

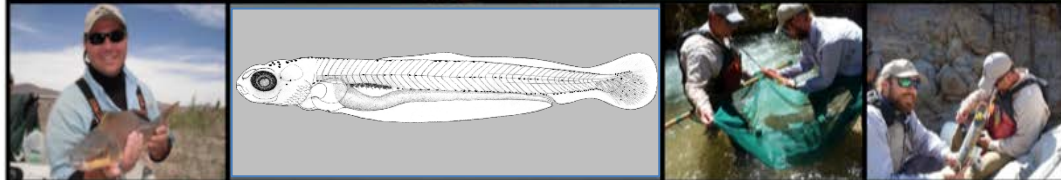


RECLAMATION

Managing Water in the West

Razorback Sucker *Xyrauchen texanus* Research and Monitoring in the Colorado River Inflow Area of Lake Mead and the Lower Grand Canyon, Arizona and Nevada

2017 DRAFT ANNUAL REPORT



Prepared by:

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³ U.S. Bureau of Reclamation, Upper Colorado Region;

⁴ U.S. National Park Service;

⁵ Lower Colorado River Multi-Species Conservation Program

**Glen Canyon Dam Adaptive
Management Program – March 2018**

Objectives

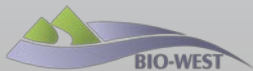


- Monitoring the Colorado River Inflow (CRI)
 - Same methods since 2010
- Determine Razorback Sucker presence and habitat use in Grand Canyon (GC)
 - Larval and small-bodied fish community sampling within the GC
 - Assess reproduction and distribution
 - GC telemetry
- Explore linkages between Lake Mead and GC

Colorado River Inflow (CRI)



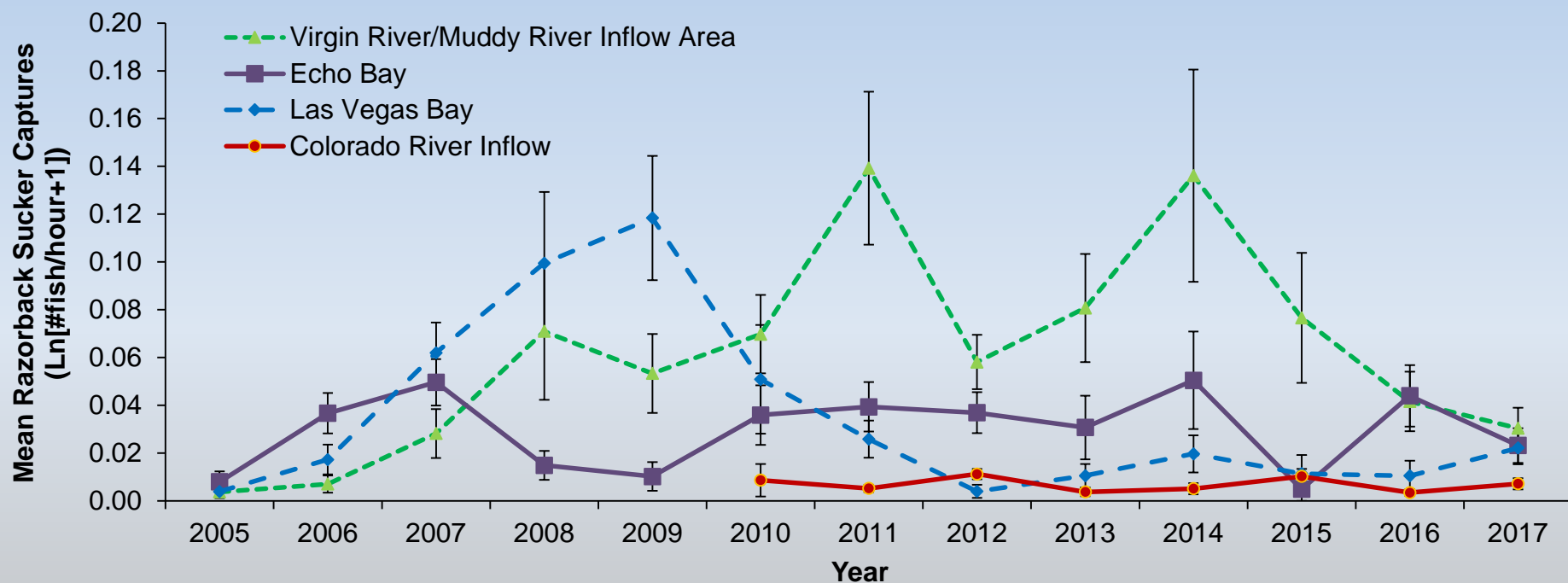
Photo credit: USBR



*Razorback Sucker *Xyrauchen texanus* Research and Monitoring in the Colorado River Inflow Area of Lake Mead and the Lower Grand Canyon, Arizona and Nevada*

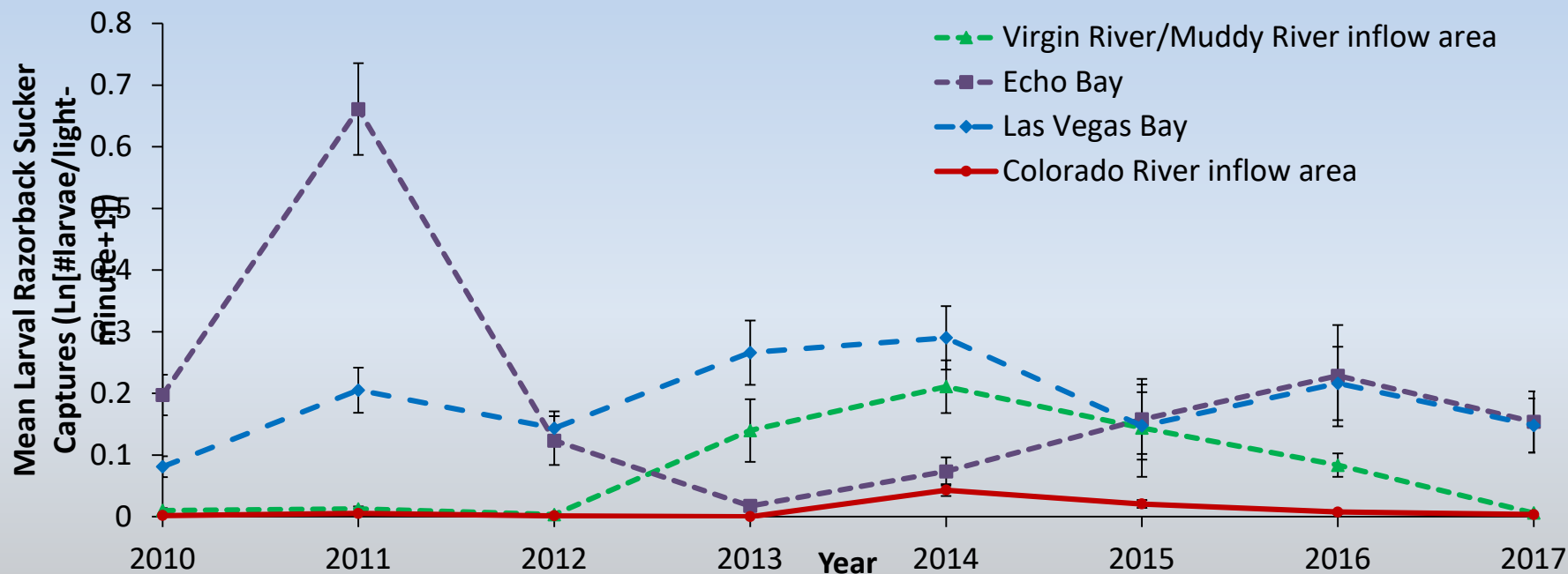
2017 Adult Catch (CRI)

- 12 Razorback Suckers
 - 5 new, wild (1 was juvenile)
 - 2 recaps from Overton Arm
 - 1 sonic-tagged LGC recap



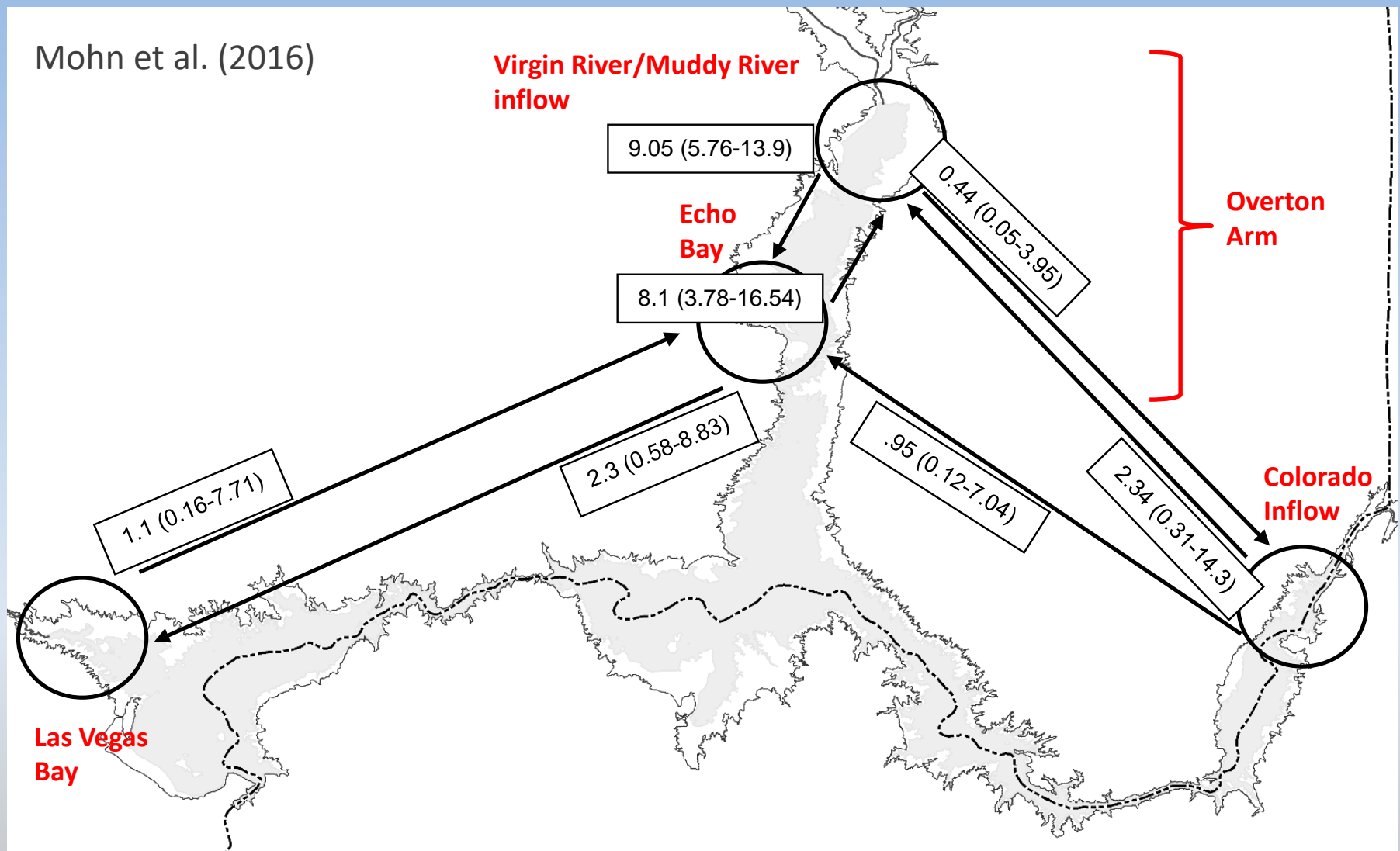
2017 Larval Catch (CRI)

