

POPULATION ESTIMATES AND WATER QUALITY SUMMARY FOR NATIVE FISH IN BACKWATER HABITATS (2009-2010)



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Acknowledgments

- ⦿ ECGC ponds
- ⦿ REGC ponds
- ⦿ USGS - Gordon Mueller (Retired)
- ⦿ USBR - Jeff Lantow
- ⦿ CNWR
- ⦿ BWRNWR

Outline

- ① **Lower Colorado River Management Plan (LCRMP) Strategies**
- ② **Background: brief description / stocking / water quality/ population estimates (Lincoln Peterson model)**
 - High Levee Pond (HLP)
 - Emerald Canyon Golf Course (ECGC)
 - Office Cove
 - River's Edge Golf Course
- ③ **Summary**
- ④ **Recommendations**

LCRMP Strategies

- ① Use of hatcheries to produce larger fish for reintroduction
- ② Use of natural or constructed habitats to develop self-sustaining populations and to produce larger fish for release into the main stem
- ③ Use of exploited habitat made available by reservoir drawdown or drying to establish populations of large adults

High Levee Pond (HLP)

- Established in 1993 and located in Cibola National Wildlife Refuge
- FY 2009, water quality remains stable throughout fall and spring months, until summer conditions begin to spike to near alarming conditions



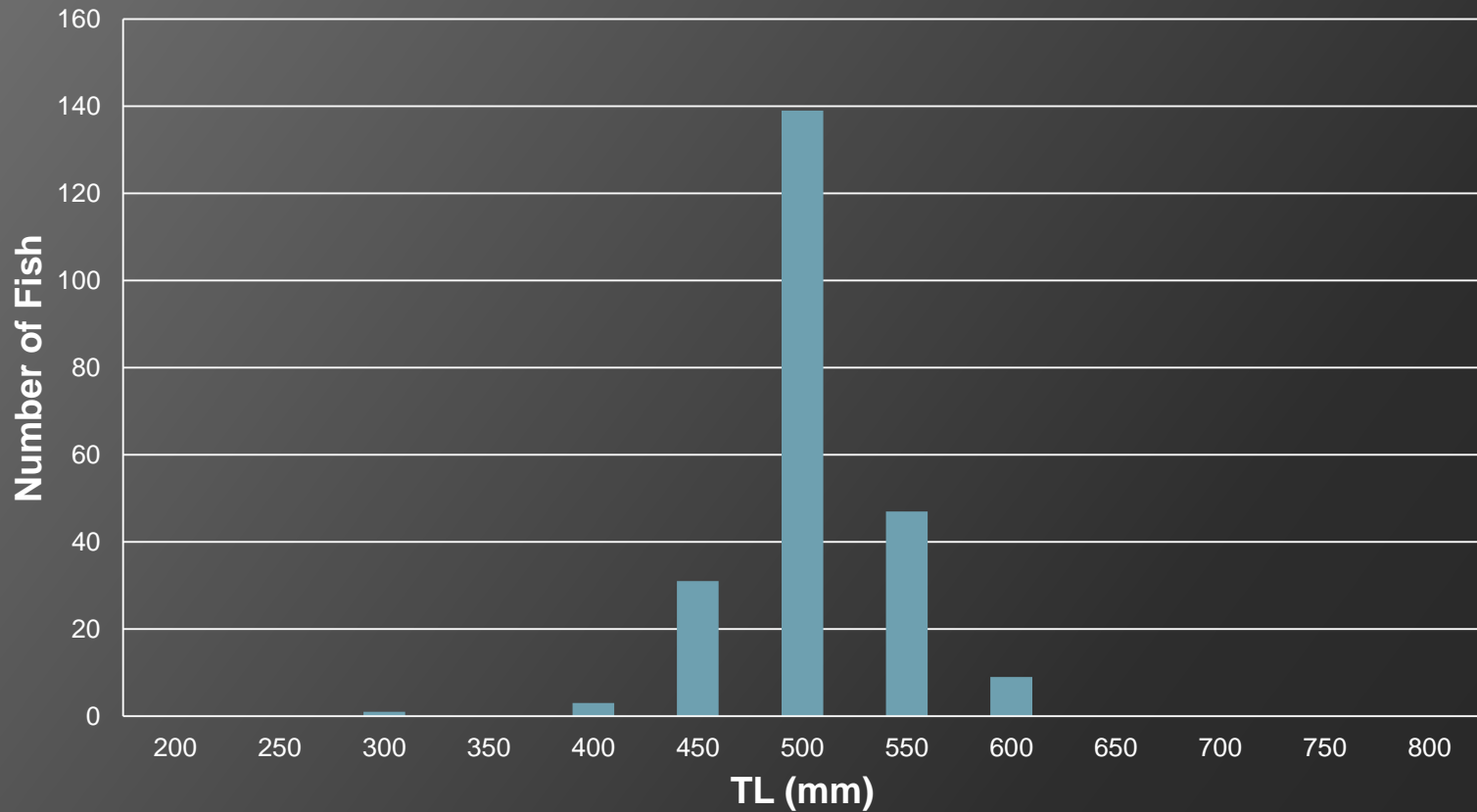
Month/Year		# of Species		Average Length
October	2008	1,252	RBS	354 mm
December	2008	535	BTC	340 mm

