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

Ron Kegerries [1], Brandon Albrecht [1], Ron Rogers[1], W. Howard Brandenburg [2], Adam L. Barkalow [2], Harrison Mohn[1], Mark McKinstry[3], Brian Healy [4], James Stolberg [5], Emily Omana Smith [4]

([1] BIO-WEST, Inc.; [2] American Southwest Ichthyological Researchers, LLC; [3] U.S. Bureau of Reclamation, Upper Colorado Region; [4] U.S. National Park Service; [5] Lower Colorado River Multi-Species Conservation Program)

BIO-WEST

American Southwest Ichthyological Researchers

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

NATIONAL PARK SERVICE

Lower Colorado River Multi-Species Conservation Program

NEVADA DEPARTMENT OF WILDLIFE

ARIZONA GAME & FISH

Museum of Southwestern Biology

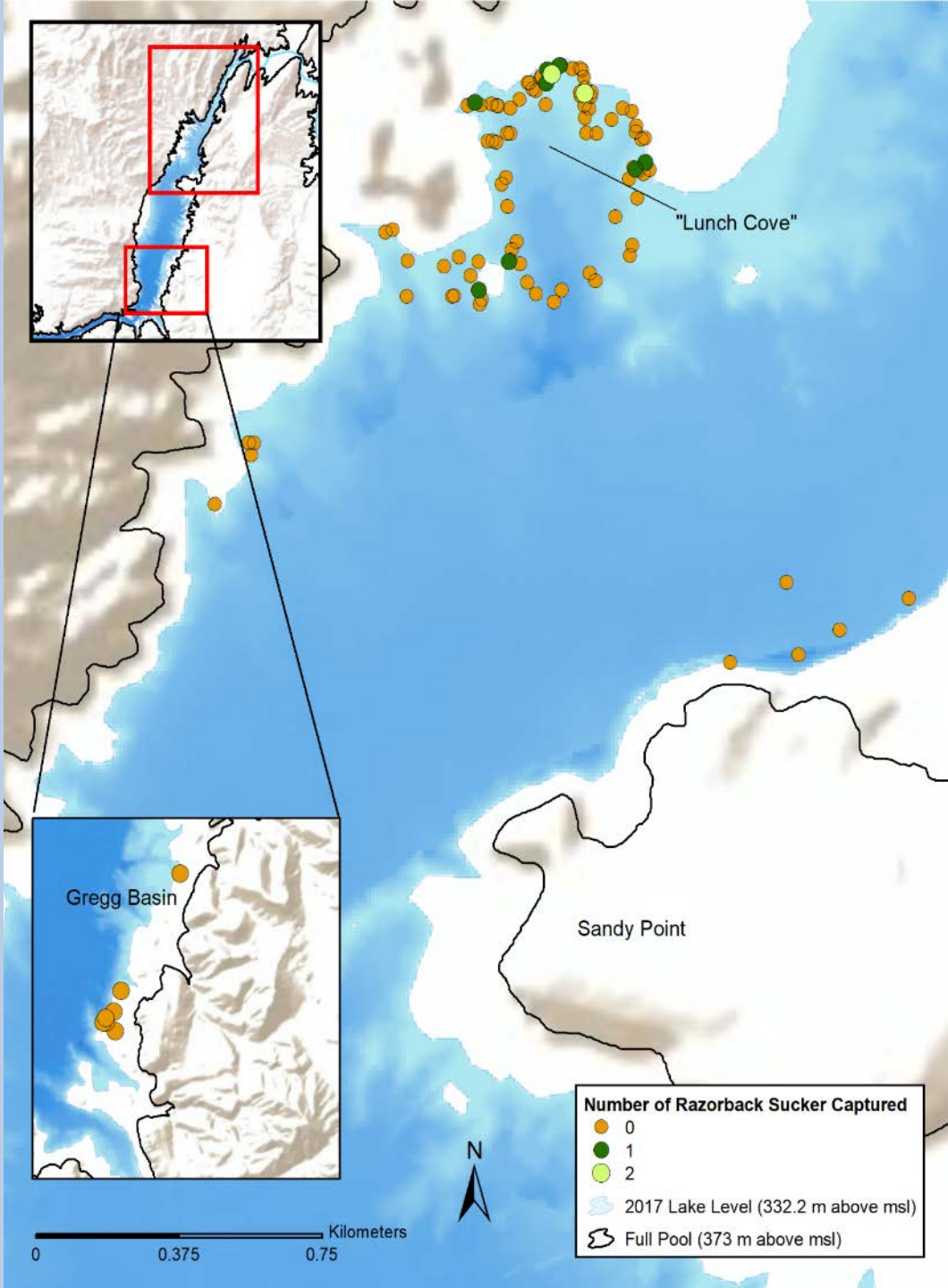
U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

Lake Mead Razorback Sucker Workgroup

Objectives

- Monitoring the Colorado River Inflow of Lake Mead (CRI)
  - Same methods since 2010
- Determine RBS presence and habitat use in the Grand Canyon (GC) through larval and small-bodied fish community sampling
  - Including telemetry
- Explore linkages between Lake Mead and GC

