

Lake Mattamuskeet Fisheries Management Update



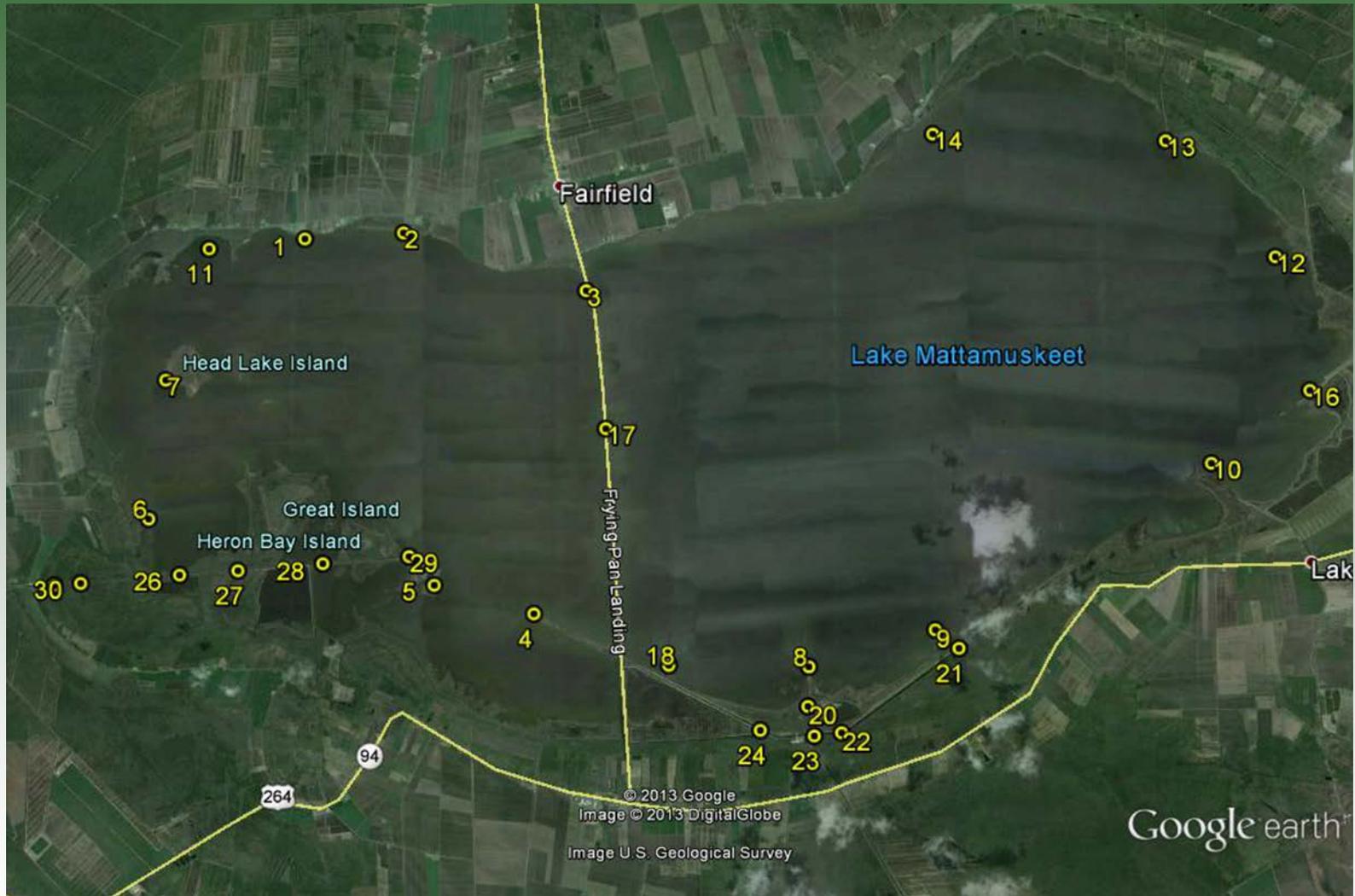
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District 1 Fisheries Biologist

