

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-47

Name: Little Moreau #1
Legal Description: T16N-R25W-Sec. 17
Location from nearest town: 7 miles south of Timber Lake

County (ies): Dewey
GPS: 45°20'49.26"N 101°05'36.92"W

Date of present survey: June 17-19, 2013 (netting); September 16, 2014 (electrofishing)
Date of last survey: July 12-14, 2010 (netting); September 29, 2010 (electrofishing)
Most recent lake management plan: F-21-R-40 (January 1, 2008 to December 31, 2012)
Management classification: Warmwater Permanent

Primary Game Species	Secondary and Other Species
Largemouth Bass	Northern Pike
Bluegill	Yellow Perch
Black Crappie	White Sucker
	Black Bullhead
	Channel Catfish
	Walleye

PHYSICAL DATA

Surface Area: 36 acres
Maximum Depth: 20 feet
Lake elevation at time of survey (field observations): Full
Contour map: No

Watershed: 33,300 acres
Mean Depth: 10 feet
Date: NA

Ownership of lake and adjacent lakeshore properties:

Little Moreau #1 is a 36-acre impoundment seven miles south of Timber Lake in north central Dewey County. Little Moreau #1 was created in 1932 by the Works Progress Administration. Flood damage to the dam grade resulted in the South Dakota Department of Game, Fish and Parks rebuilding the structure in 1936. The dam grade and entire lake lies within a Game Production Area owned by the Department of Game, Fish and Parks.

Watershed condition with percentages of land use types:

The watershed for Little Moreau #1 is relatively large, draining all or portions of 52 sections or approximately 33,300 acres. Land use in the watershed is estimated at 78% cultivated agricultural land, 10% native grassland used as pasture and for hay crops, 10% native grass and wooded land with the Game Production Area, and the remaining 2% residences, roads and a golf course.

Fishing access:

There is ample shore and water access for fishing opportunities around the entire lake.

Condition of all structures (i.e. spillway, boat ramps, level regulators, etc.):

The Parks Division of the Department of Game, Fish and Parks maintains the recreation area with hard surface roads, a concrete boat ramp, dock, toilets, and a camping area. All structures are in excellent condition.

Field observations of aquatic vegetation condition:

Emergent and submergent vegetation surrounds the entire lake and is heaviest in the portion of the lake above the boat ramp. The dam grade and the deep areas along the north shore do not contain much, if any submergent or emergent vegetation. Both emergent and submergent vegetation consists of multiple species.

CHEMICAL DATA**Field observations of water quality and pollution problems:**

No pollution problems were evident at the time of the survey. Water clarity was good with a secchi disc reading of 3 feet. Other water quality characteristics were measured in the field on June 17, 2013, using a HACH water quality kit and a Hanna multiparameter meter. Results are found in Table 1.

Presence of a thermocline and depth from surface: No

Station for water chemistry located on attached map: Yes

Table 1. Water chemistry results from Little Moreau #1, Dewey County, June 17, 2013.

Station	Depth (ft)	Temp (F)	DO (ppm)	CO2 (ppm)	ALK (mg/L)	HRD (mg/L)	pH	Cond (μ S/cm)	TDS (ppm)	Sal.	ORP	Secchi (ft)
A	Surface	71.5	4.04	21.6	137	--	7.96	356	180	0.17	-264	3.0
A	18.3	65.5	1.47	33.6	150	--	7.39	349	174	0.17	-296	

BIOLOGICAL DATA**Methods:**

Little Moreau #1 was sampled on June 17-19, 2013, with ten overnight trap net sets. The trap nets have 3ft x 5ft frames, 60ft leads, and 3/4 inch knotted mesh. No experimental gill nets or electrofishing was done during this survey period. On the evening of September 16, 2014, Little Moreau #1 was electrofished for 40 minutes (4-ten minute transects) to sample the largemouth bass population. The boat was set up with 120 pulses per second of DC current at 340 volts with around 14 amps to electrofish the lake that had a conductivity of 504 μ S/cm with a water temperature of 62.9°F. Fish indices and statistics were completed using Winfin.

Results and Discussion:

Trap Net Catch

Table 2. Total catch of ten, overnight ¾-inch frame nets at Little Moreau #1, Dewey County, June 17-19, 2013.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Bluegill	224	70.0	22.4	± 14.6	13.0	4	1	112
Green Sunfish	29	9.1	2.9	± 1.6	0.7	0	0	105
Yellow Perch	24	7.5	2.4	± 1.2	2.1	25	0	93
Northern Pike	24	7.5	2.4	± 1.0	1.0	88	33	98
Black Crappie	18	5.6	1.8	± 1.3	18.3	39	39	97
Black Bullhead	1	0.3	0.1	± 0.1	15.1	--	--	97

* Eleven year mean (1971, 1974, 1980, 1984, 1987, 1995, 1998, 2001, 2004, 2007, 2010)

