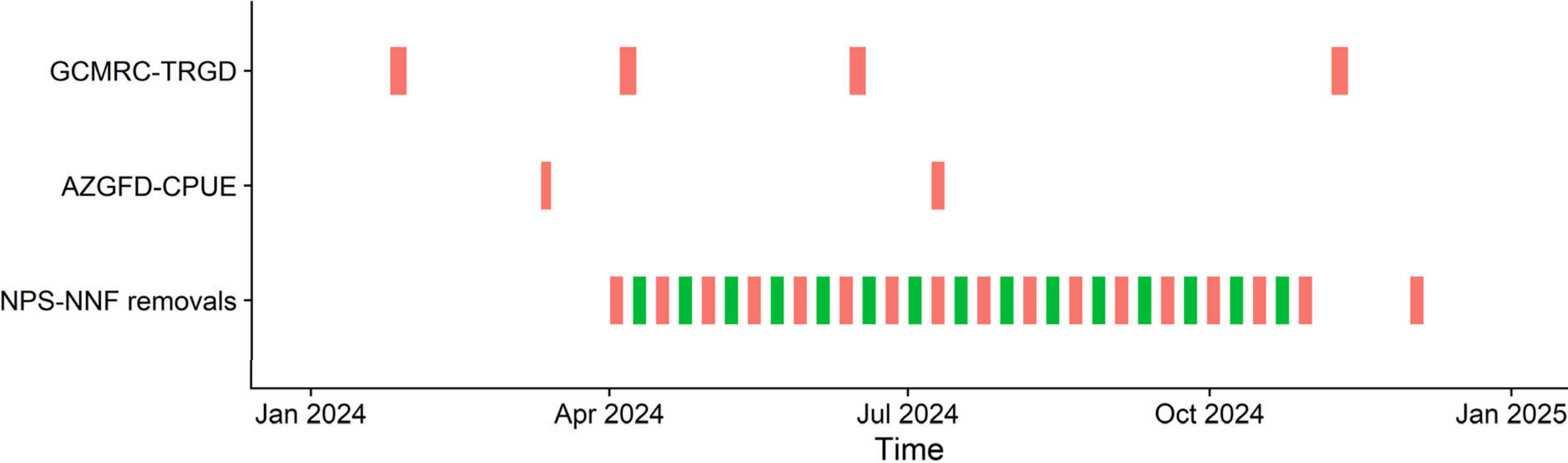
## 2024: Lees Ferry



# 2024 Sampling Effort: Lees Ferry

Gear  
Electrofishing  
Netting

## Fisheries- Lees Ferry 2024

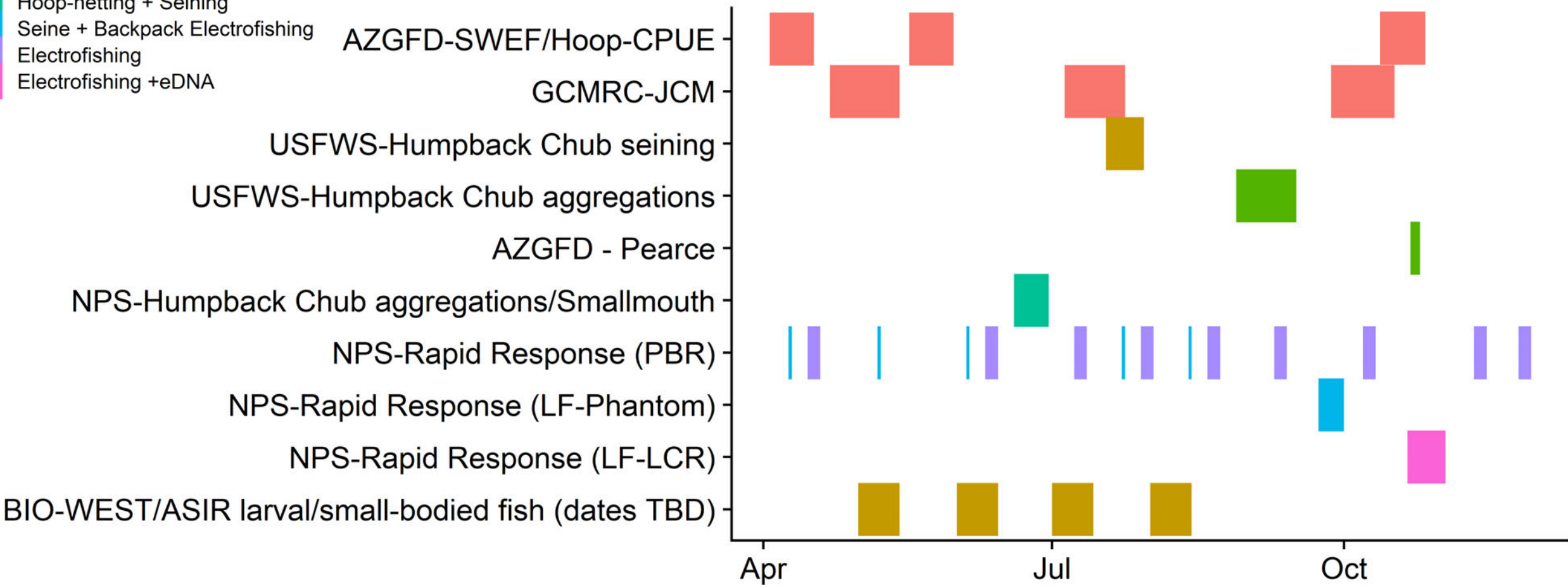


# 2024 Sampling Effort: Downstream

Gear

- Electrofishing + Hoop-netting
- Seining
- Hoop-netting
- Hoop-netting + Seining
- Seine + Backpack Electrofishing
- Electrofishing
- Electrofishing +eDNA

## Fisheries- Grand Canyon Mainstem 2024



Preliminary data, subject to change, do not cite

Figure: B. Healy, USGS

# High-Risk Species

Detected (2024)		Not Detected
	Green Sunfish	Northern Pike
	Largemouth Bass	White Sucker
	Rainbow Trout (GRCA)	Burbot
	Striped Bass	

## 10.3: Mean # nonnative species

### ■ Tributaries

- Little Colorado River = 0.7
- Kanab Creek = 0
- Shinumo Creek = 0
- Havasu Creek = 0
- Bright Angel Creek = 1.2