Electrofishing



140-1000 volts of DC
Lengths, weights
Abundance,
Size and age structure

Sampling Locations



Relative Abundance

- Catch per unit effort
 - Index of abundance
 - Fish per hour of electrofishing
 - Coastal Rivers – 25 Bass/hr

$$\text{CPUE} = \frac{\text{Number of largemouth bass } > 8 \text{ inches}}{\text{Amount of electrofishing effort}}$$

Previous Largemouth Bass Sampling Results

Year	Season	CPUE >200mm (fish/h)	Location
1990	Fall	26.5	
1996	Spring	24.6	Canals Only
2003	Spring	7.2	Whole Lake
2005	Spring	8.7	Whole Lake
2005	Fall	11.7	Whole Lake
2007	Spring	31.9	Whole Lake
2008	Spring	15.6	West Side Only
2011	Fall	15.7	Canals Only
2012	Spring	19.8	Canals Only



2013 Largemouth Bass Sampling

- **Electrofishing October 28-31**
- **6 lake sites (1.3 hours)**
- **12 canal sites (3.0 hours)**
- **Lake sites very shallow**
 - **navigation and sampling limited**
- **Collected 190 LMB**
 - **16 from main lake sites**
 - **174 from Jarvis, Main and Rose Bay Canals**

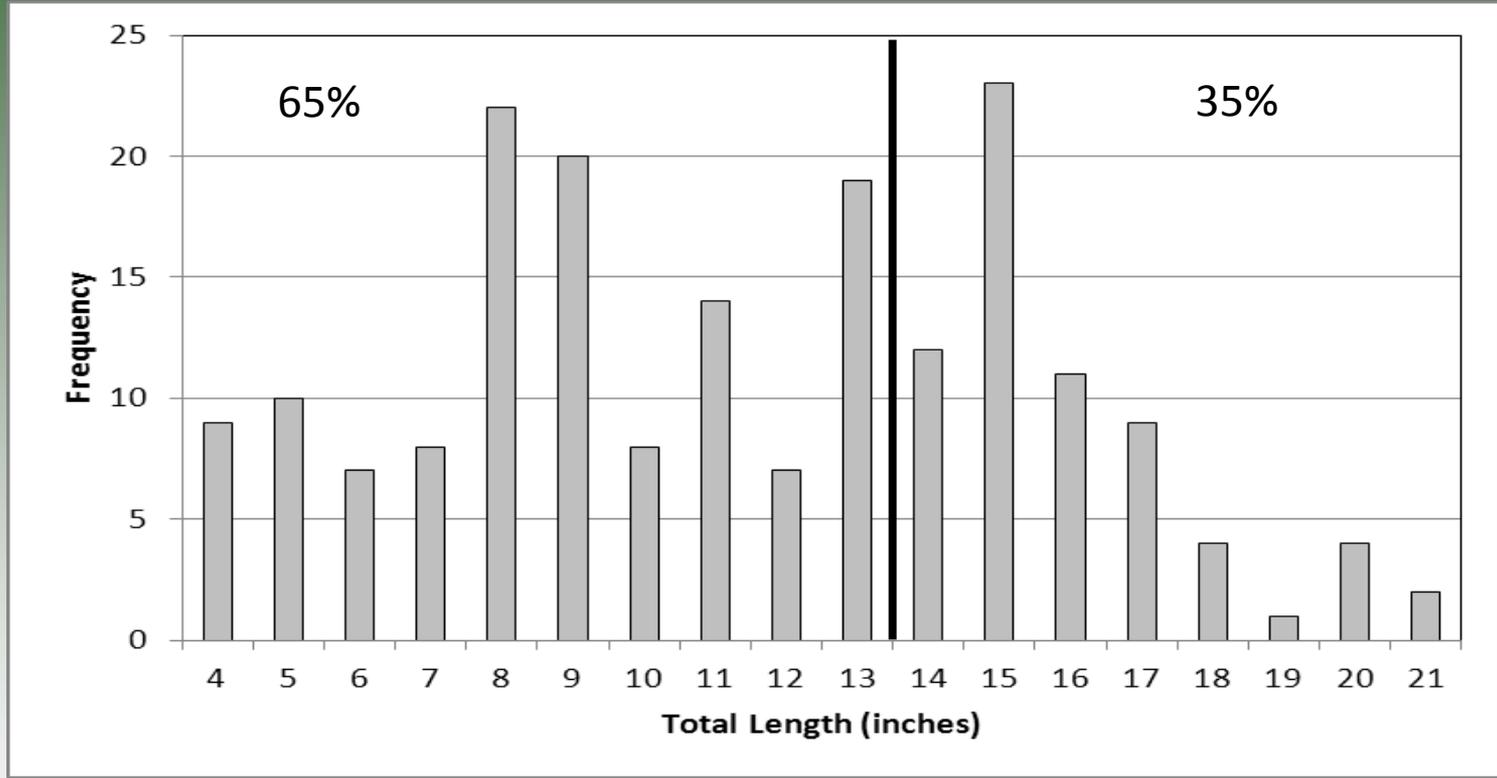


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2013	Fall	12.1	Main Lake
		46.1	Canals



2013 LMB Size Distribution



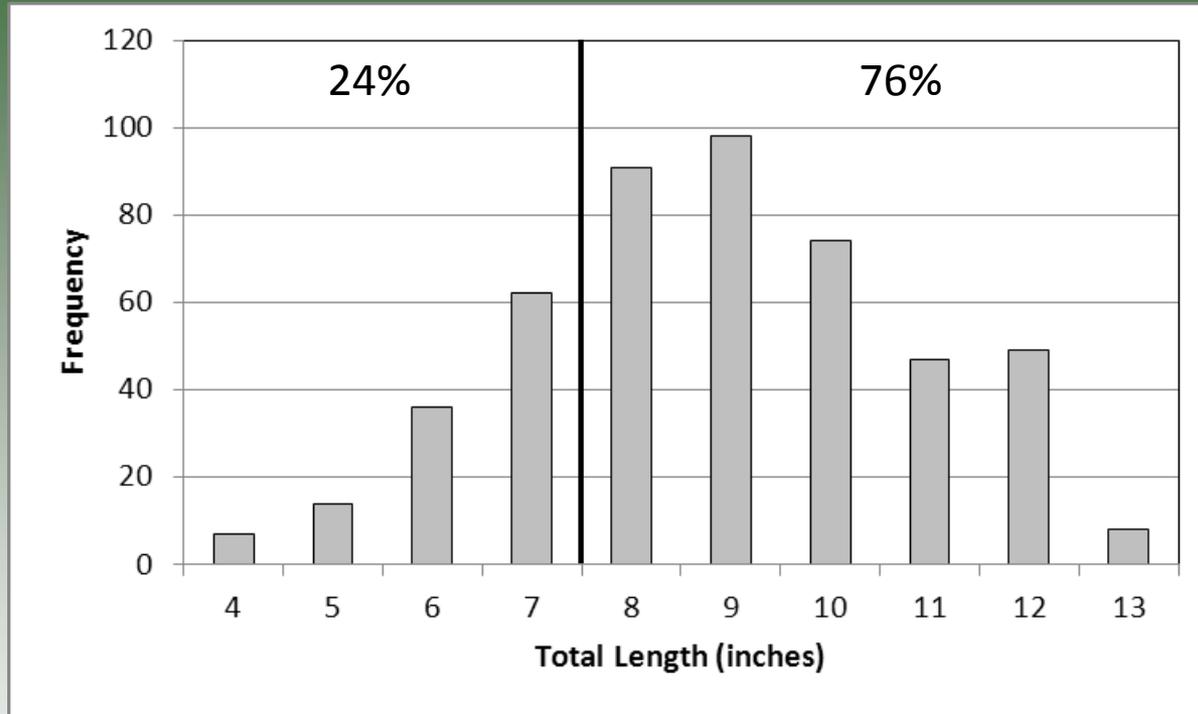
Wide range of sizes with lots of quality fish
Most abundant size group was 15 inches
Some small fish, but would expect to see more
Recruitment concerns

