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

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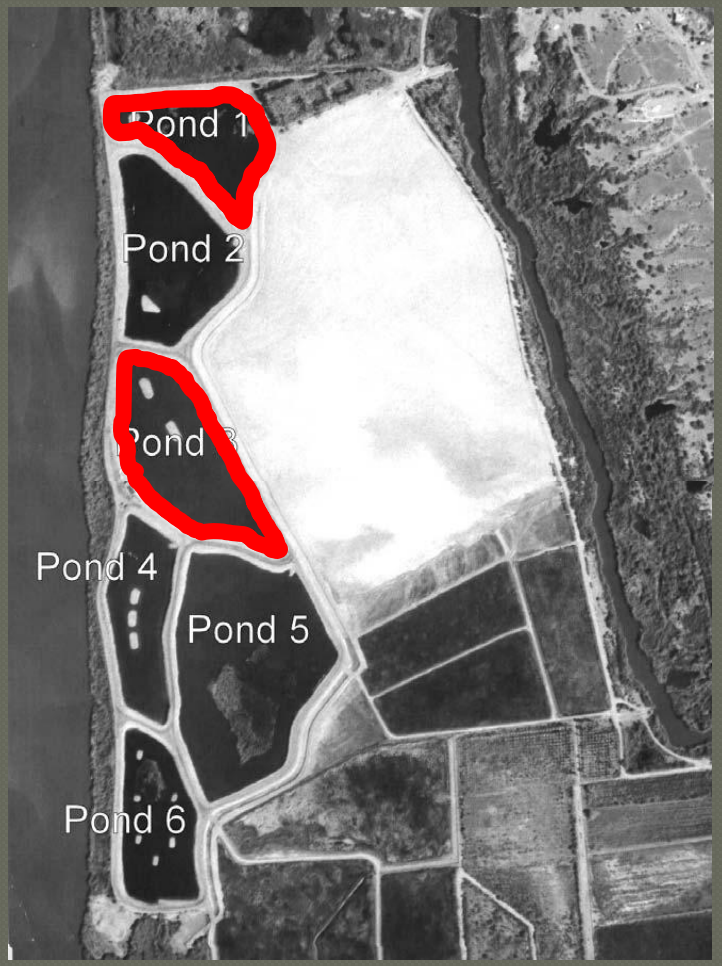
Outline

- Background
- Failures of Pond 1
- Success of Pond 3
- Future recommendations

Background

- Location



Background

- 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

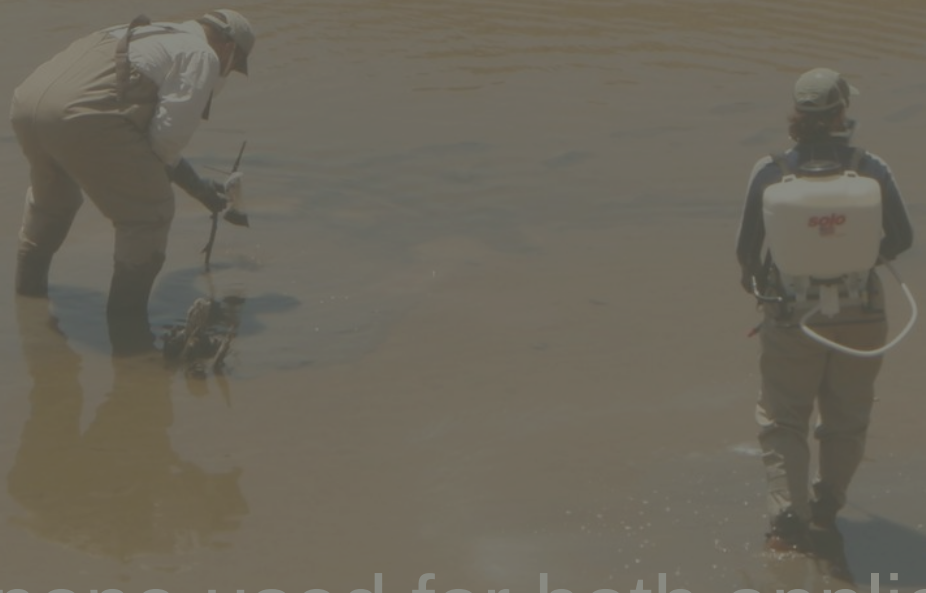
- MSCP covered
  - NEPA/Environmental Assessment
  - Section 7
- Pesticide Use Proposal completed by USFWS

Application Method of 1st Treatment, Pond 1

- Pond was dewatered
  - Can it be done?
- Backpack Sprayers used
- Slow drip bottles system for upwellings

