



Lower Colorado River Multi Species Conservation Program

Balancing Resource, Use and Conservation

Beal Lake Conservation Area

Summary of Activities
2001 - 2013



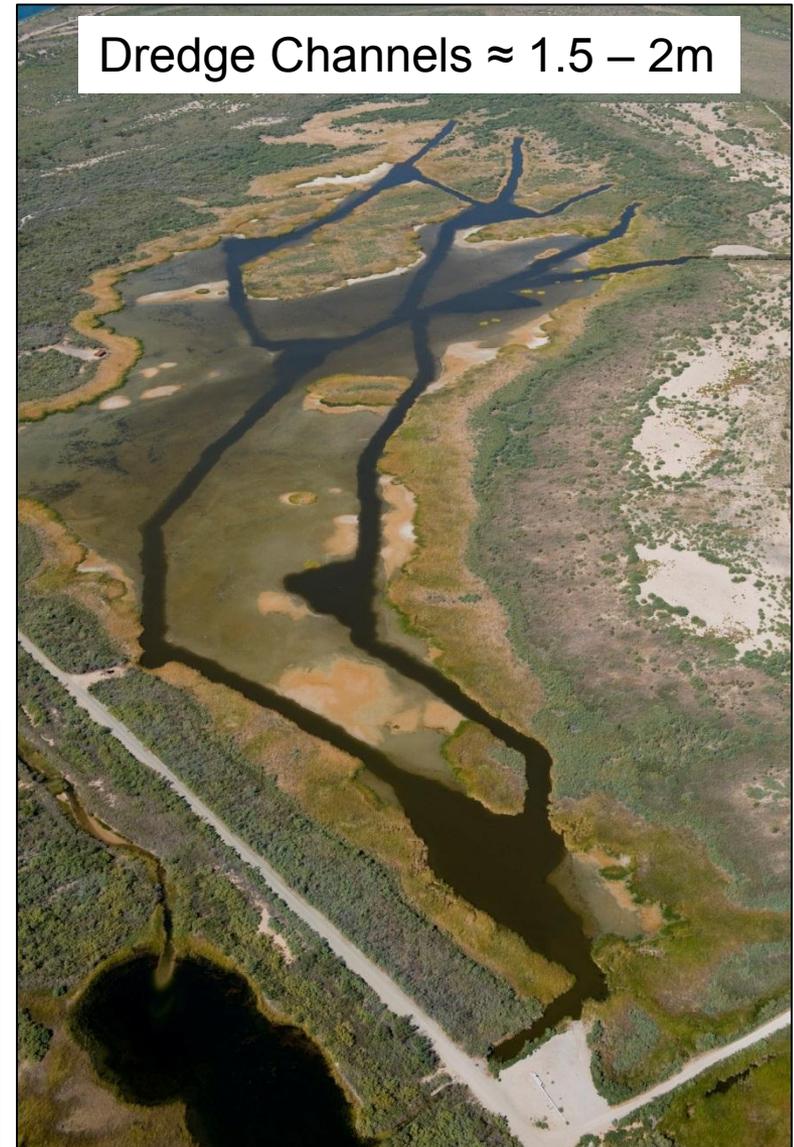


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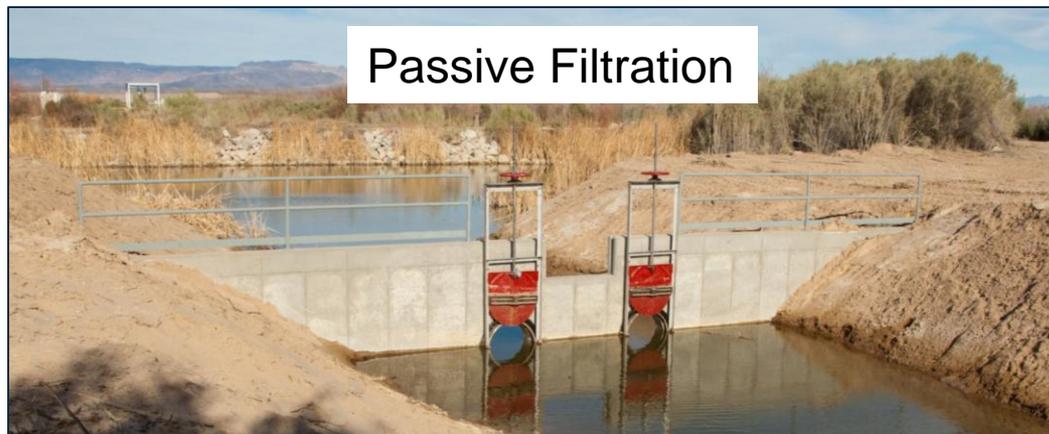
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215 acres



