An Overview of Humpback Chub Monitoring in the Little Colorado River

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Objectives

- **USFWS** - Obtain spring and fall closed mark-recapture population estimates of humpback chub in the Little Colorado River (0 to 13.6 km).

- **AGFD** - Obtain spring CPUEs of native fish in lower 1200 m of Little Colorado River.

- **GCMRC** - Investigate fish migration patterns with MUX antennae.
Methods in Little Colorado River

- USFWS
- Closed Mark Recapture
  - Mark trips: 10 days
  - Recapture trips: 10 days
  - ~2 weeks between trips
- AGFD
  - CPUE during 30 days in spring
Spring Little Colorado River Results
Spring Abundance & CPUE of Humpback Chub ≥ 150 mm
Spring Abundance & CPUE of Humpback Chub ≥ 200 mm
Catch per unit effort of spring bluehead suckers ($\geq 150$ mm)
Catch per unit effort of spring flannelmouth suckers (≥ 150 mm)
Fall Mark-Recapture Efforts
Fall Abundance of Humpback Chub ≥ 150 mm and ≥ 200 mm
Comparison of spring and fall adult humpback chub abundance ≥200 mm

![Comparison of spring and fall adult humpback chub abundance ≥200 mm](chart.png)
Age-0 humpback chub abundances – Chapman-Petersen, preliminary estimations using capture probability, and age-0 cropping
Correlation between spring runoff (sum of mean daily flow 1 Jan – 31 May) in LCR and fall age-0 CPUE

\[ n = 13, \ r = 0.755, \ P = 0.003 \]
Age-0 production significantly influences CPUEs of age 1 and subadult humpback chub.
Upstream Antenna Array 2011-12

Antenna 1
Antenna 2
Antenna 3
Antenna 4
Antenna 5

UPSTREAM
Number of unique fish detected, and percent of total detections

<table>
<thead>
<tr>
<th>Species</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing(^1)</td>
<td>388</td>
<td>6.7%</td>
</tr>
<tr>
<td>Black bullhead</td>
<td>1</td>
<td>0.0%</td>
</tr>
<tr>
<td>Bluehead sucker</td>
<td>1,372</td>
<td>23.8%</td>
</tr>
<tr>
<td>Channel catfish</td>
<td>6</td>
<td>0.1%</td>
</tr>
<tr>
<td>Common carp</td>
<td>1</td>
<td>0.0%</td>
</tr>
<tr>
<td>Flannelmouth sucker</td>
<td>846</td>
<td>14.7%</td>
</tr>
<tr>
<td>Humpback chub</td>
<td>3,146</td>
<td>54.5%</td>
</tr>
<tr>
<td>Unresolved/unidentified</td>
<td>8</td>
<td>0.1%</td>
</tr>
<tr>
<td>Total</td>
<td>5,768</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Number of unique fish detected per day 2012
Estimated size of humpback chub detected by PIT antenna array, 2012
Thank You