Lees Ferry fishery

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AZGFD Lees Ferry Monitoring

• Project Elements
  • Project H: Salmonid Research and Monitoring
  • Project I: Warmwater Native and Nonnative Fish Research and Monitoring
  • Project J: Socioeconomic Research in the Colorado River Ecosystem

• Project Objectives
  • Long term monitoring of trout population
  • Assess angler use of fishery
  • Detect warmwater invasive species

• Funding Amount and Source: GCDAMP $88,000, supplemented with AZGFD D-J Funds

• Cooperators: USGS, GCDAMP, NPS

• Products: Annual Reports, presentations, publications
LTEMP resource goals

6. *Recreational Experience.* Maintain and improve the quality of recreational experiences for the users of the Colorado River Ecosystem. Recreation includes, but is not limited to, flatwater and whitewater boating, river corridor camping, and angling in Glen Canyon.

9. *Rainbow Trout Fishery.* Achieve a healthy high-quality recreational rainbow trout fishery in GCNRA and reduce or eliminate downstream trout migration consistent with NPS fish management and ESA compliance.

10. *Nonnative Invasive Species.* Minimize or reduce the presence and expansion of aquatic nonnative invasive species.
Lees Ferry Fishery Management Plan

• Maintain a healthy population of Rainbow Trout at Lees Ferry to support recreational fishing
  • Rainbow Trout ≤ 6 inches compose 20-50% of the Lees Ferry population as determined by fall electrofishing
  • Rainbow Trout electrofishing CPUE exceeds 1 fish per minute

• Quality trout fishing experience
  • Angler catch rate ≥ 1 Rainbow Trout per hour

• Grow quality sized trout that are available to the angler
  • In 10 hr day, angler catches at least 10 Rainbow Trout ≥ 14 inches and one ≥ 20 inches
  • trout condition factor ≥ 1 during summer
Objectives

• Long term monitoring of trout population
• Assess angler use of fishery
• Detect warmwater invasive species
Methods

• Standardized electrofishing:
  • spring, summer, fall
  • Nonnative hunt (summer, fall)
• Angler surveys (creel):
  • 6 days/month
• Citizen science
• Game camera
# Electrofishing – catch 2021

<table>
<thead>
<tr>
<th>Species</th>
<th>Standard Monitoring</th>
<th>Nonnative hunt</th>
<th>total</th>
<th>% catch standard monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainbow Trout</td>
<td>794</td>
<td>0</td>
<td>794</td>
<td>68.7</td>
</tr>
<tr>
<td>Brown Trout</td>
<td>322</td>
<td>6</td>
<td>328</td>
<td>27.8</td>
</tr>
<tr>
<td>Flannelmouth Sucker</td>
<td>36</td>
<td>0</td>
<td>36</td>
<td>3.11</td>
</tr>
<tr>
<td>Common Carp</td>
<td>4</td>
<td>17</td>
<td>21</td>
<td>0.346</td>
</tr>
<tr>
<td>Green Sunfish</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Walleye</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>
Rainbow Trout CPUE

Mean CPUE (fish/min)

Year

Goal: Rainbow Trout CPUE > 1.0 fish/hr
Rainbow Trout CPUE by size class
Fall Rainbow Trout length frequency histograms 2016-2021
Rainbow Trout relative condition ($K_n$) by size class
Rainbow Trout relative condition (kn) and abundance (CPUE)
Location of Brown Trout captured 2021
Brown Trout length frequency histograms 2010-2021

ARIZONA GAME & FISH
Brown Trout relative condition (Kn)
Relative condition of Brown Trout and Rainbow Trout
Brown Trout relative condition and CPUE (fish/min) of Rainbow Trout (<152 mm TL)

https://flycurrents.blogspot.com/
2021 Angler surveys (creel)

• AGFD/GCMRC
• 143 days, 2033 anglers
  • Walk-in area (n=440)
  • Boat ramp (n=1593)

Preliminary data and results do not quote or cite
Relative angler use

Year

Relative number of anglers

- boat
- walk-in
## 2021 Demographics

<table>
<thead>
<tr>
<th></th>
<th>Number of anglers (%)</th>
<th>Mean age (median age)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Boat</td>
<td>1502 (87.8%)</td>
<td>209 (12.2%)</td>
</tr>
<tr>
<td>Walk-in</td>
<td>335 (75.1%)</td>
<td>111 (24.9%)</td>
</tr>
</tbody>
</table>
Age/Sex of anglers at Lees Ferry

Preliminary data and results do not quote or cite
Fish captured by anglers!