Dredge Channels \approx 1.5 – 2m



Passive Filtration



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2001 - 2005

2001 – Dredging

2002 – Renovation and Stocking

- 10,000 razorbacks
- Initiated WQ and Fish Monitoring

2003 – Waning interest due to poor survival and non-natives

2004 – Minimal activities

2005 – Incorporated into MSCP

- Installation of wedge-wire screen





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2006 - 2009

2006 – Renovation

- Non-natives were undetectable
- Stocked with razorbacks and bonytail
- Observed YOY bass in June

2007 – Used as grow out for large razorbacks

- Monitoring Continues
- Large numbers of non-natives

2008 – Stocked with more than 6,000 razorbacks (some with PIT tags)

2009 – Monitoring indicates poor survival of stocked razorbacks





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2010 - 2013

2010 – Stocking and Monitoring

- Stocked 610 razorbacks in February
 - All fish were PIT tagged
 - Continuous monitoring with remote sensors
- Troll 9500's installed for water quality
- Stocked 400 razorbacks in November



2011 – Monitoring Continues

- Large numbers of non-natives

2012 – Population estimates for all species

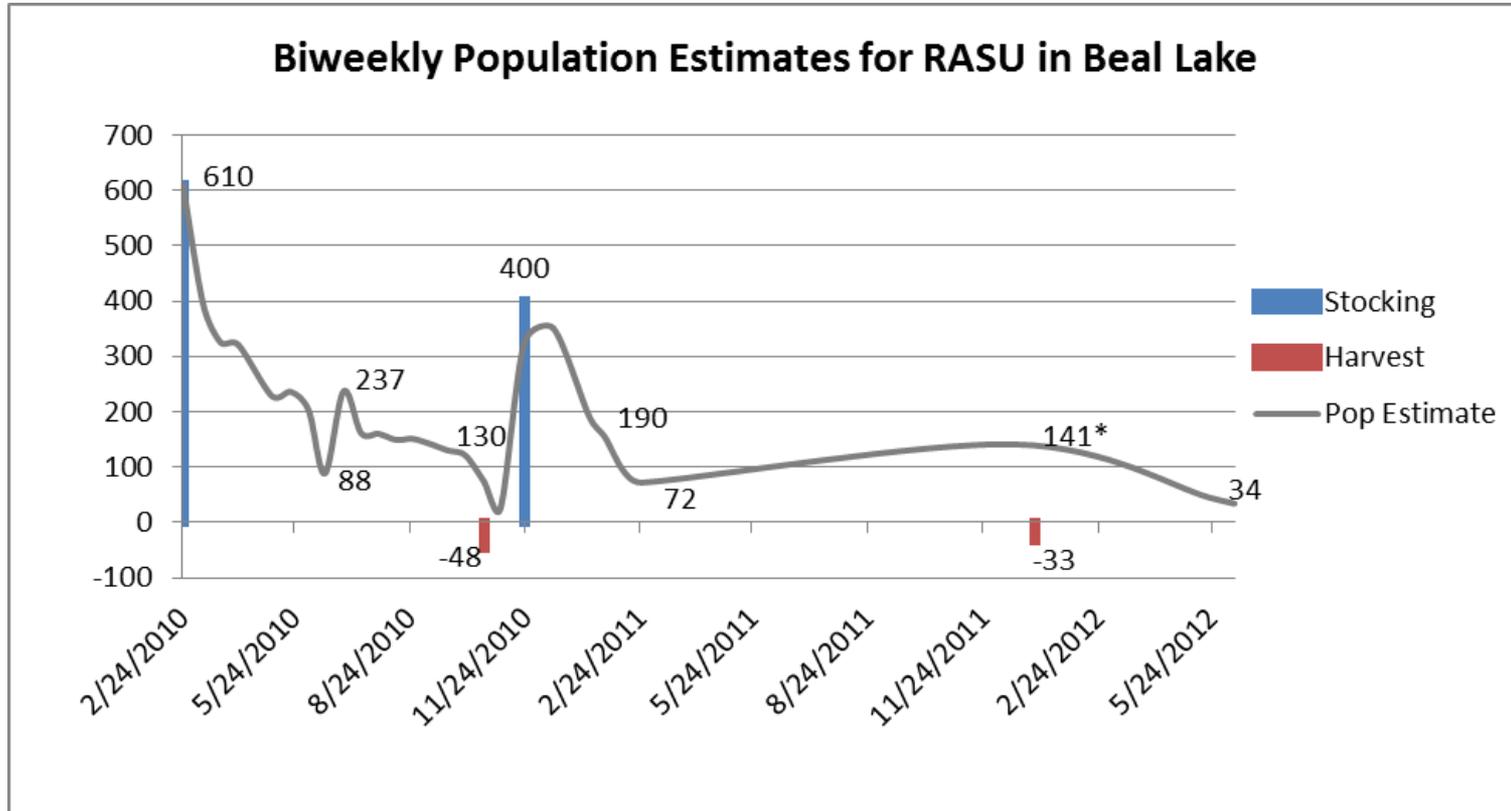
2013 – Golden Algae





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*Estimate derived from netting and includes non-PIT tagged RASU

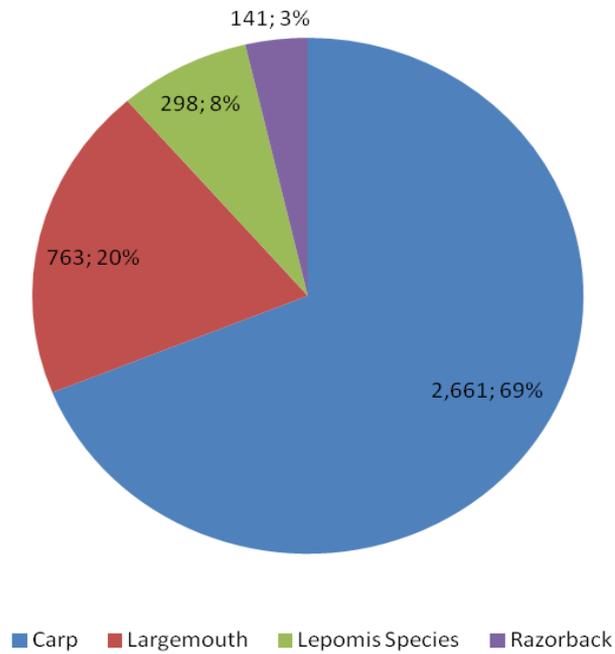


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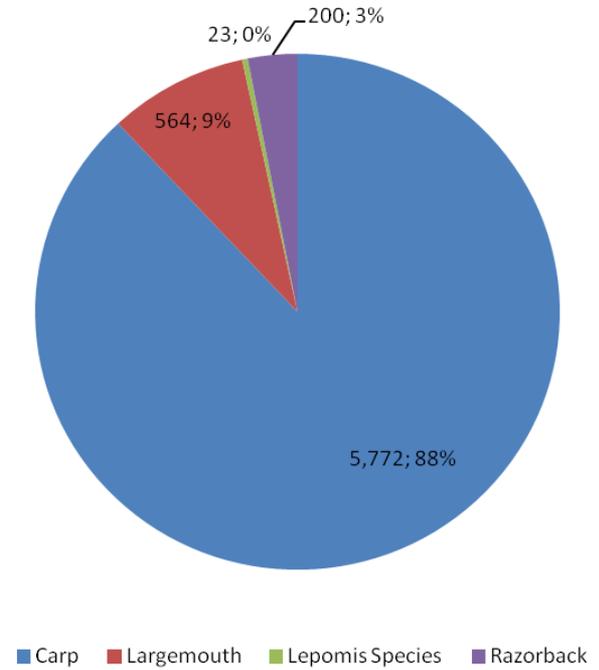
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Beal Lake Fish Community

