ANGLER USE AND HARVEST SURVEYS ON STOCKADE LAKE, SOUTH DAKOTA, MAY – JULY 2011

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Angler Use and Harvest Survey on Stockade Lake, South Dakota, May - July, 2011

By

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Completion Report

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PREFACE

This is an annual report. Copies of this report and reference to the data is not for publication and can only be made with written permission from the author(s), Director of the Division of Wildlife, or the Secretary of the South Dakota Department of Game, Fish and Parks, Pierre, South Dakota 57501-3182.

The author would like to acknowledge the following individuals who assisted with the data collection, data entry, and editing this manuscript from the South Dakota Department of Game, Fish and Parks; Travis March, Aaron Sundmark and two reviewers.

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EXECUTIVE SUMMARY

From May 14th to July 31st, 2011 a creel survey was conducted at Stockade Lake, South Dakota. Information from this survey is included in this report and is used by managers for decisions on this fishery. The purpose of this survey was to update needed information on angler harvest, catch and satisfaction. Additional information on angler opinions towards fishery regulation complexity was also reviewed in this survey.

Angler use at Stockade Lake was estimated at 10,601 hours from May 14th to July 31st, 2011. This pressure was lower than estimated levels in 2003 (14,283 hours). Each month had fewer anglers than during the 2003 survey. Even with the lower number of hours, there was greater overall catch. Overall harvest of all fish species; however, was lower in 2011 than in 2003. Catch rates were much higher for yellow perch but lower for black crappie when compared to these two surveys. Catch rates of yellow perch increased from 2.87 fish per hour to 7.6. Harvest rates declined from 2.03 fish per hour to 0.35. This may be due the presence of white grub prevalent in the Stockade Lake yellow perch. Catch rates of black crappie decreased during this period from 9.79 fish per hour in 2003 to 5.2 in 2011. Harvest rates of black crappie also decreased during this same period (4.7 fish per hour in 2003 to 2.2 in 2011).

Overall angler satisfaction at Stockade Lake was 96% and exceeded the management goal of 66% based on Gigliotti (2003) for statewide anglers. A high angler satisfaction was also observed during the 2003 survey of Stockade Lake.

Anglers felt that fishing regulations in South Dakota were easy to understand. Eighty-five percent of Stockade Lake anglers felt that South Dakota fishing regulations were easy to understand. Seventy-seven percent of interviewed anglers were residents of South Dakota, but people interviewed gave their residency from 21 other states.

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INTRODUCTION

Stockade Lake was originally constructed in 1935 at the western entrance of Custer State Park. The largest reservoir (48.6 hectares) within the park boundaries, it derives its name from the original Gordon Stockade that was in the immediate area. Highly visible from the highway, many visitors travel and experience the lake and surrounding area (Figure 1). Each year some of the angling visitors target the fish populations. Stockade Lake has had an interesting history.

Stockade Lake was originally constructed by the damming of French Creek and was to become the first major ponded water below the city of Custer. This geographical context becomes important because it meant that Stockade Lake received deposition items from this community. One issue, in particular, was the nutrient loading that occurred due to a faulty municipal sewer system. The result of these influences was an impact on the water quality within Stockade Lake. Starting in the mid-1960's, an increase in aquatic weeds and a greater amount of algae was noted in the lake. Trout die-offs were beginning to take place and biologists assumed that the nutrient loading was impacting the amount of oxygen within the water. To offset these fish kills installation of aeration systems was an option to improve conditions.

Three attempts at improving the water quality in Stockade Lake have occurred with each having varying success. The first aeration system determined if it was a feasible method in totally mixing the lake oxygen and temperature profiles. This first system showed some success and again saw use in 1971 to prevent a fish die off. The second system had some similar goals to the first but was ultimately removed due to operational costs. Steps were then taken to address the source of the nutrient loading. The sewer system of the city of Custer went through three stages. Primary sewage treatment and discharge into French Creek (the major tributary of Stockade Lake) existed until 1974 when a secondary treatment facility including the use of digesters and stabilization ponds was installed. Finally, in 1986 the discharge was moved into a different watershed that consisted of only temporary flows. A final attempt to improve water quality occurred from 1987-1989 when removal of sediment via dredging took place. Even with all of these attempts

to improve water quality, a fully functional aeration unit was needed as issues involving lake stratification, (e.g. fish kills and the occurrence of algal blooms) still existed. Some of these were in part due to lake stratification that occurs at Stockade Lake which, in turn, are the results of the nutrient loading from the past.

Besides the efforts at installing an aeration system, other improvements were also attempted. In the 1980's, a dredging operation removed an estimated 175,000 cubic yards of sediment. It was only after the city of Custer began pumping the sewage effluent to a different drainage that the continual input of nutrients has stabilized. However, much of the enriched sediment still was present in the lake even after the extensive dredging effort. In 1999, biologists installed a new aeration system that allows more oxygen in the lake due to the breakup of lake stratification or at least the lowering of the thermocline (Simpson 2005). Success of this system was showing promise and continues to work during the open water season at Stockade Lake. This last system was successful in regards to the stated objectives, although occasional problems (e.g. hose leaks, kinks) to the system do occur.

There were four goals for the 2011 summer Stockade Lake Creel Survey:

1. Quantify angler use at Stockade Lake during the summer of 2011.
2. Determine angler harvest of game fish species in Stockade Lake.
3. Determine angler satisfaction at Stockade Lake during the summer of 2011. Our management objective is to maintain angler satisfaction on Black Hills reservoirs at the 2003 average of 66%.
4. Determine angler attitudes towards the complexity of South Dakota fishing regulations.