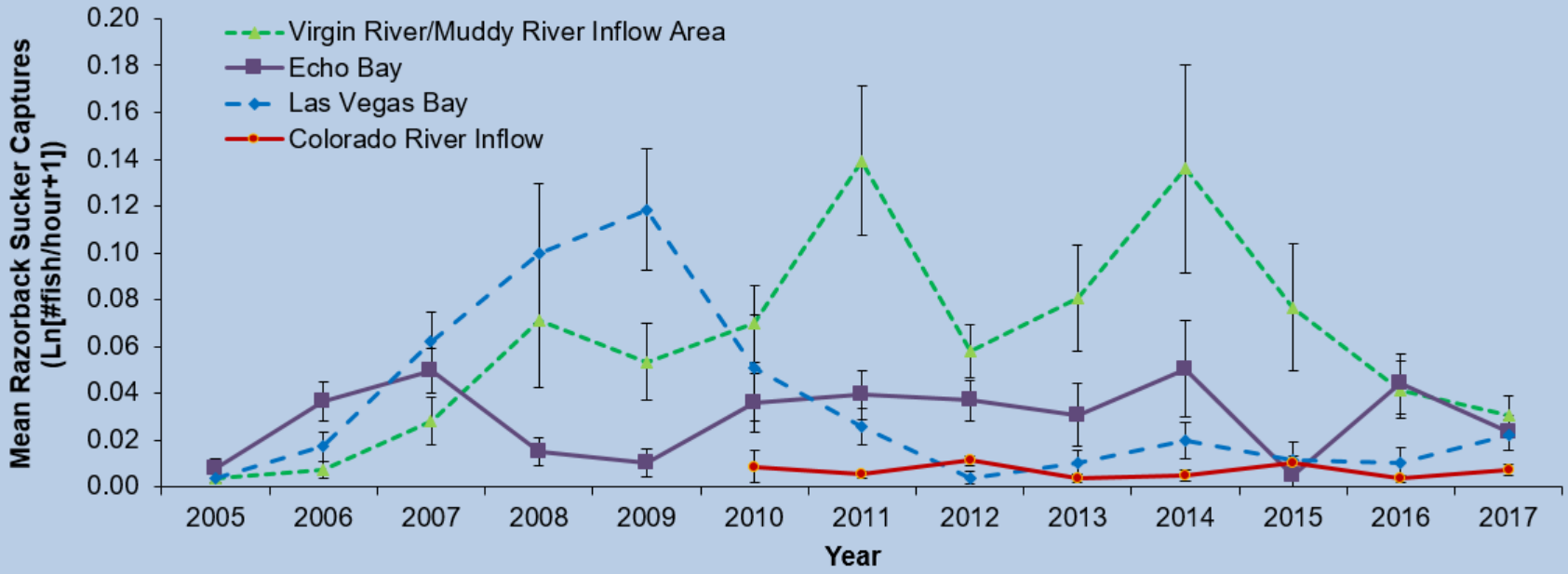
Netting (CRI)


"Lunch Cove"
Gregg Basin
Sandy Point
Number of Razorback Sucker Captured
0
1
2
2017 Lake Level (332.2 m above msl)
Full Pool (373 m above msl)
N
Kilometers
0
0.375
0.75

Adult RBS Sampling (CRI)

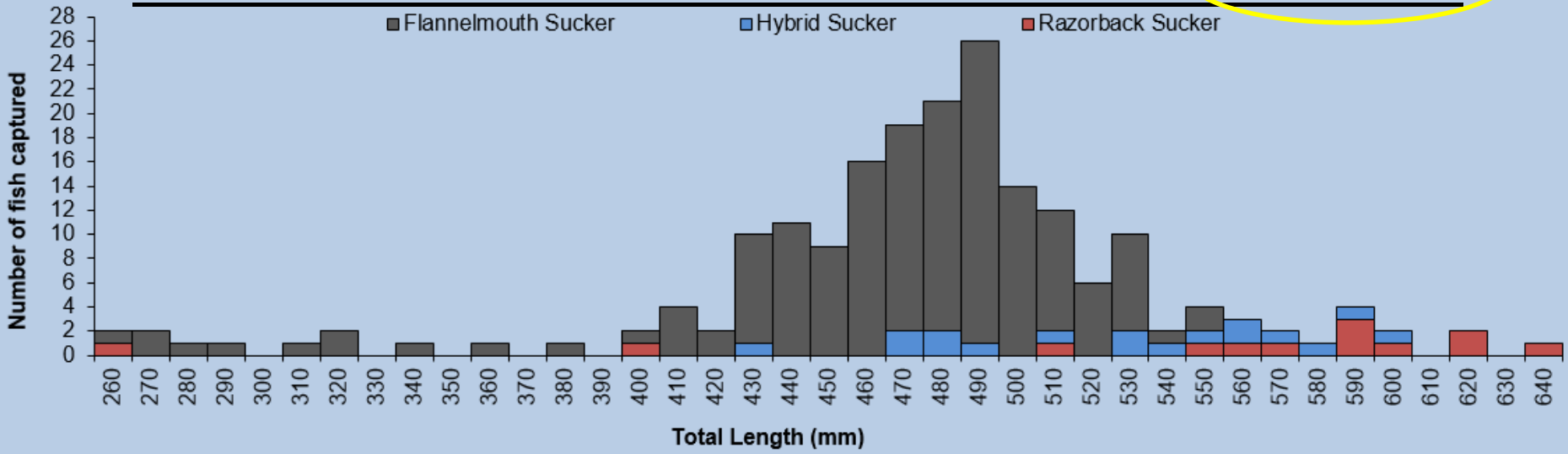
2017

- 12 Razorback Suckers
  - 5 new, wild (1 was juvenile)
  - 2 recaps from OA
  - 1 sonic-tagged LGC recap
- 18 Hybrid Suckers
  - 5 new, wild
- 68 Flannelmouth Suckers



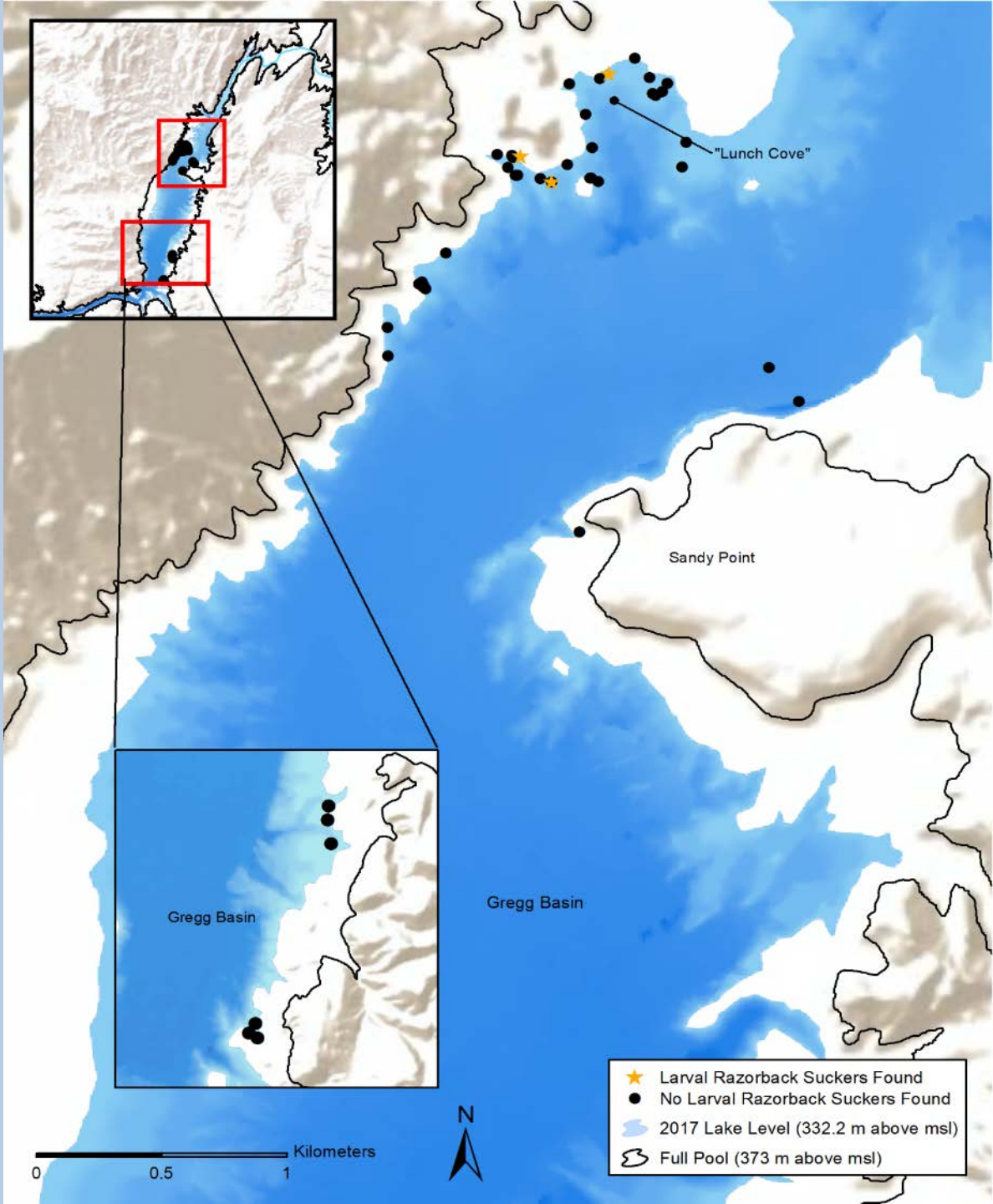
RBS Length and Growth (CRI)

