

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-45

Name: Geddes Lake **County(ies):** Charles Mix
Legal Description: T97N-R63W-Sec. 35 **GPS:** 43°11'37.16"N 98°42'47.20"W
Location from nearest town: 4.5 miles south of Geddes

Date of present survey: October 1, 2012 (electrofishing)
Date of last survey: June 28-30, 2010 (netting)
Most recent lake management plan: F-21-R-41 (January 1, 2009 to December 31, 2013)
Management classification: Warmwater Semi-permanent

Primary Game Species	Secondary and Other Species
Black Crappie	Black Bullhead
Bluegill	Common Carp
Largemouth Bass	Green Sunfish
Cannel Catfish	Orange-spotted Sunfish
Yellow Perch	

PHYSICAL DATA

Surface Area: 64 acres **Watershed:** 68,000 acres
Maximum Depth: 9 feet **Mean Depth:** 6 feet
Lake elevation at time of survey (field observations): 5-6 feet low
Contour map: Yes **Date:** 1972

Ownership of lake and adjacent lakeshore properties:

Geddes Lake is a 64 acre impoundment located 4.5 miles south of the town of Geddes in central Charles Mix County. The artificial impoundment was created in 1939 by the Works Progress Administration (WPA) with construction of an earthen dam on Pease Creek. To allow for the creation of the dam and lake, two public use easements were granted to the State of South Dakota for the lake and a twelve-foot strip of land above the high water contour. The immediate shoreline surrounding Geddes Lake is privately owned.

Watershed condition with percentages of land use types:

Geddes Lake is located on the upper end of the Pease Creek watershed, a tributary of the Missouri River. The watershed above Geddes Lake covers approximately 68,000 acres or 106 square miles. The immediate shoreline of Geddes Lake consists mainly of native grasses and wooded areas. The remainder of the watershed is made up of approximately 60% cultivated cropland and 40% pasture and hayland.

Fishing access:

Fishing opportunity is usually severely limited during the summer due to the heavy amounts of emergent vegetation found around the shoreline. There is a marginal boat ramp for water access by small duck type boats.

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

The access trail is a good trail that travels through a wooded area on the east side of Geddes Lake. The boat ramp is in fair to poor condition, but is usually narrowed by heavy emergent vegetation.

Field observations of aquatic vegetation condition:

Emergent vegetation, mainly cattail and bulrush, is found around the perimeter of the entire lake. Submergent vegetation is common and found to a depth of 5 feet

CHEMICAL DATA

Field observations of water quality and pollution problems:

Moderate to heavy siltation has occurred in the entire lake resulting in a significant loss of the lakes total holding capacity. Siltation from the watershed has also created high nutrient levels. No other pollution problems were evident at the time of the survey. Water clarity was poor with a secchi disc reading of 1.5 foot. Other water quality characteristics were measured in the field on June 29, 2010, 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 Geddes Lake, Charles Mix County, June 29, 2010.

Station	Depth (ft)	Temp (F)	DO (ppm)	CO2 (ppm)	ALK (mg/L)	HRD (mg/L)	pH	Cond. (µS/cm)	TDS (ppm)	Sal.	ORP	Secchi (ft)
A	Surface	79.1	4.28	23.6	238	709	8.37	1391	702	0.78	95.0	1.5
A	7	78.4	3.20	29.2	222	643	8.32	1400	704	0.70	126.9	

BIOLOGICAL DATA

Methods:

Geddes Lake was sampled by electrofishing this fall on October 1, 2012 to monitor a special largemouth bass stocking. This report will cover the findings of the electrofishing as well as leave the data analysis of the summer survey of 2010. Geddes Lake was sampled on June 28-30, 2010, with ten overnight trap net sets. The trap nets have 3ft x 5ft frames, 60ft leads, and ¾ inch knotted mesh. No experimental gill nets or electrofishing was done during this sampling season. 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 Geddes Lake, Charles Mix County, June 28-30, 2010.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Hybrid Sunfish	702	61.3	70.2	± 36.9	0.01**	--	--	--
Black Bullhead	330	28.8	33.0	± 10.0	202.3	7	2	101
Common Carp	62	5.4	6.2	± 2.6	7.7	9	0	97
Black Crappie	52	4.5	5.2	± 2.7	6.4	15	6	105

* Ten year mean since winterkill in 1977-78 (1979, 1983, 1987, 1990, 1992, 1995, 1998, 2001, 2004, 2007)

** Only one other year sampled (2004)

Table 3. Total catch of three, ten-minute transects of fall nighttime electrofishing on Geddes Lake, Charles Mix County, October 1, 2012.

