Razorback Sucker Rearing Strategies
WBNFH
### Past Razorback Sucker Production at WBNFH

<table>
<thead>
<tr>
<th>Production Year</th>
<th>Number of RBS Stocked</th>
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<tbody>
<tr>
<td>2010</td>
<td>7317</td>
</tr>
<tr>
<td>2011</td>
<td>7151</td>
</tr>
<tr>
<td>2012</td>
<td>11686</td>
</tr>
<tr>
<td>2013</td>
<td>17857</td>
</tr>
<tr>
<td>2014</td>
<td>12769</td>
</tr>
<tr>
<td>2015</td>
<td>16226</td>
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</tbody>
</table>
How have we increased production?

- Improved water quality
- Improved feeding techniques
- Decreased handling
- Grading
- Improved early rearing techniques and facilities = increased survival percentage
- LHO’s in all RBS rearing systems
- Increased water availability
Meeting the needs of an evolving MSCP

- Want to address the needs of MSCP
- Where are MSCP’s needs and how can we achieve them?
- Need to balance quality and quantity
- Reduce the number of Razorbacks produced
- Increase size (TL) of fish produced
- Bonytail Chub back to WB?
How do we plan to improve?

Much experimentation

– Bonytail rearing @ WB?
– Keep improving water quality
– Obtaining better feed conversions
– Increase rearing capacity
– Grow Bigger Fish!
Flow Conditioning

• Using concepts from Lake Mead Hatchery flow conditioning work, WBNFH is going to apply these principles experimentally to our culture techniques during different rearing stages.

• Decreased rearing volume=Increased velocity=less rearing capacity
**Density/Age Experimentation**

- Most densely populated raceway grew the most

<table>
<thead>
<tr>
<th>Rearing Unit</th>
<th>Date</th>
<th>Number of fish</th>
<th>Yearclass</th>
<th>Size(mm)</th>
<th>Density</th>
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</thead>
<tbody>
<tr>
<td>C1</td>
<td>4-1-14</td>
<td>3600</td>
<td>13</td>
<td>208</td>
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<td>11</td>
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<td>.5</td>
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<td>999</td>
<td>11</td>
<td>363</td>
<td>.59</td>
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</tbody>
</table>
• Pond Fish grow considerably faster than hatchery reared fish
• Experimentation with young, large fish at Achii Hanyo
Long Time Holding

• Does work!
• 09’ Razorback on station as a pet, that fish is at least 500mm
• Big commitment
• Increased rearing costs
• Selectivity
Limitations

• Heterogeneity
• Genetics
• Rearing space
• Decreased Bonytail production
• Running pumps to create “high flow” environment
• No protocol of how to deal with surplus fish
• Rearing system limitations
Learning From Past Failed Experiments

Growth studies
Extended hatchery rearing time. Maybe extend rearing time for young large fish?
Reduced densities
Water heating - No significant increase in growth for increased production cost
Further Improvements

• Suggestions/ input for improvements to WB’s production contribution to MSCP?
• Suggestions on techniques that could be employed at WB to increase size faster?
Conclusion

• We can grow bigger fish for MSCP
• Will take time to develop and hone
• May have to get rid of fish that are undersized early.
• Effect on genetic diversity?
• Keep up with efficient communication between LCRMSCP and WBNFH to meet changing needs
• Final note: WBNFH has ~250 excess RBS @ 360mm