- Active and passive sampling:
 - 6 RBS larvae
 - 3 FMS larvae



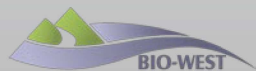
Movement of RBS in Lake Mead

Mohn et al. (2016)





Small-bodied and Larval Fish Surveys

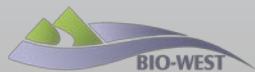


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GC Survey Summary (2014–2017)

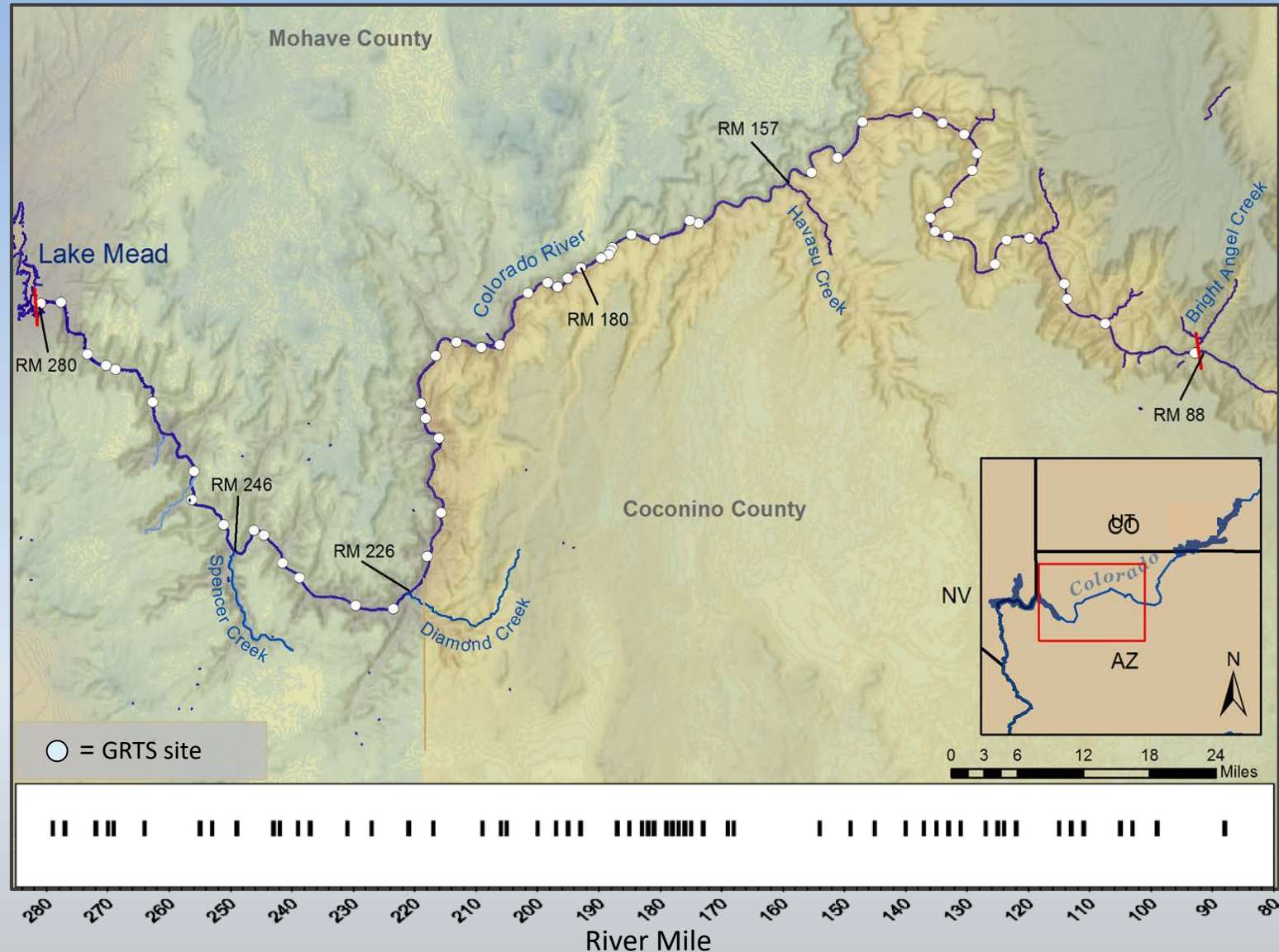
Year	Study area	Study Period	GRTS Sites	Implanted Razorback Sucker	Larval Razorback Sucker
2014	100 river miles Lava Falls– Pearce Ferry	Apr–Sep	n=40	n=9 above Lava Falls Rapid	n=459
2015	100 river miles Lava Falls– Pearce Ferry	Mar–Sep	n=40		n=81
2016	191 river miles Bright Angel Creek–Pearce Ferry	Mar–Sep	n=56	n=10 Diamond Creek	n=46
2017	191 river miles Bright Angel Creek–Pearce Ferry	Mar–Sep	n=56		n=27



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Sampling Localities in Grand Canyon



Methods

Larval Fish Sampling

- Small fine mesh seine
- low velocity habitats
- four hauls per site



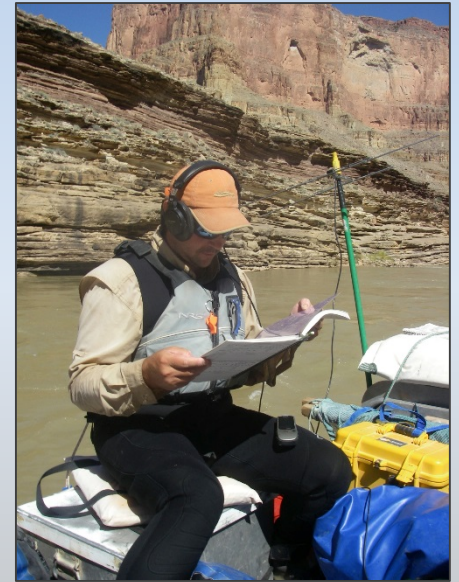
Small-bodied Fish Sampling

- 10' and 15' seine
- diverse habitats
- ~10 hauls per site



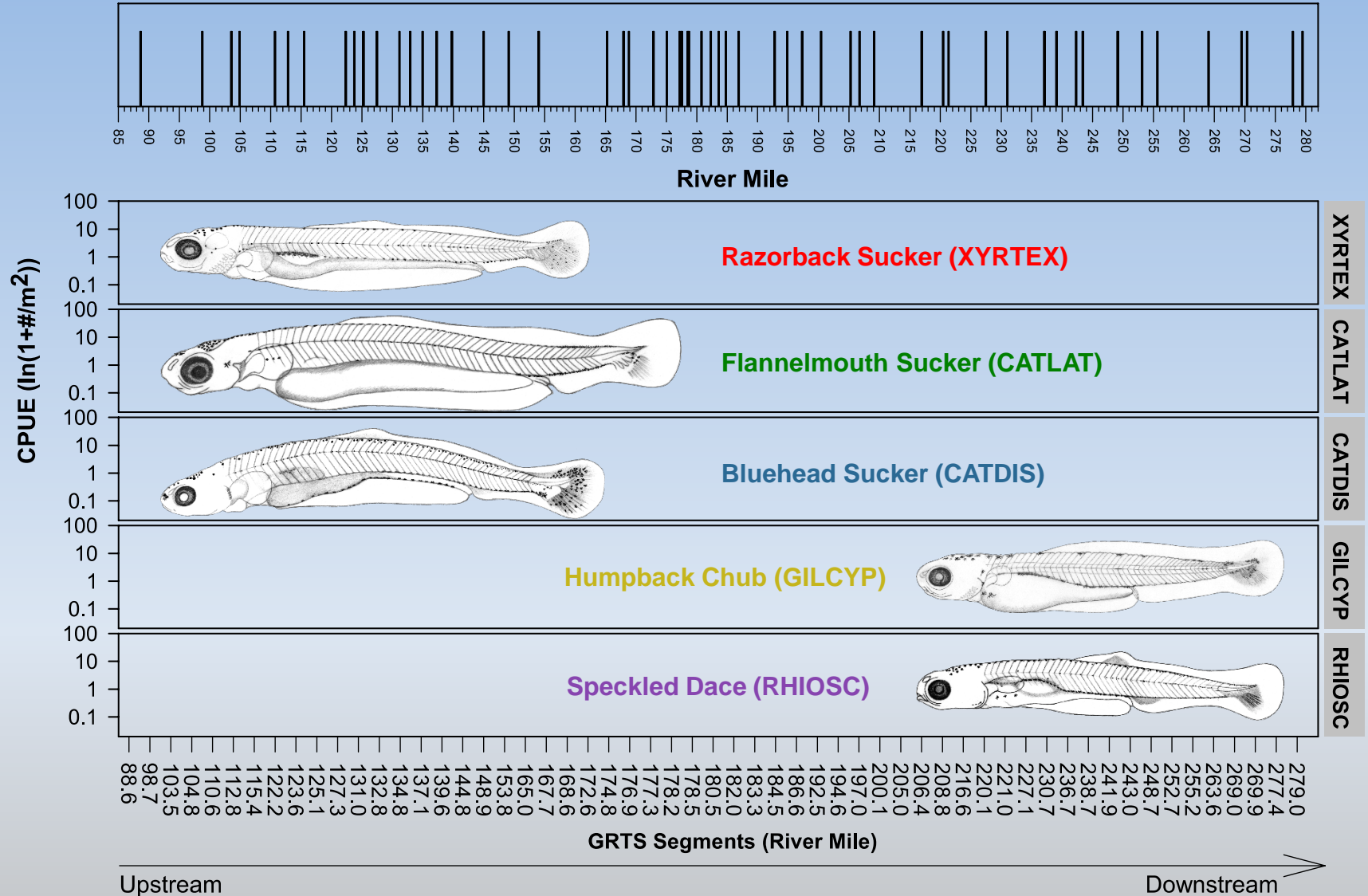
Telemetry

- Active
- Passive (n=20 SURs, every 10 miles)



