Successes and Failures of Renovating Two Ponds at Imperial National Wildlife Refuge

Tammy Knecht

Andrea Montony – USBR/MSCP
Mitch Thorson - USFWS
Outline

- Background
- Failures of Pond 1
- Success of Pond 3
- Future recommendations
1990s USFWS managed DU2 Imperial Ponds for waterfowl and razorback sucker (RBS)

2007 MSCP reconstructed 6 ponds

Advisory team formed
- USFWS: Fisheries and Refuge
- USBR/MSCP
- Marsh and Associates
- USGS

2007 nonnative carp and mosquitofish

2008 RBS and Bonytail (BTC) stocked

2008 redear sunfish, bluegill and warmouth
Rotenone Facts

- Rotenone organic compound derived from pea family
- Works by disrupting cell function
- Affect gill breathing organisms
- Rotenone quickly breaks down naturally to harmless organic compounds
- Natural half-life is approximately 2 weeks
Compliance

- MSCP covered
  - NEPA/Environmental Assessment
  - Section 7
- Pesticide Use Proposal completed by USFWS
Pond was dewatered
  • Can it be done?

Backpack Sprayers used

Slow drip bottles system for upwellings
1st Application April 29, 2009
2nd Application July 9, 2009

4.0ppm of rotenone used for both applications
1st Treatment Pond 1

Problems

- Upwellings decreased effectiveness of Rotenone
  - Gave fish areas to escape from Rotenone
  - Constant water supply
Large amount of vegetation on 2nd application
Unsuccessful kill
Pond was not able to be completely dewatered
Numerous upwellings to deal with
2nd Treatment necessary
1st Application February 17, 2010
2nd Application April 21, 2010
0.5ppm of rotenone used for both applications
Increase of 70 AF
Application method different
Application Method for 2nd Treatment

Spray perimeter

Venturi tube used for middle of pond
Results of 2nd Treatment
Pond 1

- Unsuccessful kill
- Mosquitofish still present
- Thick vegetation areas inaccessible
- Rotenone concentration too low
1\textsuperscript{st} Application February 17, 2010 4.0ppm
2\textsuperscript{nd} Application April 21, 2010 0.5ppm
Application method same as pond 1, 2\textsuperscript{nd} treatment.
Results of 1st Treatment
Pond 3
## Amount of Rotenone used
### Pond 1 & 3

<table>
<thead>
<tr>
<th>Pond</th>
<th>Application Date</th>
<th>Acre Feet</th>
<th>Gallons of Rotenone</th>
<th>ppm</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>29-Apr-2009</td>
<td>2*</td>
<td>4</td>
<td>4.0</td>
</tr>
<tr>
<td>1</td>
<td>9-Jul-2009</td>
<td>4*</td>
<td>7</td>
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<td>17-Feb-2010</td>
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<tr>
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<td>21-Apr-2010</td>
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<tr>
<td>3</td>
<td>17-Feb-2010</td>
<td>103</td>
<td>137</td>
<td>4.0</td>
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<tr>
<td>3</td>
<td>21-Apr-2010</td>
<td>103</td>
<td>17</td>
<td>0.5</td>
</tr>
</tbody>
</table>

* Does not include flow of upwellings
Future Plans

- Enhance water quality
- Marsh and Associates will monitor RBS and BTC recently released into pond 1
  - Came from harvest of Pond 2, 4, and 6
Recommendations for future Treatments

- Cut weeds back
- Use a higher concentration for mosquitofish
- Treat pond at full pool
  - Dewatering a pond is expensive and ineffective
Acknowledgements

- USBR/MSCP Boulder City, NV
- Marsh and Associates
- Imperial NWR
- Gordon Mueller
- Chuck Minckley
Questions?