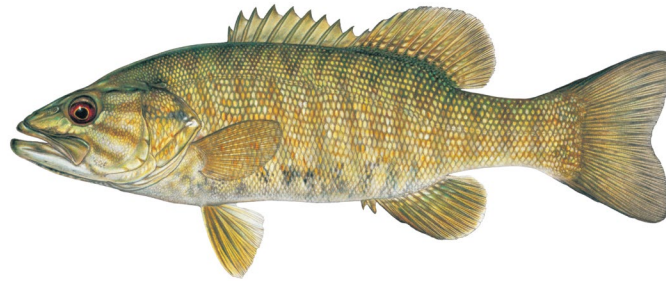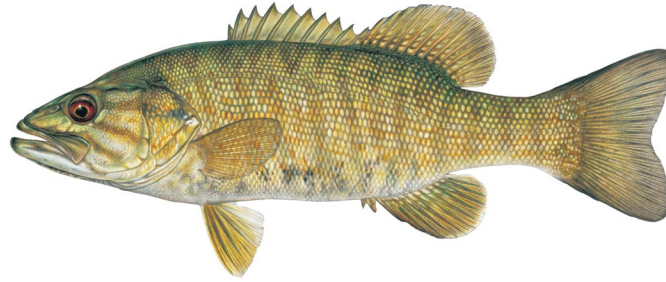# 2024 Bass Nest Monitoring

Conor Clancy, Jeff Arnold, Matt O'Neill, Drew Eppehimer, Brian Hines
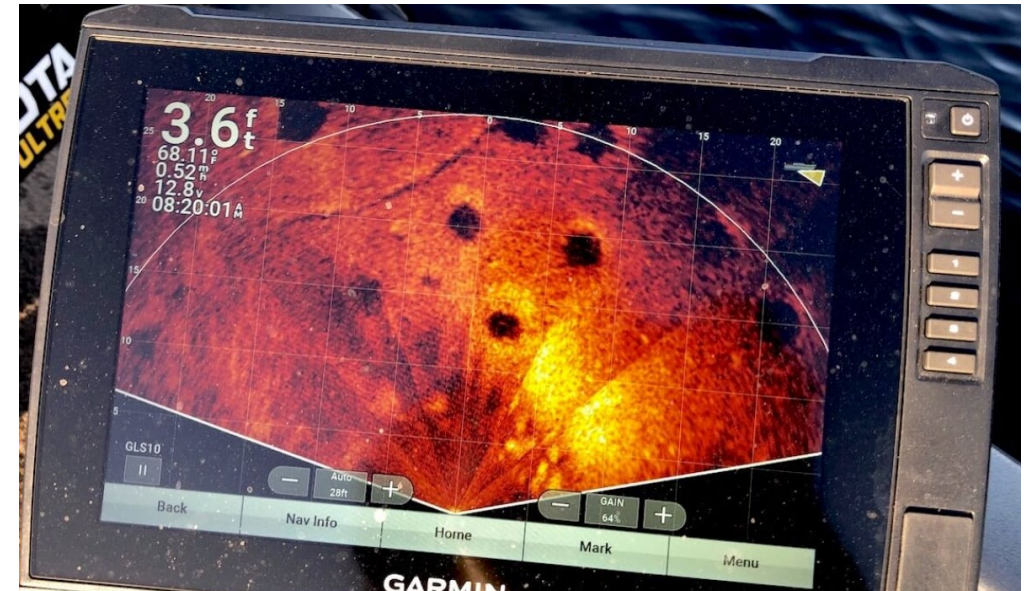
2024 Bass Nest Monitoring

Artificial nests

Sonar detection of nests

Are bass spawning in Lees Ferry?

- Early nesting detection
- Improved targeting for removal efforts
- Nest disruption and adult removal

Questions

Note: not all questions will be addressed with the same certainty

1. ***Distribution/Dispersal***:

   How are SMB distributed throughout the sampled area?
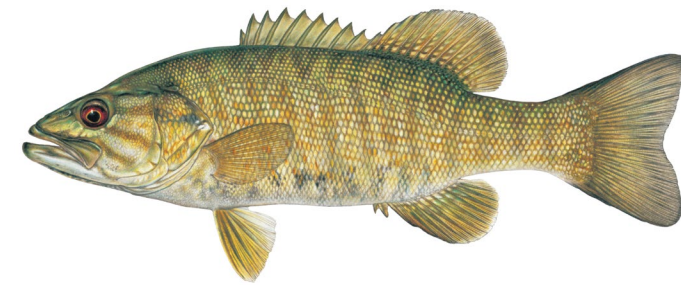
2. ***Reproduction***:

   Is there *in situ* SMB spawning?
   a. Where is it occurring? Hotspots?
   b. When did it occur?

   -Side Scan Sonar Detection of SMB Beds

   -Artificial Spawning Beds

   c. Can we use close-kinship analyses to differentiate entrainment vs local reproduction?
   d. Is reproduction leading to recruitment of age-1 SMB? (next year sampling)

Questions

Note: not all questions will be addressed with the same certainty

5. *Diet*:

What are SMB eating in different locations at different life stages?
   a. What are rates of piscivory as a function of SMB size?
   b. Are there longitudinal relationships with stomach fullness or biomass?

6. *Capture Efficiencies*:

How efficient are different approaches to capturing SMB?
   a. Are there better approaches to catch different life stages?
   b. Are there better approaches to finding SMB nests/spawning areas?

-Side Scan Sonar Detection of SMB Beds
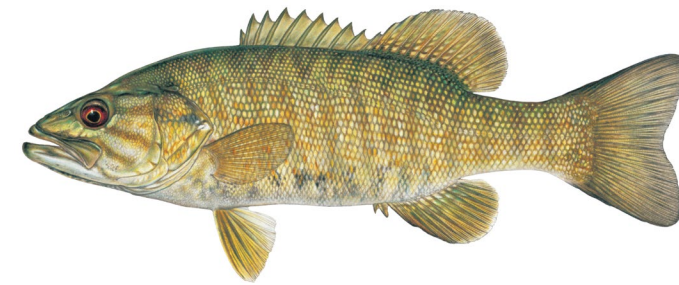
Artificial nesting habitat

- Provide excellent nesting habitat to lure bass to spawn where we can see them
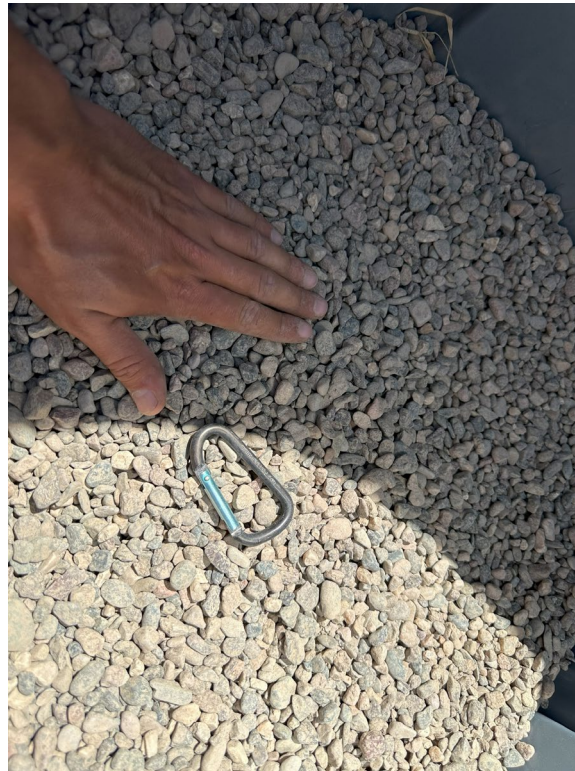
Artificial nesting habitat