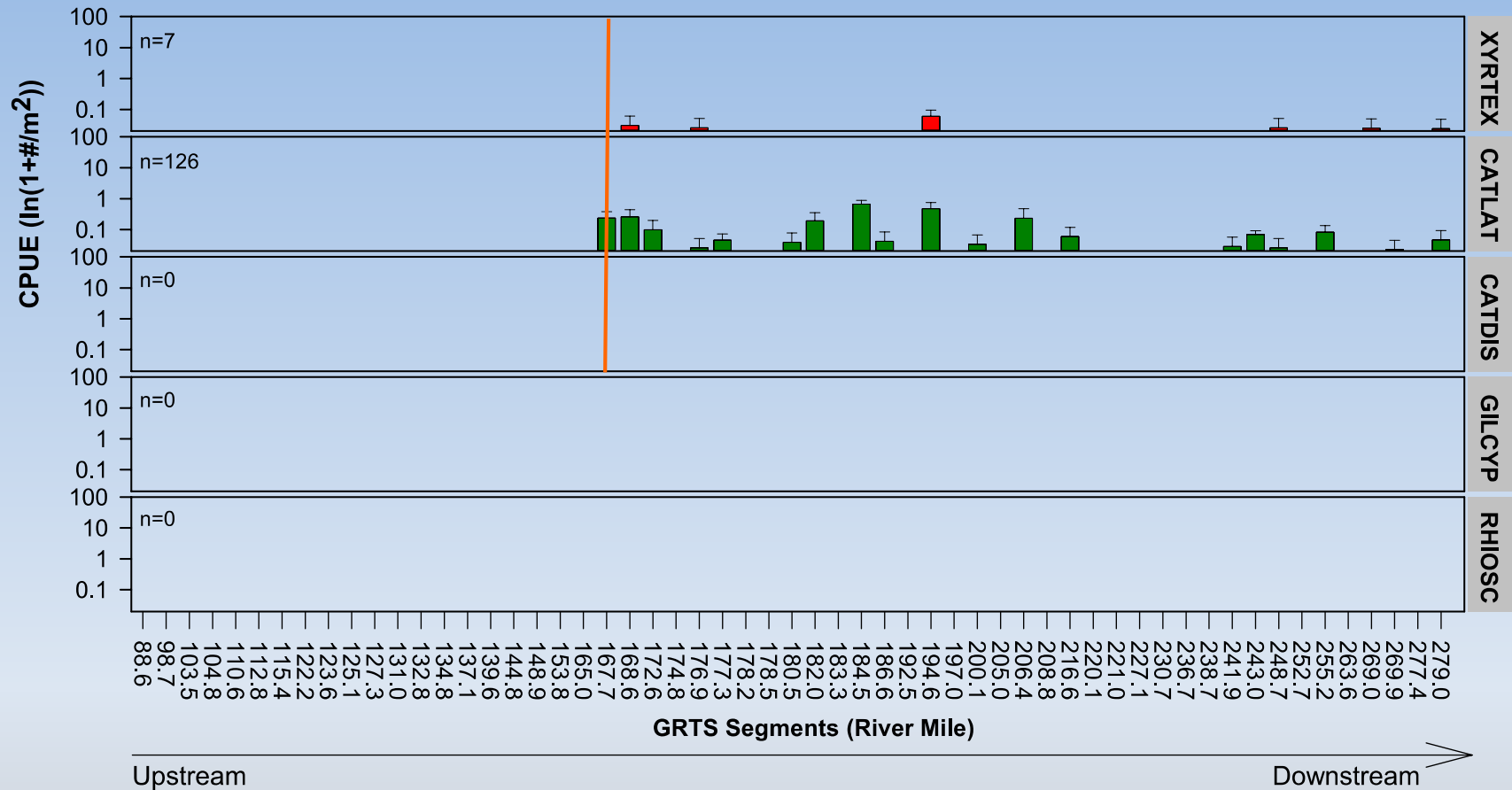


Age-0 Monthly Captures





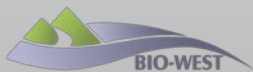
2017 Age-0 Fish Captures – March



9–17 March 2017

GRTS segments: 54

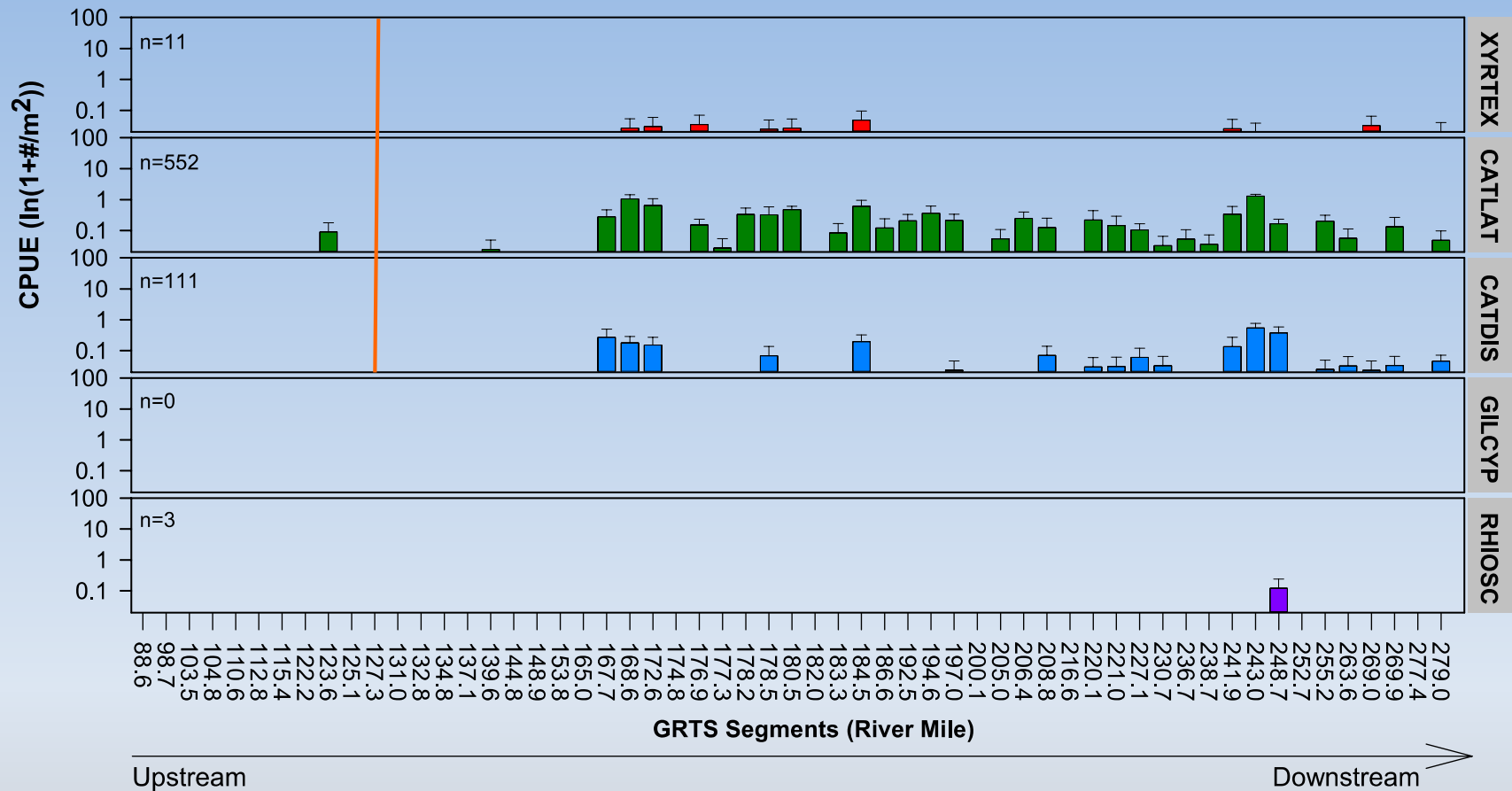
Effort: 1,993.4 m²



Razorback Sucker *Xyrauchen texanus* Research and Monitoring in the Colorado River Inflow Area of Lake Mead and the Lower Grand Canyon, Arizona and Nevada