Black Crappie Trap Netting

- Fished nets November 4-7
- Main Canal: 8 nets set for 3 nights
- Rose Bay Canal: 11 nets set for 2 nights
- Collected 53 crappie during electrofishing
- Netted 433 crappie
- More crappie in Rose Bay
- Sizes larger in Main Canal
- Kept subsample for otolith age and growth analysis



2013 Black Crappie Size Distribution



Appear to be multiple year classes

Majority of catch was > 8 inches

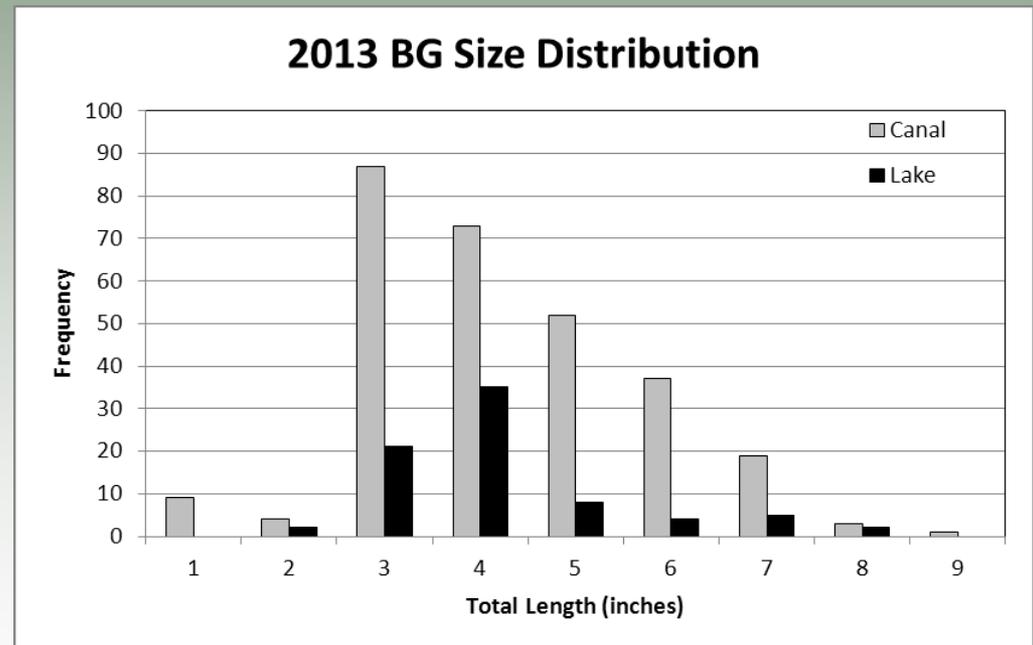
Survival good for keeper-sized fish

Some recruitment concerns but small fish usually not caught in nets

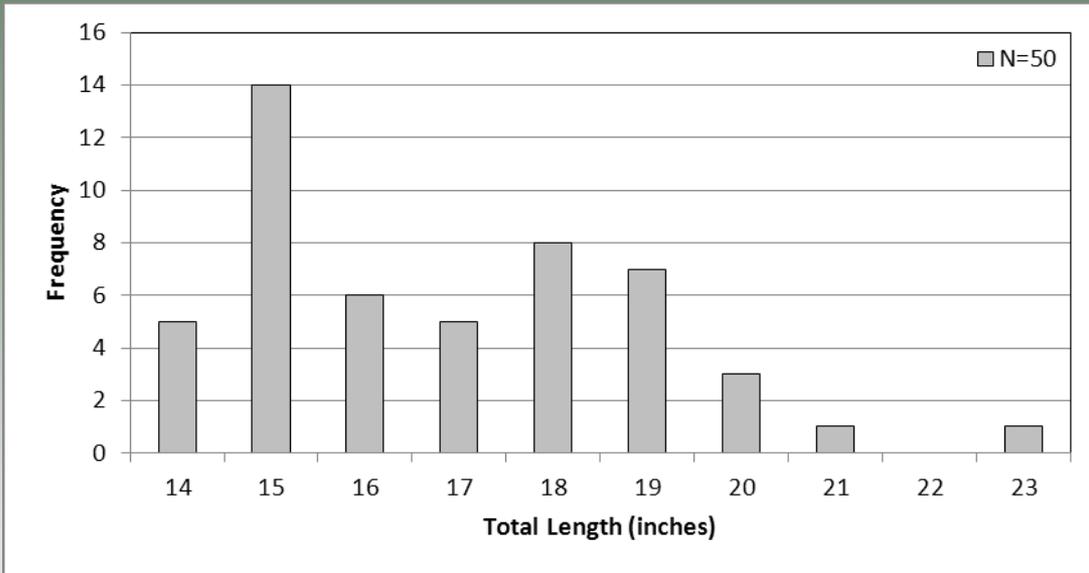
Age and growth will inform us about growth rates and need for limits