Species	#	%	CPUE	80% C.I.	Mean CPUE	PSD	RSD-P	Mean Wr
No fish sampled	0	0	0	± 0.0	0	0	0	0

Largemouth Bass

The largemouth bass population in Geddes Lake was in need of monitoring since a stocking of larger over wintered fish were marked and stocked. The success of this stocking was in question. Time and conditions did not allow for the lake to be sampled in the 2010 survey or in 2011. The lake was considerably lower this fall and made conditions marginal for survival. After 30 minutes of electrofish, no largemouth bass were sampled. The only fish seen were numerous common carp, black bullheads and green sunfish.

Black Bullhead

The black bullhead numbers in Geddes Lake appear to be back on the incline. The CPUE of 33.0 is above the 22.9 from the 2007 (Table 6) survey but well below the 202.3 ten year mean (Table 2). Condition of these fish is good with a mean Wr of 101. Size structure is on the small side with a PSD of 7 and an RSD-P of 2 (Table 2). This can also be seen in Figure 1 with most fish in the stock category. Figures 1 through 4 illustrate the changes to the size structure of this population over the past 4 surveys. Black bullheads have always been a problem in Geddes Lake. They will continue to be a problem with the lack of success at getting a top line predator like largemouth bass established.

Figure 1. Length frequency histogram for black bullhead sampled from Geddes Lake, Charles Mix County, 2010.

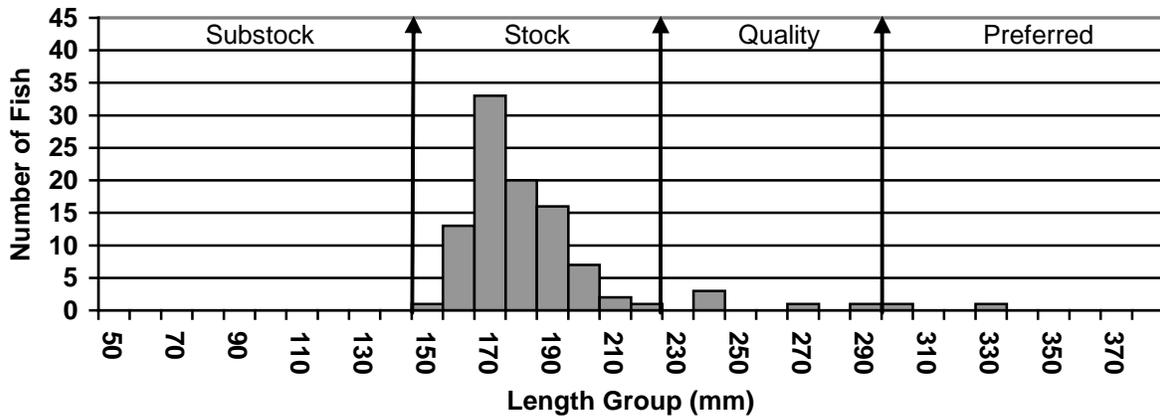


Figure 2. Length frequency histogram for black bullhead sampled from Geddes Lake, Charles Mix County, 2007.