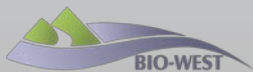
2017 Age-0 Fish Captures – April



8–13 April 2017

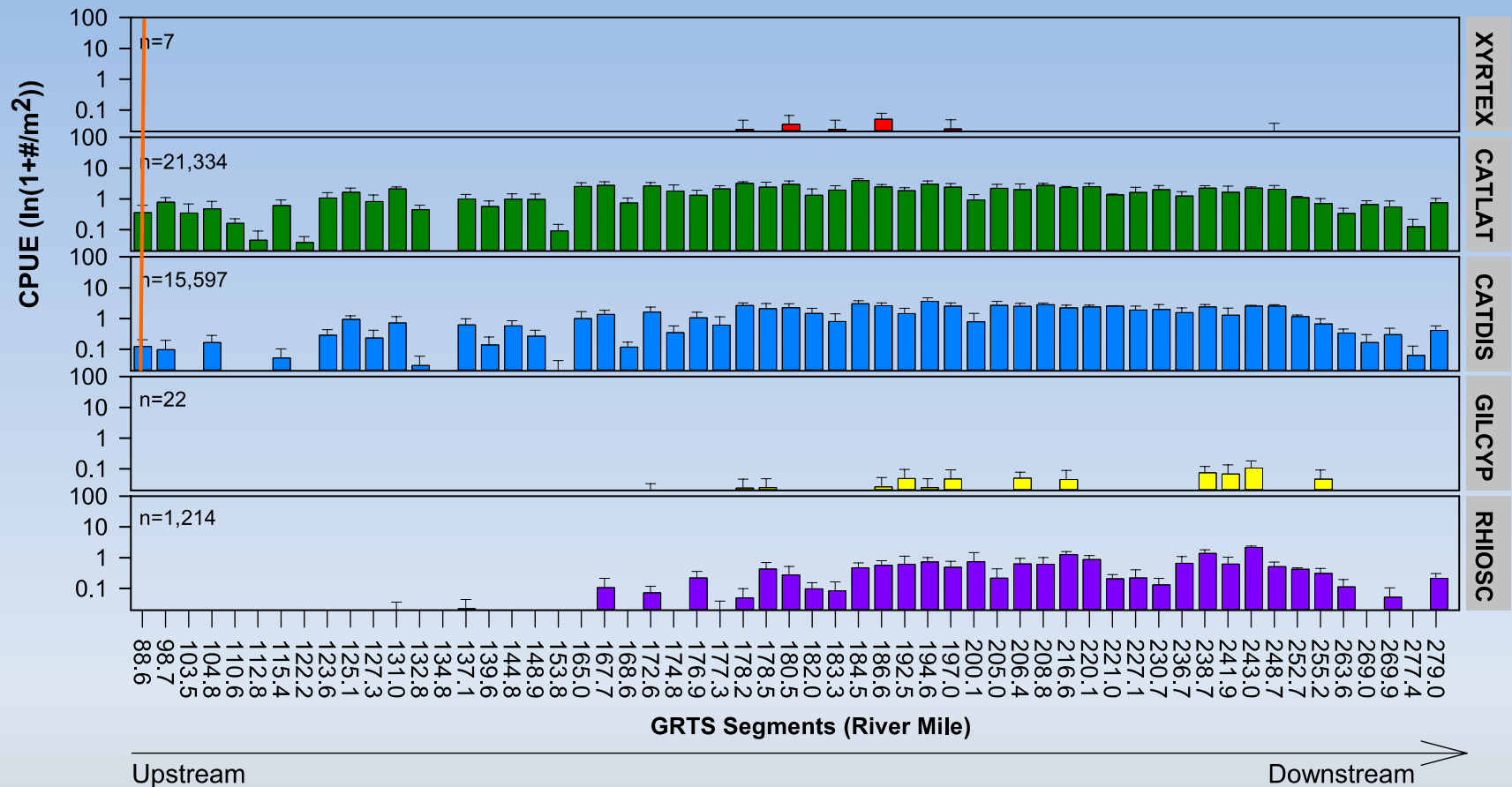
GRTS segments: 56

Effort: 2,011.6 m²



Razorback Sucker *Xyrauchen texanus* Research and Monitoring in the Colorado River Inflow Area of Lake Mead and the Lower Grand Canyon, Arizona and Nevada

2017 Age-0 Fish Captures – May

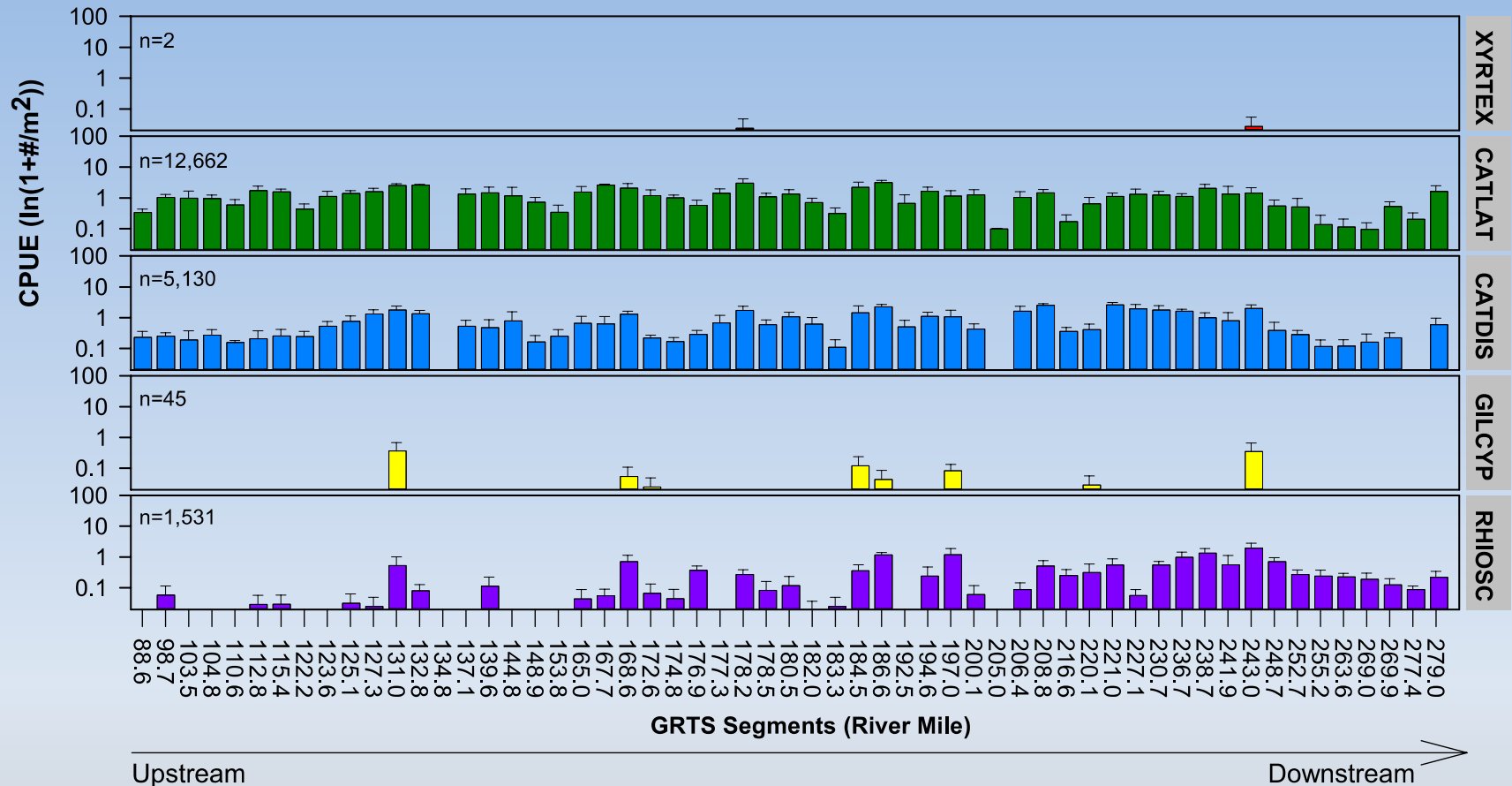


19–24 May 2017

GRTS segments: 56

Effort: 2,017.7 m²

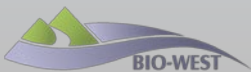
2017 Age-0 Fish Captures – June



14–19 Jun 2017

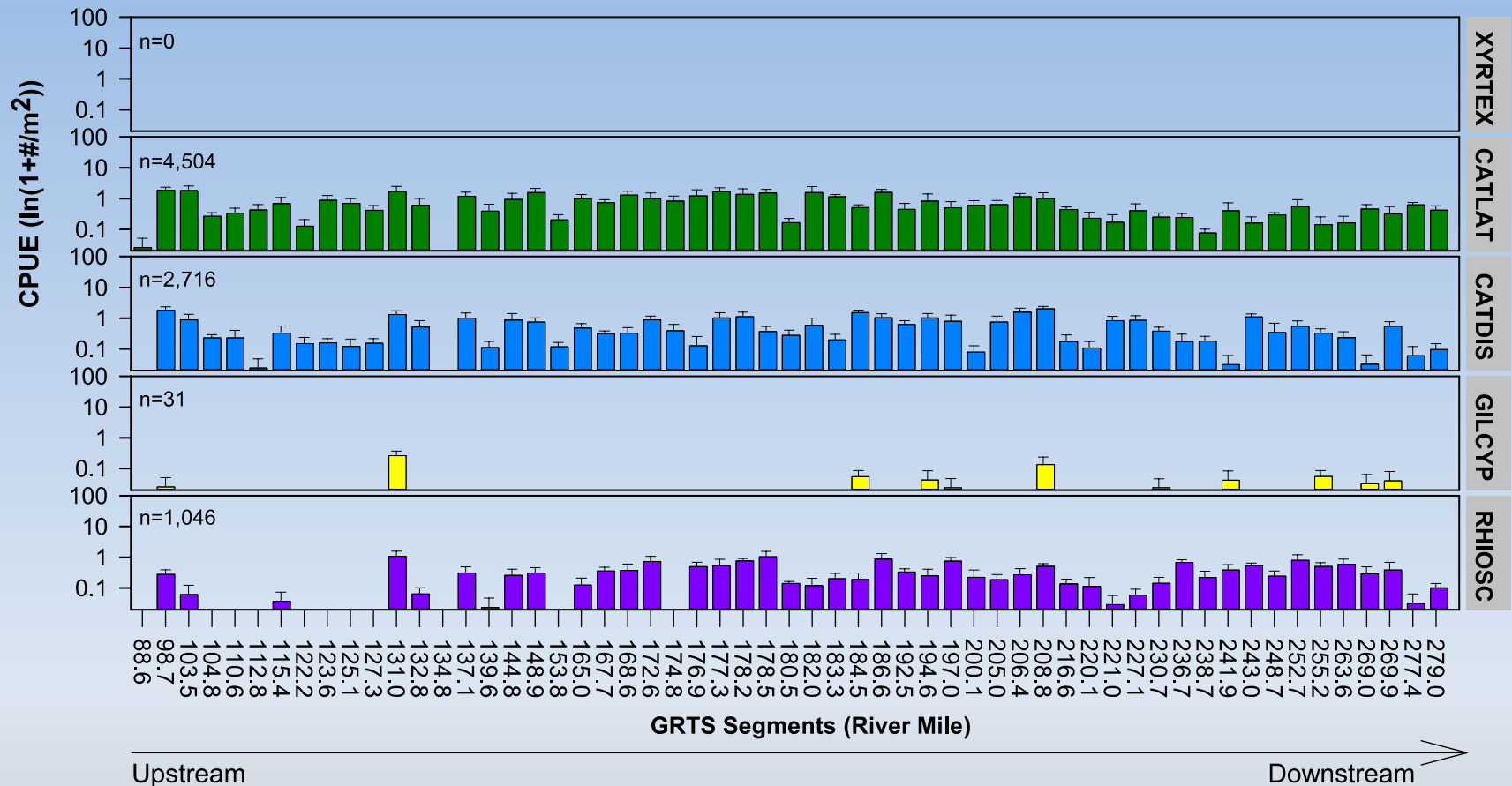
GRTS segments: 56

Effort: 1,976.5 m²



Razorback Sucker *Xyrauchen texanus* Research and Monitoring in the Colorado River Inflow Area of Lake Mead and the Lower Grand Canyon, Arizona and Nevada