PIT TAG NUMBER	ORIGINAL CAPTURE OR STOCK DATE [a]	TL (mm) [b]	LAST DATE RECAPTURED	TL (mm)	TOTAL GROWTH (mm)	DAYS BETWEEN MEASUREMENTS	GROWTH/ YEAR (mm/365 days)
Wild Fish							
3D9.1C2C8572E3	2/4/2009	602	2/14/2017	642	40	2,932	5.0
3DD.003BA20912	5/14/2014	429	1/31/2017	473	44	993	16.2
3DD.003BA2FAA5	3/17/2015	572	3/7/2017	591	19	721	9.6
Stocked Fish							
384.1B7969CCA6	5/8/2013	237	2/2/2017	565	328	1,366	87.6
3D9.1C2D697167	2/6/2015	566	2/15/2017	598	32	740	15.8
3DD.003BCBF7FA	2/22/2016	505	3/1/2017	517	12	373	11.7
Mean annual growth- All Fish							**24.3 (SE ± 12.8)**

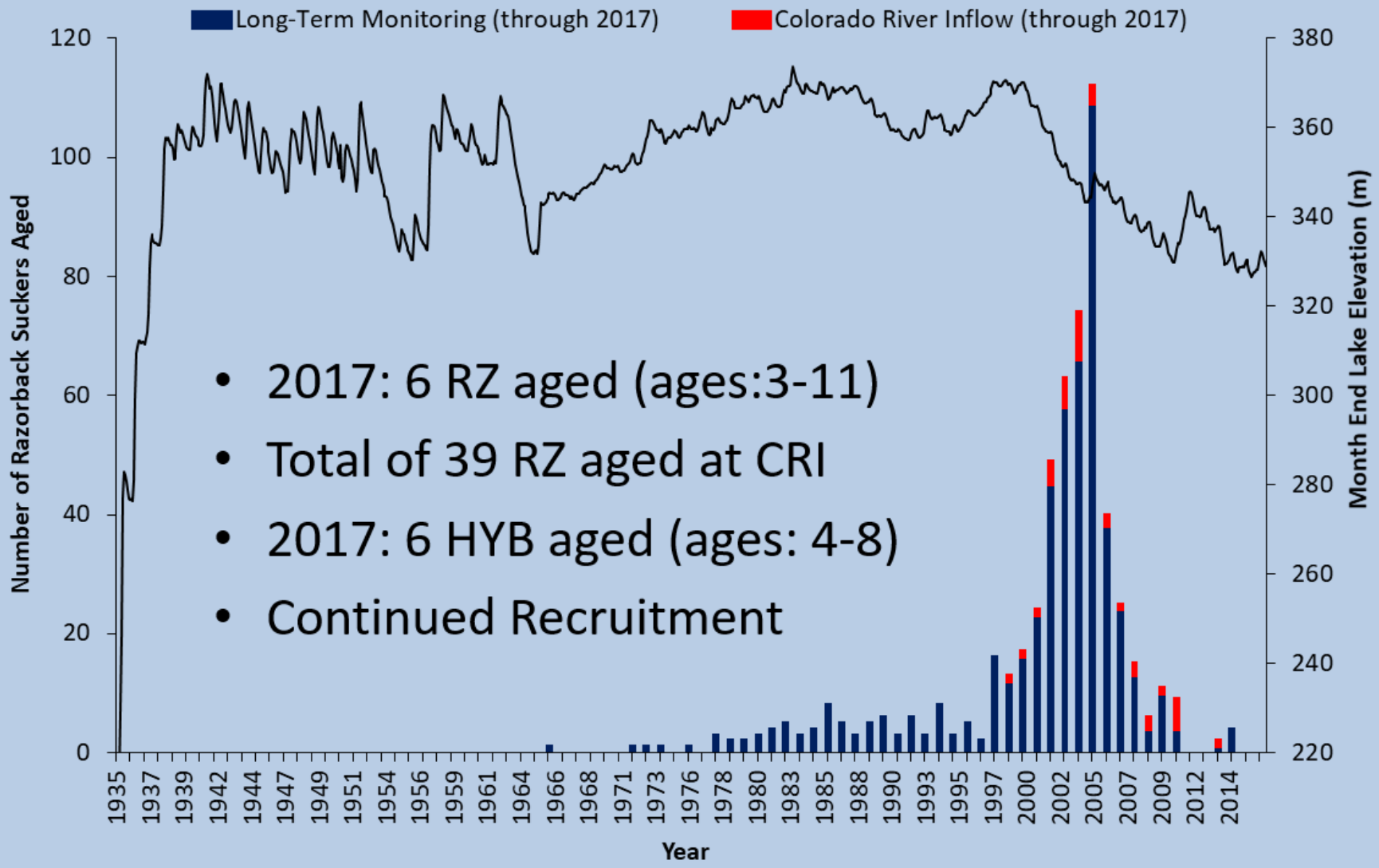


Larval RBS (CRI)