<table>
<thead>
<tr>
<th>Species</th>
<th>Number</th>
<th>Harvested</th>
<th>% harvested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainbow Trout</td>
<td>7,711</td>
<td>192</td>
<td>2.49</td>
</tr>
<tr>
<td>Brown Trout</td>
<td>273</td>
<td>67</td>
<td>24.5</td>
</tr>
<tr>
<td>Flannelmouth Sucker</td>
<td>12</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Channel Catfish</td>
<td>2</td>
<td>1</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Preliminary data and results do not quote or cite
Angler CPUE (fish/hr) for Rainbow Trout

Preliminary data and results do not quote or cite
Percent anglers that caught at least one fish:
- Boat anglers: 76 %
- Walk-in anglers: 34 %
# Angler surveys – Brown Trout

<table>
<thead>
<tr>
<th>Year</th>
<th>Anglers interviewed</th>
<th>Anglers</th>
<th>Caught</th>
<th>Harvested</th>
<th>% Harvested</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>1650</td>
<td>10</td>
<td>14</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>2015*</td>
<td>1999</td>
<td>20</td>
<td>23</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>2016*</td>
<td>1214</td>
<td>5</td>
<td>6+</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>2017</td>
<td>1254</td>
<td>26</td>
<td>30</td>
<td>8</td>
<td>27</td>
</tr>
<tr>
<td>2018</td>
<td>1325</td>
<td>47</td>
<td>96</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>2019</td>
<td>1250</td>
<td>95</td>
<td>165</td>
<td>37</td>
<td>22</td>
</tr>
<tr>
<td>2020</td>
<td>1509</td>
<td>114</td>
<td>301</td>
<td>34</td>
<td>11</td>
</tr>
<tr>
<td>2021*</td>
<td>2033</td>
<td>134</td>
<td>273</td>
<td>67</td>
<td>24</td>
</tr>
</tbody>
</table>

* Extra days of creel
+likely underreported due to bad publicity on social media in relation to NPS mandate for scientists to euthanize any Brown Trout captured during monitoring efforts

Preliminary data and results do not quote or cite
Citizen science project

- 6 private anglers participated
- 127 unique trips
- 1,106 Rainbow Trout captured and measured
  - Mean TL 308 mm [302, 307]
  - Mean TL 12.0 inches [11.9, 12.1]
- 25 Brown Trout captured and measured
  - Mean TL 392 mm [368, 417]
  - Mean TL 15.4 inches [14.4, 16.4]
Citizen Science 2021

Preliminary data and results do not quote or cite
Summary

- Rainbow Trout relative abundance is the lowest ever recorded
  - Recruitment has been declining since 2017
- Brown Trout relative abundance is similar to last year (increasing recruitment?)
- A few warmwater non-natives present
- Lees Ferry Rainbow Trout fishery is not meeting AZGFD management goals:
  - CPUE electrofishing was less than 1 fish/min
  - Angler catch rates < 1 fish/hour
  - Anglers did not catch 10 Rainbow Trout ≥ 14 inches and one ≥ 20 inches
  - Rainbow Trout condition (kn) was ≥ 1 in summer 😊
Acknowledgements

- Ceiba: J. Swindlehurst
- Volunteer: M. Morton
- AZGFD: R. Chadwick, A. Feddern, S. Pierce,
- S. Harding
Incentivized Harvest

• Began November 2020

https://thumbs.dreamstime.com/b/dollar-fish-22133555.jpg

Incentivized Harvest

• Creel questions
  1. Were you aware of the incentivized harvest program when planning your trip?
  2. Were you intending to participate in the incentivized harvest program when you started your trip?

Preliminary data and results do not quote or cite
Incentivized Harvest

<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
<th>Award amount</th>
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<tbody>
<tr>
<td>11 Nov 2020</td>
<td>Implementation</td>
<td>$25/fish</td>
</tr>
<tr>
<td>April-May 2021</td>
<td>Increase award amounts</td>
<td>$33/fish, $50/3 fish, $50/PIT tagged fish, $300/sonic tagged fish; $500/most, $250/best video</td>
</tr>
<tr>
<td>Aug 2021</td>
<td>Bonus</td>
<td>$50 bonus for 3 fish</td>
</tr>
<tr>
<td>Sept.-Dec 2021</td>
<td>Bonus</td>
<td>$50 bonus for 3 fish, $300 for PIT tagged fish</td>
</tr>
<tr>
<td>Dec. 2021</td>
<td>Bonus</td>
<td>$50 bonus for 3 fish, $300 for PIT/sonic tagged fish; $500 for most, $500 for largest</td>
</tr>
</tbody>
</table>

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