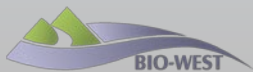
2017 Age-0 Fish Captures – July



11–17 Jul 2017

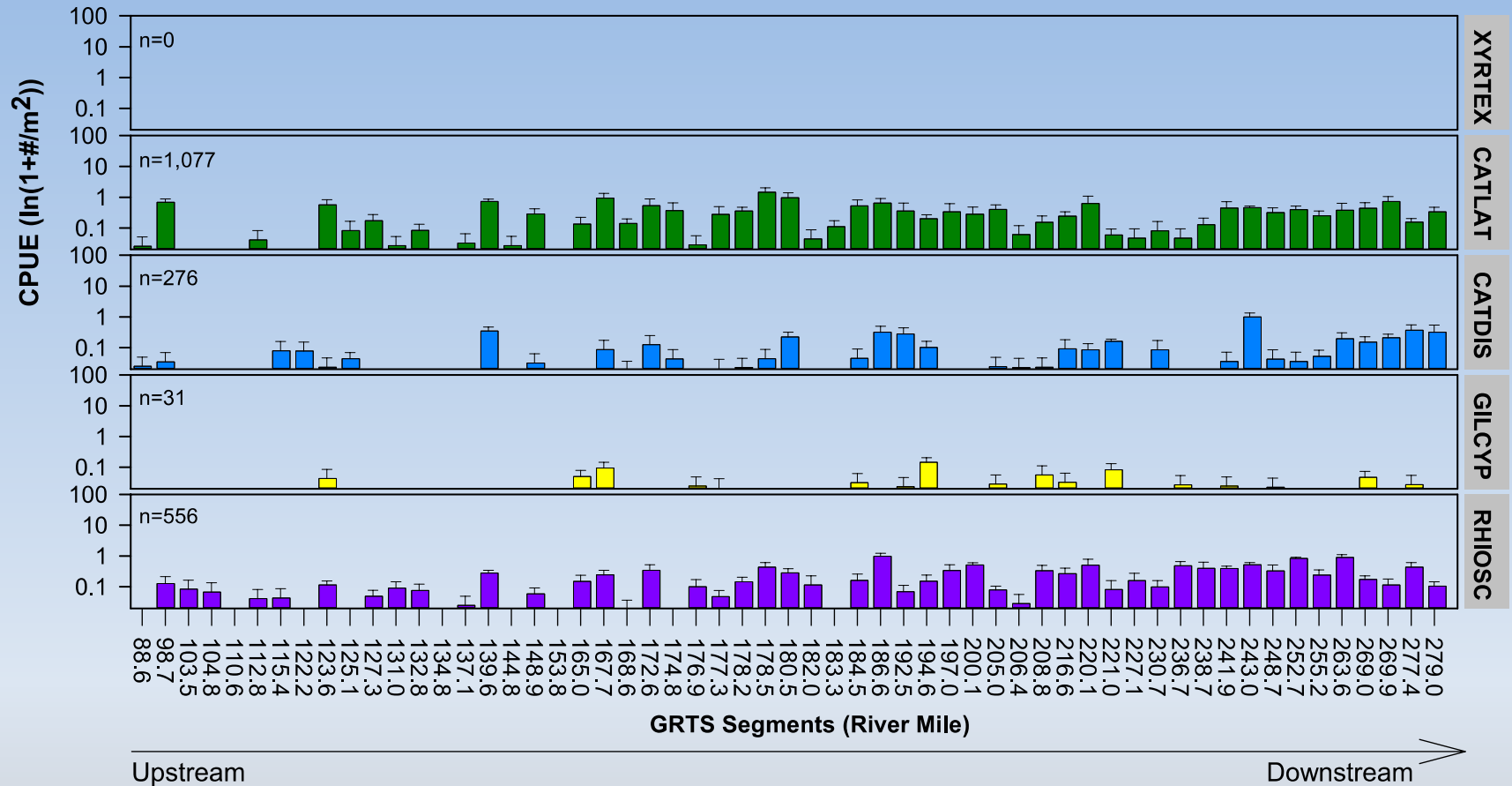
GRTS segments: 56

Effort: 1,978.3 m²



Razorback Sucker *Xyrauchen texanus* Research and Monitoring in the Colorado River Inflow Area of Lake Mead and the Lower Grand Canyon, Arizona and Nevada

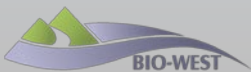
2017 Age-0 Fish Captures – August



16–23 Aug 2017

GRTS segments: 56

Effort: 1,990.6 m²

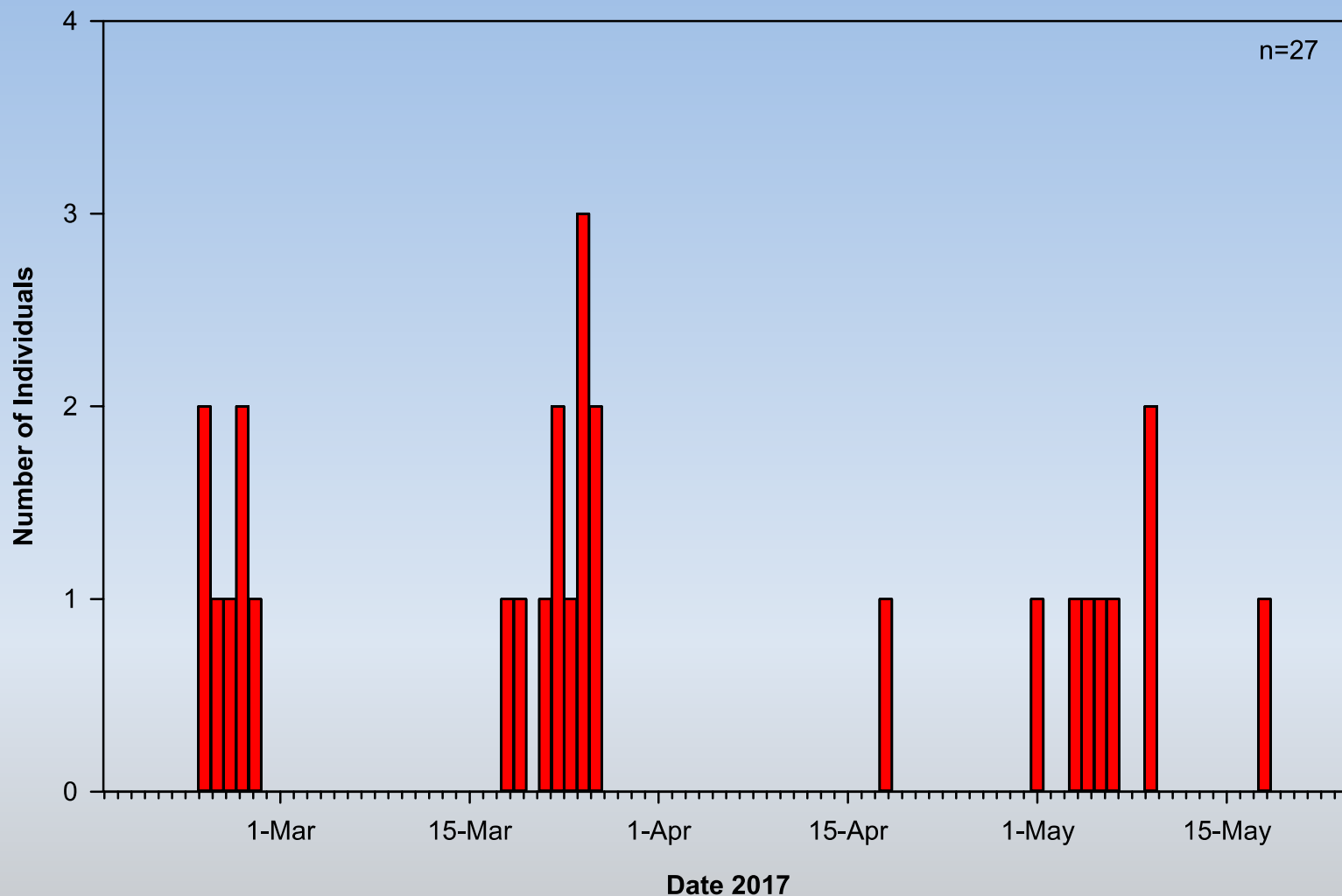


Razorback Sucker *Xyrauchen texanus* Research and Monitoring in the Colorado River Inflow Area of Lake Mead and the Lower Grand Canyon, Arizona and Nevada