Electrofishing Catch

Table 3. Total catch from four, ten-minute runs of fall nighttime electrofishing at Little Moreau #1, Dewey County, September 16 2014.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Largemouth Bass	74	100	126.0	± 42.7	28.3	88	56	122

* Six year mean (1995, 1998, 2001, 2004, 2007, 2010)

Largemouth Bass

Little Moreau #1 appears to have a largemouth bass population that is on the rebound. The lake used to contain a phenomenal bass population in size and numbers. The CPUE of 126.0 fish per hour is well above the six year mean of 28.3 (Table 3). This is an up and coming population that is dominated by young fish (Table 4). The population does contain a few larger adults as can be seen by the PSD of 88 with an RSD-P of 56. Figure 1 illustrates the length frequency histogram for the fish sampled this year, which can be compared to the length frequencies from the previous three surveys in Figures 5 through 7. Growth is good with means right at or slightly above statewide, regional and SLI means (Table 4). Condition is good with a mean Wr of 122. Hopefully this population continues to trend upward and brings this bass population back to where it was.

Table 4. Average back-calculated lengths (mm) for each age class of largemouth bass sampled from Little Moreau #1, Dewey County, 2014.

Year Class	Age	N	Back-calculated Age										
			1	2	3	4	5	6	7	8	9		
2014	0	56											
2013	1	3	97										
2011	3	6	98	178	279								
2009	5	2	117	191	263	346	386						
2008	6	2	89	153	237	299	349	395					
2007	7	2	95	187	272	322	353	401	424				
2006	8	1	129	192	282	329	410	441	460	477			
2005	9	1	111	230	318	354	381	406	419	451	464		
All Classes		73	105	189	275	330	376	411	434	464	464		
Statewide Mean			96	182	250	305	342						
Region II Mean			105	183	246	296	328						
SLI* Mean			99	183	246	299	332						

*Small Lakes and Impoundments

Figure 1. Length frequency histogram for largemouth bass sampled from Little Moreau #1, Dewey County, 2014.

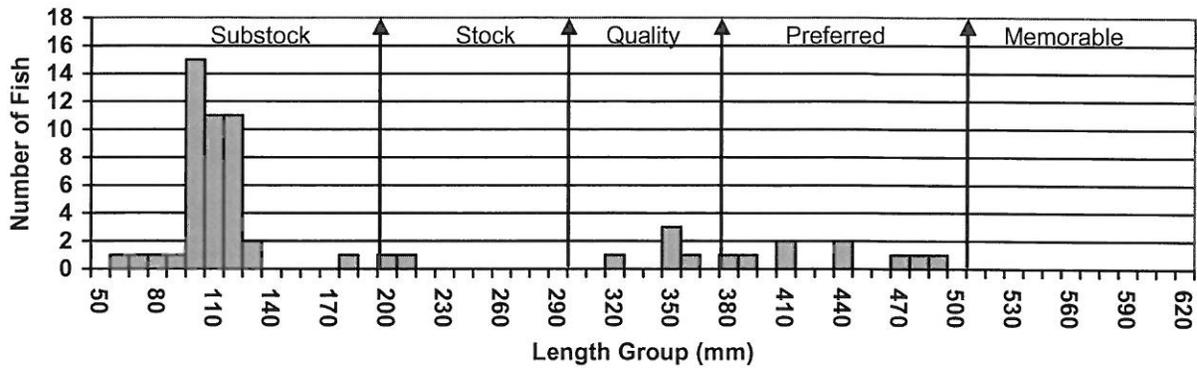


Figure 2. Length frequency histogram for largemouth bass sampled from Little Moreau #1, Dewey County, 2010.

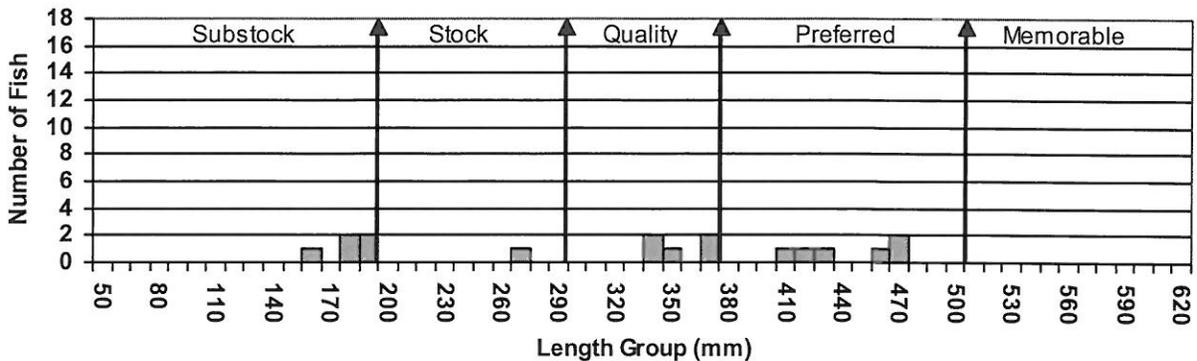


Figure 3. Length frequency histogram for largemouth bass sampled from Little Moreau #1, Dewey County, 2007.