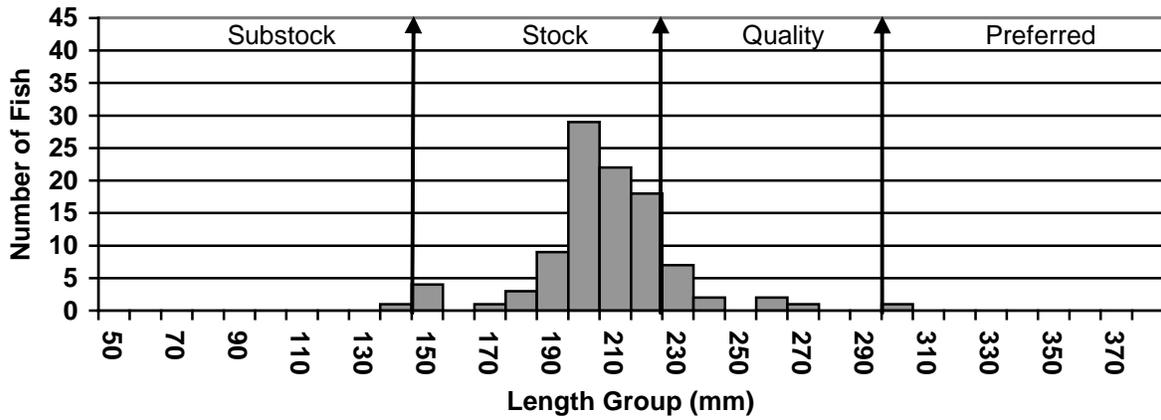


Figure 3. Length frequency histogram for black bullhead sampled from Geddes Lake, Charles Mix County, 2004.

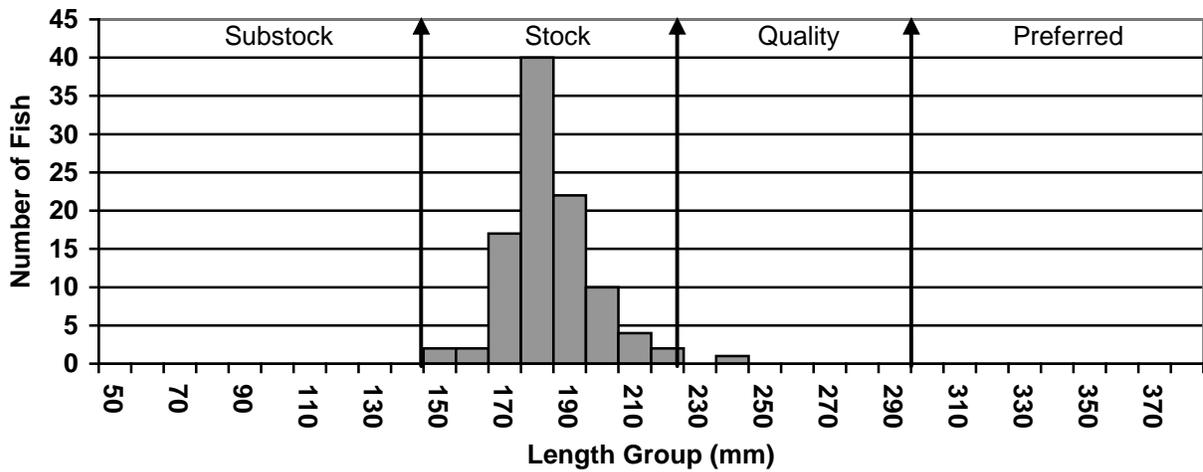
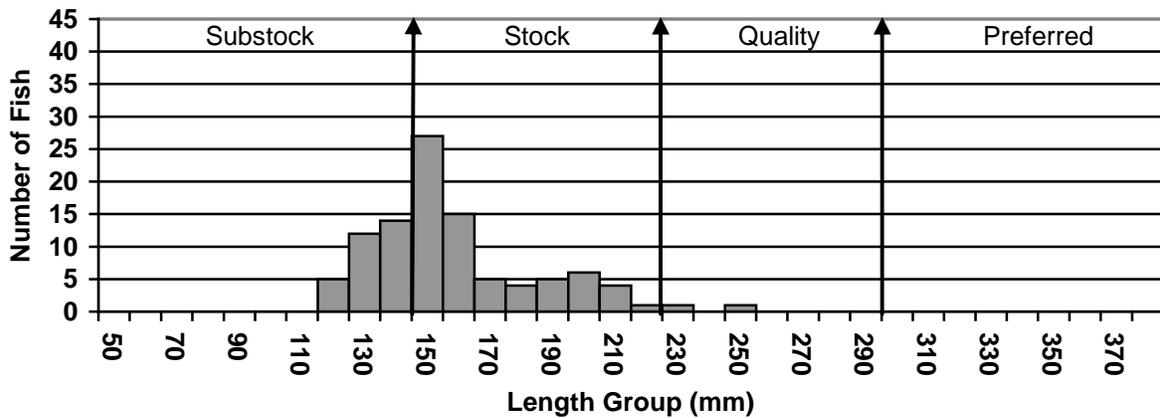


Figure 4. Length frequency histogram for black bullhead sampled from Geddes Lake, Charles Mix County, 2001.