**Estimated Species Abundance
within Beal Lake**



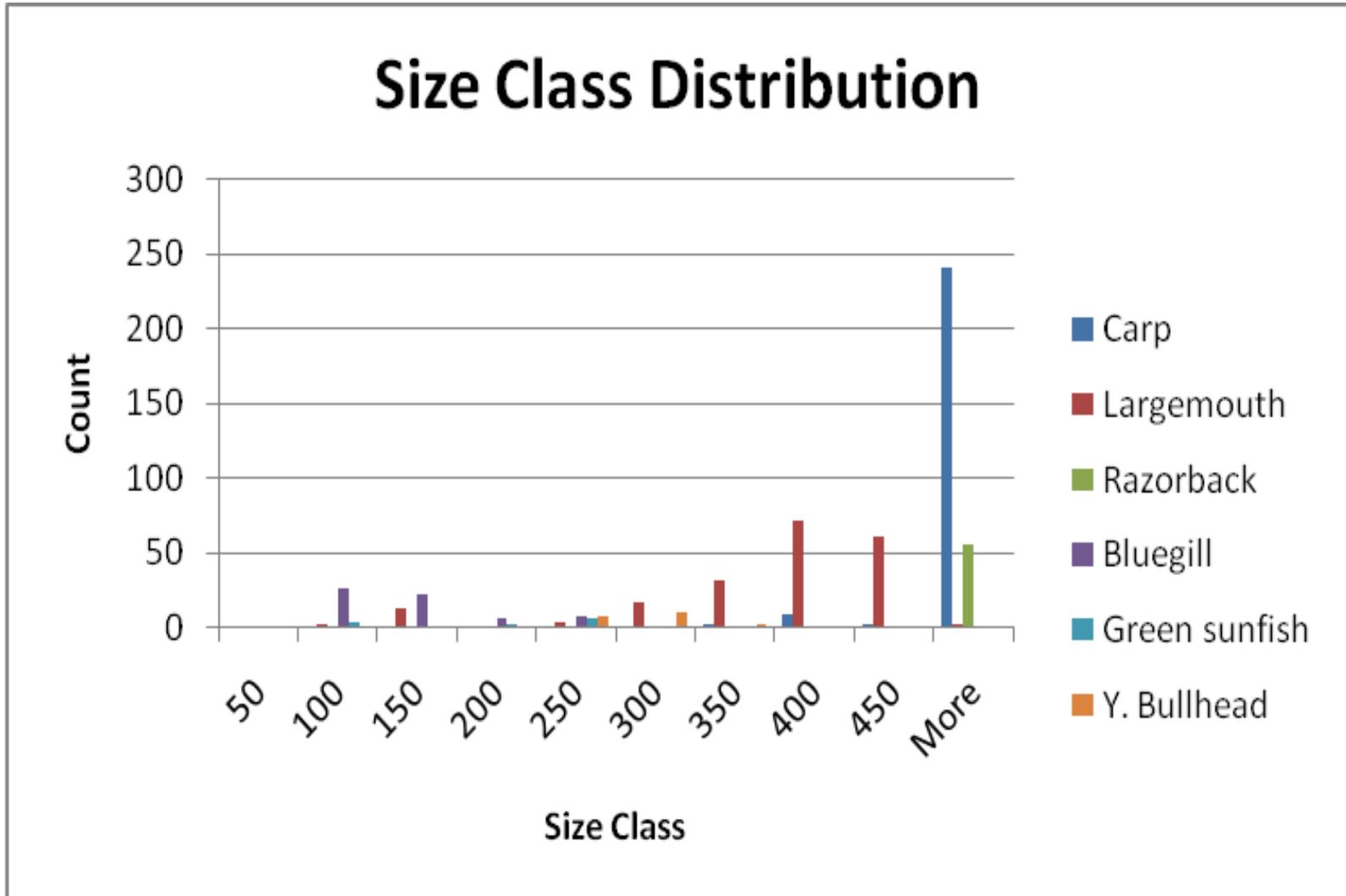
**Estimated Species Biomass (kg)
within Beal Lake**





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Not all carp were measured, this represents 53% of total carp



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Water Quality Monitoring

Profiles at 7 locations from 2004-2009

- Inconsistent and infrequent

Continuous deployment of Troll 9500 in 2010

- Four locations \approx 1 meter deep
- Two records/day (sunrise and sunset)
- Replaced probes 1-2 months