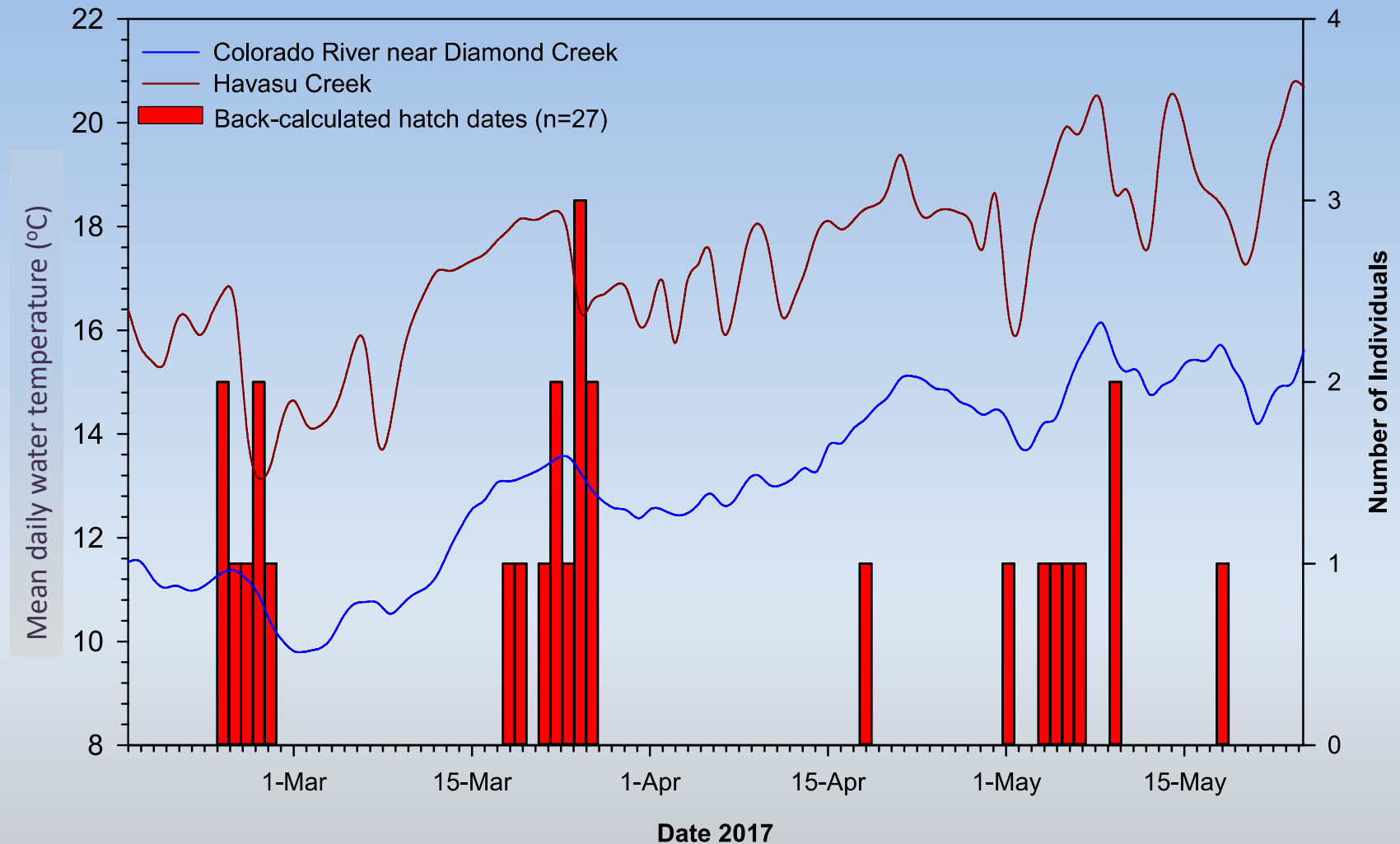
Back-calculated Hatching Dates

Hatch Dates: 23 February–18 May 2017



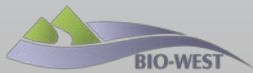
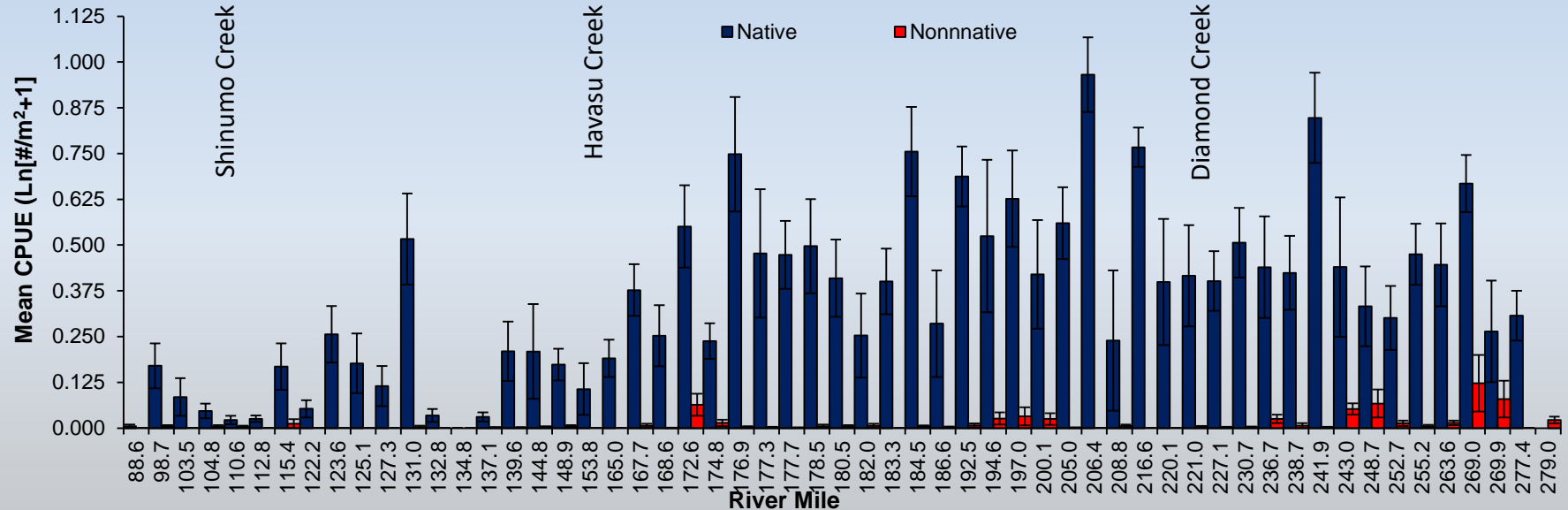
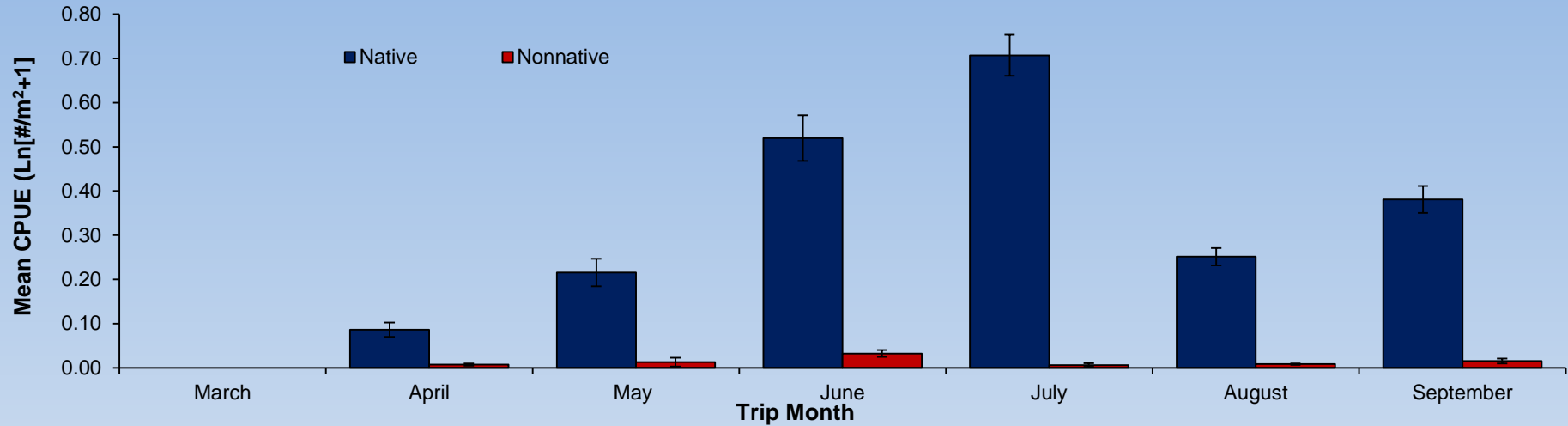
Back-calculated Hatching Dates

Hatch Dates: 23 February–18 May 2017





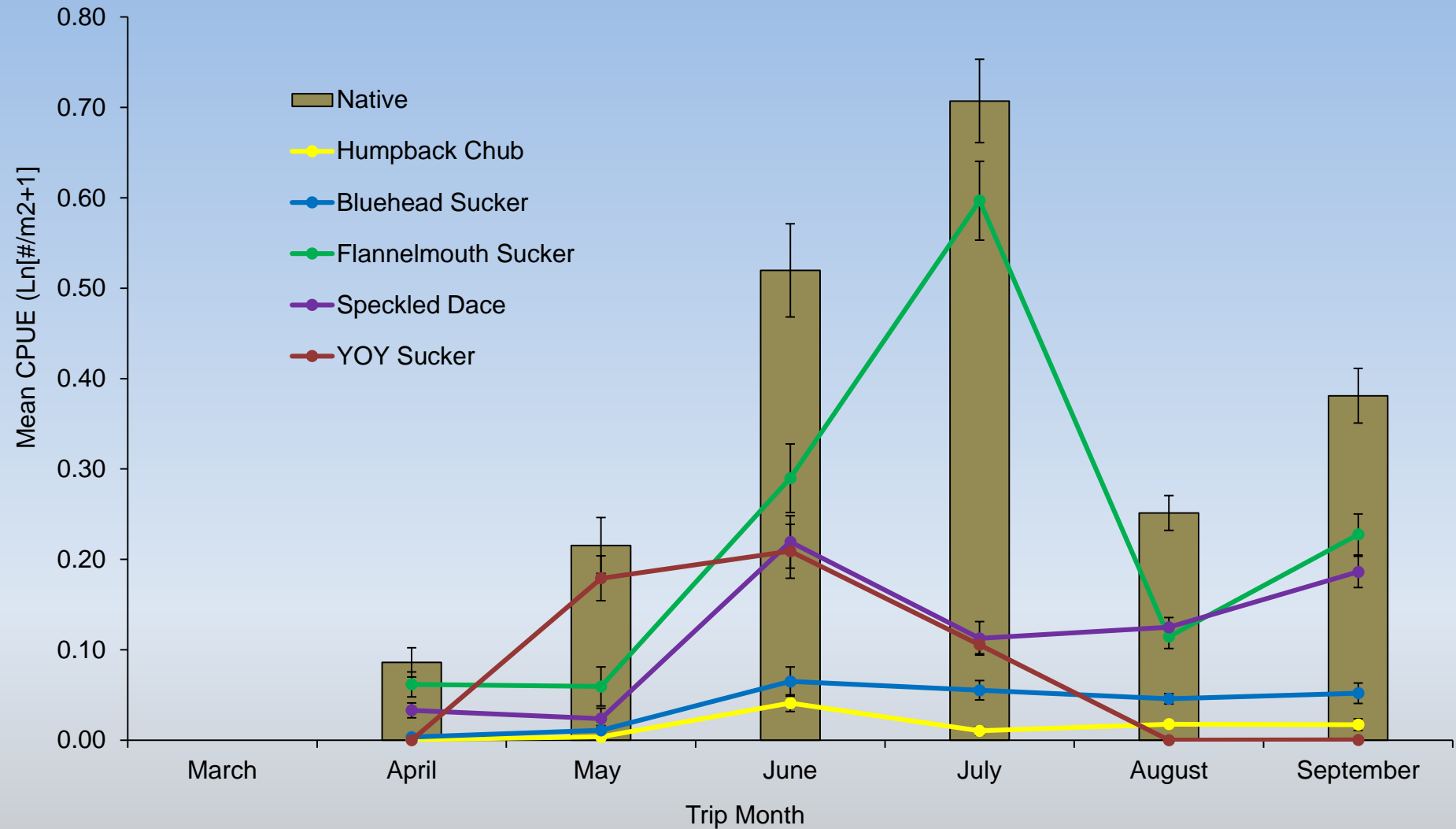
2017 Small-bodied Sampling (GC)