HLP Cont...

- ◉ Dec. 2009 survey, 153 marked RBS, and 71 captures on second event, 28 recaps
- ◉ Estimated pop. 381, (95% CI = 286-477) with an average length of 483 mm
- ◉ 2009 survey showed a 129 mm difference from the original 354 mm average length

Length Frequency Diagram

(HLP) Length Frequency of RBS



Emerald Canyon Golf Course (ECGC)

- Located in La Paz County, three of the six ponds are used as native fish backwaters
- FY 2009, water quality in pond 1 and 9 was stable throughout fall and spring months, until summer conditions
- A fish kill occurred in pond 11 during the same time as the Koi Herpes Virus



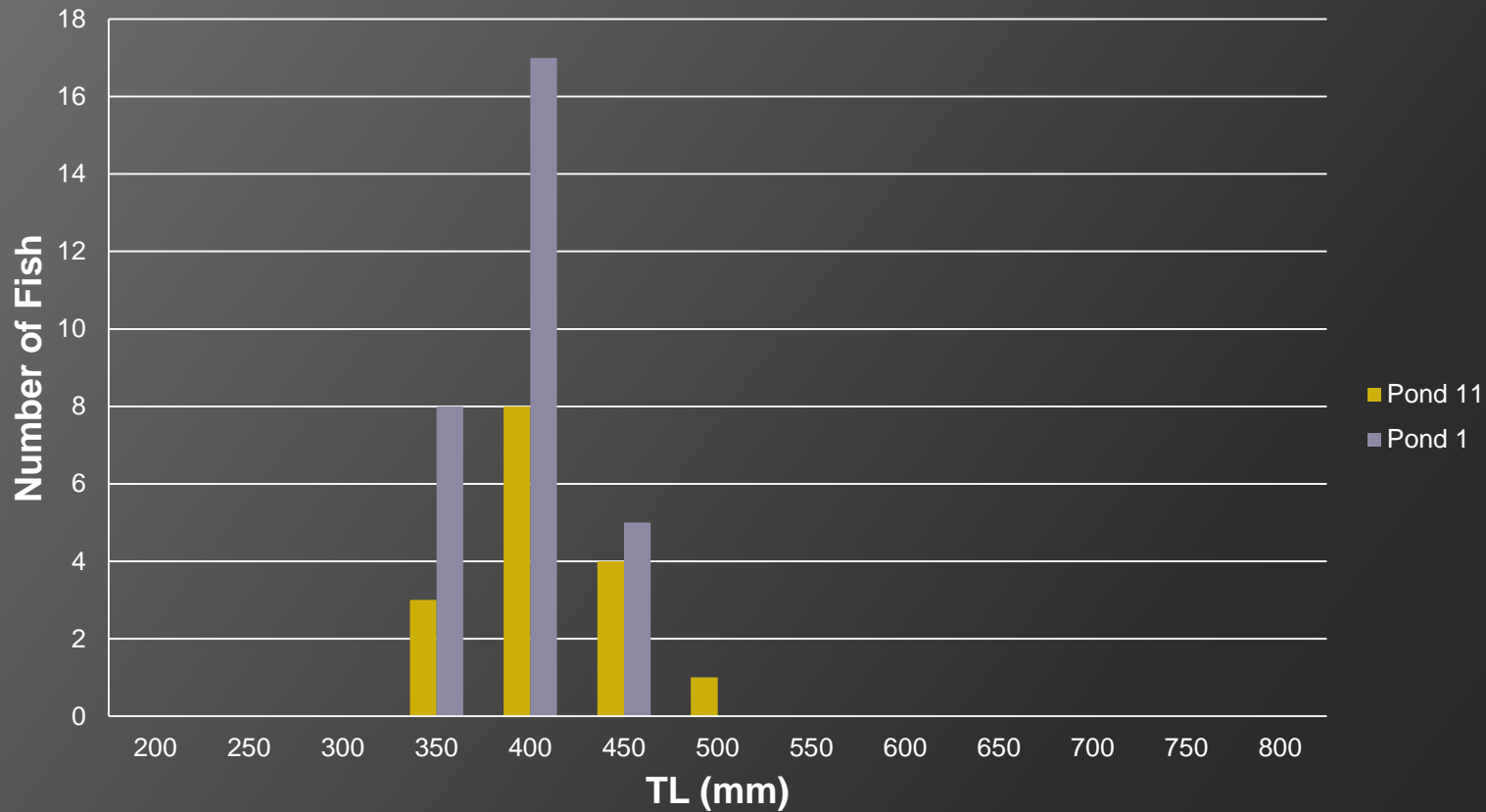
Month/Year		# of Species	Average Length
April	2005	24 RBS	N/A
November	2007	1,002 RBS	240 mm
December	2007	250 BTC 505 RBS	190 mm 354 mm