Additional Fish Species Observed

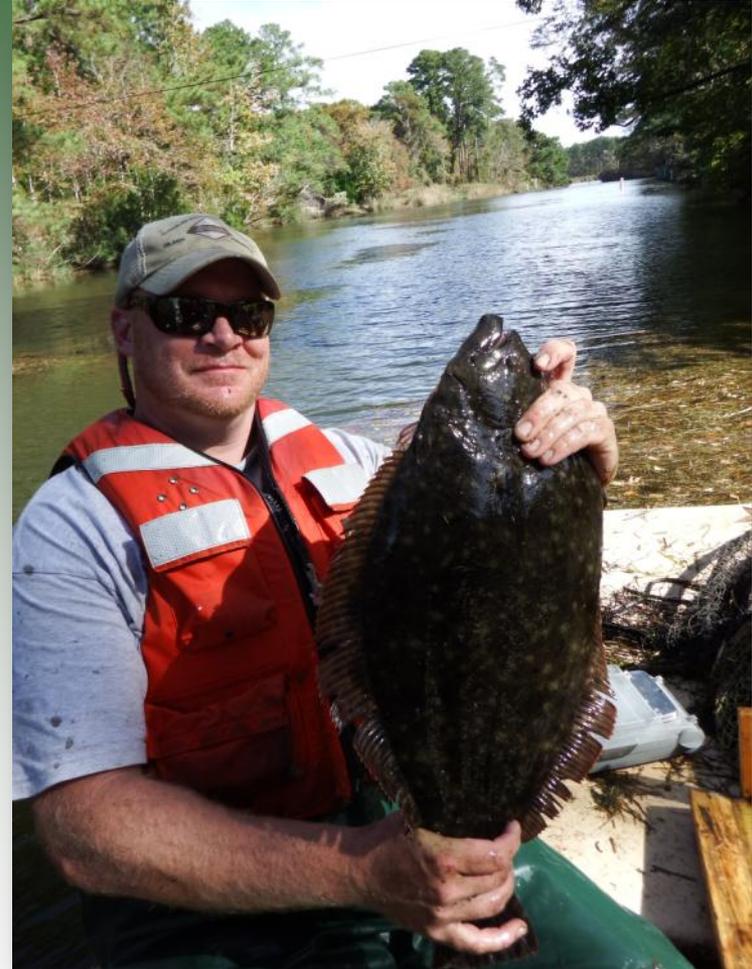
- Sunfish
 - Bluegill: 362 from electrofishing
 - Pumpkinseed, Redear, Warmouth, Hybrid
- White Perch: Small fish very abundant
- Alewife: >100 from trap nets
- American Eel: large and small
- Channel Catfish
- Gizzard and threadfin shad
- Golden Shiner
- Common Carp
- Bowfin
- Longnose Gar
- Striped Mullet
- Ladyfish
- Spot
- Croaker
- Southern Flounder



Flounder...



