SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-42

Name: Mallard Dam **County(ies):** Corson
Legal Description: T22N-R21W-Sec. 2 **GPS:** 45°53'31.58"N 101°29'20.29"W
Location from nearest town: 2 miles south and 2 miles east of Watauga

Date of present survey: June 29- July 1, 2009 (netting)
Date of last survey: July 5-7, 2006 (netting)
Most recent lake management plan: F-21-R-38 (January 1, 2006 to December 31, 2010)
Management classification: Warmwater Semi-permanent

Primary Game Species	Secondary and Other Species
Black Crappie	Black Bullhead
Largemouth Bass	Green Sunfish
Northern Pike	Channel Catfish
Yellow Perch	

PHYSICAL DATA

Surface Area: 40 acres **Watershed:** 6,400 acres
Maximum Depth: 16 feet **Mean Depth:** 7 feet
Lake elevation at time of survey (field observations): Full
Contour map: No **Date:** No

Ownership of lake and adjacent lakeshore properties:

Mallard Dam is a 40-acre impoundment located on Hump Creek, part of the Grand River drainage. The earthen dam creating the lake was constructed by the Federal Emergency Relief Administration in 1934. Mallard Dam lies within 160 acres of land owned by Corson County. To allow for the construction of the dam and the resultant flooding, as well as for public access to a strip of land 12-feet above the high water contour, two easement contracts to the State of South Dakota were signed. The South Dakota Department of Game, Fish and Parks applied for and received vested water rights to 180 acre/feet of water annually at Mallard Dam for public recreation. The Wildlife Division of the South Dakota Department of Game, Fish and Parks completes fisheries management activities at Mallard Dam.

Watershed condition with percentages of land use types:

Mallard Dam has a watershed of 6,480 acres or approximately 10.125 square miles, which is made up of South Dakota School and Public Lands property and privately owned agricultural land. Land use percentages in the watershed are approximately 50% native grassland utilized as pasture and hayland, 49% cultivated cropland, and 1% roads and residences. The immediate shoreline is 100% pastureland and cattle have direct access to the lake.

Fishing access:

Fishing access is somewhat limited during open water periods. There is no boat ramp for water access. A section line that crosses the spillway and an easement around the shoreline to a point 12 feet above the high water mark allows for shoreline fishing. Vegetation may hamper shore fishing at times of the year. There is good access for winter fishing.

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

The spillway was redone in 1998 and both the dam and spillway are in good condition. The bridge across the spillway is also in good condition. The access road is only a section line that may become impassible during wet times of the year.

Field observations of aquatic vegetation condition:

The emergent vegetation surrounds about 90% of the shoreline is a mix of bulrushes and cattails. The only submergent vegetation observed was floating leaf pondweed in just a few areas around the shoreline.

CHEMICAL DATA

Field observations of water quality and pollution problems:

No pollution problems were observed at the time of the survey. Water clarity was very bad with a secchi disc reading of only 1 inch. The water has the look of chocolate milk. Other water quality characteristics were measured in the field on June 29, 2009, using a HACH water quality kit, an Oyster meter and an YSI 55 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 Mallard Dam, Corson County, June 1, 2009.

Station	Depth (ft)	Temp (F)	DO (ppm)	CO2 (ppm)	ALK (mg/l)	Hardness (mg/l)	pH	Secchi disc (in)
A	Surface	74.8	7.85	29.0	93	62	7.61	6
A	17	69.8	4.40	36.8	70	62	7.43	

BIOLOGICAL DATA

Methods:

Mallard Dam was sampled on June 29-July 1, 2009, 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 on Mallard Dam in 2009. 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 Mallard Dam, Corson County, June 29-July 1, 2009.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Crappie	414	85.2	41.4	± 11.9	32.4	7	7	103
Black Bullhead	44	9.1	4.4	± 2.3	9.5	22	22	90
Northern Pike	13	2.6	1.3	± 0.7	0.5	92	23	89
Channel Catfish	12	2.5	1.2	± 0.9	0.1	67	67	87
Yellow Perch	2	0.4	0.2	± 0.2	1.6	--	--	94
Largemouth Bass	1	0.2	0.1	± 0.1	0.4	--	--	103

* Ten year mean (1968, 1971, 1979, 1982, 1987, 1991, 1995, 2000, 2003, 2006)