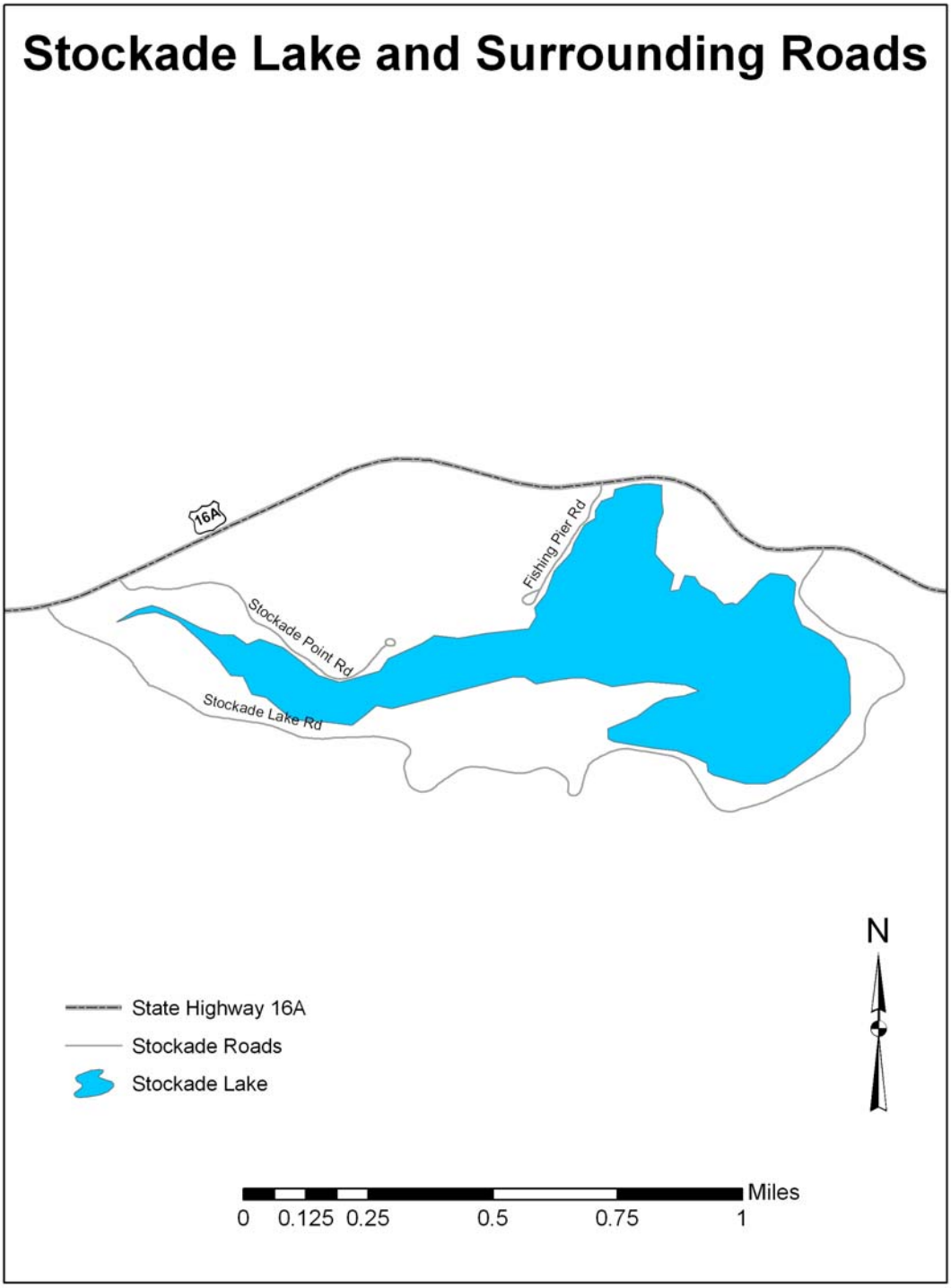

Figure 1. Geographical location of Stockade Lake and surrounding access roads.

SAMPLING METHODS

Angler Use and Preference Survey

A creel clerk surveyed anglers at Stockade Lake from May 11th to August 8th, 2011. As a small lake (48.6 hectares), the creel was performed in a roving access design (Malvestuto 1983: Pollock et al. 1994). A creel of this fashion consists of two independent parts, pressure counts and angler interviews. Creel clerks were instructed to only interview anglers that were finished fishing. Data on length of trip, species caught, numbers of fish caught and released, angling method, primary and secondary fish species caught and targeted, number of fish caught and released, and angler preferences were collected during each interview.

A stratified process was used to select dates of work, work shifts and count times for the pressure counts. Surveys were conducted throughout the entire week and were separated into two strata (weekend/holiday and weekday). A greater emphasis was placed on weekends as there is traditionally more angling activity during those days and a greater chance for completed interviews. All days were divided into AM and PM shifts with half of the shifts, on a monthly basis, randomly assigned to each category. All creel shifts were scheduled to be performed during the daylight hours.

Anglers were asked two preference questions during the 2011 Stockade Lake Creel Survey. The following questions were asked of all anglers and the possible answers that they were given during the interview process.

1. Considering all factors, how satisfied are you with your fishing trip today? (Possible responses were: Very satisfied, Moderately satisfied, Slightly satisfied, Neutral or no opinion, Slightly dissatisfied, Moderately dissatisfied, or Very dissatisfied).

2. What are your feelings on South Dakota fishing regulations? (Possible responses were: Too complex, moderately complex, Somewhat complex, Neutral, Somewhat easy to understand, Moderately easy to understand, Easy to understand).

Each creel survey across the state asks anglers the first question. Angler satisfaction across many years of surveys aids with management direction in combination with other factors; such as demographic changes in relation to satisfaction. Managers of the Black Hills fisheries need to know anglers opinions on regulation complexity within the Black Hills. All anglers were asked these questions after finishing their fishing trip. Actual copies of the field interview and pressure forms are in Appendices A and B. Creel Application Software (CAS) Creel Survey Data Entry/Analysis Program was used for data entry and analysis of creel data (Soupir and Brown 2002).

RESULTS & DISCUSSION

Angler Use

The estimated angling pressure at Stockade Lake during the summer of 2011 (10,601 hours) declined by approximately thirty-five hundred hours since the most recent survey in 2003 (14,283 hours, Table 1). Across the three months of the survey (May-July) there were declines in pressure at Stockade Lake across all months, but the greatest drop during the summer of 2011 was in May (Figure 2). The exact reason for this decline in angling pressure is unknown, but there could be many factors that are influencing the changes.

Many visitors go to Stockade Lake and utilize the fishery during the summer, but there was a drop in participation this summer. The month of May was a low usage month this summer. A possible explanation for this decline could be that there were more seasonal storms present (Skadsen and Todey, 2011). For example, on May 19th a snow storm dropped seven-inches of snow on the immediate area. This event and other rain events that were common during May 2011 could have contributed to the drop in angling pressure observed across the entire summer.

Table 1. History of summer creel survey values from Stockade Lake, 2003 and 2011. Estimated fishing pressure, expressed as angler-hours (h), catch as (fish/angler-h), and harvest as (fish/angler-h). Values of 80% confidence intervals noted in curly braces "{}".

YEAR	Overall			Yellow Perch		Black Crappie	
	Pressure (h)	Catch (fish/angler-h)	Harvest (fish/angler-h)	Catch Rate (catch/hr)	Harvest Rate (harvest/hr)	Catch Rate (catch/hr)	Harvest Rate (harvest/hr)
2003	14,283 {1,617}	22,340 {4,309}	9,365 {2,422}	2.87 {0.872}	2.03 {0.691}	9.79 {3.642}	4.7 {2.30)
2011	10,601 {1,107}	29,971 {6,095}	8,118 {3,645}	7.6 {0.540}	0.9 {0.446}	5.2 {2.039}	2.2 {1.162}

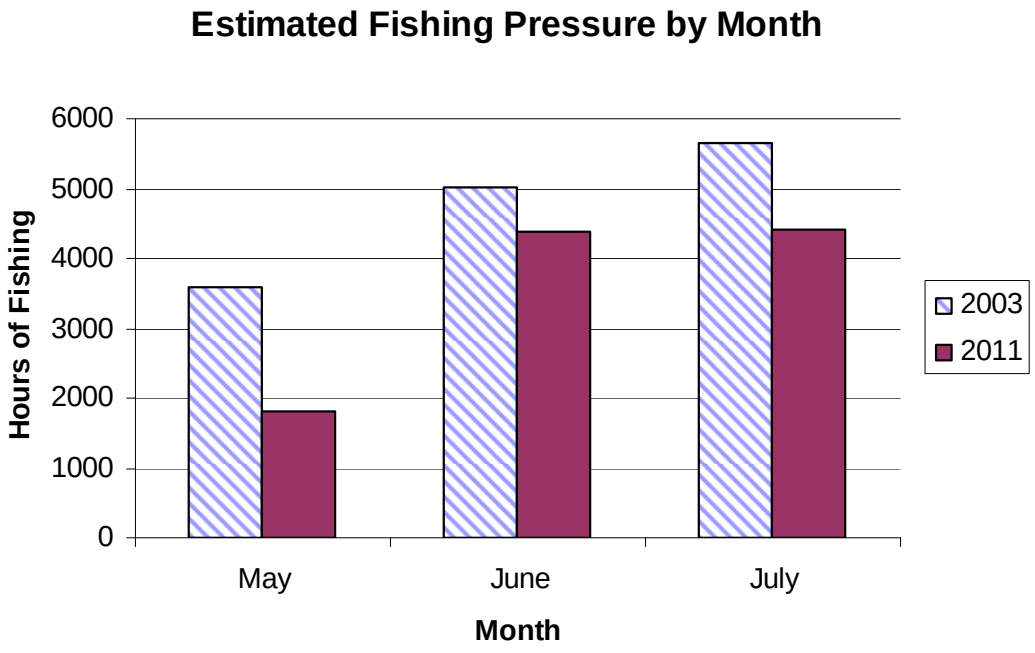

Figure 2. Estimated fishing pressure by month for Stockade Lake, May-July for the years 2003, and 2011.