- Two types of nests
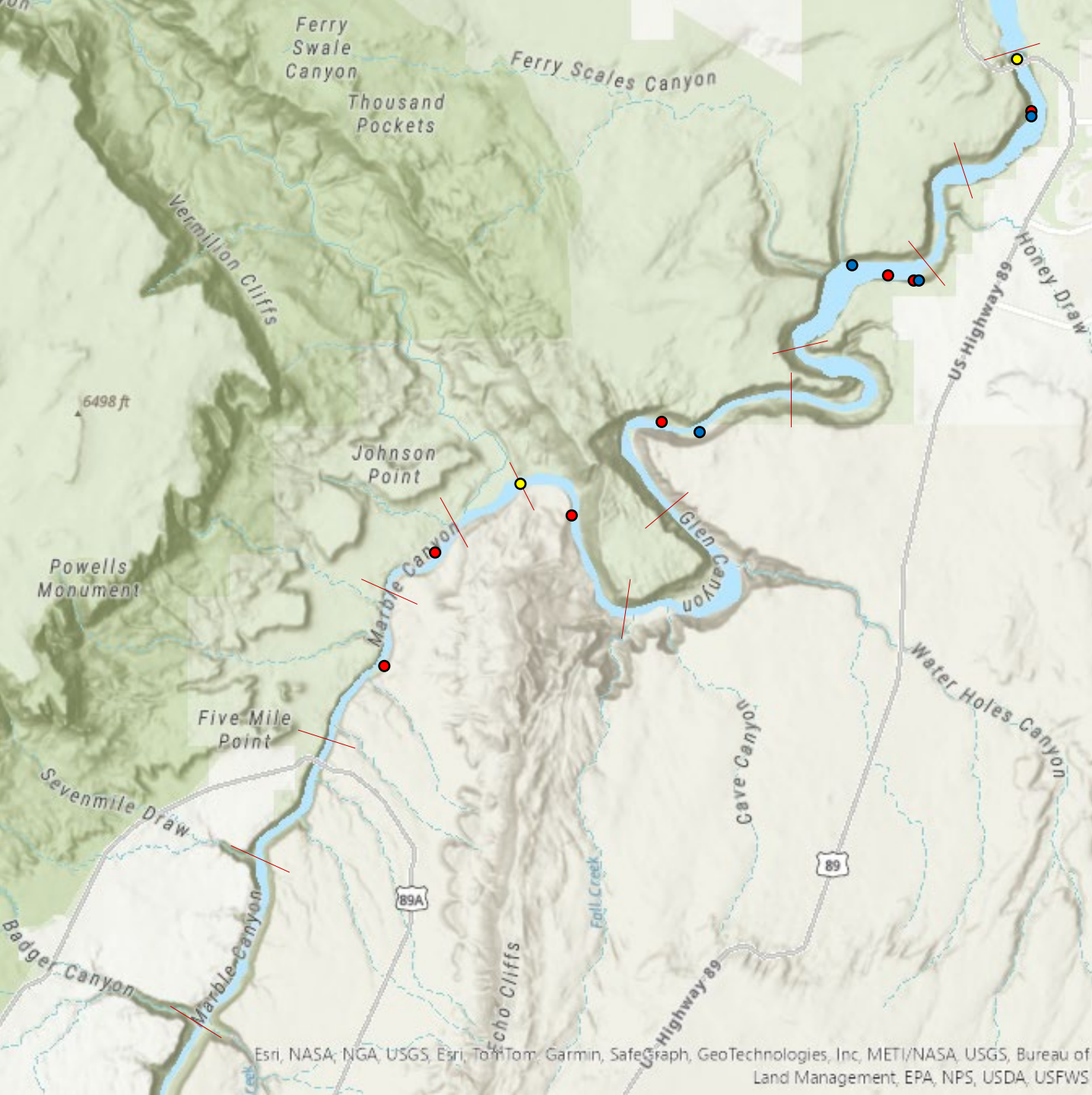
Artificial nesting habitat

- Two types of nests
- Pea gravel substrate

Artificial nesting habitat

- Paired deployment
- 4 sites in Lees Ferry
- HOBO temp logger
- First nests placed in early July
- Monitored weekly for nesting

Legend:

- Sampling Reaches
- ● USGS Stream Gage
- ● NPS Temperature Logger
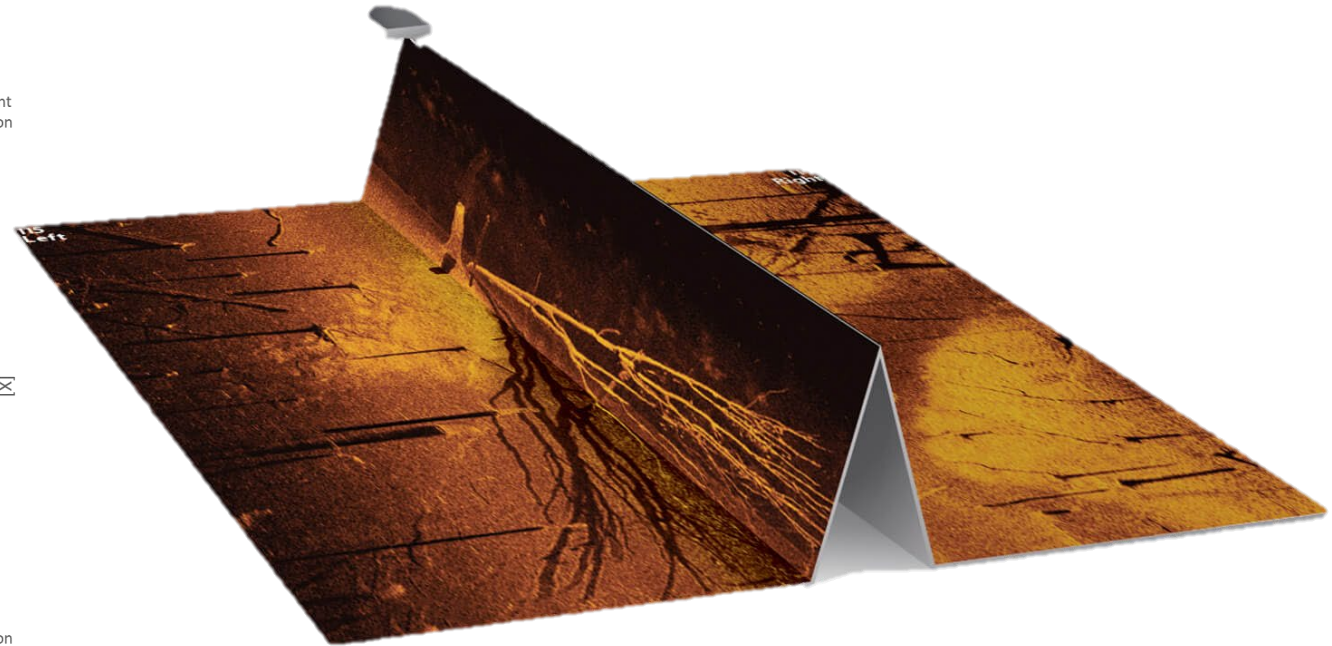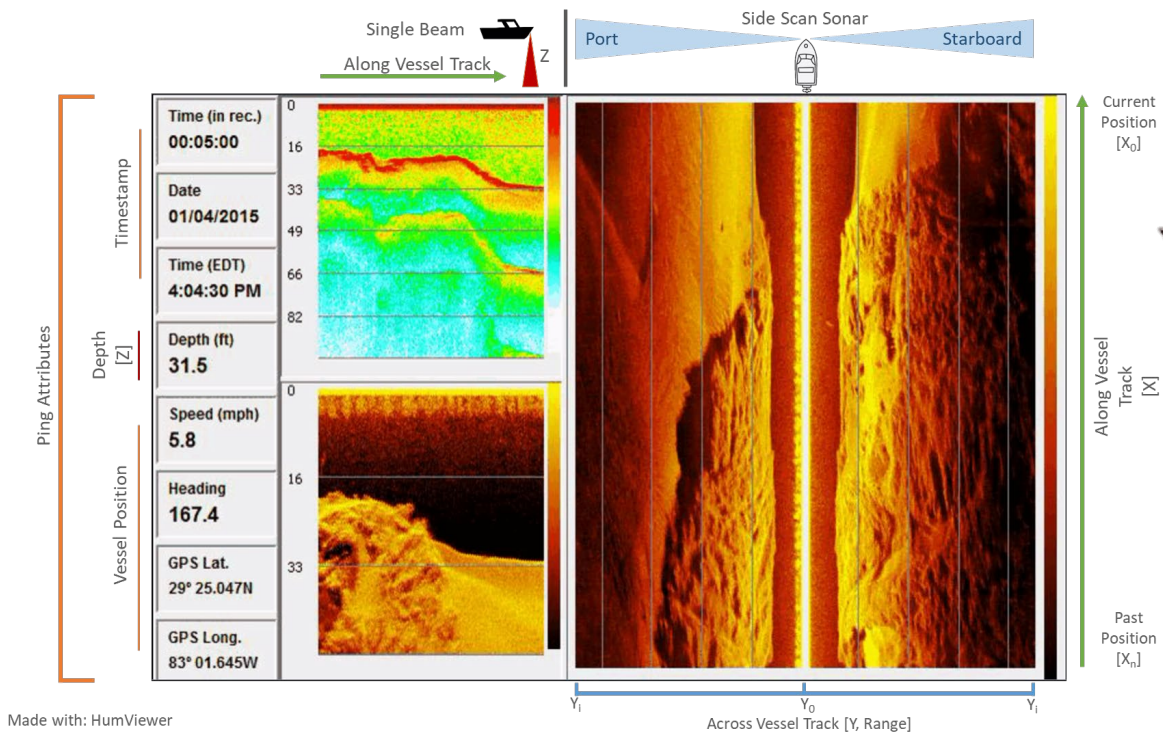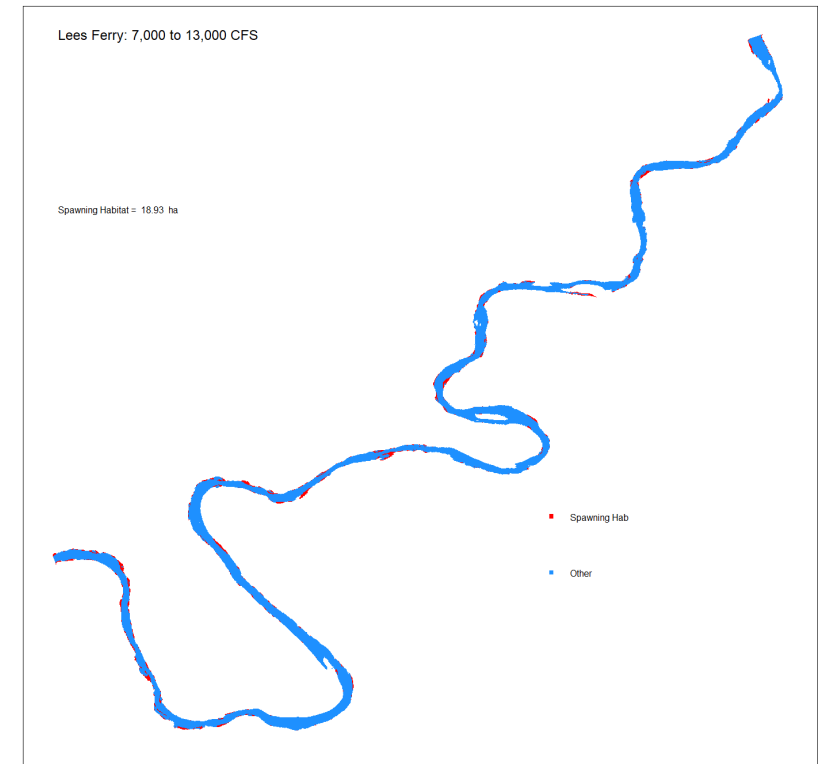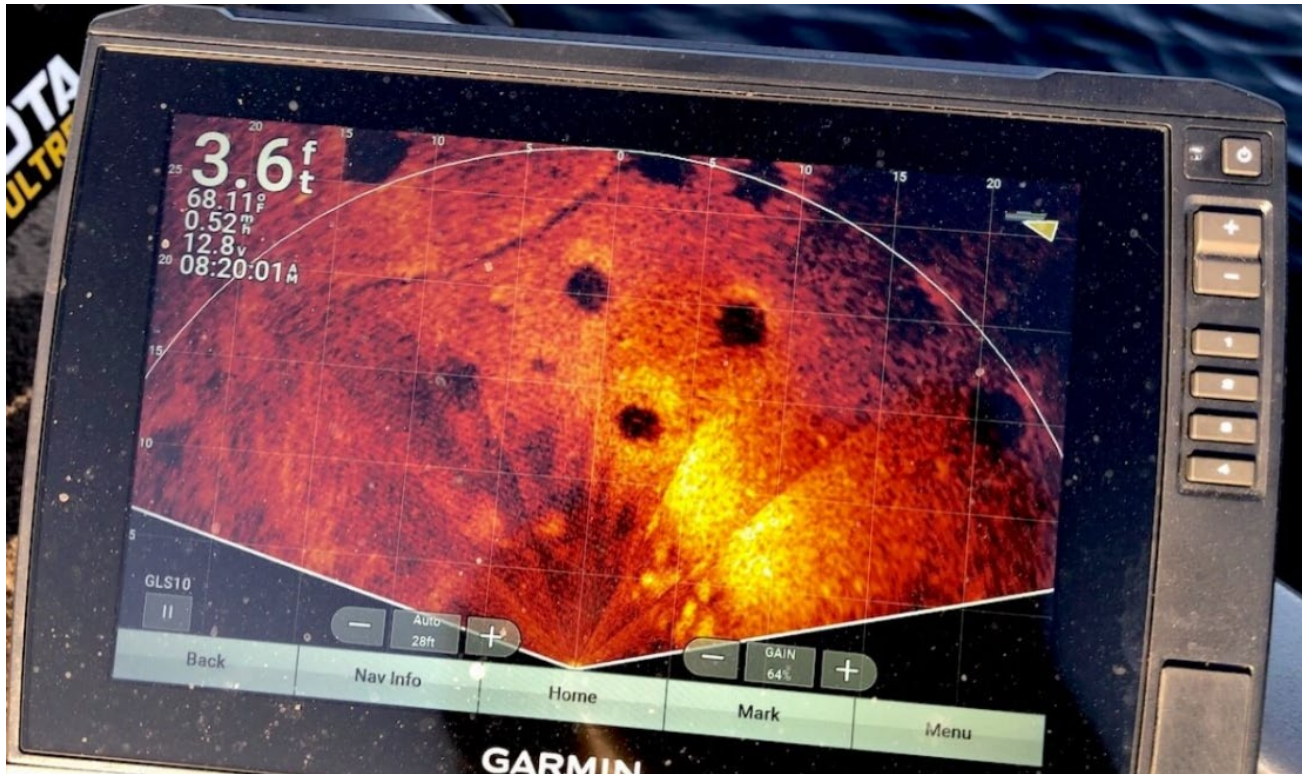- ● Artificial bass nests