Black Crappie

The black crappie population in Mallard Dam has decreased slightly from the 2006 survey. The current CPUE of 41.4 is slightly below the 48.0 from 2006 but still above the 32.4 ten year mean (Table 2). Figures 1 through 3 illustrate how the size structure has changed over the past three surveys. The 2009 population looks about the same as the 2006 survey except for 2 slight differences. The first is that there are a few bigger fish in 2009. Also the big grouping of substock fish has shifted to a larger size with some even crossing into the stock category, which was expected to happen. These couple changes can be seen in that the current PSD is 7 with the RSD-P of 7 compared to the PSD of 13 with an RSD-P of 0 from the 2006 survey. The biggest down fall to the population is the growth rate. Growth is significantly slower than the statewide, regional and SLI means in all ages (Table 3). Condition is fine with a mean Wr of 103. Mallard Dam has a water clarity issue that does not allow for the production of invertebrates that are necessary for good growth. The good thing with this population is that it is self-sustaining. If growth would improve, Mallard Dam could have a great fishery.

Table 3. Average back-calculated lengths (mm) for each age class of black crappie sampled from Mallard Dam, Corson County, 2003.

			Back-calculated Age					
Year Class	Age	N	1	2	3	4	5	6
2008	1	4	74					
2007	2	72	65	101				
2006	3	10	65	122	150			
2005	4	9	67	108	158	174		
2004	5	4	63	97	146	173	195	
2003	6	1	72	134	160	186	225	237
All Classes		**100**	**68**	**112**	**154**	**178**	**210**	**237**
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 1. Length frequency histogram for black crappie sampled from Mallard Dam, Corson County, 2009.

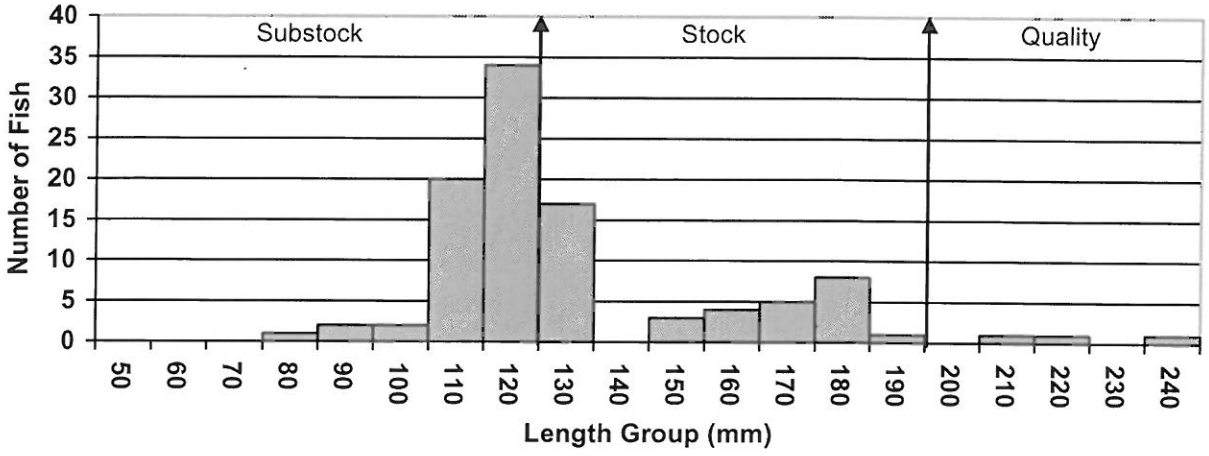


Figure 2. Length frequency histogram for black crappie sampled from Mallard Dam, Corson County, 2006.