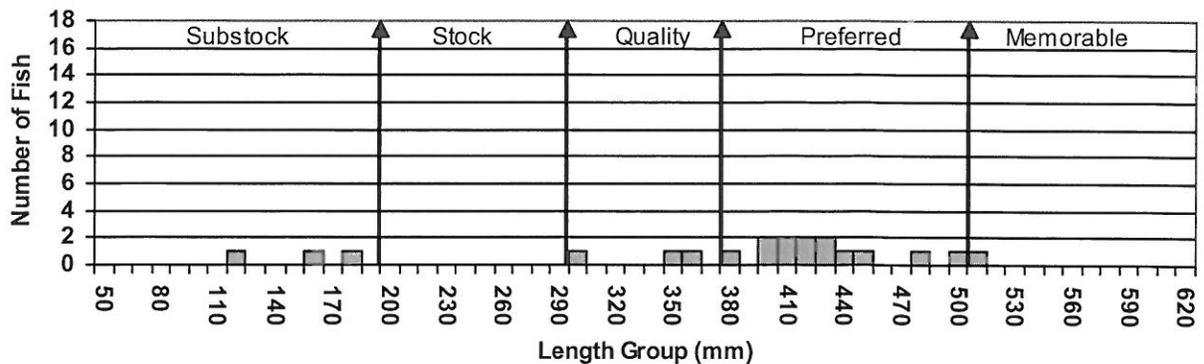
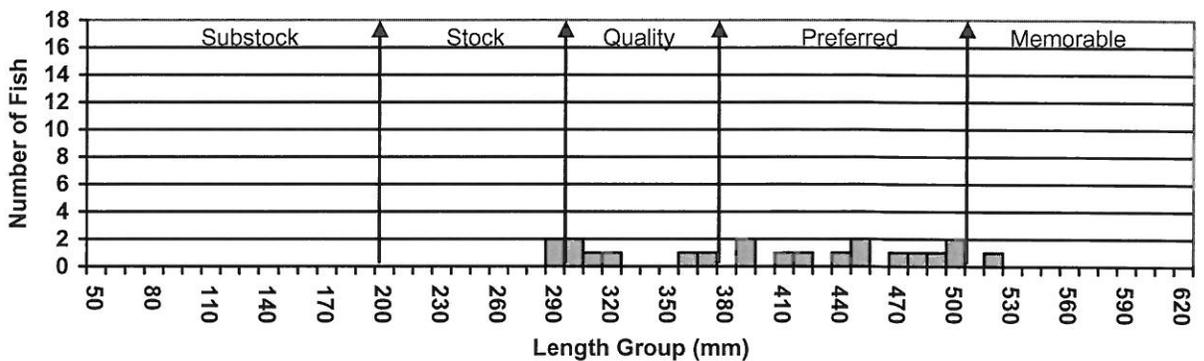


Figure 4. Length frequency histogram for largemouth bass sampled from Little Moreau #1, Dewey County, 2004.



Bluegill

Bluegills have once again become the dominant panfish species present in Little Moreau #1. Dominance of the panfish species seems to fluctuate between bluegill, yellow perch and black crappie depending on the year. The CPUE of 22.4 is above the 3.9 from the 2010 survey (Table 8) as well as the 13.0 eleven year mean (Table 2). Size structure has dropped back from the last survey. The PSD of 4 with an RSD-P of 1 is below the 64 and 5, respectively, from the 2010 survey. Figures 5 through 8 illustrate the length frequency histograms for the last four surveys and show this fluctuation in the size structures. Growth is fair with means at or slightly below statewide, regional and SLI means (Table 4). Condition is good with a mean W_r of 112.

Table 4. Average back-calculated lengths (mm) for each age class of bluegill sampled from Little Moreau #1, Dewey County, 2013.

Year Class	Age	N	Back-calculated Age									
			1	2	3	4	5	6	7	8	9	
2011	2	95	45	90								
2010	3	1	45	99	152							
2007	6	1	38	87	114	133	154	169				
2006	7	1	44	81	128	147	166	186	195			
2004	9	1	43	82	105	131	146	185	177	191	197	
All Classes		99	43	88	125	137	155	174	186	191	197	
Statewide Mean			55	103	141	166	180					
Region II Mean			52	97	134	164	180					
SLI* Mean			53	101	138	163	180					

* Small Lakes and Impoundments

Figure 5. Length frequency histogram for bluegill sampled from Little Moreau #1, Dewey County, 2013.