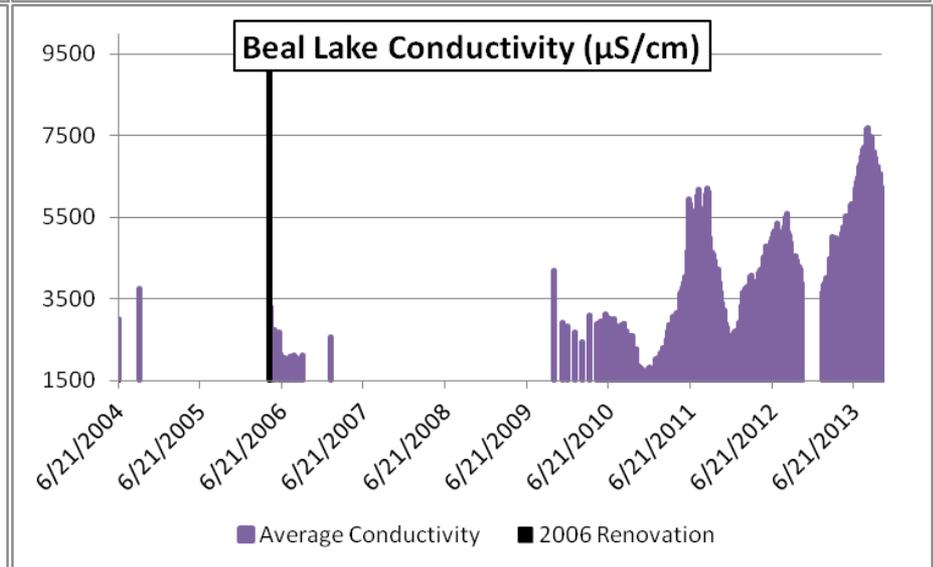
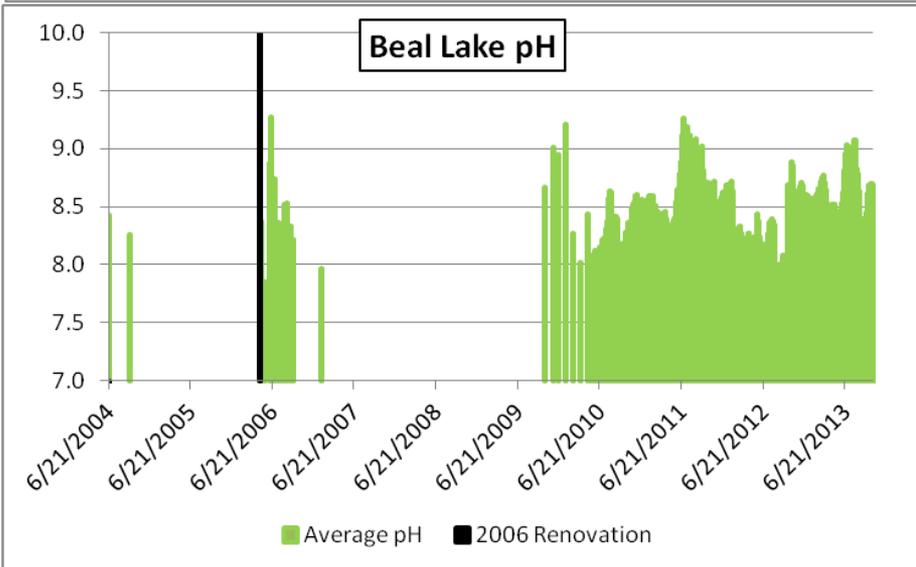