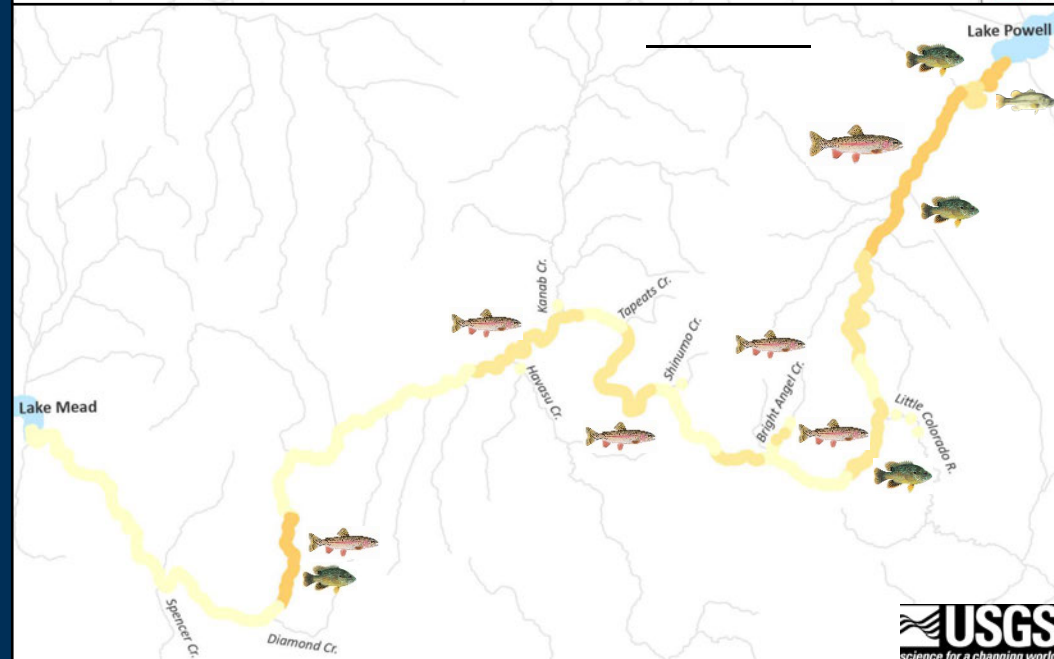
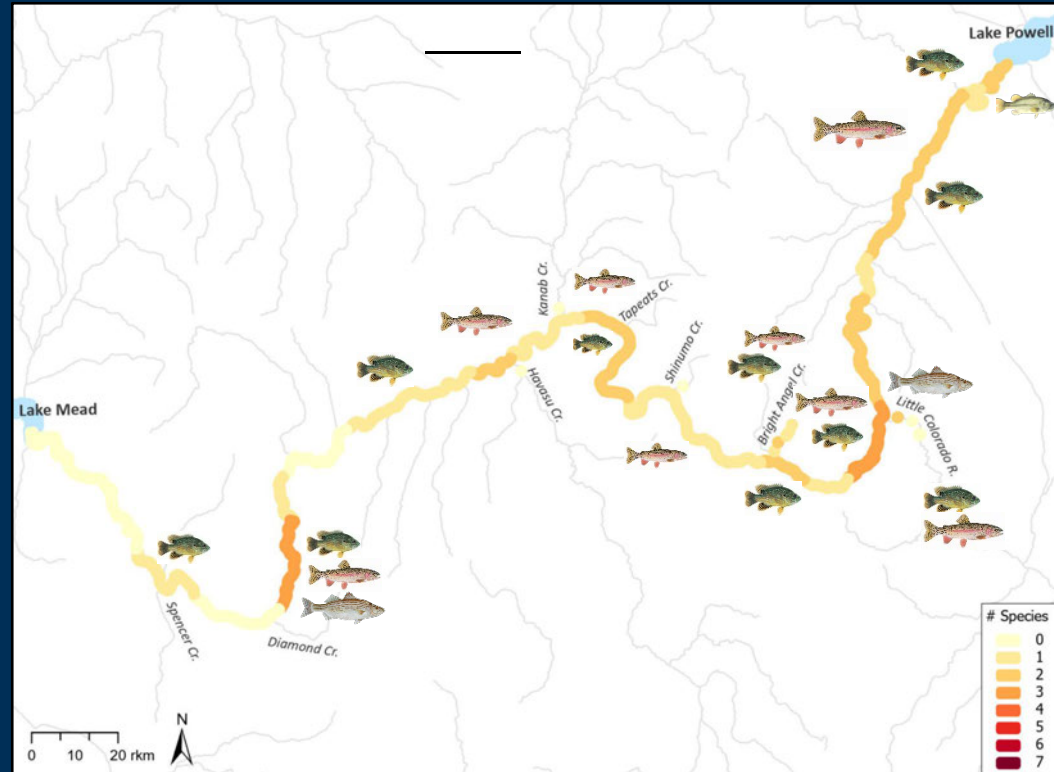
### ■ Mainstem = 1.3

## 10.7: Mean # reproducing species

### ■ Tributaries

- Little Colorado River = 0
- Kanab Creek = 0
- Shinumo Creek = 0
- Havasu Creek = 0
- Bright Angel Creek = 0.4

### ■ Mainstem = 0.6



# Very High-Risk Species

Detected (2024)		Not Detected
	Brown Trout	Flathead Catfish
	Smallmouth Bass	
	Walleye	

## 10.4: Mean # nonnative species

- Tributaries
  - Little Colorado River = 0.3
  - Kanab Creek = 0
  - Shinumo Creek = 0
  - Havasu Creek = 0
  - Bright Angel Creek = 1.0
- Mainstem = 0.7

## 10.8: Mean # reproducing species

- Tributaries
  - Little Colorado River = 0
  - Kanab Creek = 0
  - Shinumo Creek = 0
  - Havasu Creek = 0
  - Bright Angel Creek = 0.6
- Mainstem = 0.1