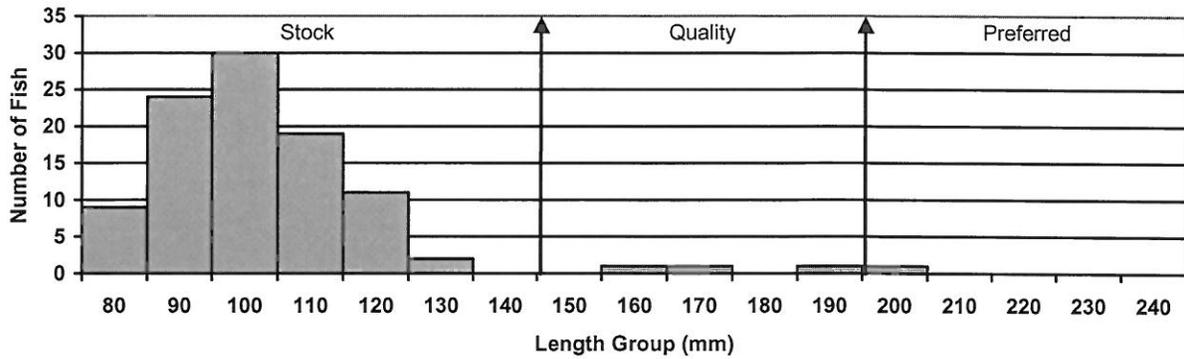


Figure 6. Length frequency histogram for bluegill sampled from Little Moreau #1, Dewey County, 2010.

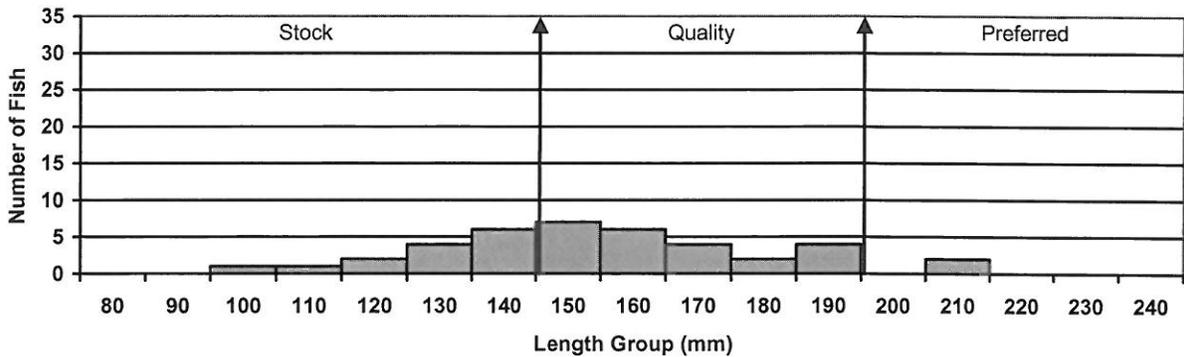


Figure 7. Length frequency histogram for bluegill sampled from Little Moreau #1, Dewey County, 2007.

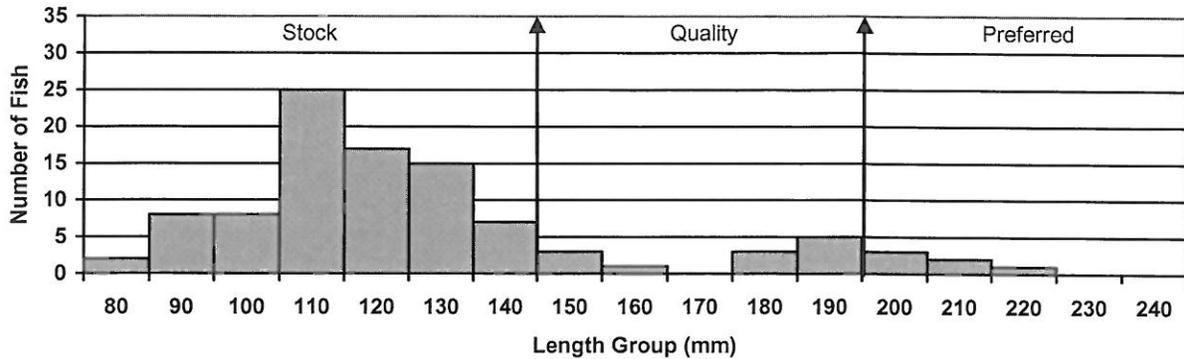
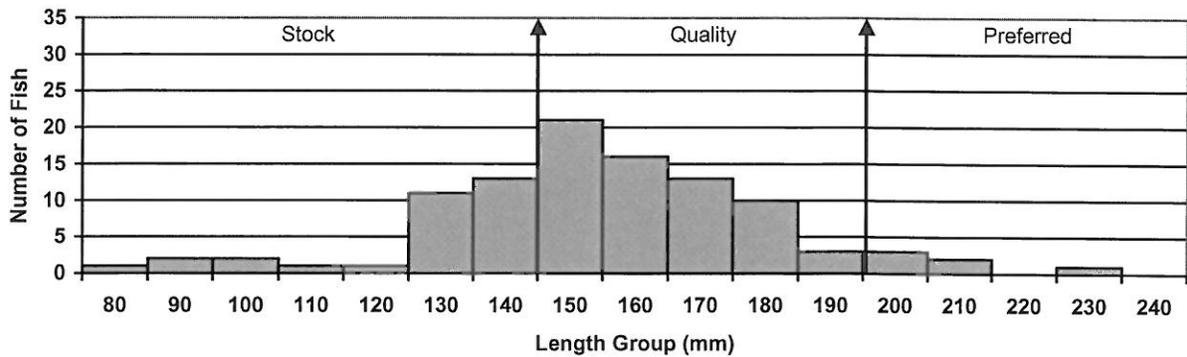