Razorback Sucker *Xyrauchen texanus* Research and Monitoring in the Colorado River Inflow Area of Lake Mead and the Lower Grand Canyon, Arizona and Nevada

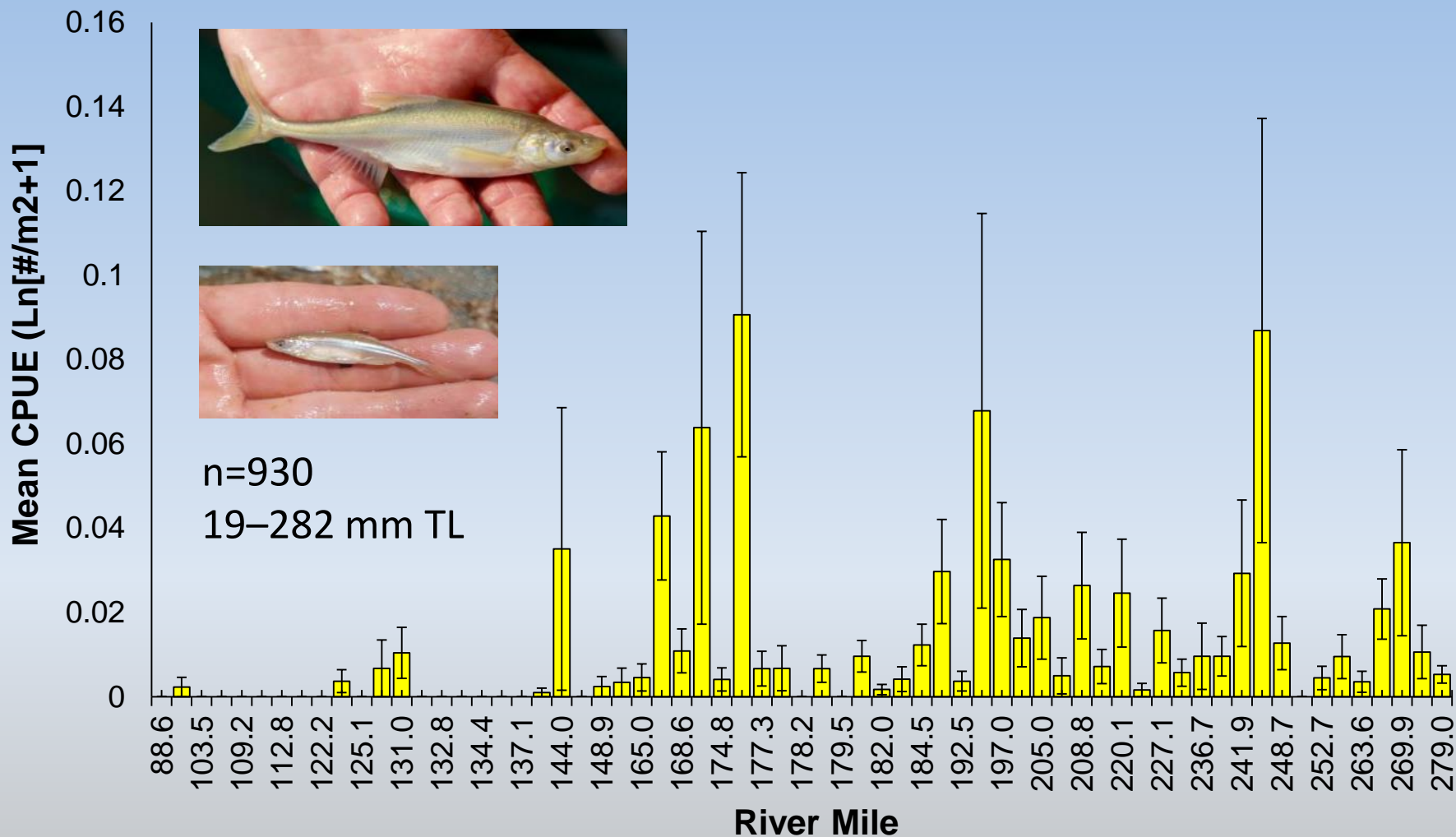


2017 Small-bodied Sampling (GC)



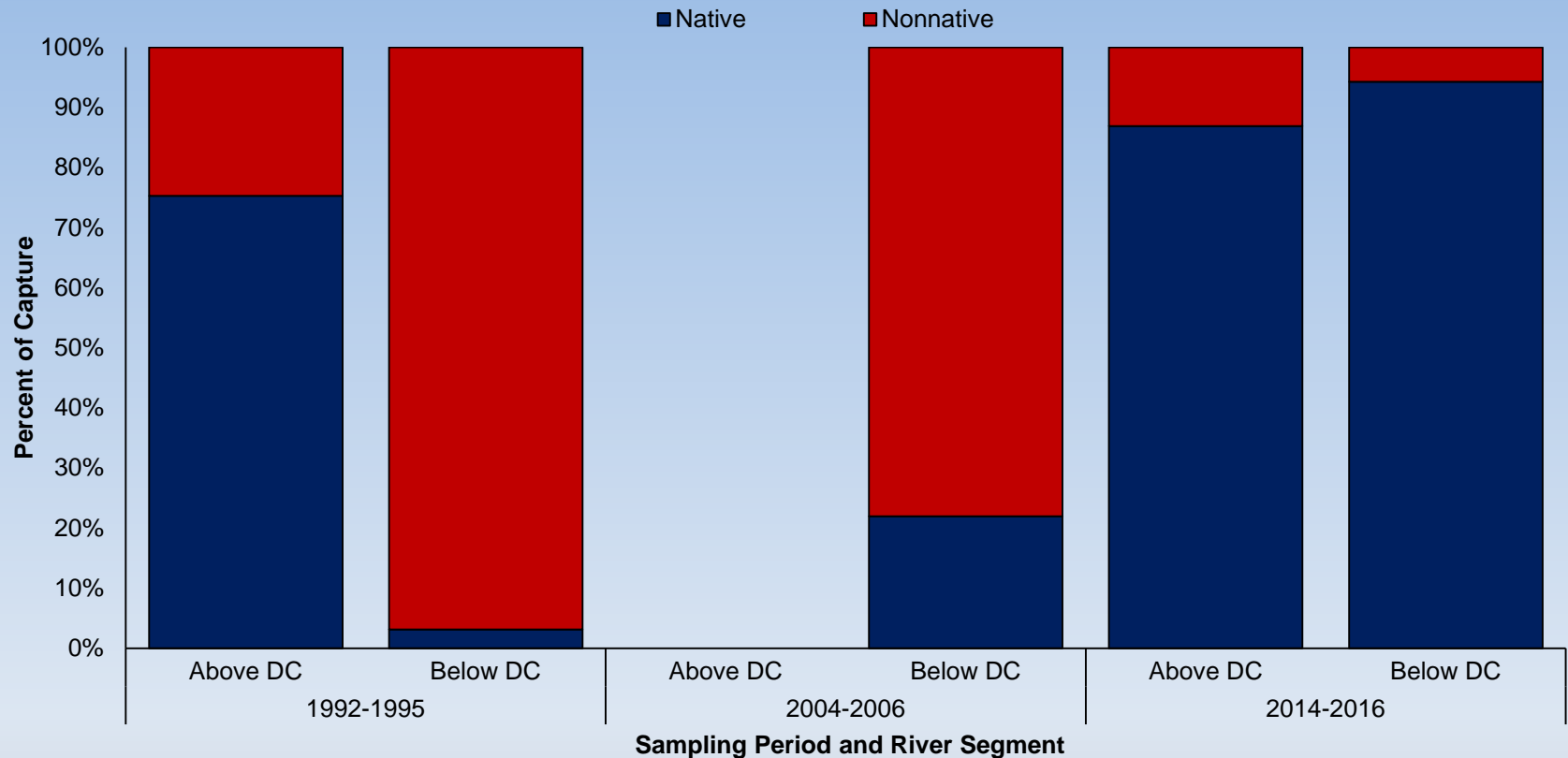
Small-Bodied HBC Captures 2017

(all trips combined)





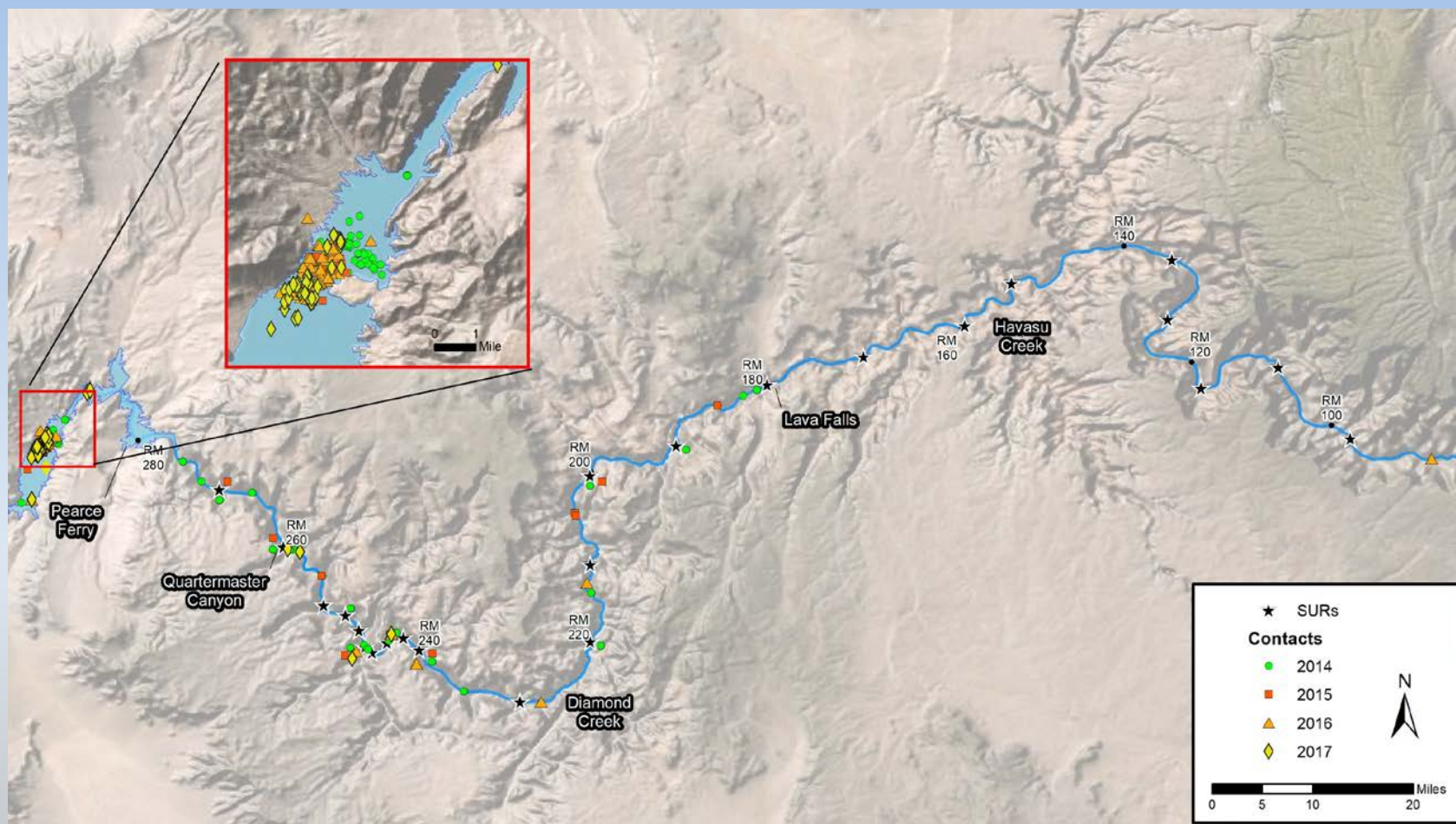
Small-bodied Sampling (GC)