Other Species

Hybrid sunfish, common carp and black crappie were the other species sampled this survey. Yellow perch, largemouth bass, channel catfish, bluegill, green sunfish, orangespotted sunfish and pumpkinseed sunfish were the species not sampled this survey that have been in years past (Table 6).

Common carp saw a big drop in their CPUE. The CPUE was 6.2 compared to the 167.3 from 2007 (Table 6) but came back in line with the ten year mean of 7.7 (Table 2). The numbers were hugely inflated from the 2007 survey as that year the population was dominated by a very strong year class that was produced in the previous year or two. This can be seen by comparing Figures 5 and 6 which illustrate the length frequencies from the past two surveys. Condition is fine with a mean Wr of 97.

Figure 5. Length frequency histogram for common carp sampled from Geddes Lake, Charles Mix County, 2010.

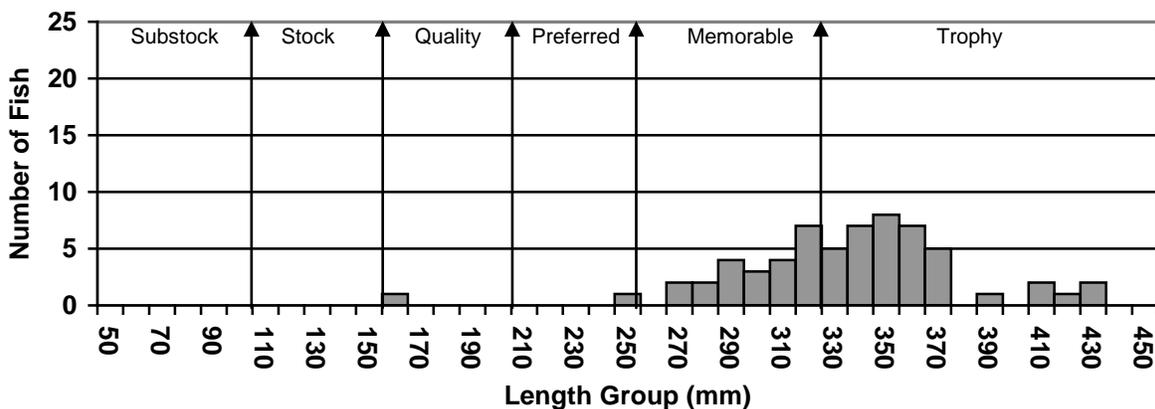
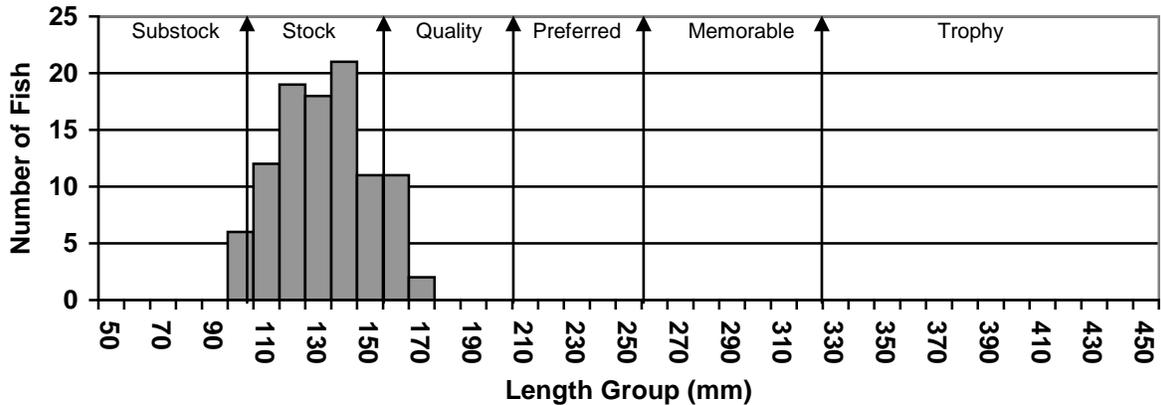


Figure 6. Length frequency histogram for common carp sampled from Geddes Lake, Charles Mix County, 2007.