Figure 8. Length frequency histogram for bluegill sampled from Little Moreau #1, Dewey County, 2004.



Black Crappie

The black crappie population in Little Moreau #1 has declined for the third consecutive survey. The CPUE of 1.8 is below the 3.9 from the 2010 survey (Table 8) as well as the 18.3 eleven year mean (Table 2). Figures 9 through 12 illustrate the length frequency histograms for the last four surveys. Size structure has remained relatively constant over the years with the exception of density to bring up the smaller sizes. Growth is good with means right on with statewide, regional and SLI means (Table 5). Condition is good with a mean W_r of 97.

Table 5. Average back-calculated lengths (mm) for each age class of black crappie sampled from Little Moreau #1, Dewey County, 2013.

Year Class	Age	N	Back-calculated Age								
			1	2	3	4	5	6	7	8	9
2011	2	10	91	145							
2010	3	1	76	141	185						
2008	5	1	98	165	203	239	259				
2005	8	4	90	158	207	230	249	262	271	282	
2004	9	2	96	160	202	217	231	241	251	256	266
All Classes		18	90	154	199	229	246	252	261	269	266
Statewide Mean			83	147	195	229	249				
Region II Mean			75	132	177	209	235				
SLI* Mean			78	134	180	209	226				

* Small Lakes and Impoundments

Figure 9. Length frequency histogram for black crappie sampled from Little Moreau #1, Dewey County, 2013.

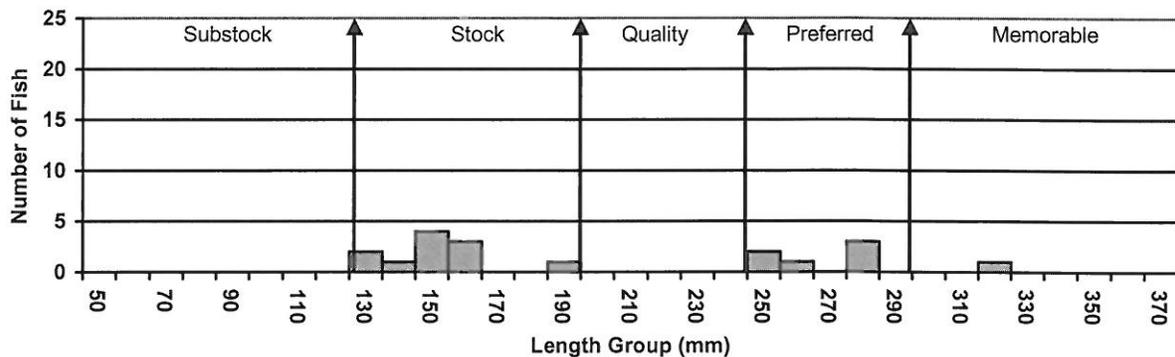


Figure 10. Length frequency histogram for black crappie sampled from Little Moreau #1, Dewey County, 2010.

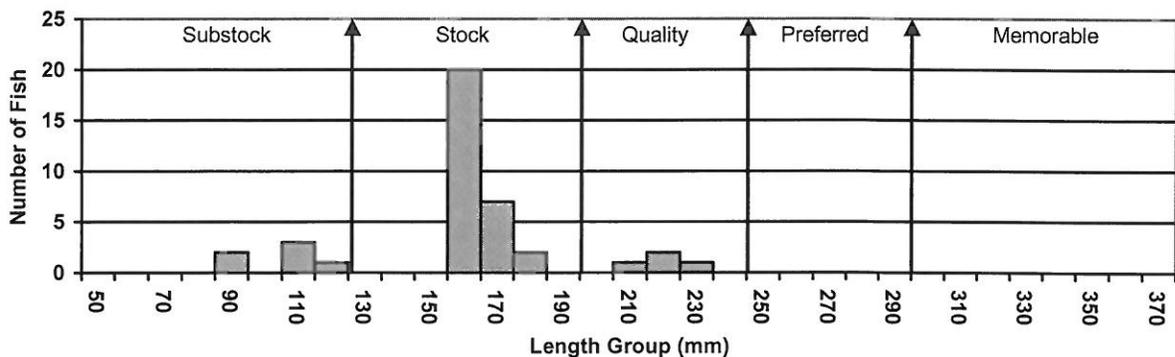


Figure 11. Length frequency histogram for black crappie sampled from Little Moreau #1, Dewey County, 2007.