Side Scan Sonar nest detection

- Cameron Bodine, former NAU graduate student

Side Scan Sonar nest detection

- Cameron Bodine, former NAU graduate student

Made with: HumViewer

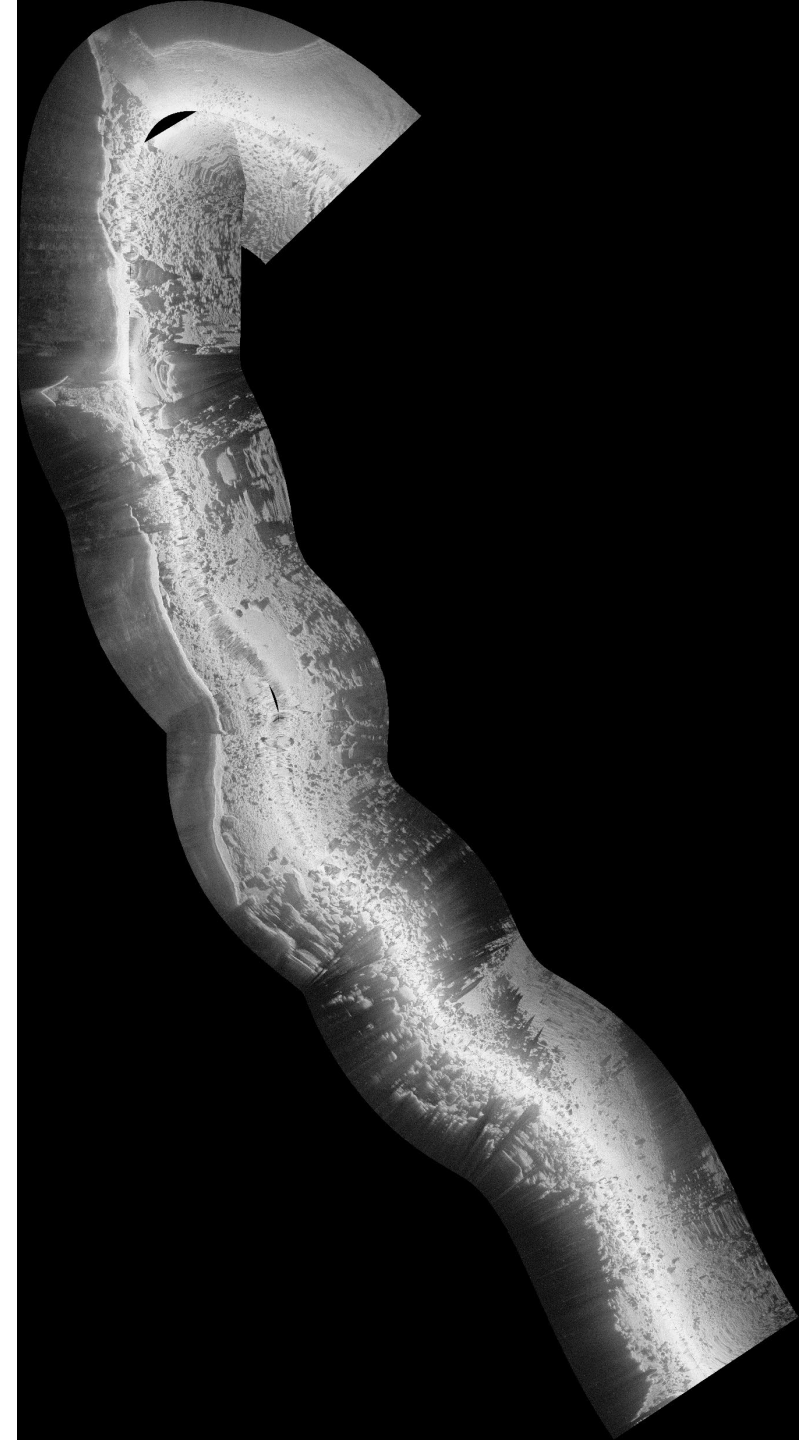# Side Scan Sonar nest detection

- Cameron Bodine, former NAU graduate student

Lees Ferry: 7,000 to 13,000 CFS

Spawning Habitat = 18.93 ha

Spawning Hab

Other

Side Scan Sonar nest detection

- Surveyed Lees Ferry at the end of May

- Comprehensive mapping survey

  - Date/time
  - GPS coordinates
  - Estimated water velocity
  - Hydrologic features
    - Riffle, run, rapid, eddy, backwater, etc
  - Water depth
  - Nest size
  - Substrate type in nest
  - Notable nest features
  - Adult SMB on or near nest?
  - Eggs/larvae in nest?
  - Other fishes in proximity to nest?
  - Substrate type around nest
 - Notable shoreline features