- 1,350 minutes active sampling
  - 5 RBS Larvae captured
  - 2 FMS Larvae captured
- 34,147 minutes of larval light-trap sampling
  - 1 RBS larvae
  - 1 FMS larvae



RBS Age and Recruitment



- 2017: 6 RZ aged (ages:3-11)
- Total of 39 RZ aged at CRI
- 2017: 6 HYB aged (ages: 4-8)
- Continued Recruitment

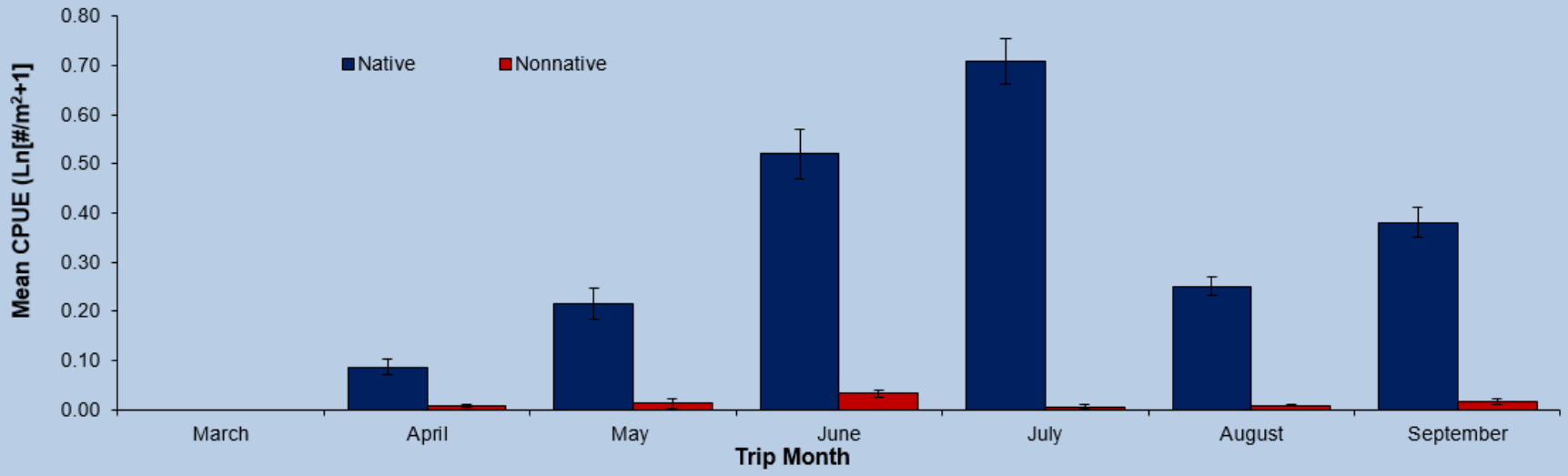
Grand Canyon Sampling

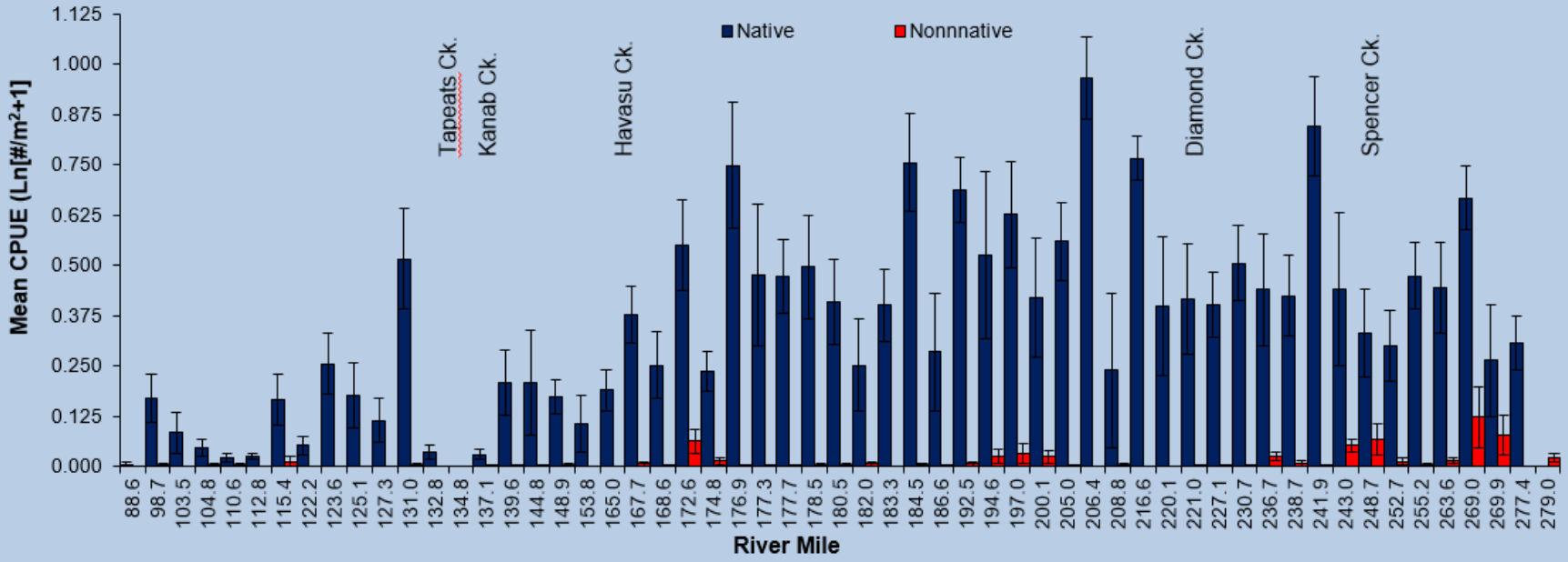
- Generalized Random Tessellation Stratified (GRTS)

- Larval Seining
- Small-bodied Seining
- Telemetry
  - Active
  - Passive (SUR)