**Collected 50 flounder in trap nets
Majority came from Main Canal**



2013 Sampling Summary

- Shallow depths in lake prevented adequate sample
- Species diversity is high
- Largemouth Bass in canals abundant and relatively large
- Black Crappie in canals also in good shape
 - Need more years of trap netting data to establish trends in abundance
 - Age and growth analysis will inform need for changes in size limit
- Sunfish abundant for bass forage with some quality fish for angling opportunities



Criteria for Quality Largemouth Bass and Black Crappie Populations in Lake Mattamuskeet

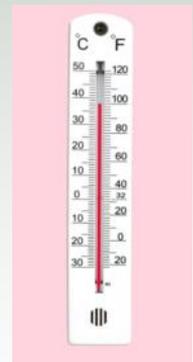
- **Spawning success/recruitment**
 - Increased salinities can limit spawning success
 - Some potential for nest predation by other species

- **Adequate forage**



- **Water quality**

- **Water quantity**



95°F

Successful spawning leads to good recruitment, which results in multiple year classes



Stocking History

Date	Species	Number	Size	Weight (lbs.)	Hatchery	Comments	Special Projects
1890	Common Carp	NA					
1949	Striped Bass	100,000	Fry		Weldon		
4/27/1951	Striped Bass	135,000	Fry		Weldon		
4/24/1952	Striped Bass	350,000	Fry		Weldon		
6/17/1965	Largemouth bass	51,000			Harrison Lake		
6/18/1965	Largemouth bass	75,000			Edenton		
6/23/1965	Largemouth bass	91,333			Edenton		
6/15/1966	Largemouth bass	505,166		729.5	Edenton		
6/8/1966	Largemouth bass	239,190			McKinney Lake		
6/10/1966	Largemouth bass	198,400		273.9	Cheraw		
6/27/1969	Striped Bass	18,000	2"	28	Edenton		
12/8/1969	Striped Bass	19,304		1425	Edenton	Right Pectoral Fin Clip	Geddings Thesis
1/12/1970	Striped Bass	9,140		1040	Edenton	Right Pectoral Fin Clip	Geddings Thesis
10/19/1970	Striped Bass	35,450			Edenton	Pelvic fin clip	
1/10/1971	Striped Bass	12,365	7"		Edenton	Pelvic fin clip	
11/21/1971	Striped Bass	14,625	7"	2709	Edenton (Moncks corner strain)	Left Pectoral Fin Clip	
12/23/1971	Striped Bass	3,845	7"		Edenton	Not marked	
1/8/1972	Striped Bass	12,400	7-9"		Edenton	Left Pectoral Fin Clip	
11/16/1972	Striped Bass	1,310	11"	986	Edenton (Maryland strain)	Floy tagged	
11/20/1972	Striped Bass	1,200	7"		Edenton (Moncks corner strain)	Right Pectoral Fin Clip	
11/20/1972	Striped Bass	19,356	7"		Edenton (Moncks corner strain)	Anal Fin Clip	
6/27/2003	Largemouth bass	22,050	2"	49	Watha	West End	
5/27/2004	Largemouth bass	20,000	2"	22.2	Watha	East End	
6/5/2005	Largemouth bass	26,000	2"		Fayetteville	Hwy 94 Shoreline - Midway	
6/9/2006	Largemouth bass	20,000	2"		Fayetteville	Hwy 94 Shoreline - North	
6/9/2006	Black crappie	2,000	2"		Fayetteville	Hwy 94 Shoreline - North	
5/25/2007	Largemouth bass	20,000	1.5	20	Watha	Hwy 94 Shoreline - South	

Largemouth Bass stockings not formally evaluated

What's Next?

- Main lake EF sample in Spring 2014 if water levels allow
- Crappie trap net sample in Fall 2014
- Evaluate need for LMB stocking
- Wrap up crappie age and growth for size limit evaluation
- Conduct creel survey in 2014
- Cooperate with refuge research and monitoring program
 - reduce saltwater intrusion through water control structures
 - monitor and improve water quality
 - evaluate lake level management options
- Identify and pursue additional research needs
 - Evaluate side-opening water control structure gates
 - Crappie and Largemouth Bass migration from canals
 - White perch predation of Largemouth Bass nests



Questions?