Angler Harvest

Angler harvest is an important aspect of any fishery. As part of the overall catch component, harvest is generally referred to as that portion of catch that is not returned to the water (Malvestuto 1983). Harvest of trout was an important historic gauge of hatchery stocking success. Management goals, dating back to 1965, have stated a goal of 75% of catchable trout returned to the angler in the form of harvest (South Dakota Department of Game, Fish and Parks, and Bureau of Sport Fisheries Management 1965). Forty-six years later this goal may not be appropriate as angler attitudes have likely changed. Gigliotti (1997) found that there were seven different "types" or motivations for Black Hills anglers. Having a single goal that is harvest based may no longer be appropriate as some anglers either don't desire to take home fish or have other reasons for fishing. Still, some anglers pursue fish for table fare and their preferences are important as well.

Long-term harvest and catch data has value in two regards. First, it describes how much of a stocked product was used by the public. Secondly, it is an aid to validate the relative population status of wild or carryover populations when associated with population survey data. Total harvest can be broken down into the rate that fish were caught per unit period (Ricker 1975). Stating the harvest by an hourly rate allows the fishery to be compared to other waters and helps to normalize the data for these comparisons.

The total number of fish estimated to have been harvested decreased from 9,365 (80%CI 2,422) in 2003 to 8,118 (80%CI 3,645) in 2011 (Table 1). The decline in harvest occurred for many different species and may have been larger if it wasn't for the large harvest of bluegill during 2011 (Figure 3). Bluegill represented eighteen percent of the harvest in 2011 and were not recorded in the harvest in 2003. Once a rainbow trout fishery, this lake was eliminated from coldwater stocking in the mid-1990's when management of the lake switched to warm and coolwater species. The current fisheries are managed under natural yield or occasional supplemental stockings.

Besides the increase in bluegill harvest, yellow perch harvest remained relatively constant across the two periods (Figure 3). Harvest of other species dropped from 2003 to 2011. It was expected that the yellow perch would make up a large proportion of the winter fishery and have an even larger harvest component if this survey were to run year round and not for the three months of the summer. The size structure of yellow perch has increased between the two creel survey periods (Figure 4).

Black crappie was the most harvested fish species in 2011 (Figure 3). Total numbers of black crappie caught were lower in 2011 than in 2003. This might be due to an interspecific reaction between black crappie and bluegill, but it might also be the case that anglers were targeting bluegill or that they were incidental catch by crappie fishermen. The length frequency of lake survey captured black crappie has decreased slightly over time (Figure 5).

During the interview portion of the creel survey, anglers were asked the question "what species of fish are you targeting today?" Anglers reported that they were targeting "anything", largemouth bass, black crappie, rainbow trout, northern pike, yellow perch and smallmouth bass during the 2011 creel survey (Figure 6). Responses to this question again showed that "anything that bites" and largemouth bass were the primary targets in the summer fishery at Stockade Lake. All of these responses were similar to those recorded during the 2003 creel survey. It was interesting to note that bluegill, despite being the third most harvested species, were not noted as being a species anglers were targeting. This may be demonstrating that anglers were willing to switch their preference of fish to catch at the lake when a particular species was biting more readily.

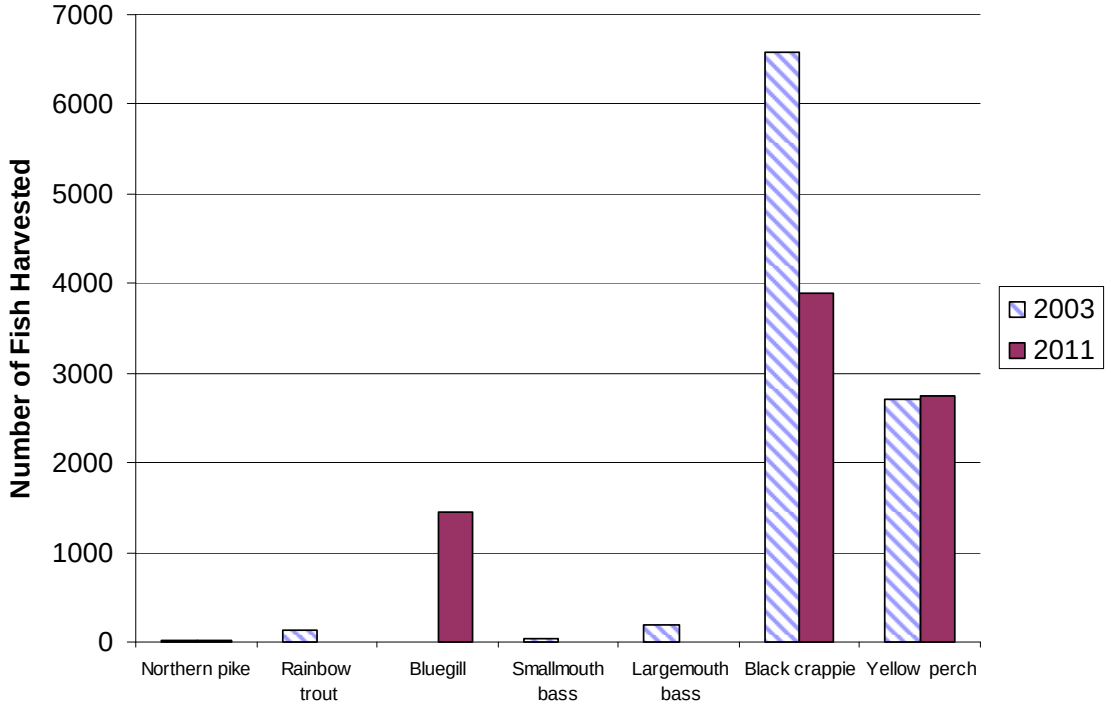

Figure 3. Estimated total harvest of game fish species from Stockade Lake, May-July, 2003 and 2011 creel surveys.

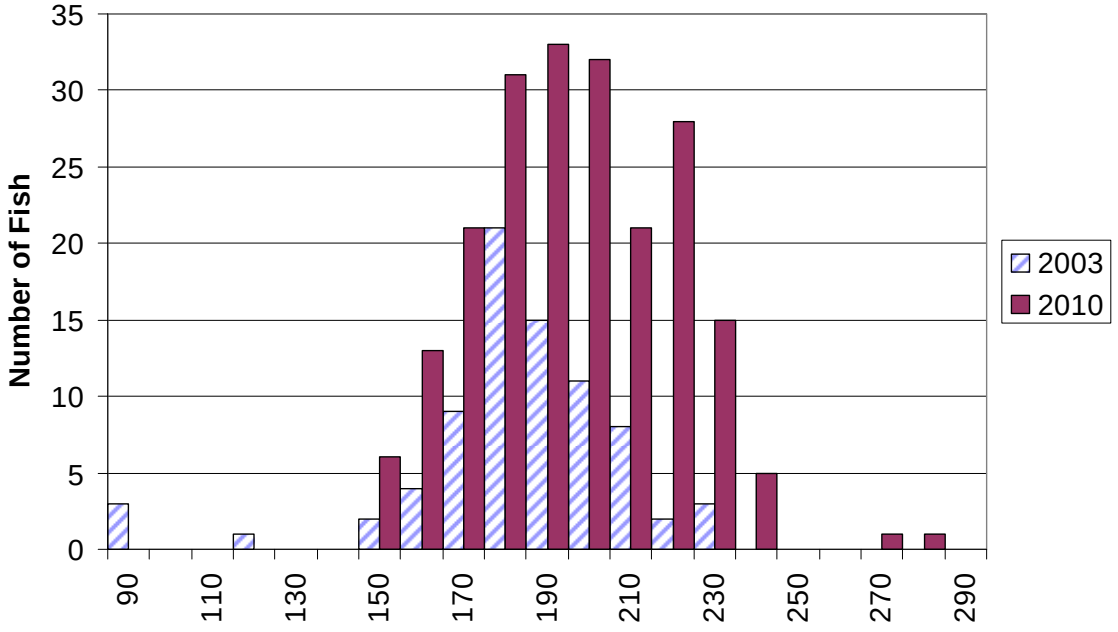

Figure 4. Length frequency histograms for yellow perch collected during lake surveys at Stockade Lake, Custer County, South Dakota for 2003 and 2010.