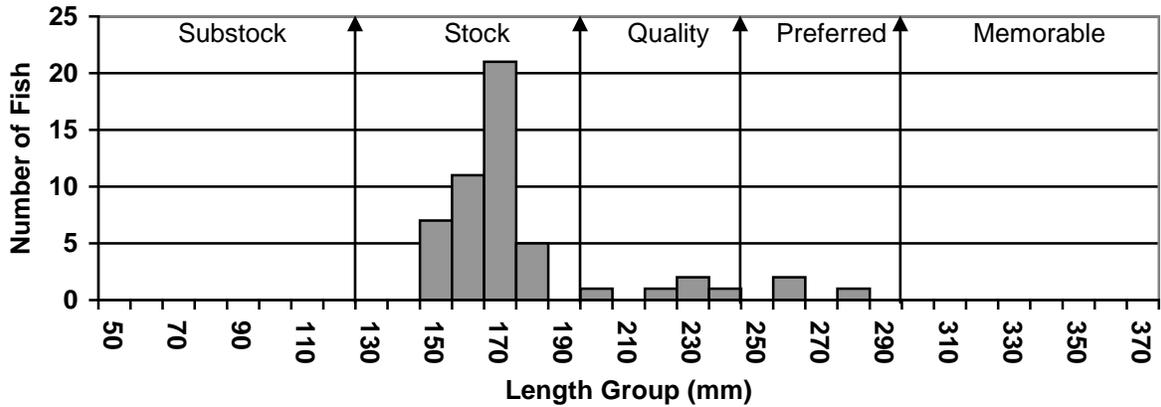
Black crappie saw an increase in their CPUE over the last survey. The CPUE of 5.4 is above the 0.1 from 2007 (Table 6) but right back on with the ten year mean of 6.4 (Table 2). Growth is good with means right on with statewide, regional and SLI means (Table 4). Condition is also good with a mean W_r of 105. Most of these fish are on the small side as can be seen in Figure 7 which illustrates the size structure from this summers sampling. Hopefully this population will take off and produce a quality fishery in Geddes Lake.

Table 4. Average back-calculated lengths (mm) for each age class of black crappie sampled from Geddes Lake, Charles Mix County, 2010.

Year Class	Age	N	Back-calculated Age				
			1	2	3	4	5
2008	2	45	86	145			
2007	3	4	93	140	200		
2006	4	2	100	164	217	261	
2005	5	1	95	134	187	231	258
All Classes		52	93	146	201	246	258
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 7. Length frequency histogram for black crappie sampled from Geddes Lake, Charles Mix County, 2010.



Geddes Lake has a new dominant species this survey. The new dominant species is hybrid sunfish. A number of other sunfish species have been sampled in past survey (Table 6) and all are more than likely contributing to this population. Figure 8 illustrates the size structure, which is on the small side. Not much else can be concluded from this population as they are hybrids.

Figure 8. Length frequency histogram for hybrid sunfish sampled from Geddes Lake, Charles Mix County, 2010.