Side Scan Sonar nest detection

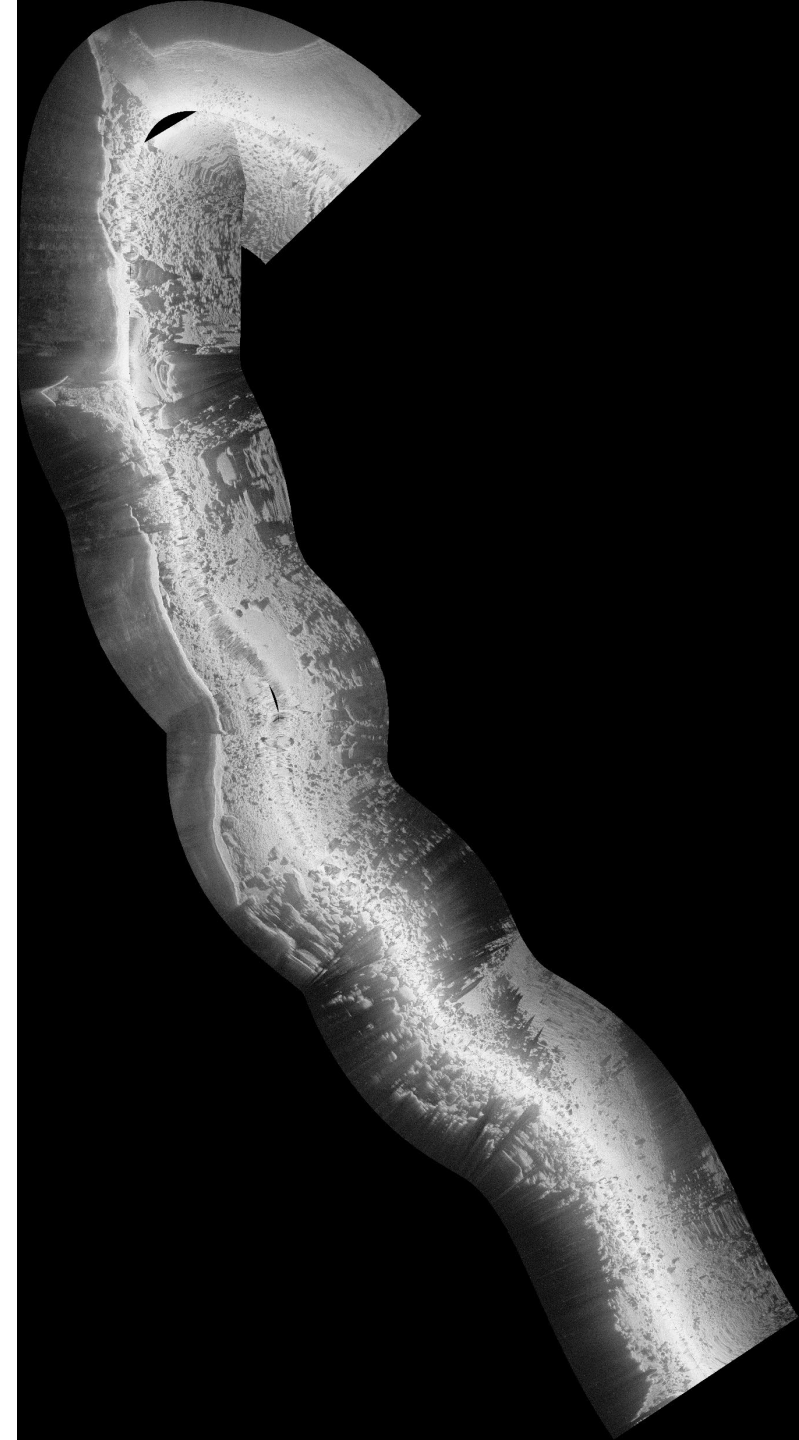- Surveyed Lees Ferry at the end of May

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