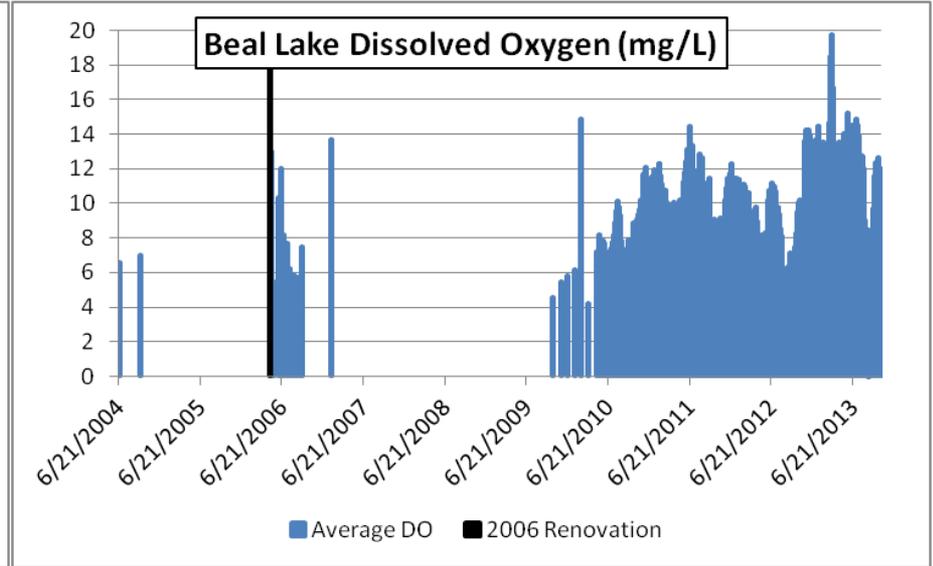
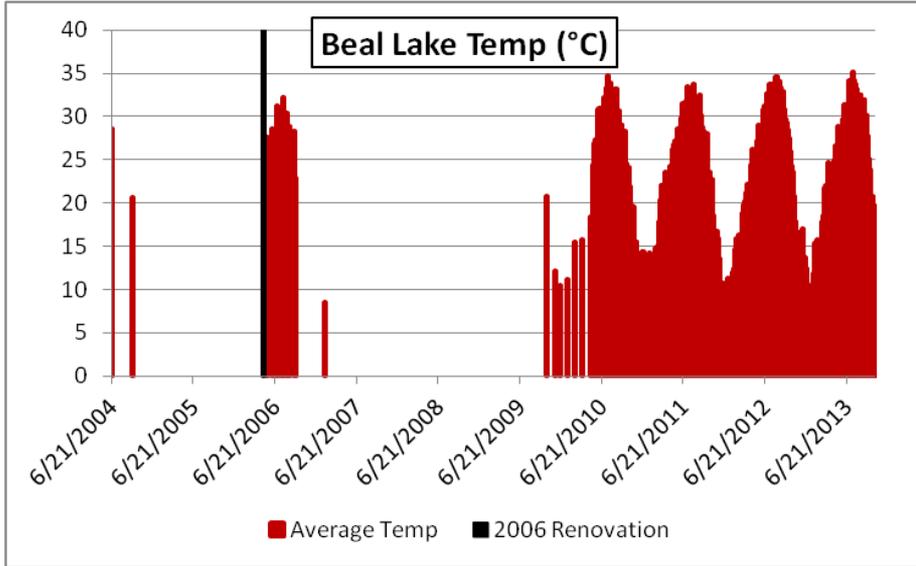