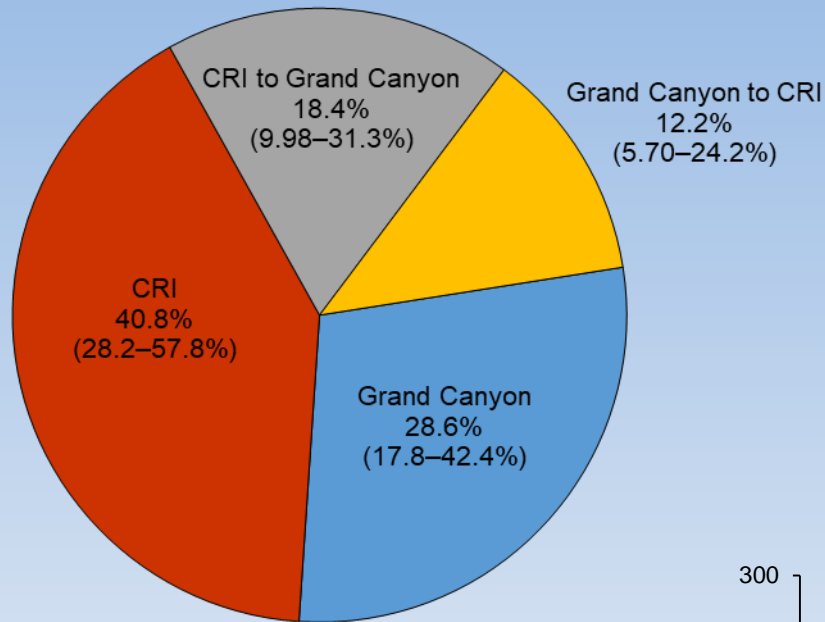
- Valdez et al. (1995), Ackerman et al. (2005), Kegerries et al. (2014–2017)

Telemetry-Tagged Fish

- Critical to monitor movement and improve sampling efficiency
- Since 2013 n=46 sonic tagged fish released

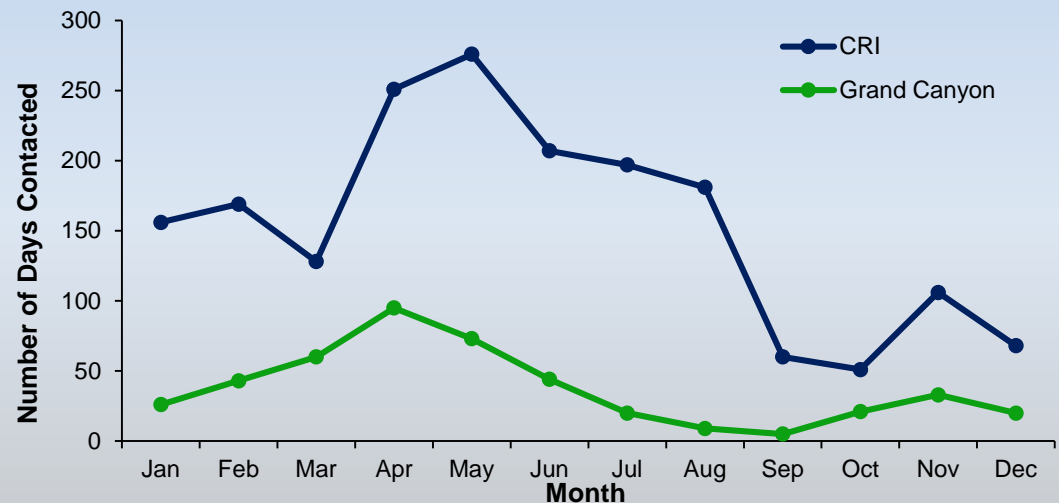


2010–2016 Movement Patterns

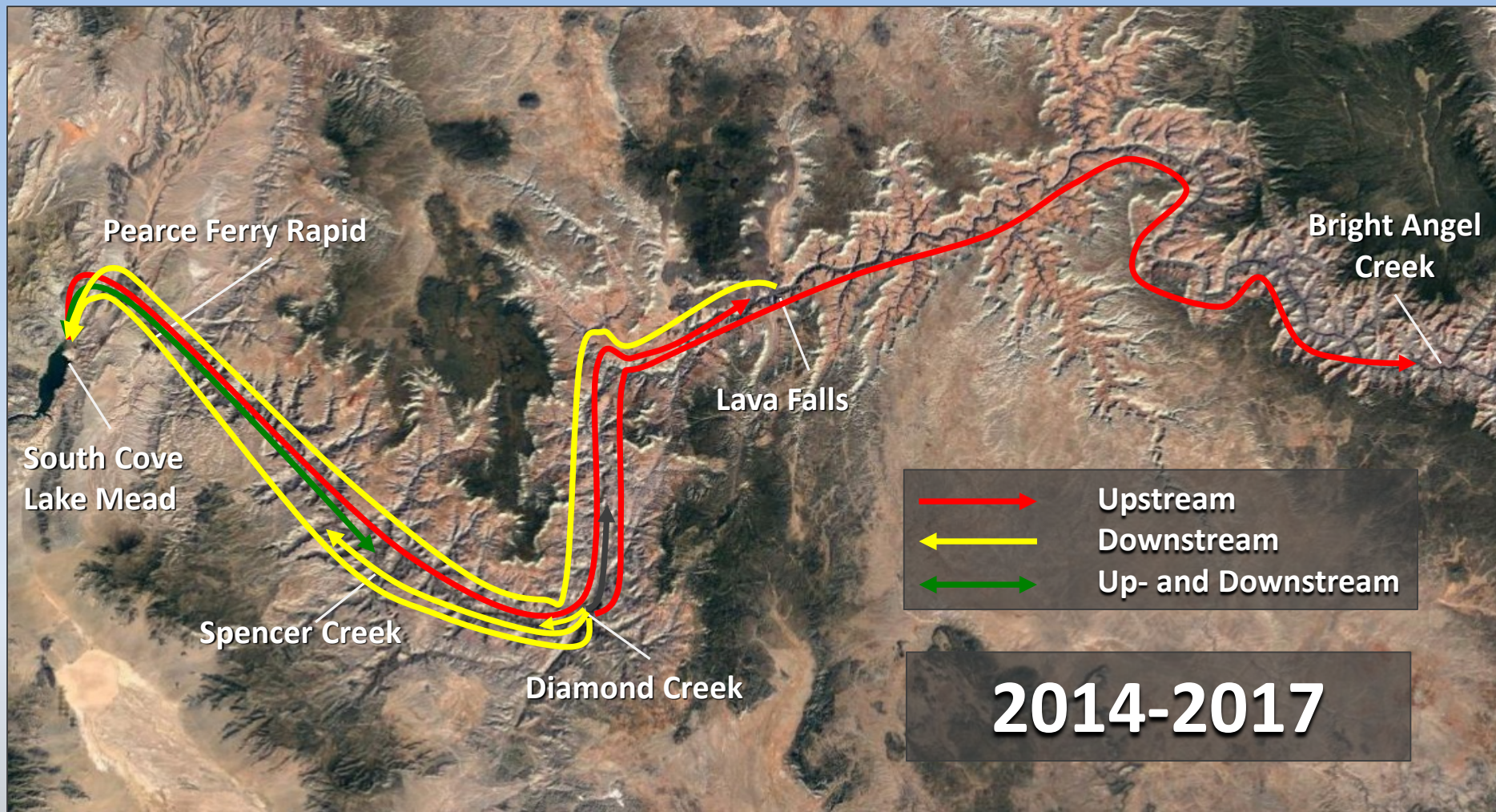


- Four types of movement
- 70% remain within stocking habitat

- Most movement occurs during the spring and summer



Movement Patterns



2017 Science Panel Report

RECLAMATION

Managing Water in the West

Three-Year Review of Razorback Sucker *Xyrauchen texanus* Research in Grand Canyon and Colorado River Inflow to Lake Mead

A Science Panel Report

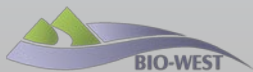


U.S. Bureau of Reclamation
Upper Colorado Region
Salt Lake City, Utah

- *Do not force augmentation (i.e., stocking) of Razorback Sucker.*
- *Continue ongoing work with Razorback Sucker at the Colorado River Inflow Area and western Grand Canyon.*
- *Expand fish surveys for Razorback Sucker, in the lower Grand Canyon and investigate larval fish to get evidence of spawning and use of river.*
- *Integrate all habitat, fish, and food base studies in the Grand Canyon and the Colorado River Inflow Area of Lake Mead.*

Razorback Sucker Conclusions

- All life stages present at the CRI (8th year).
- Larvae documented in Grand Canyon downstream of Havasu Creek.
- Native fishes dominate the fish community of the GC.
- Movement of Razorback Sucker occurs between Grand Canyon, CRI, and Lake Mead.
- Hypothesize that lentic and lotic habitats cumulatively facilitate Razorback Sucker recruitment.





*American Southwest
Ichthyological Researchers, L.L.C.*