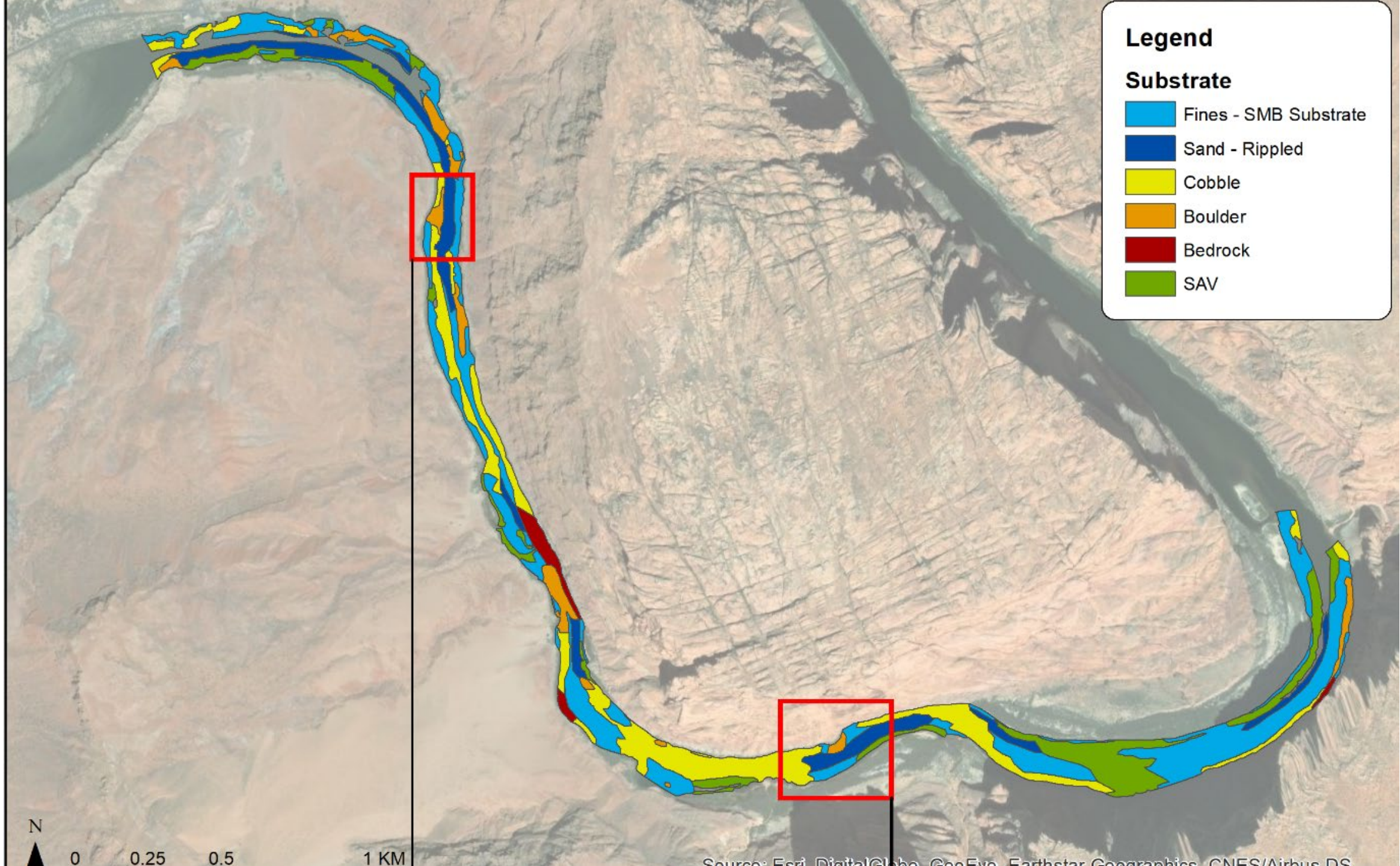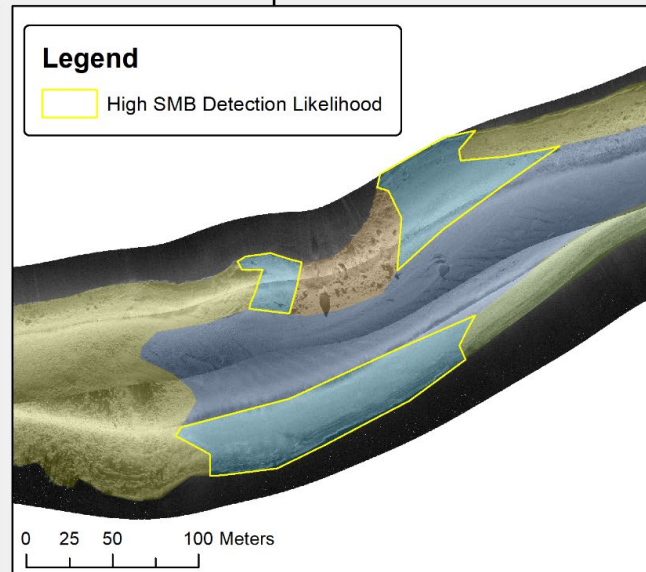- Substrate type around nest
- Notable shoreline features
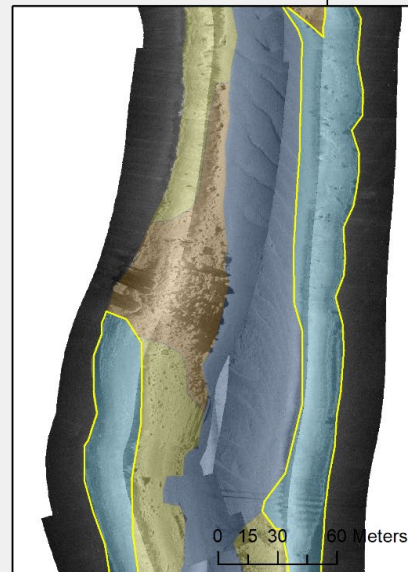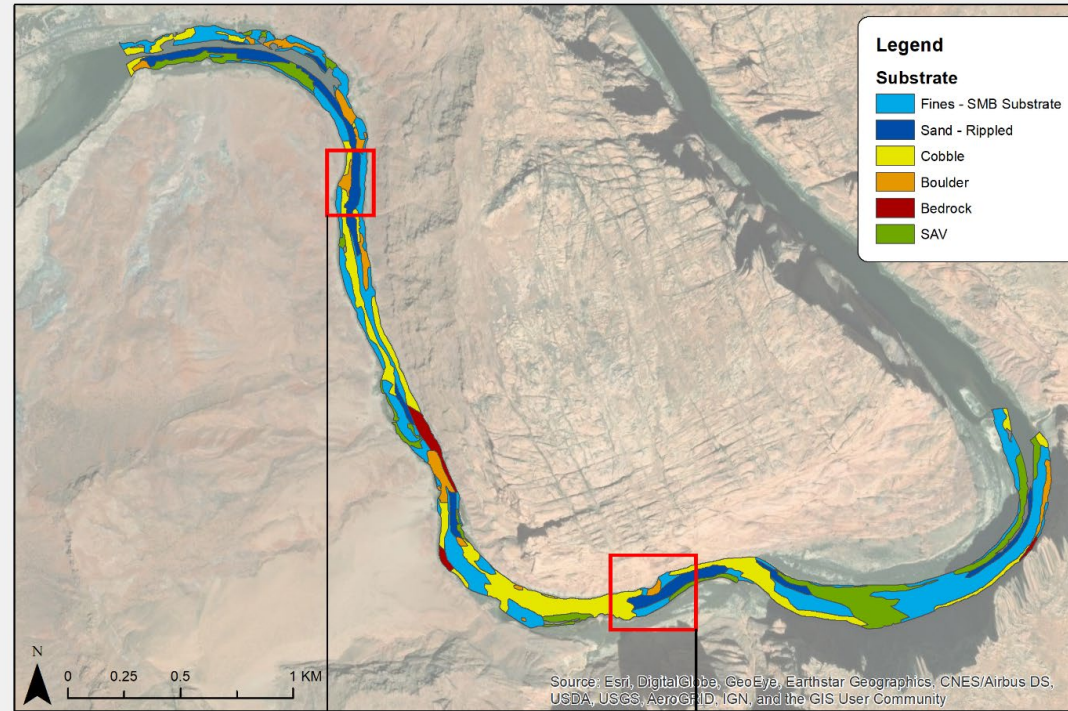