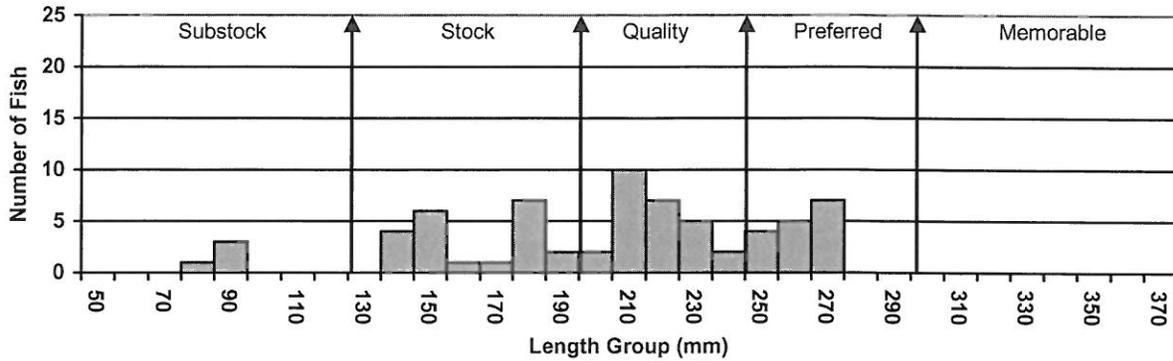
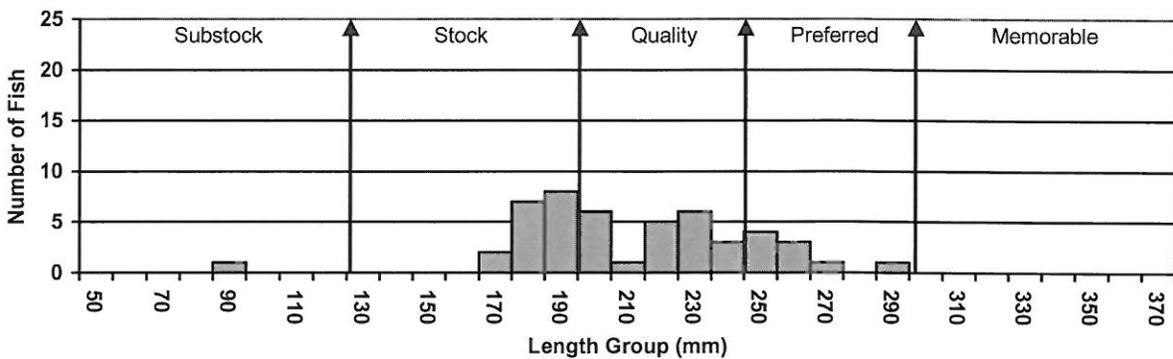


Figure 12. Length frequency histogram for black crappie sampled from Little Moreau #1, Dewey County, 2004.



Yellow Perch

The yellow perch population in Little Moreau #1 has declined from the past survey. The CPUE of 2.4 is below the 10.7 from the 2010 survey (Table 8), but is right on with the 2.1 eleven year mean (Table 2). Figures 13 through 15 illustrate the length frequency histograms for the past three surveys. Size structure is about the same with a PSD of 25 and an RSD-P of 0 compared to the 26 and 2, respectively, from the 2010 survey. Growth is good in young fish then slows in older fish compared to statewide, regional and SLI means (Table 6). Condition is good with a mean Wr of 93.

Table 6. Average back-calculated lengths (mm) for each age class of yellow perch sampled from Little Moreau #1, Dewey County, 2013.

Year Class	Age	N	Back-calculated Age				
			1	2	3	4	5
2011	2	6	89	133			
2010	3	12	73	114	152		
2009	4	5	93	149	180	204	
2008	5	2	90	135	164	189	206
All Classes		25	86	133	165	197	206
Statewide Mean			86	145	190	220	242
Region II Mean			91	152	196	219	242
SLI* Mean			87	142	185	205	219

* Small Lakes and Impoundments

Figure 13. Length frequency histogram for yellow perch sampled from Little Moreau #1, Dewey County, 2013.