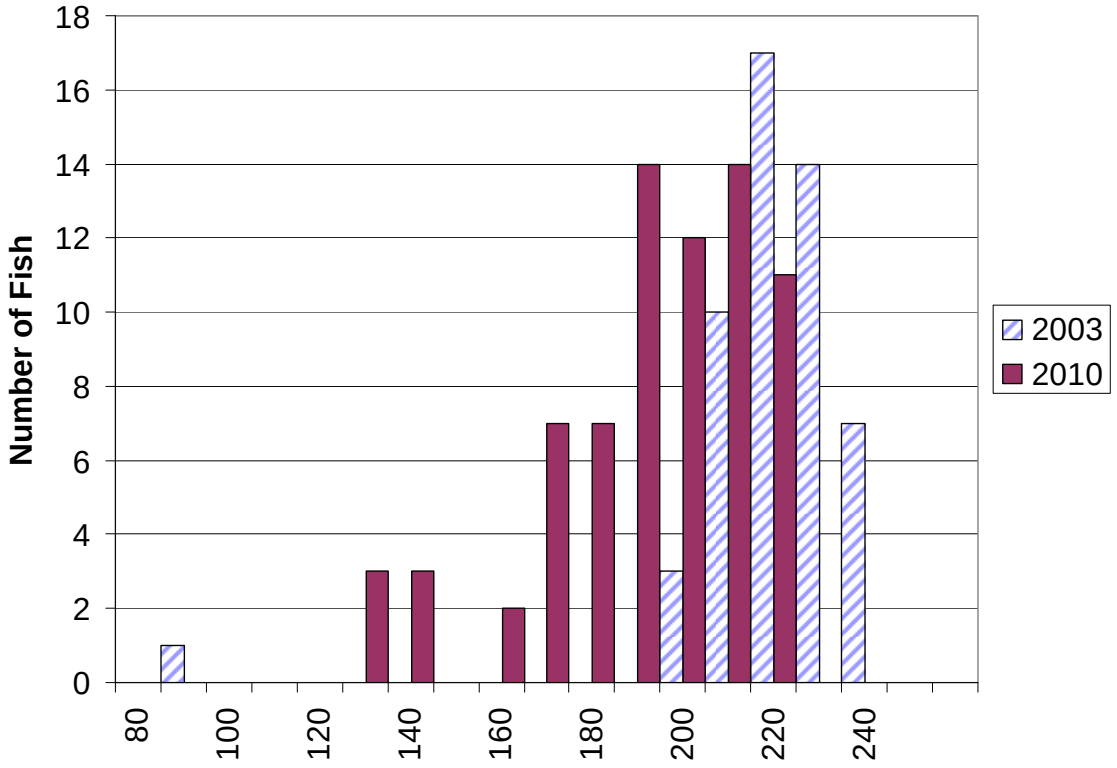

Figure 5. Length frequency histograms for black crappie collected during lake surveys at Stockade Lake, Custer County, South Dakota for 2003 and 2010.

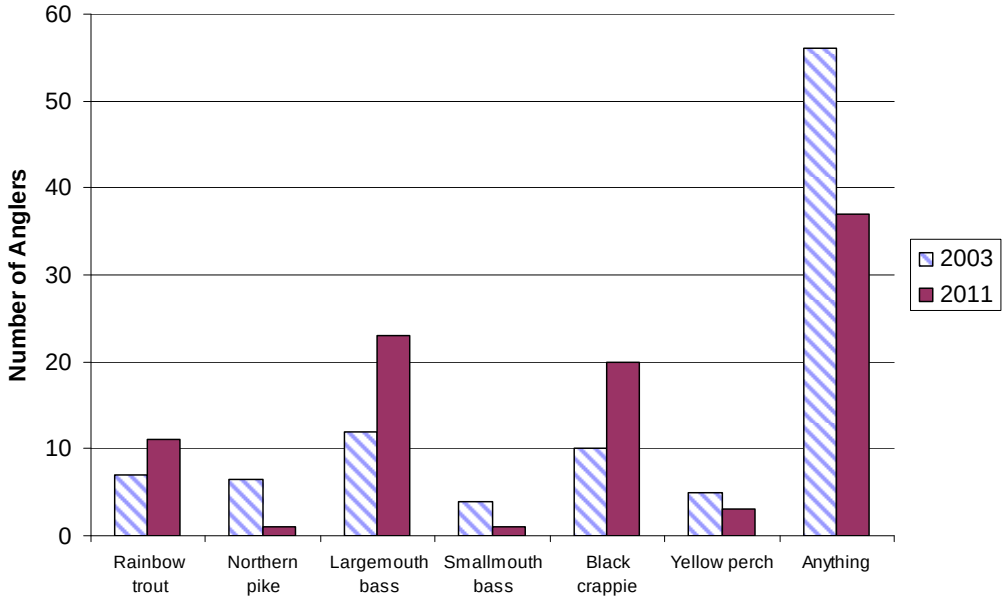

Figure 6. Percent of targeted species by anglers for Stockade Lake, May-July, 2003 and 2011.

Fish harvest differed by species across the summer months (Figures 7 and 8). Overall, harvest of all fish species was low in May. Bluegill and northern pike were the primary species harvested during this month. In June, harvest increased for all species, except northern pike. July had fewer bluegills and black crappie harvested, while the harvest of northern pike and yellow perch both increased.

Shifts in the species harvested and number of fish caught occurred over the summer. Bluegill and black crappie harvest peaked in June. This might be in part to the summer spawning strategy of these two warmwater fish species. In June, these species may have been very vulnerable to anglers during their prespawning and spawning behaviors. Later these species may have dispersed to other parts of the lakes and not all remained near the spawning locales. Northern pike anglers harvested few pike over the summer (Figure 8). Yellow perch harvest was similar to that seen in other creel surveys in the Black Hills (Simpson 2010). In the perch example, it may be that the fish have spawned earlier in the summer and do not return to feed aggressively until later in the summer.

Depictions of the size classifications of black crappie are noted in Figure 9. Numbers of fish caught from both creel surveys show a slight shift in the fish to a greater size, but an overall decrease in the overall abundance of harvested fish. The abundance of black crappie were lower in 2011 compared to 2003, but this may be due in part to the presence of the introduced population of bluegill that occurred between these two surveys.