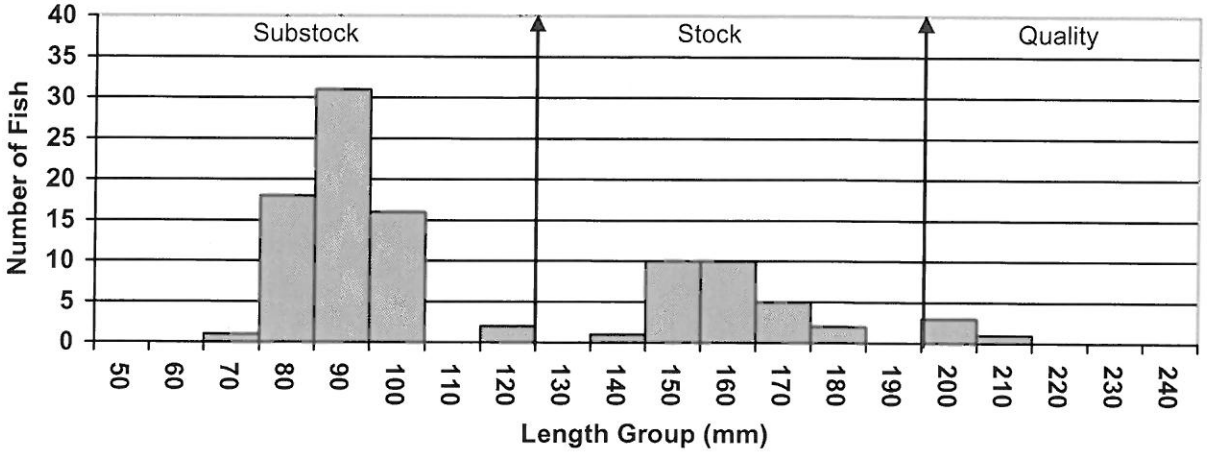
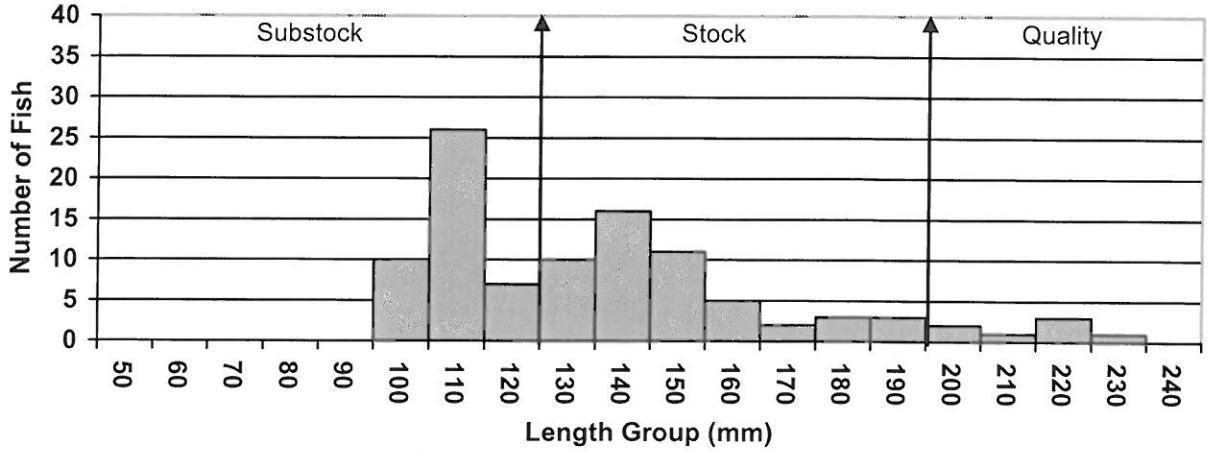


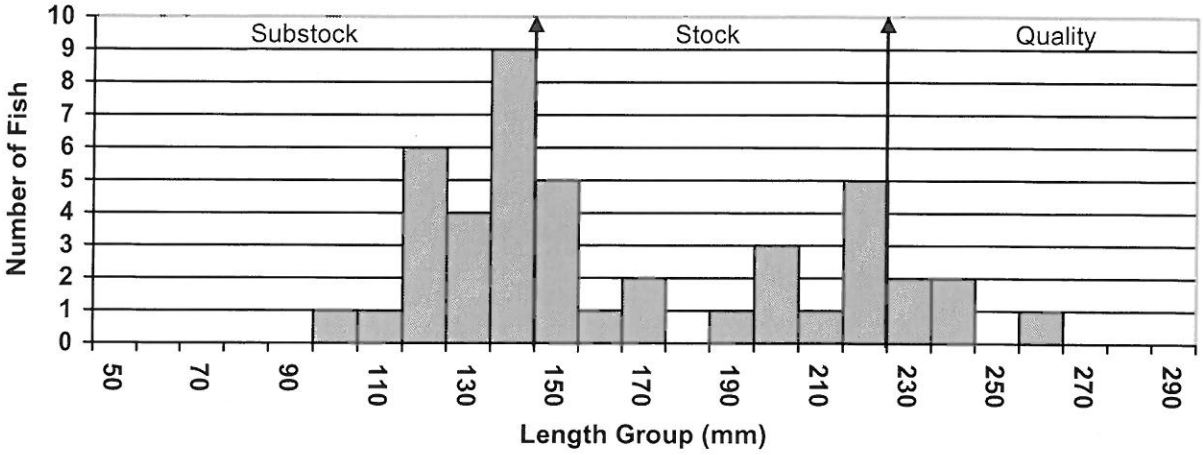
Figure 3. Length frequency histogram for black crappie sampled from Mallard Dam, Corson County, 2003.