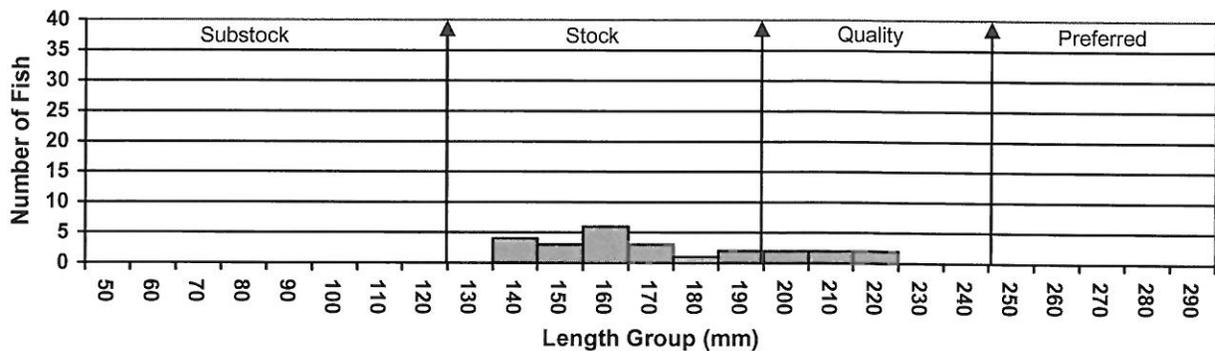


Figure 14. Length frequency histogram for yellow perch sampled from Little Moreau #1, Dewey County, 2010.

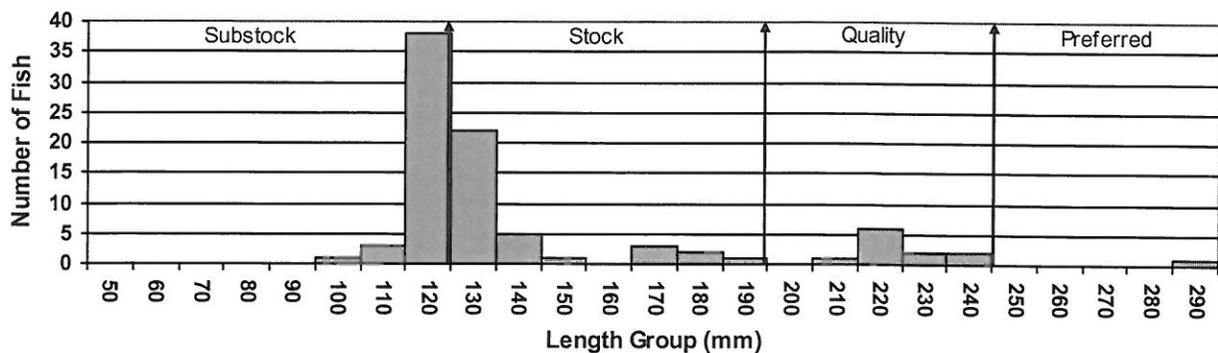
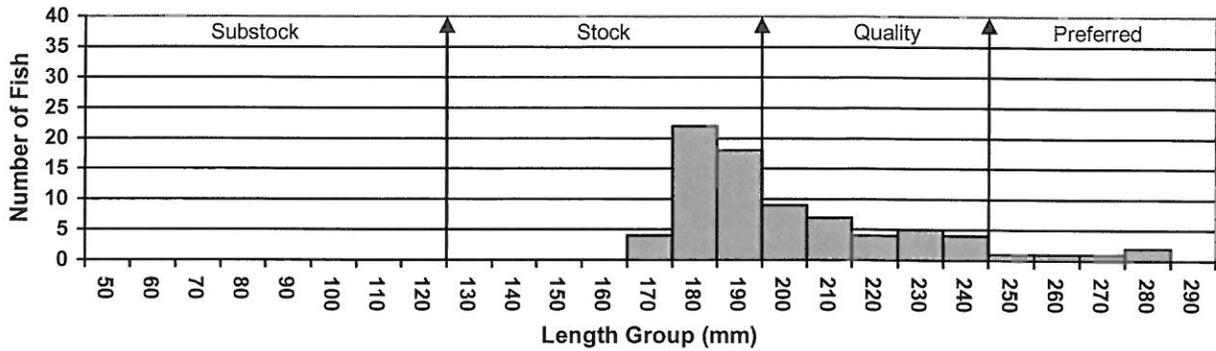


Figure 15. Length frequency histogram for yellow perch sampled from Little Moreau #1, Dewey County, 2007.



Other species

Little Moreau #1 continues to contain a good northern pike population. The CPUE of 2.4 is above the 1.0 from the 2010 survey (Table 8) as well as the 1.0 eleven year mean (Table 2). Figure 16 illustrates the length frequency histogram for the fish sampled this survey. A good number of good sized fish were sampled. Condition is good with a mean Wr of 98. This population is a good secondary predator species to help control all the panfish species present.