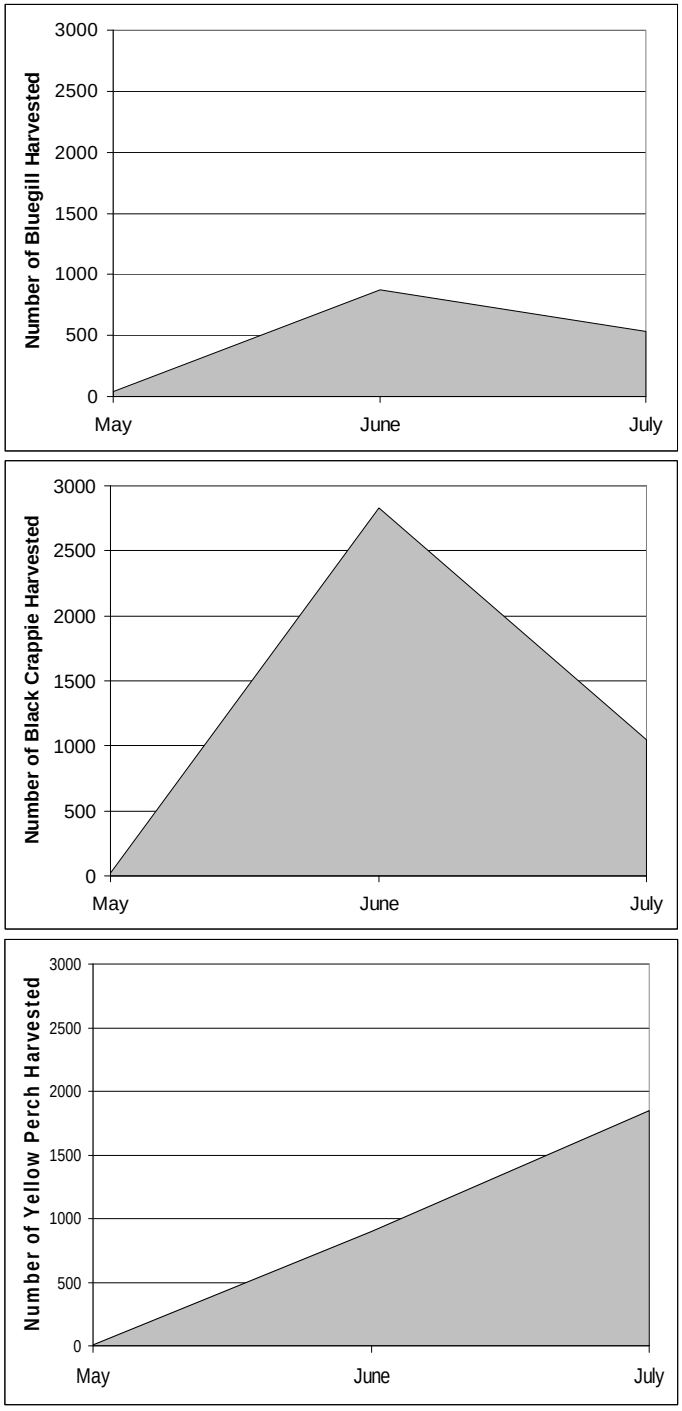

Figure 7. Monthly harvest numbers, by species during the summer creel at Stockade Lake, May-July, 2011. Bluegill are noted in the top graph, black crappie in the middle graph and yellow perch in the lower graph.

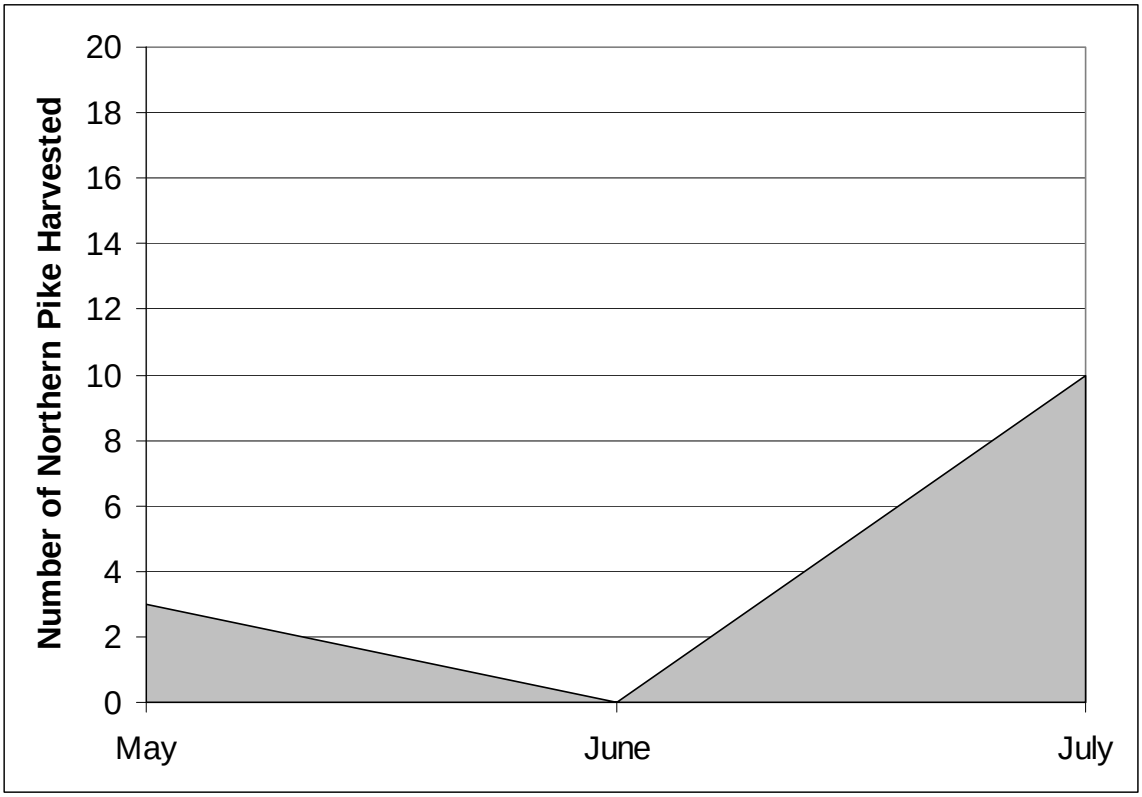

Figure 8. Monthly harvest numbers of northern pike during the summer creel at Stockade Lake, May-July, 2011.

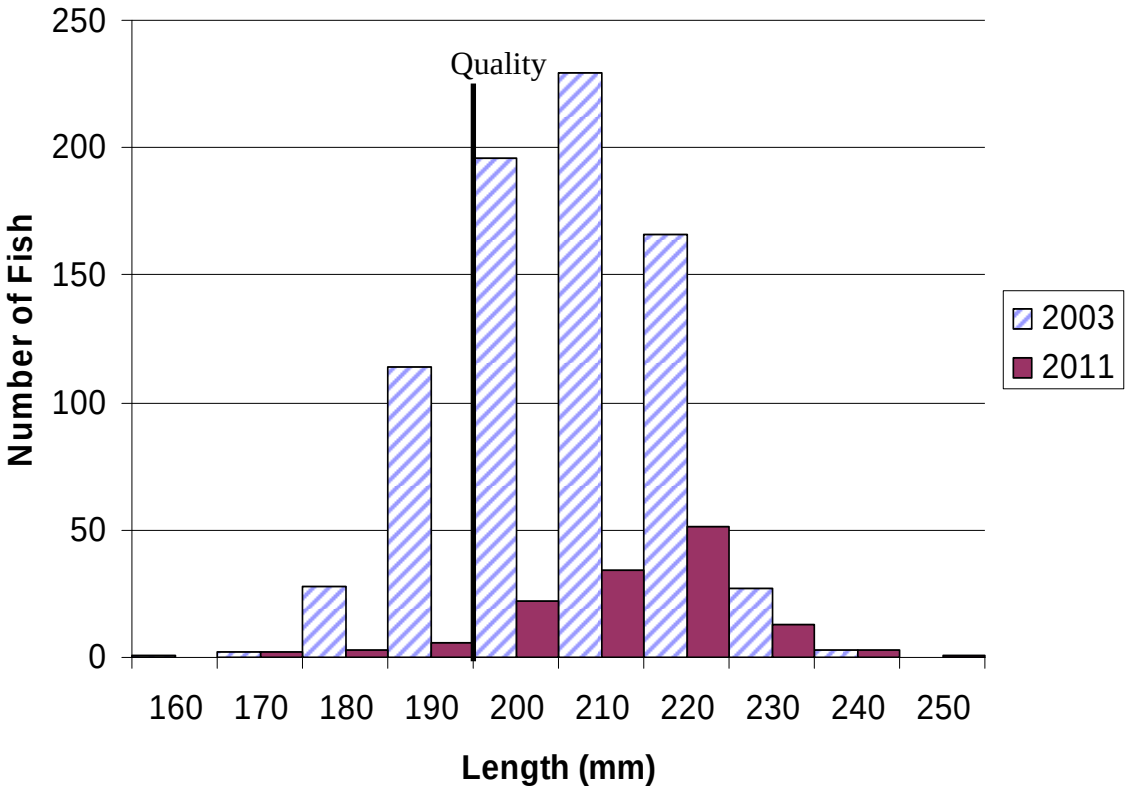

Figure 9. Length frequency of harvested creel survey black crappie measured in 2003 and 2011 on Stockade Lake. Lake survey composite includes individuals caught by gill nets and frame nets. Length delineation for quality size class of black crappie perch is also noted.