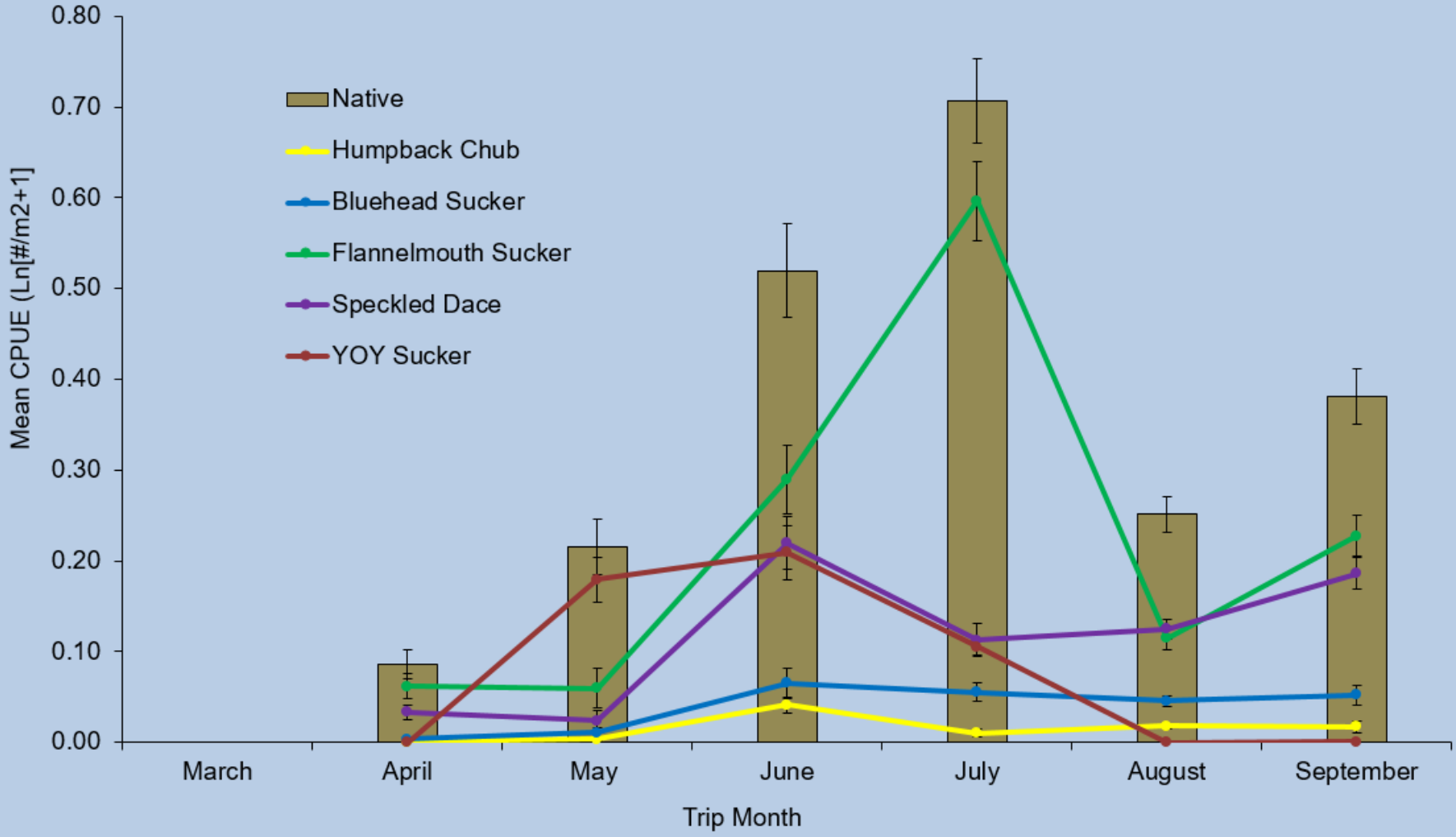
- 7 Trips
  - Mar-Sept

GC Small-Bodied Sampling

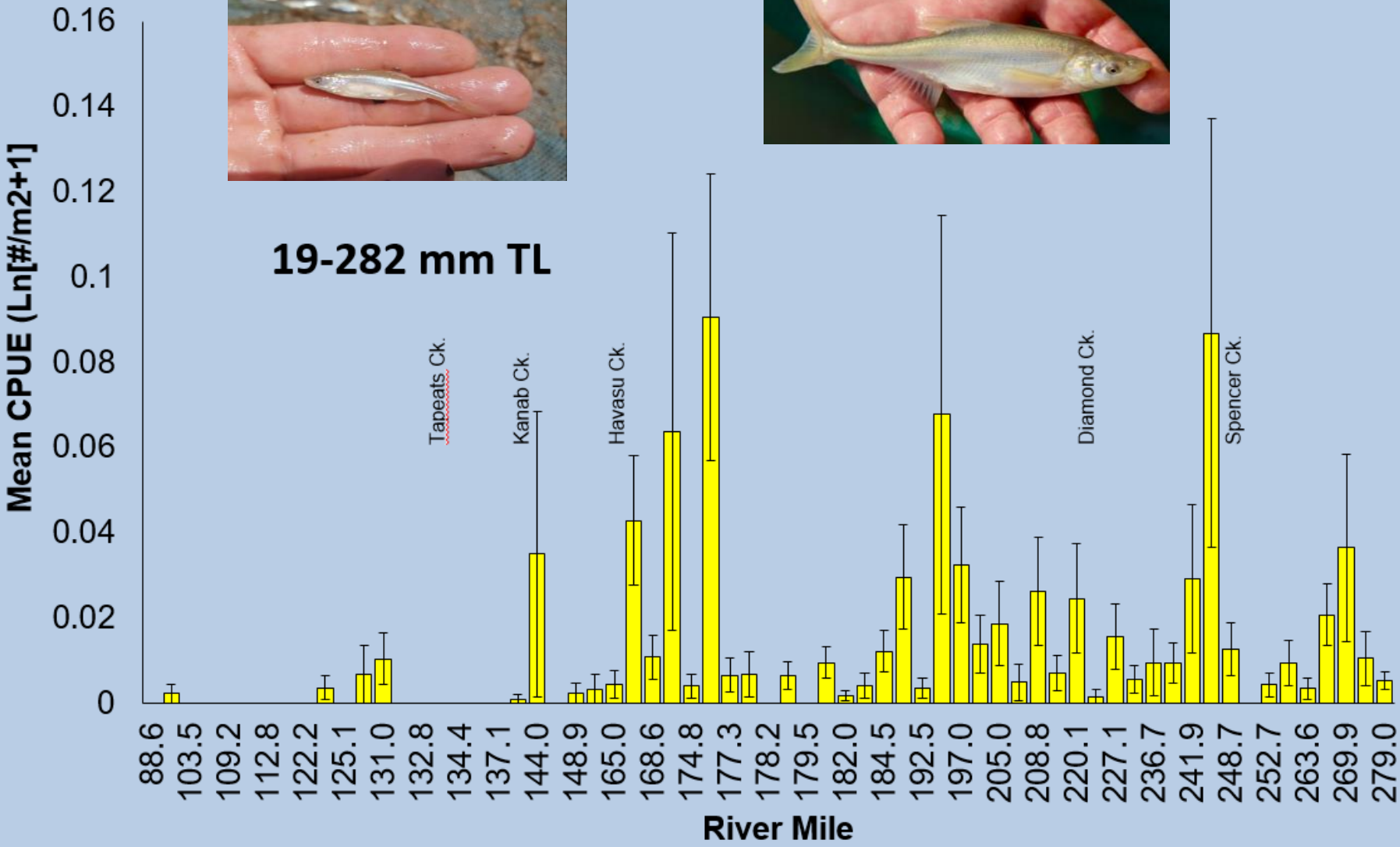




GC Small-Bodied Sampling



Humpback Chub



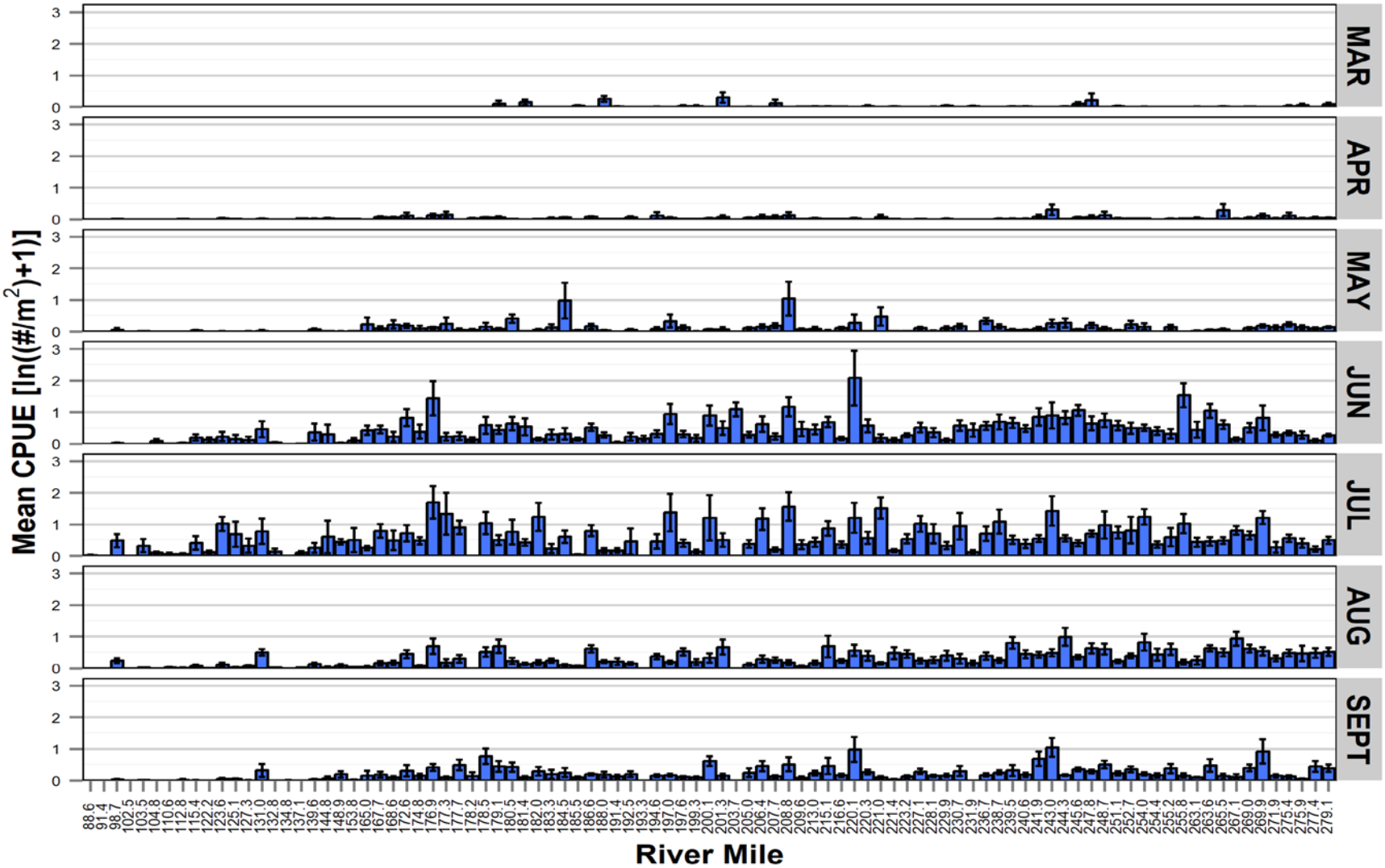
Native Fish Below Pearce Ferry Rapid (River)

GEAR	Razorback Sucker	Hybrid Sucker	Humpback Chub	Bluehead Sucker	Flannelmouth Sucker	Speckled Dace
Seine				29	549	242
Larval Seine	1			3	62	2
Trammel		2			20	
Fyke					12	1
Hoop			10		9	1
TOTAL	**1**	**2**	**10**	**32**	**652**	**246**