Green sunfish and black bullheads were the only other species sampled this survey. Channel catfish, white sucker, walleye, smallmouth bass, and hybrid sunfish were the species not sampled that had been in years past (Table 8).

Figure 16. Length frequency histogram for northern pike sampled from Little Moreau #1, Dewey County, 2013.

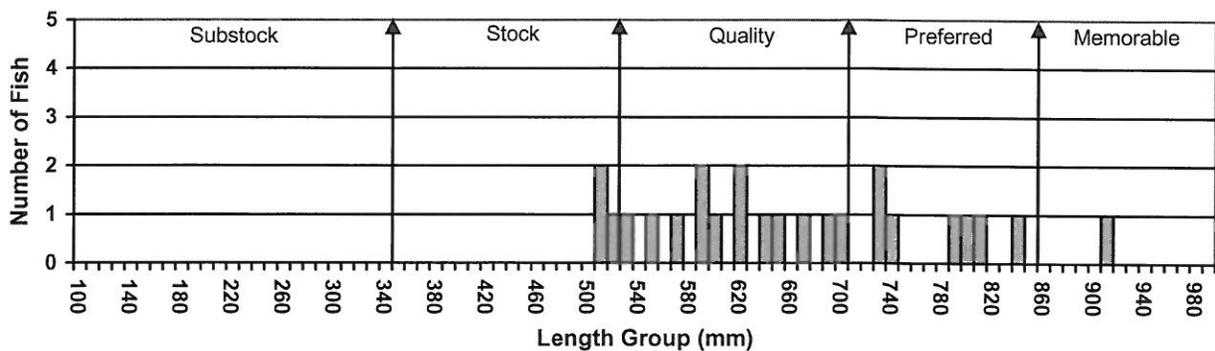


Table 7. Stocking records for the last ten years for Little Moreau #1, Dewey County.

Year	Number	Species	Size
2010	3,000	Largemouth Bass	Fingerling
2011	25	Largemouth Bass	Juvenile
2012	100	Largemouth Bass	Juvenile
2013	1,300	Largemouth Bass	Fingerling

RECOMMENDATIONS

1. Resurvey in 2016 to monitor the fish populations.

Table 8. Gill net (GN), trap net (TN), and electrofishing (EF) CPUE for all fish species sampled from Little Moreau #1 since survey records started.

Species	1971	1974	1980	1984	1987	1995	1998	2001	2004	2007	2010	2013	2014
BLB (GN)	--	--	29.0	2.0	--	--	--	--	--	--	--	--	--
BLB (TN)	3.2	17.0	54.6	47.8	3.3	15.5	1.3	21.8	2.0	0.1	0.1	0.1	--
BLC (GN)	--	--	--	2.0	--	--	--	--	--	--	--	--	--
BLC (TN)	--	--	2.1	58.3	83.1	17.6	4.9	19.6	4.8	6.7	3.9	1.8	--
YEP (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
YEP (TN)	--	--	--	--	0.9	--	0.1	2.5	1.0	7.8	10.7	2.4	--
LMB (EF)	--	--	--	--	--	28.8	26.7	28.5	31.5	28.5	25.5	--	126.0
LMB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
LMB (TN)	2.4	0.9	--	0.8	0.9	0.3	0.1	0.3	0.1	--	0.1	--	--
NOP (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
NOP (TN)	--	--	--	--	0.1	2.4	0.9	4.4	0.7	1.6	1.0	2.4	--
CCF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
CCF (TN)	--	--	--	0.1	--	0.4	--	--	--	--	--	--	--
WHS (GN)	--	--	27.0	32.0	--	--	--	--	--	--	--	--	--
WHS (TN)	4.8	4.4	43.6	56.4	3.4	0.3	0.3	--	--	--	--	--	--
WAE (GN)	--	--	12.0	--	--	--	--	--	--	--	--	--	--
WAE (TN)	0.9	0.7	0.4	0.4	0.1	--	--	--	0.1	--	--	--	--
BLG (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
BLG (TN)	--	--	--	2.8	27.7	32.8	9.6	39.3	10.0	16.7	3.9	22.4	--
SMB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
SMB (TN)	1.6	--	--	--	--	--	--	--	--	--	--	--	--
GSF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
GSF (TN)	1.6	0.4	0.3	1.1	3.1	0.9	0.3	0.2	0.1	0.1	0.1	2.9	--
HYB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
HYB (TN)	--	--	--	--	--	--	--	--	0.2	--	--	--	--

BLB – Black Bullhead, BLC – Black Crappie, YEP – Yellow Perch, LMB – Largemouth Bass, NOP – Northern Pike, CCF – Channel Catfish, WHS – White Sucker, WAE – Walleye, BLG – Bluegill, SMB – Smallmouth Bass, GSF – Green Sunfish, HYB – Hybrid Sunfish