Angler Catch

Species caught by anglers differed from the 2003 to the 2011 survey (Table 1). Six species were reported as being caught by anglers during the most recent survey (Figure 10). Black crappie was the most highly reported fish caught by anglers (45% in 2011). Bluegill, yellow perch, largemouth bass, smallmouth bass, and northern pike were also reported as being caught by anglers, but at a much lower extent than black crappie. Yellow perch catch during the 2003 creel survey was high and appears to have remained relatively constant across surveys (Figure 10).

Bluegill and black crappie were caught at different rates across the summer months (Figure 11). Catch estimates for May indicate the lowest total catch for any of the summer months. June was highest for both of these species, while July decreased slightly. Northern pike were seldom caught throughout the summer months of 2011 (Figure 12). Yellow perch catch increased, almost in a linear fashion, during the sampling period.

The total catch of all fish species during the summer of 2011 was 29,971 (80% CI 6,095) (Table 1). This was an increase over the values in the 2003 creel survey. This increase was also observed in the overall catch rates with an estimated 1.56 fish per hour (80% CI 0.455) in 2003 and increased to 2.82 fish per hour (80% CI 1.00) in 2011. The increase in overall catch could be attributed to the presence of bluegill now in Stockade Lake. Catch rate for yellow perch increased substantially from 2.87 per hour in 2003 to 7.6 in 2011. Black crappie were caught at a lower rate in 2011 than in 2003 (Table 1).

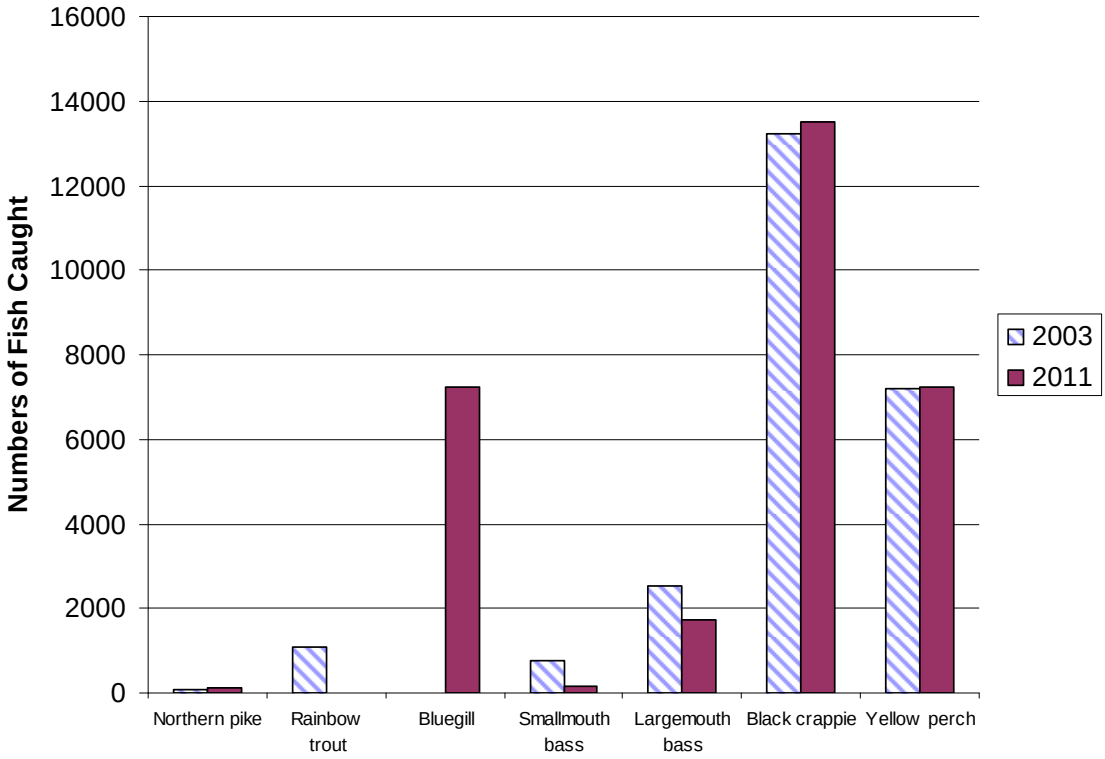

Figure 10. Numbers of fish caught as reported by anglers during 2003 and 2011 creel surveys at Stockade Lake, Custer County.

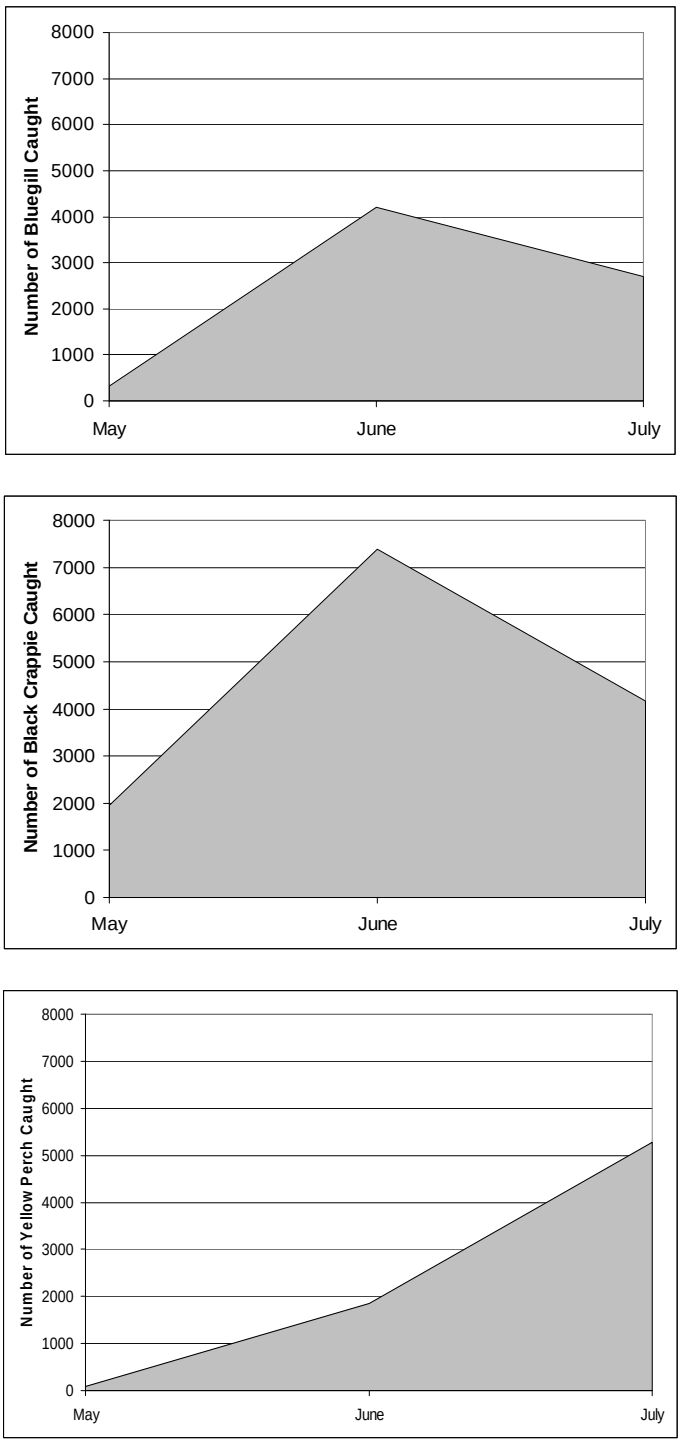

Figure 11. Monthly catch numbers, by species during the summer creel at Stockade Lake, May-July, 2011. Bluegill are noted in the top graph, black crappie in the middle graph and yellow perch in the lower graph.