Humpback Chub: 71-305 mm TL

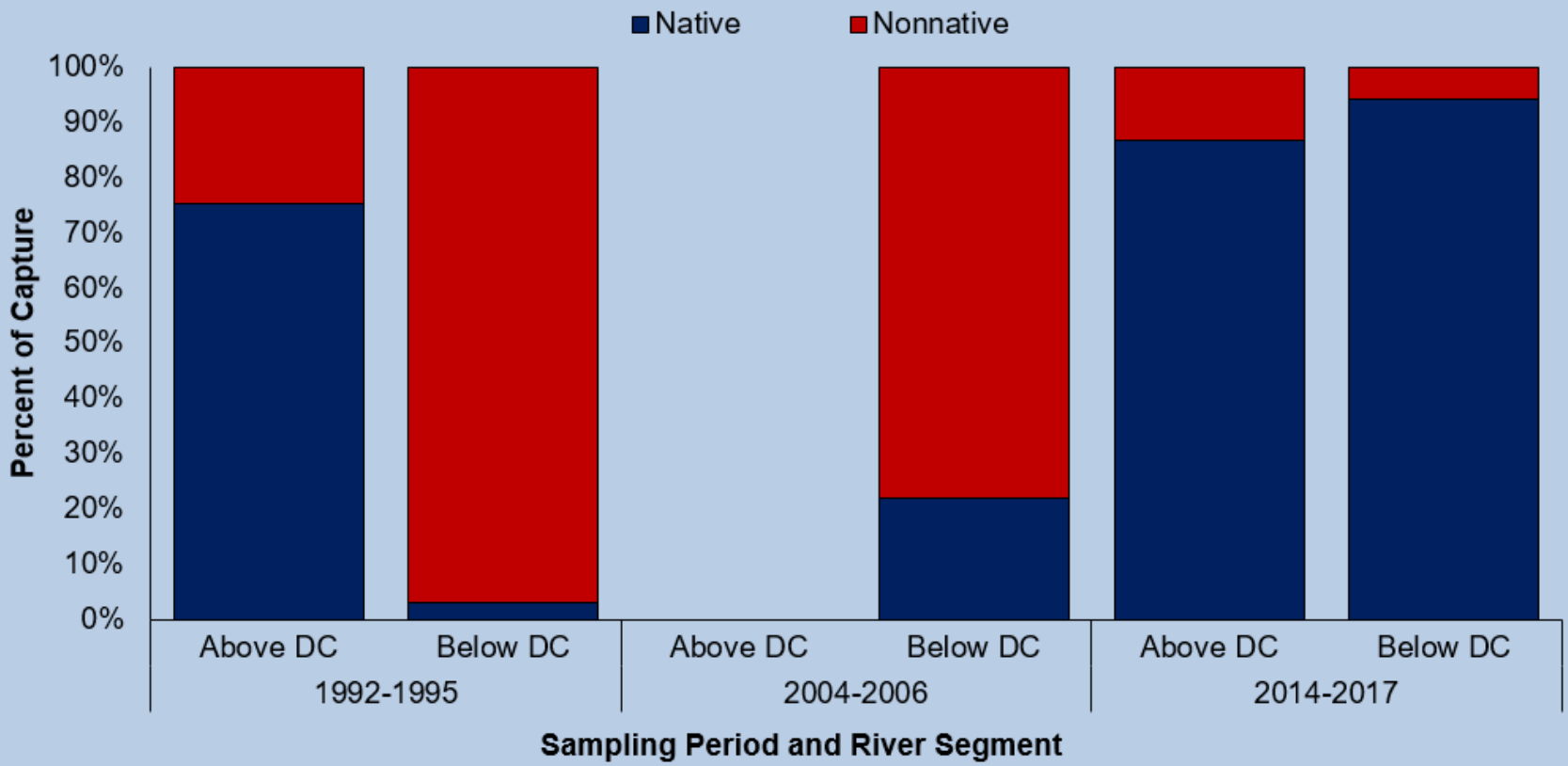
GC Small-Bodied Sampling

2014–2017 Native CPUE



GC Small-Bodied Sampling

Longer Term Perspective

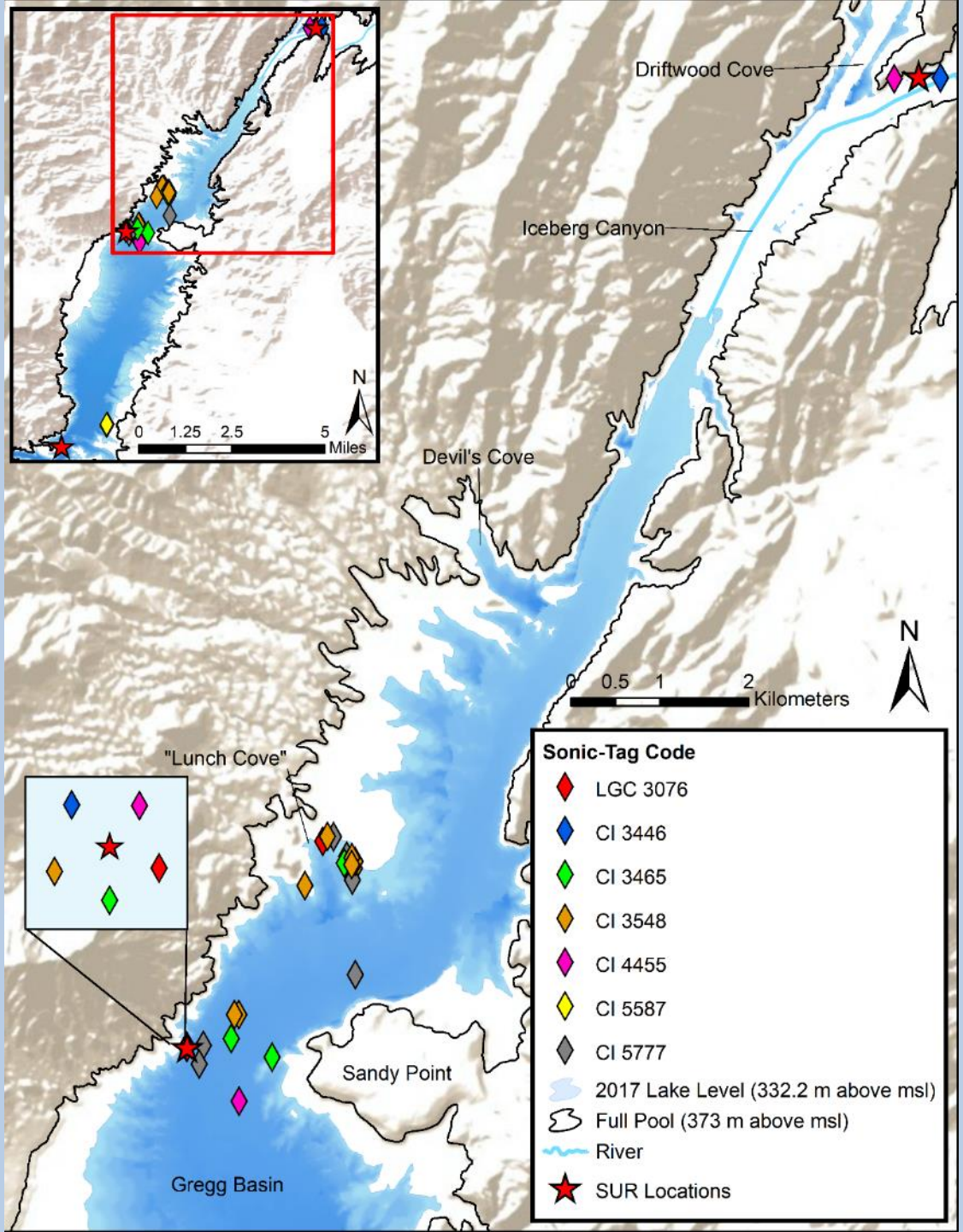


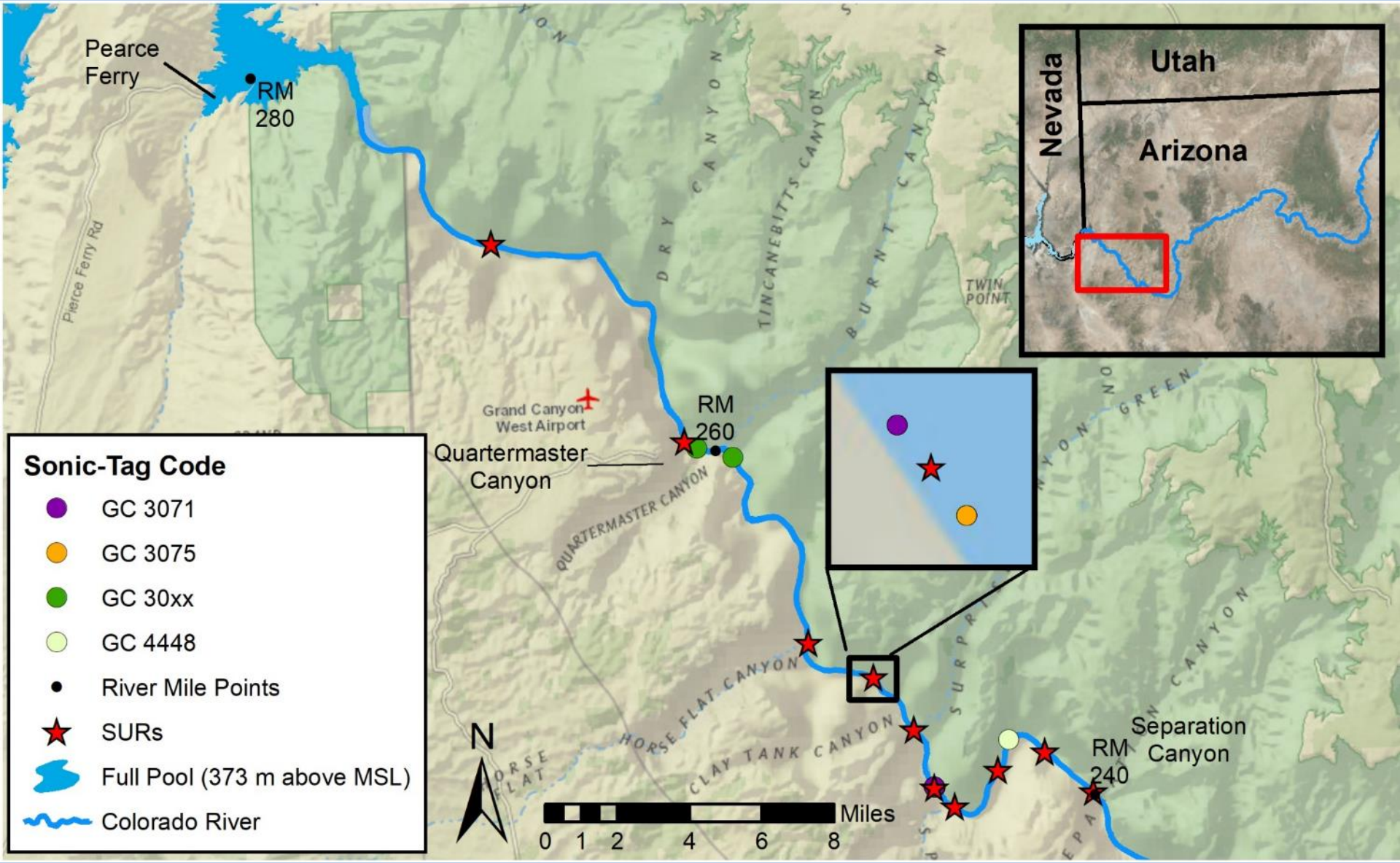
- **Above DC = ↑ in FM and ↓ in CP and CC**
- **Below DC = ↑ in all NATIVES and ↓ in CP, CC, SB, MF, FH**

Telemetry

- 15 known unique fish, ~35,000 contacts
  - 7 CRI released (2011-16)
  - 7 GC released (2013-16)
  - 1 EB release (2014)

- 2 fish from 2013 GC to CRI
- 1 fish from 2014 GC to CRI
- 1 fish from 2016 GC to CRI
- Most movement within the CRI
- Little movement throughout the GC
- Movement from CRI to GC and other spawning areas varies by year


Driftwood Cove
Iceberg Canyon
Devil's Cove
"Lunch Cove"
Sandy Point
Gregg Basin
N
0 0.5 1 2
Kilometers
0 1.25 2.5 5
Miles
Sonic-Tag Code
LGC 3076
CI 3446
CI 3465
CI 3548
CI 4455
CI 5587
CI 5777
2017 Lake Level (332.2 m above msl)
Full Pool (373 m above msl)
River
SUR Locations


Pearce Ferry
RM 280
Pierce Ferry Rd
DRY CANYON
TINCANEBITTS CANYON
BURNT CANYON
TWIN POINT
Grand Canyon West Airport
RM 260
Quartermaster Canyon
QUARTERMASTER CANYON
HORSE FLAT CANYON
CLAY TANK CANYON
SURPRISE CANYON
GREEN
Separation Canyon
RM 240
Nevada
Utah
Arizona
Sonic-Tag Code
GC 3071
GC 3075
GC 30xx
GC 4448
River Mile Points
SURs
Full Pool (373 m above MSL)
Colorado River
N
Miles
0 1 2 4 6 8

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

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

Conclusions and Considerations

- Razorback Sucker present at the CRI (8th year)
- CRI specific spawning may have occurred while it appears larvae were also drifting out of the GC
- Native fish dominate the fish community of the GC
- Native fish catch increases below ~RM 140
- Humpback Chub are found throughout the study area in multiple size classes
- Razorback and other sucker habitat overlaps within the CRI and GC and movement occurs between the two
- Hypothesize that both habitats cumulatively allow for Razorback Sucker recruitment