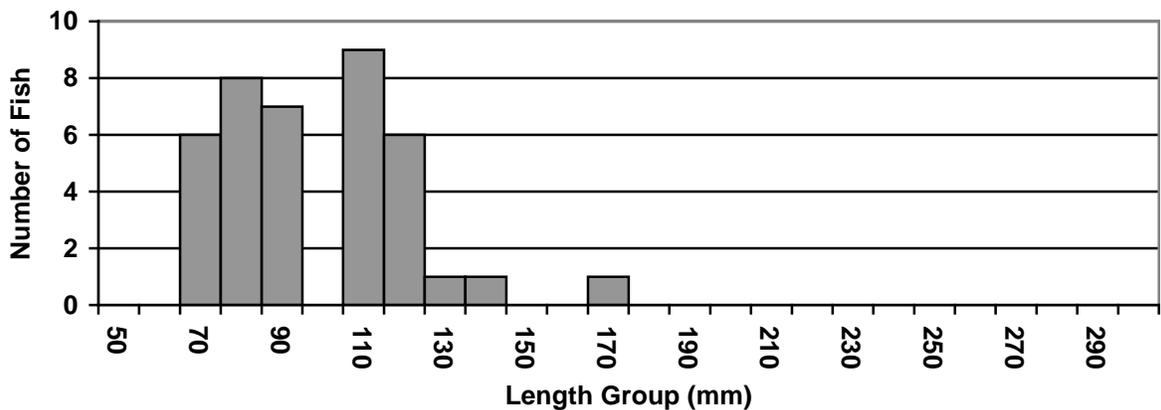


Table 5. Stocking records for the last ten years for Geddes Lake, Charles Mix County.

Year	Number	Species	Size
1999	6,400	Largemouth Bass	Fingerling
2001	6,400	Largemouth Bass	Fingerling
2008	100	Largemouth Bass	Juvenile
2009	100	Largemouth Bass	Juvenile
2009	1,050	Largemouth Bass	Juvenile

RECOMMENDATIONS

1. Resurvey in 2013 to continue monitoring the fish populations in Geddes Lake.
2. Electrofish in the fall of 2013 to check the largemouth bass population. If the population is below 20 per hour, stock adults at a rate of 10 per acre on top of fingerling stockings.
3. Stock juvenile and/or adult black crappie to supplement the existing population.

Table 6. Gill net (GN), trap net (TN) and electrofishing (EF) CPUE for all fish species sampled in Geddes Lake since surveys started.

Species	1976	1977	1979	1983	1987	1990	1992	1995	1998	2001	2004	2007	2010	2012
BLB (GN)	26.0	12.0	--	--	--	--	--	--	--	--	--	--	--	--
BLB (TN)	11.3	5.1	39.4	59.6	797.1	44.6	55.0	78.0	211.3	448.3	266.5	22.9	33.0	--
BLC (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLC (TN)	--	--	--	--	--	0.1	0.5	24.4	26.9	9.0	3.2	0.1	5.4	--
YEP (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
YEP (TN)	--	--	--	--	--	0.4	0.2	0.4	0.1	--	--	--	--	--
LMB (EF)	--	--	--	--	11.3	--	--	--	--	--	--	--	--	0.0
LMB (GN)	4.0	--	--	--	--	--	--	--	--	--	--	--	--	--
LMB (TN)	1.3	--	0.3	--	2.3	0.1	0.4	0.6	--	0.1	0.3	--	--	--
CCF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CCF (TN)	--	--	--	--	--	--	--	0.4	--	0.3	0.1	--	--	--
COC (GN)	--	112.0	--	--	--	--	--	--	--	--	--	--	--	--
COC (TN)	--	27.7	11.4	41.4	0.6	1.1	0.8	6.6	0.4	14.9	27.9	167.3	6.2	--
BLG (GN)	2.0	--	--	--	--	--	--	--	--	--	--	--	--	--
BLG (TN)	17.8	14.1	--	1.4	54.8	1.3	1.1	2.8	0.1	0.1	0.2	--	--	--
GSF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GSF (TN)	--	--	1.4	3.6	6.8	2.0	--	3.2	1.7	--	0.2	--	--	--
OSF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OSF (TN)	--	--	--	4.4	0.3	0.8	0.7	1.6	0.4	--	--	4.4	--	--
PUS (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PUS (TN)	--	--	--	--	--	--	--	--	--	0.9	--	--	--	--
HYB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HYB (TN)	--	--	--	--	--	--	--	--	--	--	0.1	--	70.2	--

BLB – Black Bullhead, BLC – Black Crappie, YEP – Yellow Perch, LMB – Largemouth Bass, CCF – Channel Catfish, COC – Common Carp, BLG – Bluegill, GSF – Green Sunfish, OSF – Orangespotted Sunfish, PUS – Pumpkinseed sunfish, HYB – Hybrid Sunfish