1st Treatment Pond 1

- 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

1st Treatment Pond 1 Problems

- Large amount of vegetation on 2nd application

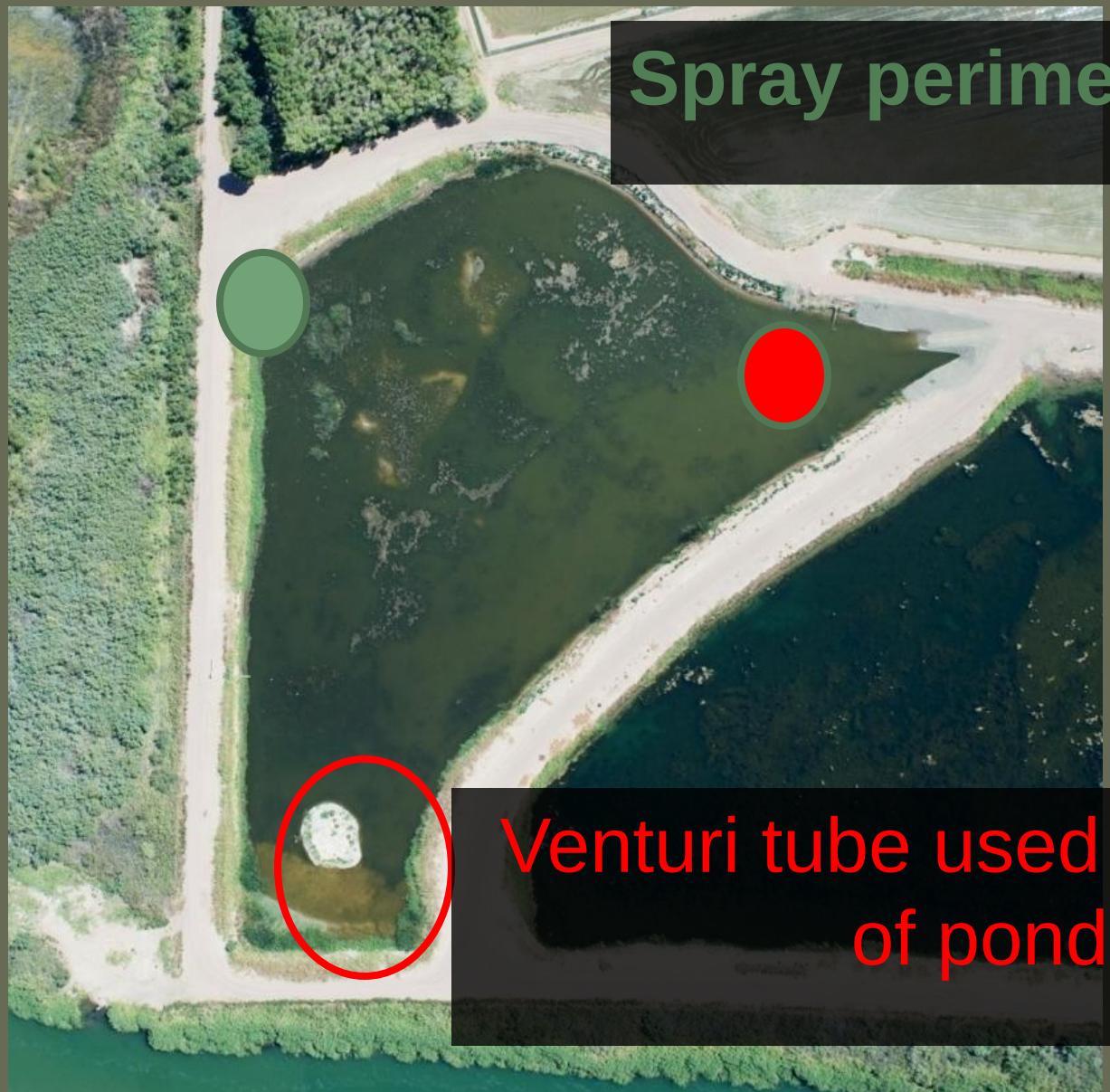
Results of 1st Treatment Pond 1

- Unsuccessful kill
- Pond was not able to be completely dewatered
- Numerous upwellings to deal with
- 2nd Treatment necessary

2nd Treatment Pond 1

- 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



Results of 2nd Treatment Pond 1

- Unsuccessful kill
- Mosquitofish still present
- Thick vegetation areas inaccessible
- Rotenone concentration to low

Pond 3

- 1st Application February 17, 2010 4.0ppm
- 2nd Application April 21, 2010 0.5ppm
- Application method same as pond 1, 2nd treatment.

Results of 1st Treatment Pond 3

Amount of Rotenone used Pond 1 & 3

Pond	Application Date	Acre Feet	Gallons of Rotenone	ppm
1	29-Apr-2009	2*	4	4.0
1	9-Jul-2009	4*	7	4.0
1	17-Feb-2010	74	99	4.0
1	21-Apr-2010	74	12	0.5
3	17-Feb-2010	103	137	4.0
3	21-Apr-2010	103	17	0.5

* 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
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- Imperial NWR
- Gordon Mueller
- Chuck Minckley

Questions?