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Water Quality Summary





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Zooplankton and Phytoplankton Monitoring

Methods

- Quarterly sampling since 2012
- Collected at four WQ sites
- Analyzed for relative abundance and total biomass

Results

- Seasonal spikes for both
- Similar to other backwaters in Reach 3, but relatively low overall





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2013

February – Observed large carp die off

- No live fish observed

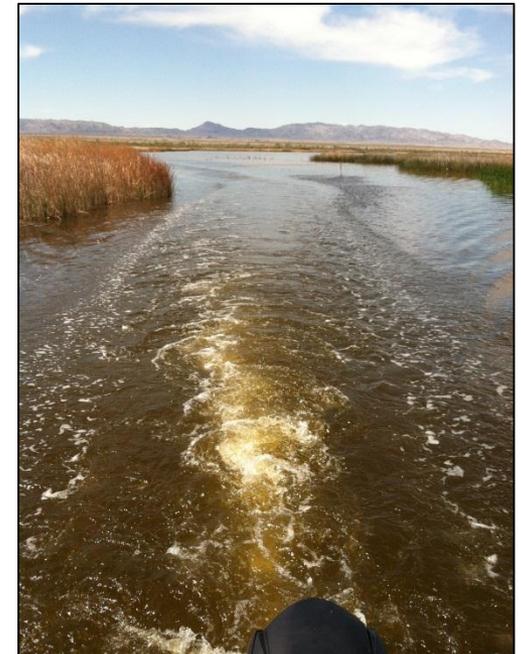
March – AZGFD confirmed Golden Algae

- No fish via E-fishing or scanning

April – Initiated monthly monitoring

May – Last month algae was detected

June – Observed YOY largemouth

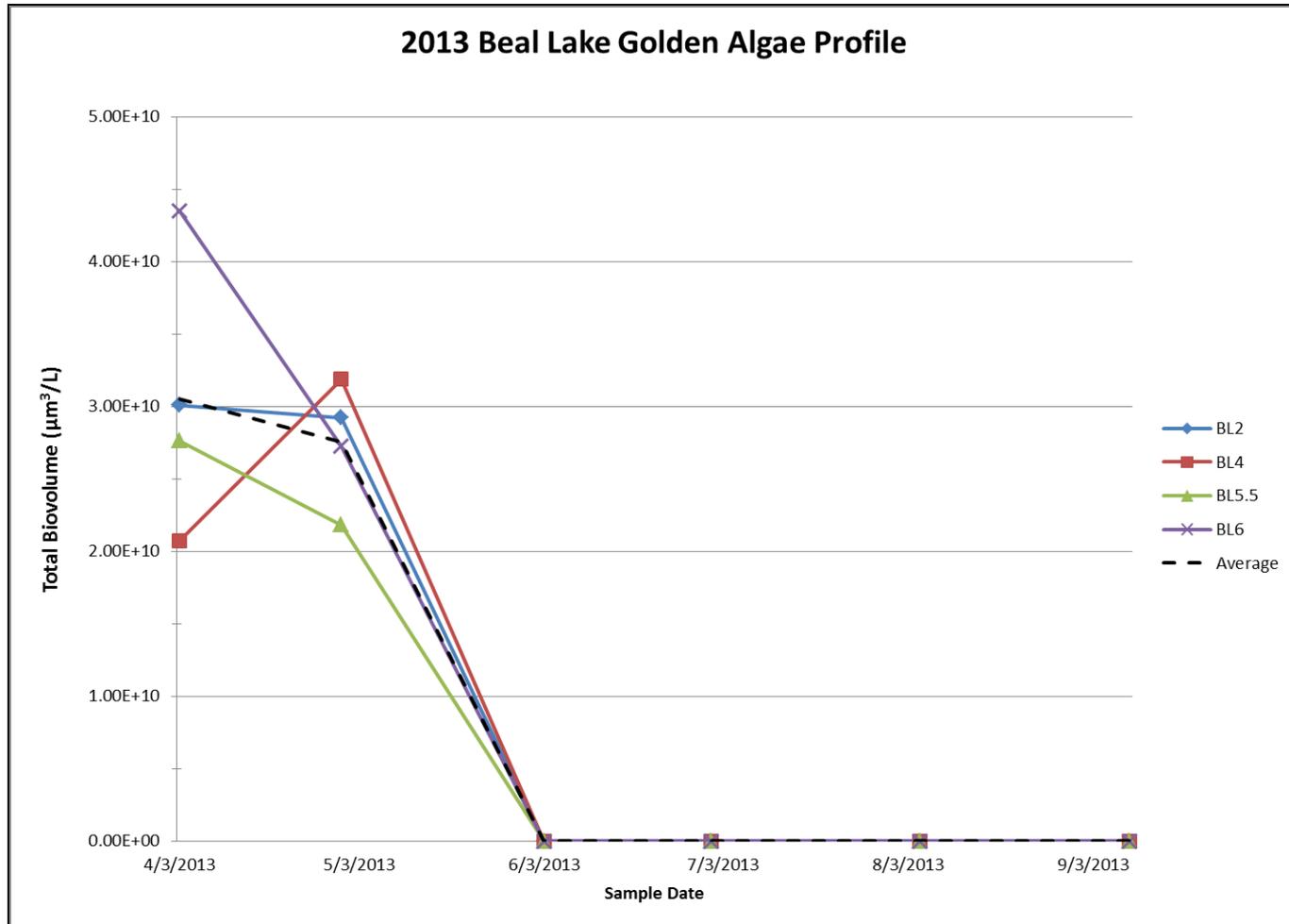




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2013





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Summary

Poor survival of stocked fish

- Small population of razorbacks

Remote sensing is extremely effective

Persistent population of non-natives

Opportunity for other research

- Species interaction
- Avian predation
- Larval trials
- Golden algae
- Water management
- ???

Date	Species	Total Stocked	Mean TL(mm)
2002	RASU	10000	120
April 2006 Renovation			
6/14/06	BONY	1844	186
6/15/06	RASU	69	301
8/28/06	RASU	302	346
1/31/08	RASU	2970	358
5/8/08	BONY	333	391
11/20/08	RASU	3445	323
12/28/09	BONY*	27859	123
2/24/10	RASU	610	332
11/30/10	RASU	400	381

*Achii Hanyo - volunteer recruits