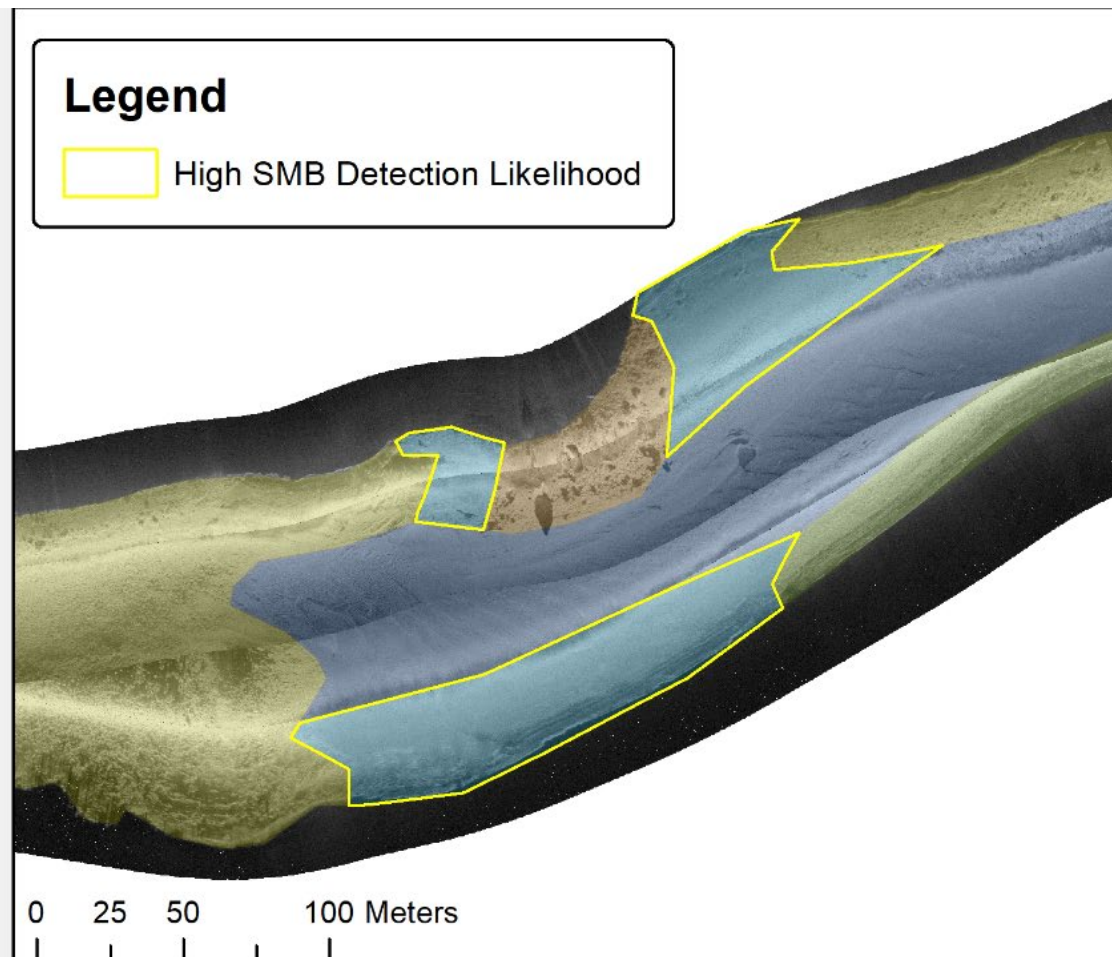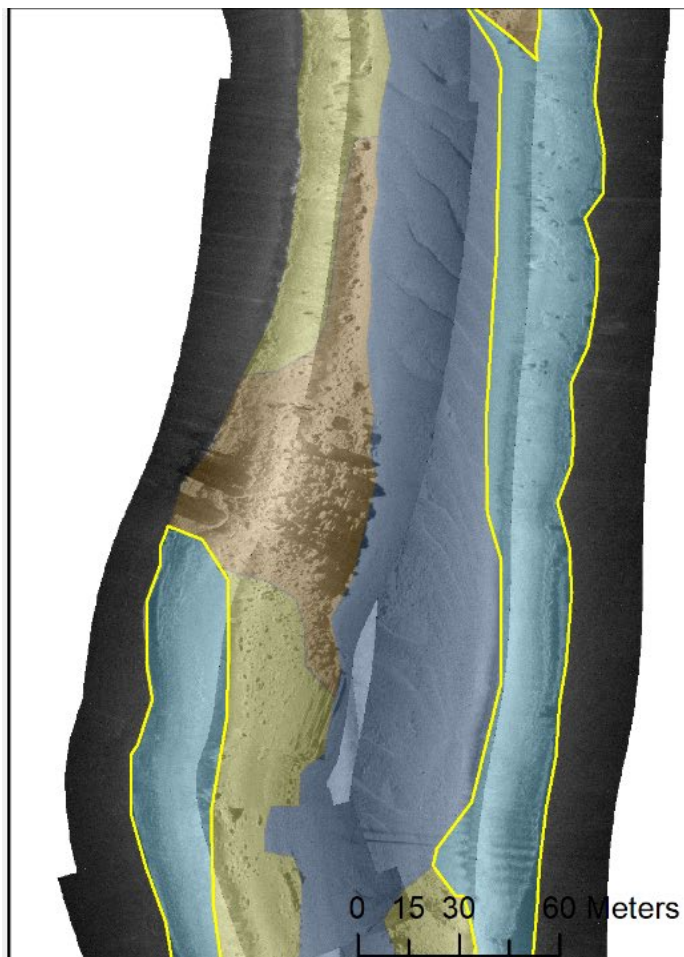Water temp
11-12°C
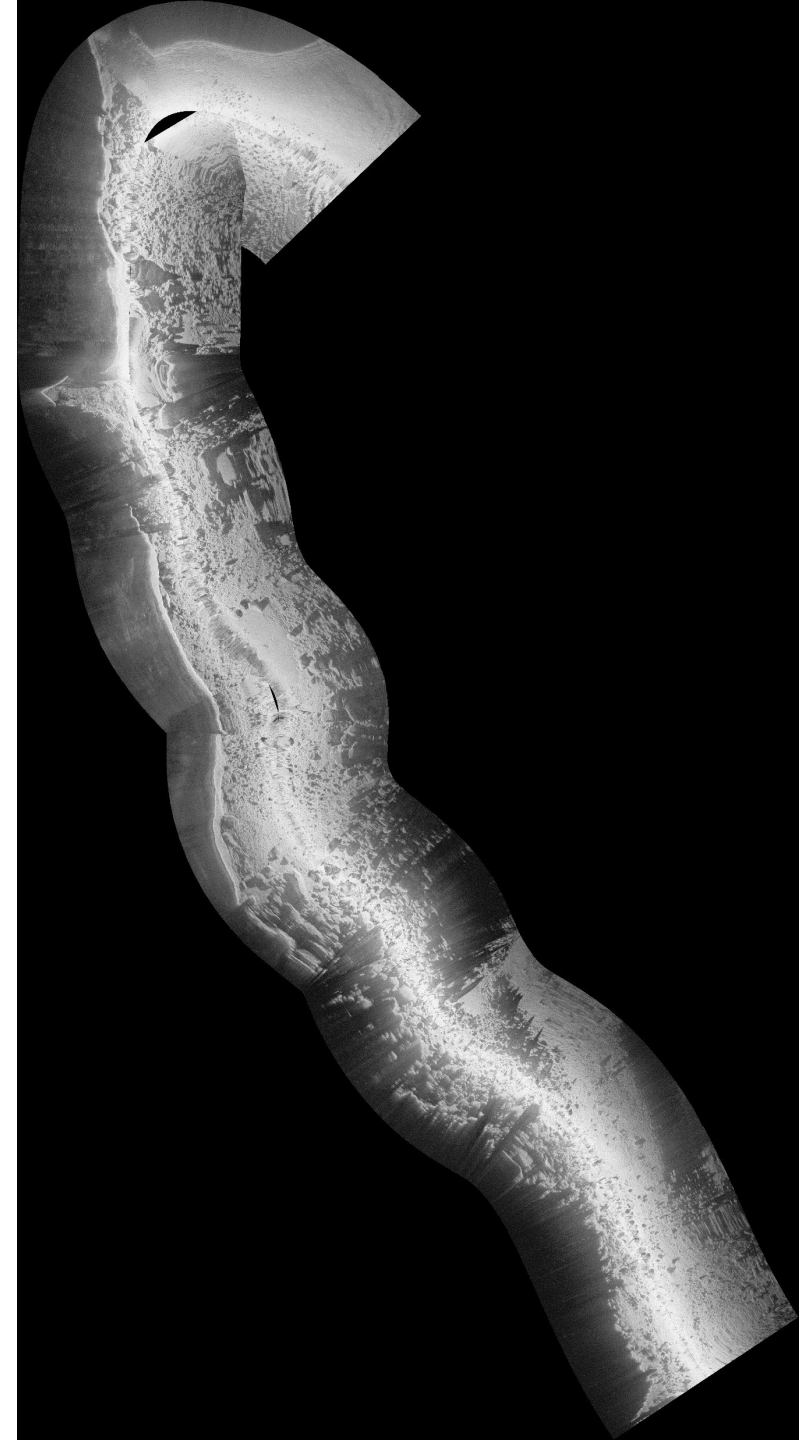
Side Scan Sonar nest detection