Other Species

The black bullhead population has decreased slightly from the 2006 survey. The current CPUE is 4.4, which is below the 6.6 from 2006 as well as the 9.5 ten year mean (Table 2). This population has remained relatively stable over the years with only a couple years on record with big jumps (Table 4). Condition is fine with a mean Wr of 90. Size structure is fine with a PSD of 22 and an RSD-P of 22. The sizes can be better seen in Figure 4.

Figure 4. Length frequency histogram for black bullhead sampled from Mallard Dam, Corson County, 2009.



Northern pike, channel catfish, yellow perch and largemouth bass were the other species sampled this survey period. All these species are sampled in most years but their CPUE is generally low as can be seen in Table 4. Other species not sampled this survey that have been in the past are golden shiner, pumpkinseed sunfish, green sunfish, and bluegill.

Stocking Records: The only stocking that has taken place on Mallard Dam in the last 10 years was 81 channel catfish adults in 2001.

RECOMMENDATIONS

1. Resurvey in 2012 with trap nets to monitor the fish populations in the lake.

Table 4: Gill net (GN) and trap net (TN) CPUE for all fish species sampled in Mallard Dam through the history of lake surveys.

Species	1968	1971	1979	1982	1987	1991	1995	2000	2003	2006	2009
BLB (GN)	--	5.0	--	2.0	--	--	--	--	--	--	--
BLB (TN)	3.0	8.0	9.9	4.0	34.1	15.3	3.5	9.0	1.2	6.6	4.4
BLC (GN)	--	4.0	--	--	--	--	--	--	--	--	--
BLC (TN)	16.0	60.0	22.9	12.5	53.9	54.4	4.6	39.1	12.5	48.0	41.4
YEP (GN)	--	10.0	--	6.0	--	--	--	--	--	--	--
YEP (TN)	--	11.0	0.6	2.5	1.0	0.1	0.1	0.1	--	0.5	0.2
LMB (GN)	--	1.0	--	--	--	--	--	--	--	--	--
LMB (TN)	1.2	0.3	0.1	0.5	0.1	0.3	--	0.3	0.5	0.2	0.1
NOP (GN)	--	1.0	--	3.0	--	--	--	--	--	--	--
NOP (TN)	0.3	0.3	0.3	--	0.9	1.1	0.4	0.6	1.2	1.2	1.3
CCF (GN)	--	--	--	--	--	--	--	--	--	--	--
CCF (TN)	--	--	--	--	--	--	0.1	--	1.0	0.3	1.2
BLG (GN)	--	--	--	--	--	--	--	--	--	--	--
BLG (TN)	--	--	--	--	--	--	0.3	--	--	--	--
GSF (GN)	--	--	--	--	--	--	--	--	--	--	--
GSF (TN)	0.3	--	1.5	--	0.1	2.0	--	0.3	--	0.1	--
PUS (GN)	--	--	--	--	--	--	--	--	--	--	--
PUS (TN)	--	4.0	--	2.4	2.5	--	--	0.3	--	--	--
GOS (GN)	--	--	--	--	--	--	--	--	--	--	--
GOS (TN)	--	--	--	1.1	0.3	0.1	--	0.1	--	--	--

BLB-Black Bullhead, BLC-Black Crappie, YEP-Yellow Perch, LMB-Largemouth Bass, NOP-Northern Pike, CCF-Channel Catfish, BLG-Bluegill, GSF-Green Sunfish, PUS-Pumpkinseed Sunfish, GOS-Golden Shiner