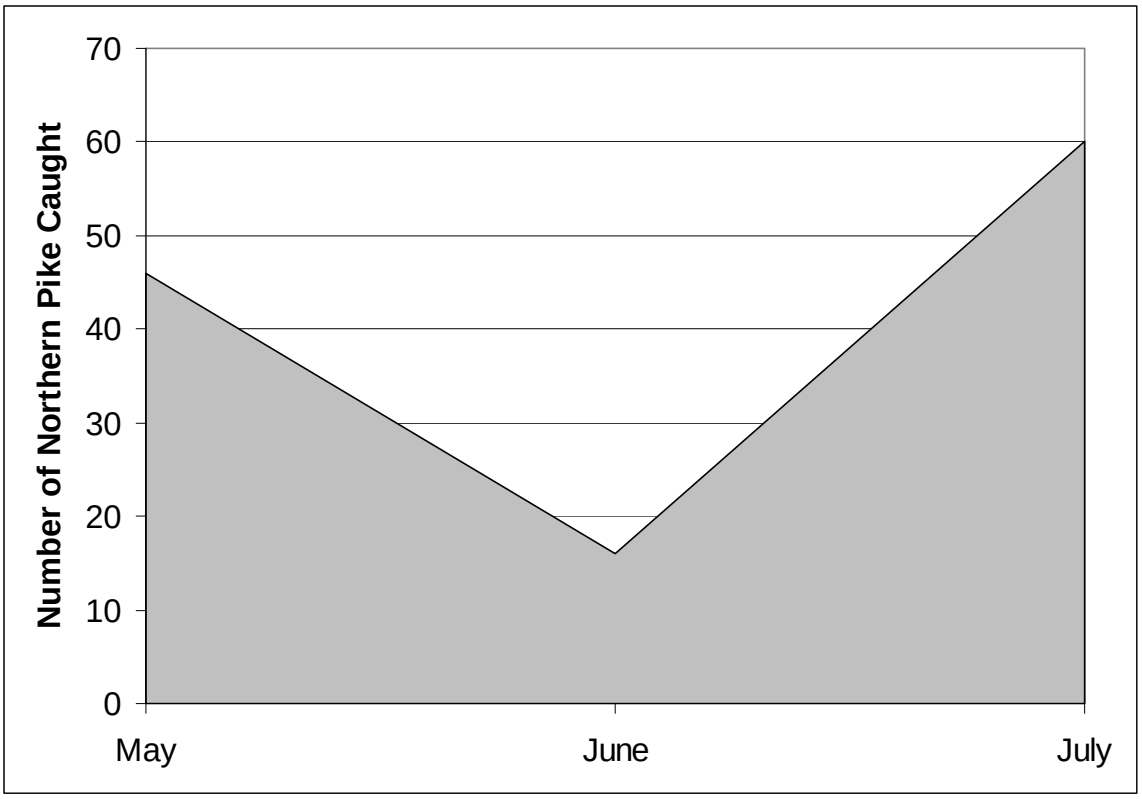

Figure 12. Monthly catch numbers of northern pike during the summer creel at Stockade Lake, May-July, 2011.

Rainbow trout were not reported as part of the catch during the 2011 survey (Figure 10). Stockade Lake has been classified as a cool and warmwater fishery so trout are not stocked on a regular basis (Appendix Table 3). The hatchery stockings that have occurred recently were an attempt to provide a trophy brown trout fishery or as a place to stock unneeded fingerlings. Two stockings of largemouth bass in 2003 were to supplement their presence in Stockade Lake. It was determined from electrofishing surveys the previous fall that largemouth bass populations were declining. It was decided the largemouth bass stocking was needed to supplement their numbers and reach a level that might influence panfish sizes to lengths anglers find acceptable.

Management has been switched from coldwater to cool/warmwater species at Stockade Lake. Two popular cool/warmwater species are smallmouth bass and northern pike. It is interesting that fewer than 150 of either smallmouth bass or northern pike were estimated

to have been caught in 2011. While the fishery may remain popular to some anglers, the total number of people participating or actively fishing for northern pike at Stockade Lake is limited.

Angler Satisfaction and Regulation Complexity

For nearly twenty years, Black Hills anglers have been asked about their satisfaction during creel survey interviews. Standardization of this question occurred more recently so that anglers across the state of South Dakota are asked the identical question. This question is important as it gauges angler attitudes towards management, management changes, provides a comparison point with other angler surveys, and provides direction for biologists in their management efforts. Another question asked of Stockade Lake anglers during the summer of 2011 was to determine how they perceive regulation complexity overall.

Anglers at Stockade Lake during the summer of 2011 stated a satisfaction level of 96%, 3% neutral and 2% dissatisfaction (Figure 13). These values indicated a better satisfaction level than in 2003 when 84% of anglers were satisfied, 6% neutral and 11% dissatisfied. As mentioned previously, it's difficult to determine angler satisfaction from a single variable; however, catch may have had an influence on increasing satisfaction between these two surveys. The overall catch rate in 2011 was higher (2.66 fish/hr) compared to 2003 (1.59 fish/hr). Two species of panfish (black crappie and yellow perch) had high catch rates at over 5 fish per hour (Table 1). Bluegill were caught at 4.8 fish/hr ($^{+}_{-}$ 80%CI 0.48) across the survey period. Many of these panfish species can be caught near shore during the summer and may have accounted for the high satisfaction seen in 2011.

It is known from previous work that angler's opinions towards the Black Hills fisheries are diverse and hard to describe (Gigliotti 1997, 2006). These efforts show that it is important to realize that not all anglers will be in approval of management actions. Each individual group will have their own idea of satisfaction and individual goals for that day.

Across South Dakota, reported angler satisfaction has changed over time. Gigliotti (1999) surveyed anglers across the state and found satisfaction at 73.4%. Later, he determined that anglers using the Black Hills fisheries were 66% satisfied, and 20% dissatisfied (Gigliotti 2003). During the 2011 summer creel survey at Stockade Lake, 96% of anglers responded that they were satisfied with all factors of their day of fishing. (Figure 13). This value was much higher than previously reported surveys.