- No bass nests detected

- Reach-wide substrate mapping

- Identified appropriate spawning substrate and locations

- Identified two areas to focus future scanning

- NPS and Reclamation purchased new sonar systems

Legend

Substrate

- Fines - SMB Substrate
- Sand - Rippled
- Cobble
- Boulder
- Bedrock
- SAV

N

0   0.25   0.5   1 KM

Glen Canyon - SMB

Legend

Substrate
- Fines - SMB Substrate
- Sand - Rippled
- Cobble
- Boulder
- Bedrock
- SAV

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

N

0   0.25   0.5   1 KM

Legend
- High SMB Detection Likelihood

0 15 30   60 Meters

0   25   50   100 Meters

Legend

☐ High SMB Detection Likelihood

0 15 30   60 Meters

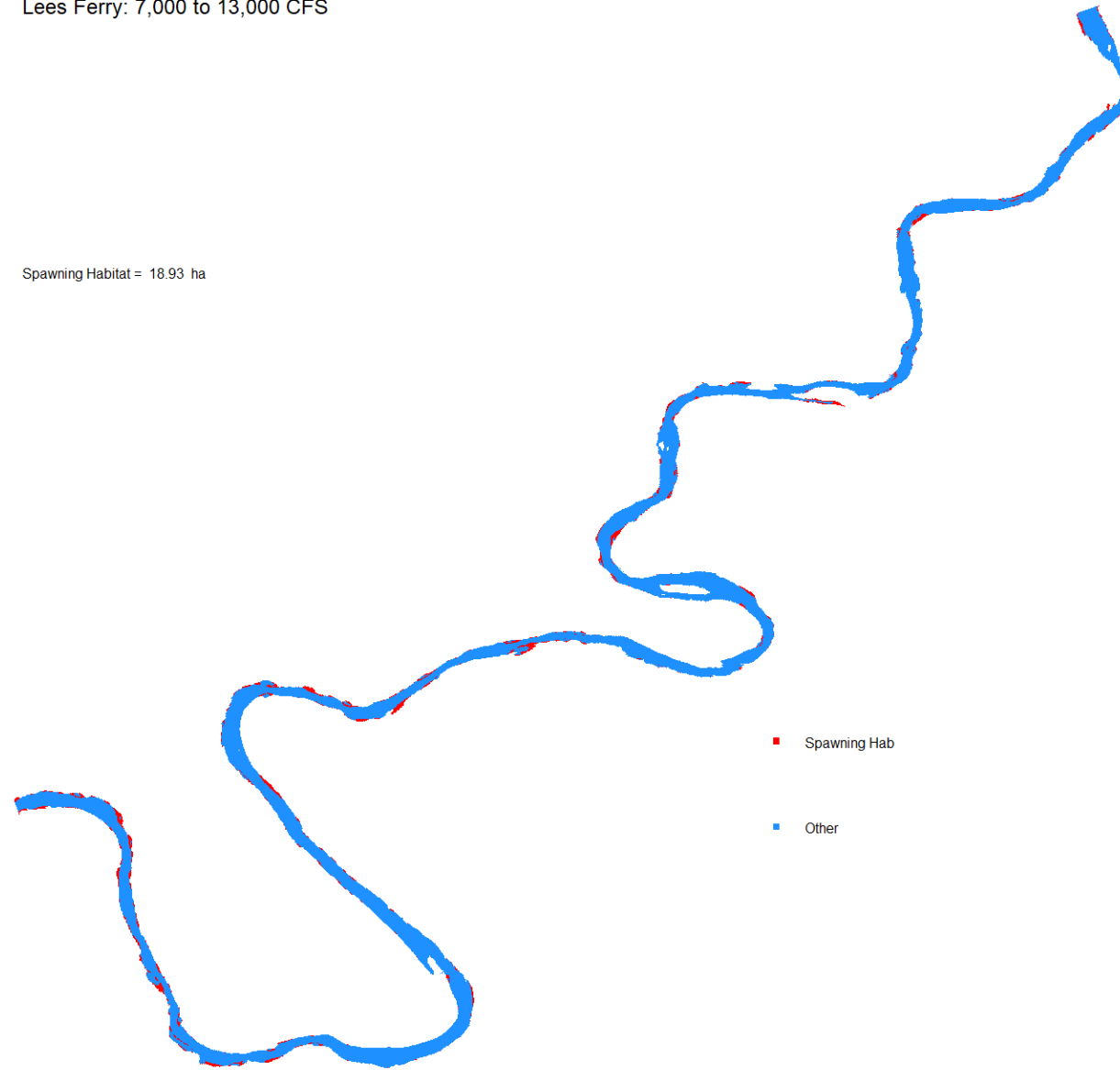0   25   50   100 Meters

Second nest detection trip August 6-8

- Sonar scanning, visual scanning, seining backwaters, snorkeling

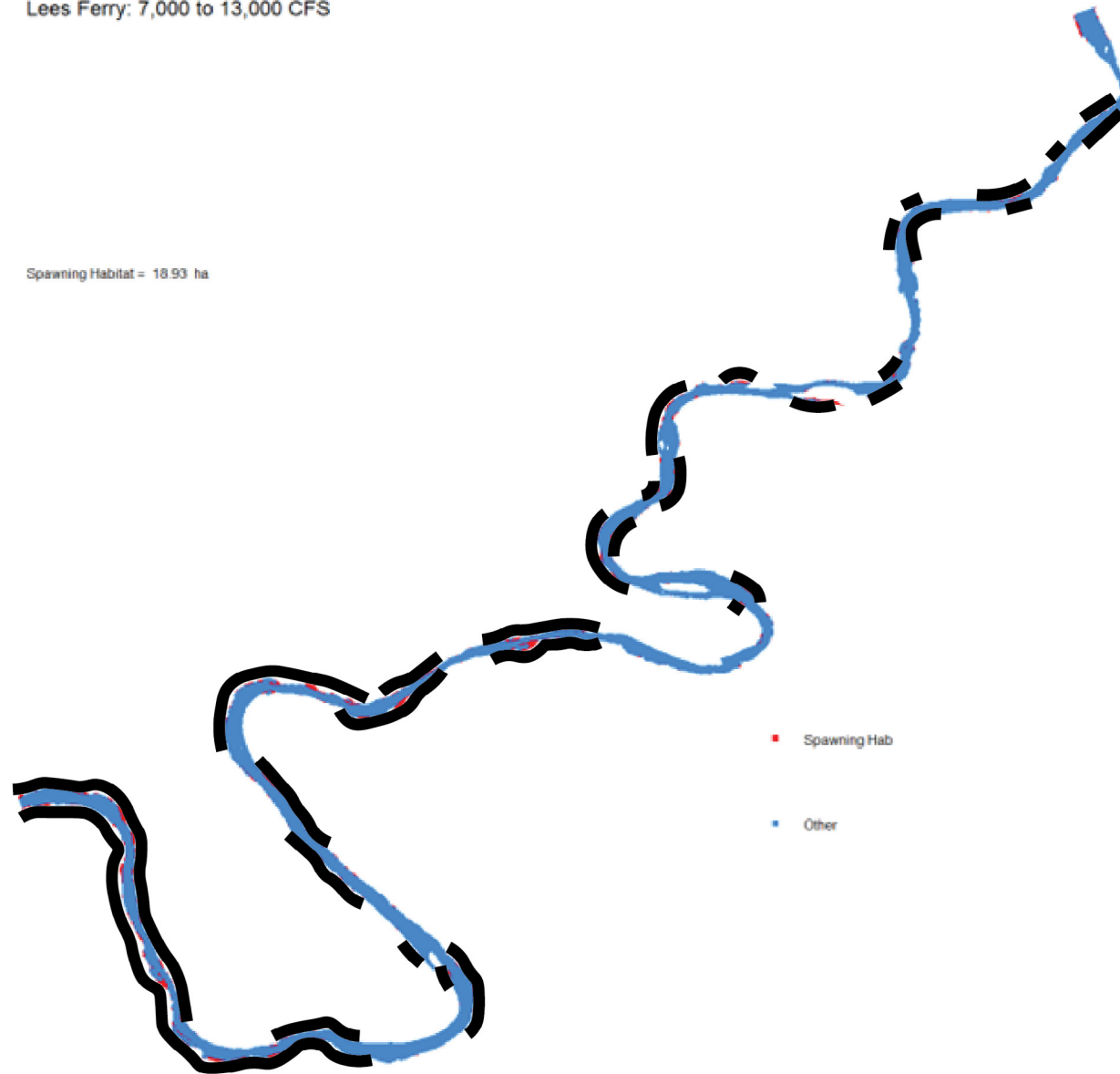- Focused on low-velocity hot spots and Cam's optimal sites

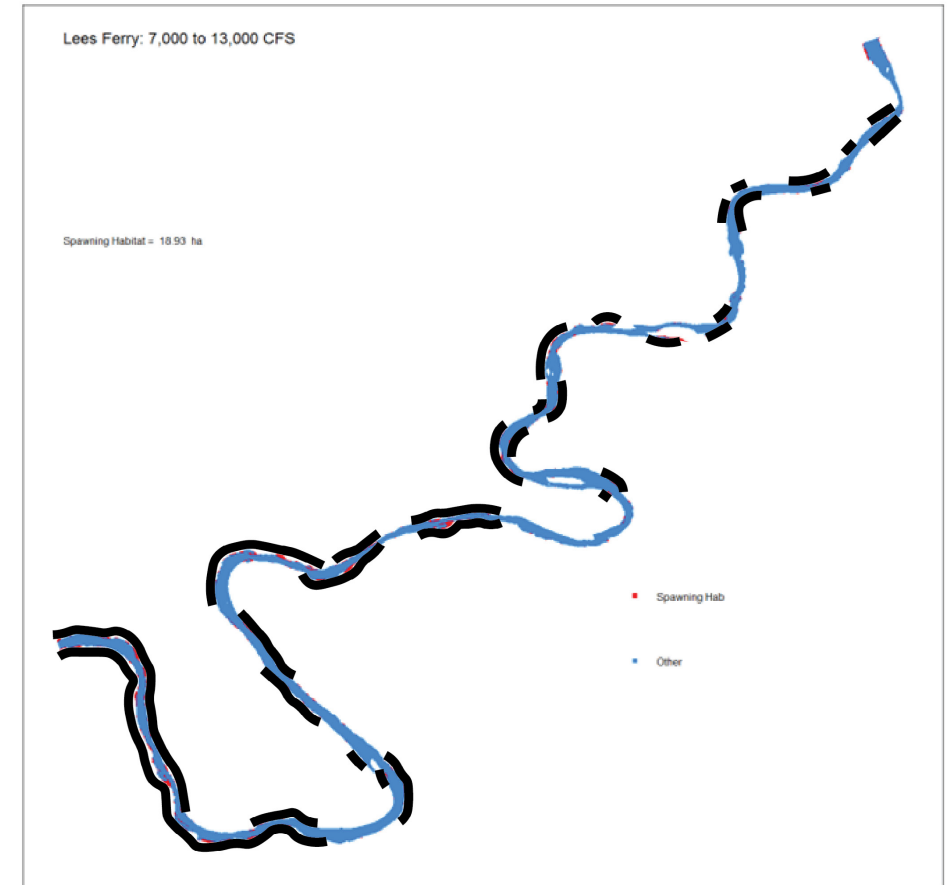Lees Ferry: 7,000 to 13,000 CFS

Spawning Habitat = 18.93 ha

Spawning Hab

Other

Lees Ferry: 7,000 to 13,000 CFS

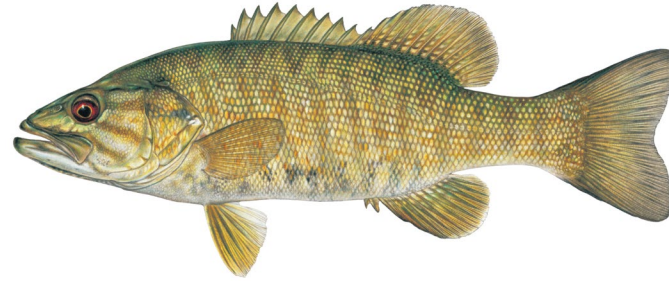Spawning Habitat = 18.93 ha

Spawning Hab

Other

Second nest detection trip August 6-8

- Water temperatures averaging 13.5C

- No bass detected by any method

- No bass nests detected by any method

- Low velocity spots frequently overgrown with algae

Lees Ferry: 7,000 to 13,000 CFS

Spawning Habitat = 18.93 ha

Spawning Hab

Other

2024 Bass Nest Monitoring

Artificial nests

Sonar detection of nests