Use of remote PIT-scanners to monitor razorback sucker in Lake Mohave

JAMIE WISENALL, BRIAN KESNER, WADE MASSURE, AND PAUL MARSH

MARSH & ASSOCIATES, LLC

Colorado River Aquatic Biologist Meeting
January 8 – 9, 2014
Laughlin, NV
Funding for this project has been provided by the Lower Colorado River Multi-Species Conservation Program.
Background

- One of the largest remaining populations of razorback sucker is in Lake Mohave
- Monitored for more than 30 years, augmented by stocking for 20
- Two types of monitoring:
  - Remote PIT-scanning
  - Routine Monitoring
Shore-based PIT-scanning units
Submersible PIT-scanning units
River Scanning

- M&A – 2 person field crew
- 5 fixed sampling stations
  - Sauna Cave, Boy Scout Canyon, Ringbolt Rapids, Black Bar, Gio’s Point
- Scanners deployed 1 week per month
  - Jan 2013 – Sept 2013
River Scanning

- 3,842 total scan hours
  - 3,298 h with submersible units
  - 544 h with shore-based units
- 12,900 total PIT tag contacts
- 1,680 unique razorback sucker
  - 1,669 repatriates
  - 8 wild
  - 3 of unknown origin
Liberty Scanning

- BOR – 1+ person field crew
- 1 successful Destron scanner deployment

- 39 total scan hours
- 97 total PIT tag contacts
- 15 unique razorback sucker
  - All repatriates
Basin Scanning

- BOR – 1+ person field crew
- 2 scanning locations
  - Yuma Cove and Tequila Cove
- Shore-based units continuously scanned
  - November 2012 – May 2013
Basin Scanning

- 7,412 total scan hours
  - 7,301 h with shore-based units
  - 111 h w Destron scanners
- 462,337 total PIT tag contacts
- 1,581 unique razorback sucker
  - 1,572 repatriates
  - 3 wild
  - 6 of unknown origin
Methods Comparison

- PIT-scanning
  - Sampling season from November 2012 – September 2013
  - 210 PIT-scanner deployments
  - 3,216 razorback sucker

- 2013 March Round-up
  - Netting efforts by USBR, FWS, NDOW, NPS, M&A
  - 89 trammel net nights
  - 214 razorback sucker
Post-stock Dispersal

- Little directional movement
- Fish released in River zone generally remained there
Post-stockling Dispersal

- Little directional movement
- Fish released in Basin zone generally remained there
Post-stocking Dispersal

- Fish released in Liberty zone generally moved up or downstream from stocking location
- Few fish released in Liberty were contacted in 2013
Post-stocking Dispersal

- Razorback sucker that were contacted by remote PIT-scanning in 2012 that were contacted again in 2013

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>River</td>
<td>1063</td>
<td>0</td>
</tr>
<tr>
<td>Liberty</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Basin</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1075</td>
<td>520</td>
</tr>
</tbody>
</table>

**River Basin Liberty**

- River: 1063 in 2012, 0 in 2013
- Liberty: 0 in 2012, 1 in 2013
- Basin: 12 in 2012, 0 in 2013

Total: 1075 in 2012, 520 in 2013
Population Estimates

• Based on 2012 and 2013 PIT-scanning
  - Tagged repatriate population – 3,588 (3,259 to 3,950)
  - River subpopulation – 2,188 (1,908 to 2,509)
  - Liberty subpopulation – 55 (17 to 100)
  - Basin subpopulation – 1,598 (1,390 to 1,836)

• Based on 2012 and 2013 March round-ups
  - Tagged repatriate population – 1,854 (941 to 3,782)
Discussion

- PIT-scanning is an effective method for monitoring razorback sucker in Lake Mohave

- Movement of razorback sucker between zones is minimal

- Population estimates based on round-up data may not accurately represent the entire reservoir population

- Remote PIT-scanning does not replace routine monitoring
Thanks to our partners for their support

- USBR
- NPS
- AZGFD
- USFWS
- NDOW
- Cross Country Consulting, LLC