ECGC Cont...

- ⦿ Jan. 2010, Pond 1, 18 RBS marked, 12 captures in second event, 1 recap
- ⦿ Population estimate was 123 fish (95% CI = 1-244), with an average length of 377 mm
- ⦿ 2010 survey shows 137 mm difference in total length from the original 240 mm average length in pond 1
- ⦿ Population estimates could not be generated for ponds 9 and 11 due to no recaptures

Length Frequency Diagram

(ECGC) Length Frequency of RBS



Office Cove

- Located on the BWRNWR, Office cove is enclosed by a permeable berm
- May 2005, 4,000 RBS, average length 100 mm
- FY 2009, water quality remained stable until summer condition moved in

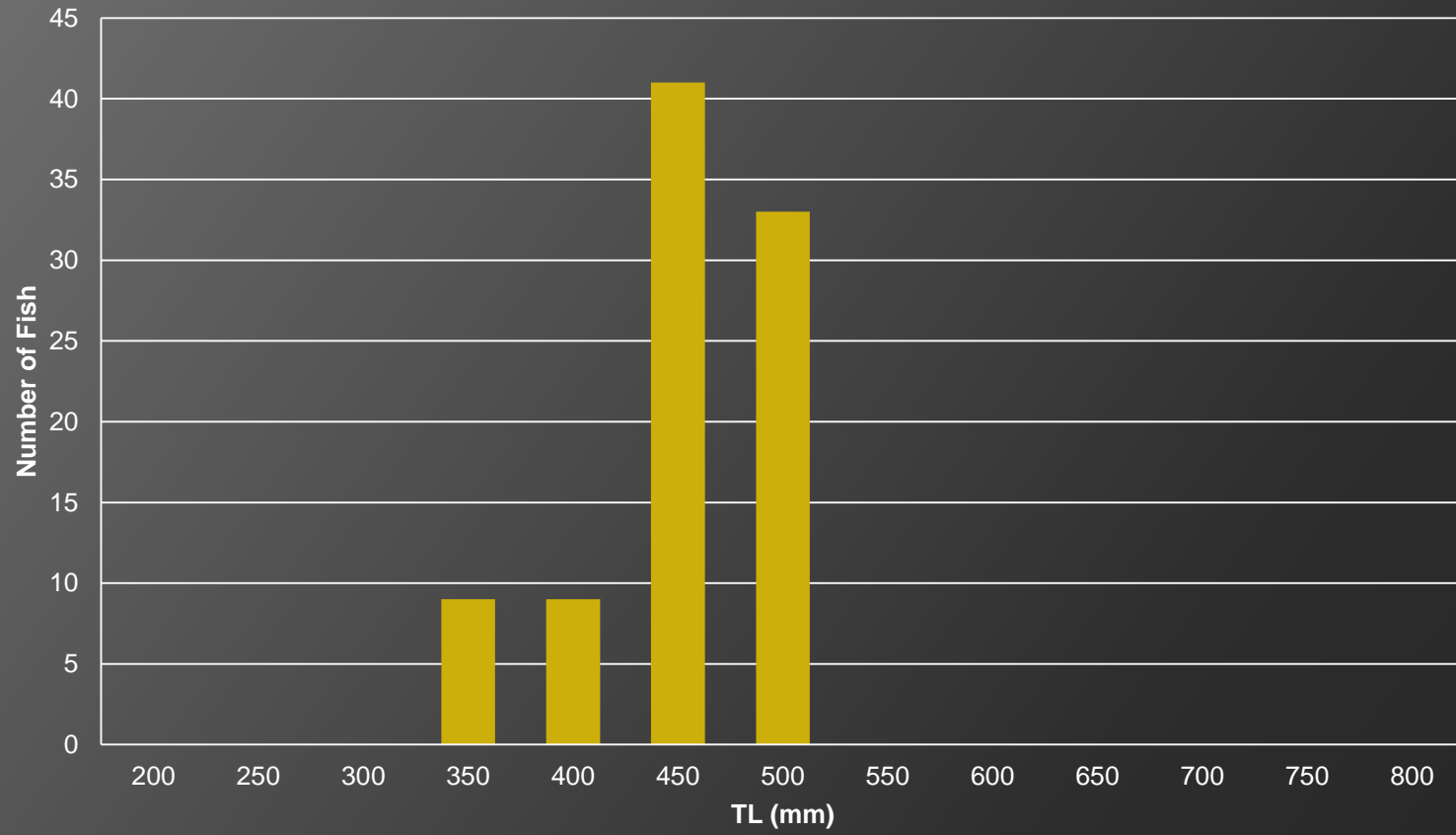


Office Cove Cont...

- Nov. 2009, 70 RBS marked, 31 captured on second event, 9 recaps
- The estimated population 226 (95% CI = 123-329), with a average length of 432 mm
- 2009 survey produced 432 mm RBS, 332 mm of growth from the original stock of 100 mm average length

Length Frequency Diagram

(OC) Length Frequency of RBS



River's Edge Golf Course

- Located in Needles, CA between river mile 50 and 51, houses two lined ponds containing RBS and BTC
- FY 2009, water quality remained stable within the ponds until summer conditions moved in
- Riverside pond experienced a fish kill



Month/Year		# of Species	Average Length
December	2007	500 BTC	190 mm
February	2008	1000 RBS	200 mm

River's Edge Golf Course Cont...

- 2010 capture data shows an average length of 483 mm, RBS still remaining
- 1 BTC was captured with a total length of 360 mm growing 170 mm since it was last stocked

Population Estimate Review

HLP	95% CL 286 ± 477	381
ECGC (Pond 1)	95% CL 1 ± 244	123
OC	95% CL 123 ± 329	226
Approximated Total		730

Summary

- ⦿ Average growth rate 10 mm per month, the backwaters can produce releasable size (>400 mm) native fish in less than one year
- ⦿ Next year we propose to refine our management actions and rearing techniques by altering stocking densities, improving water quality (when necessary) and measure growth (during cool season)
- ⦿ Information gained can be used to modify management actions and rearing techniques to grow fish of larger size and increase overall survival of stocked fish

Recommendations

- Explore stocking densities into these backwater habitats along the Lower Colorado River
- Continue monitoring water quality monthly and bi-weekly during the warmer months
- Remove and stock larger fish annually (400 mm or greater) from each of these backwaters
- Evaluate survival of larger fish that have been released into the Colorado River from these backwaters
- Success of the backwater program should be measured by the numbers and sizes of fish harvested and overall survival both in the backwater as well as survival over time post-release