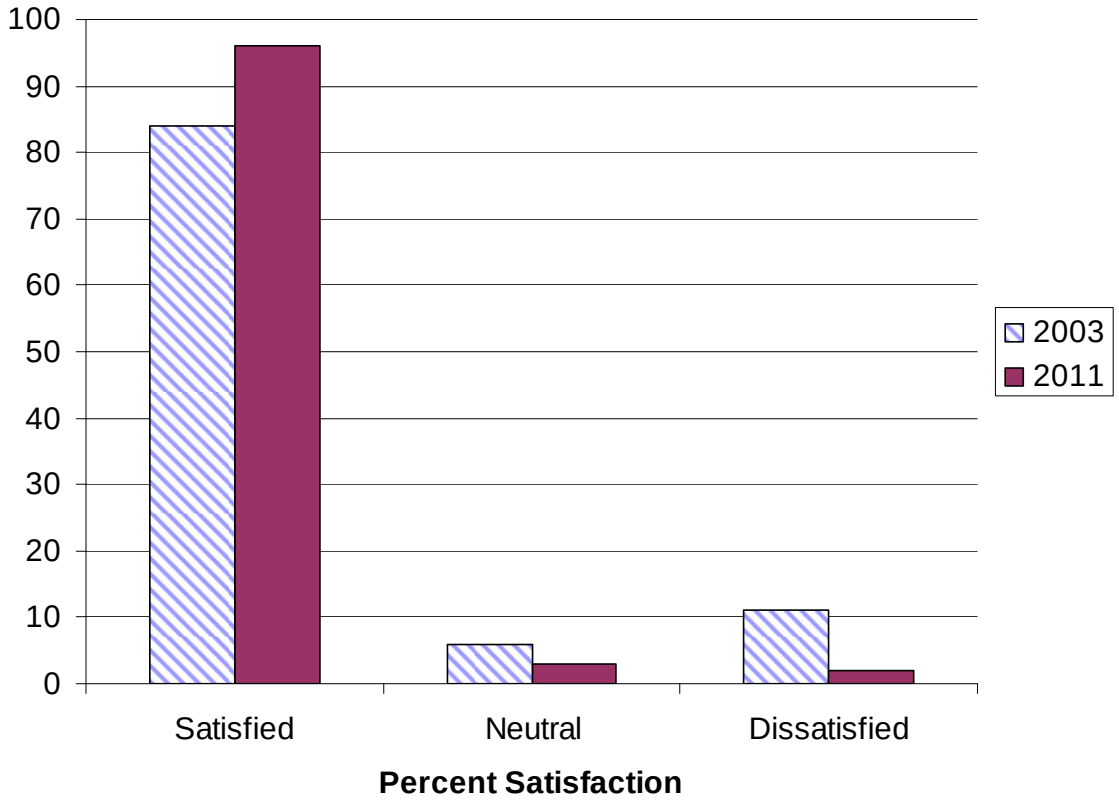

Figure 13. Percent satisfaction of anglers from Stockade Lake, May – July 2003 and 2011.

Most anglers felt that South Dakota fishing regulations were not complex (Figure 14). Eighty-five percent of anglers responded that regulations were “Not Complex”. Ten percent of anglers responded neutral or no opinion to the question and 5% responded that the South Dakota fishing regulations were complex.

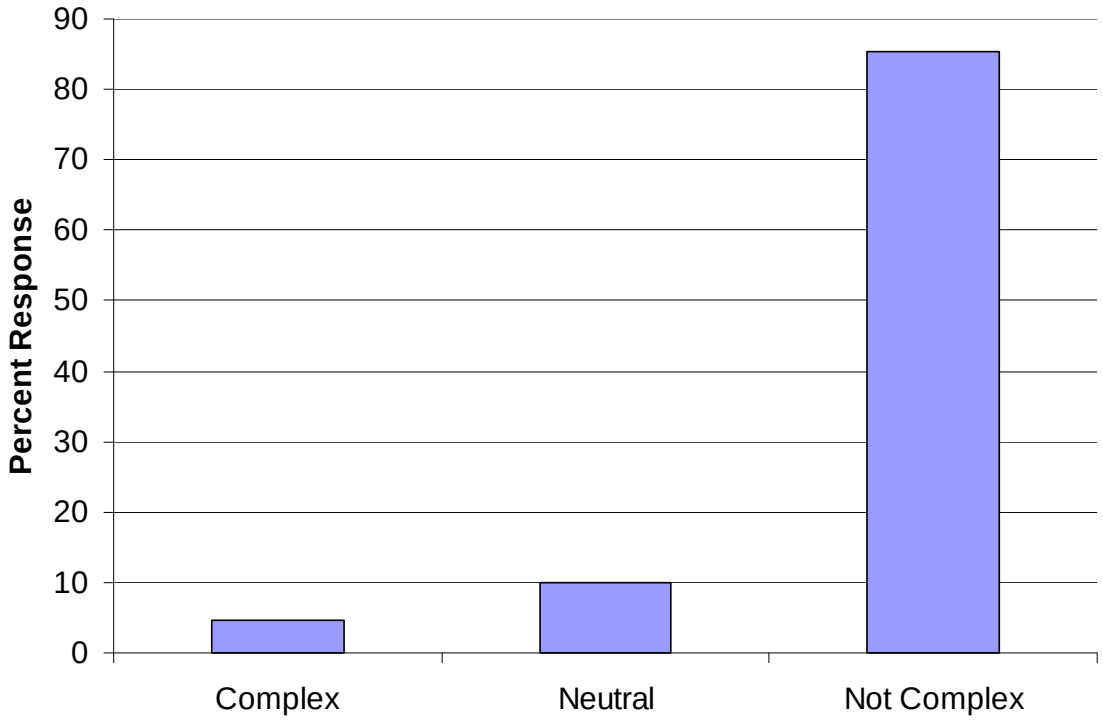

Figure 14. Angler responses to the question at Stockade Lake during the summer of 2011: What are your feelings on South Dakota fishing regulations?

Angler Demographics

Most Stockade Lake anglers during the summer of 2011 were residents of South Dakota (77%). Many of these anglers were from the Black Hills region (72%), but others traveled a long distance. Overall, the average distance that anglers traveled to reach the area was 222 miles with a maximum of 3,500 miles. Anglers responded that they came from twenty different states during the survey. Eighty percent of anglers at Stockade Lake in 2011 were males (Figure 15). Middle aged persons were identified as the most common angler, followed by young adults and seniors (Figure 16).

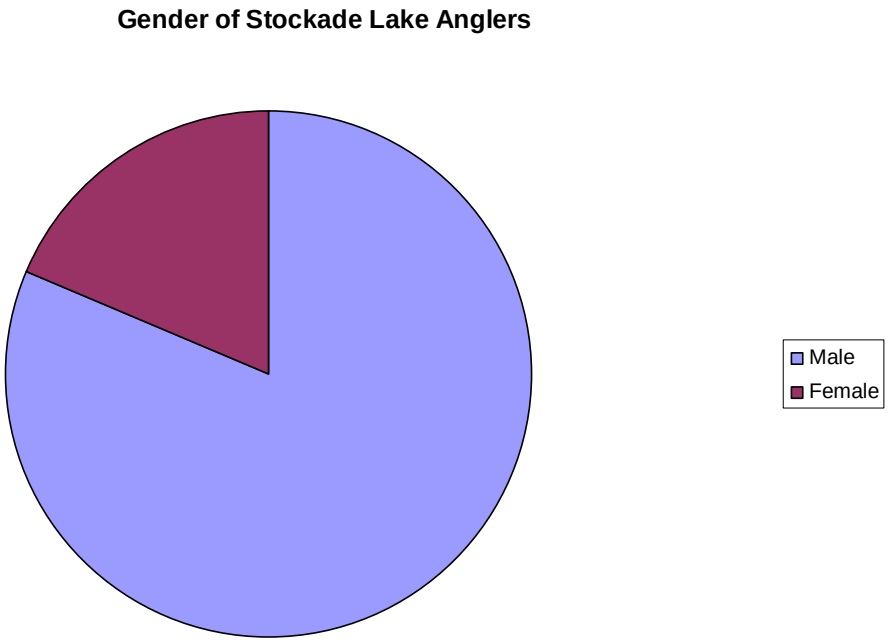

Figure 15. Gender of anglers fishing at Stockade Lake in 2011.

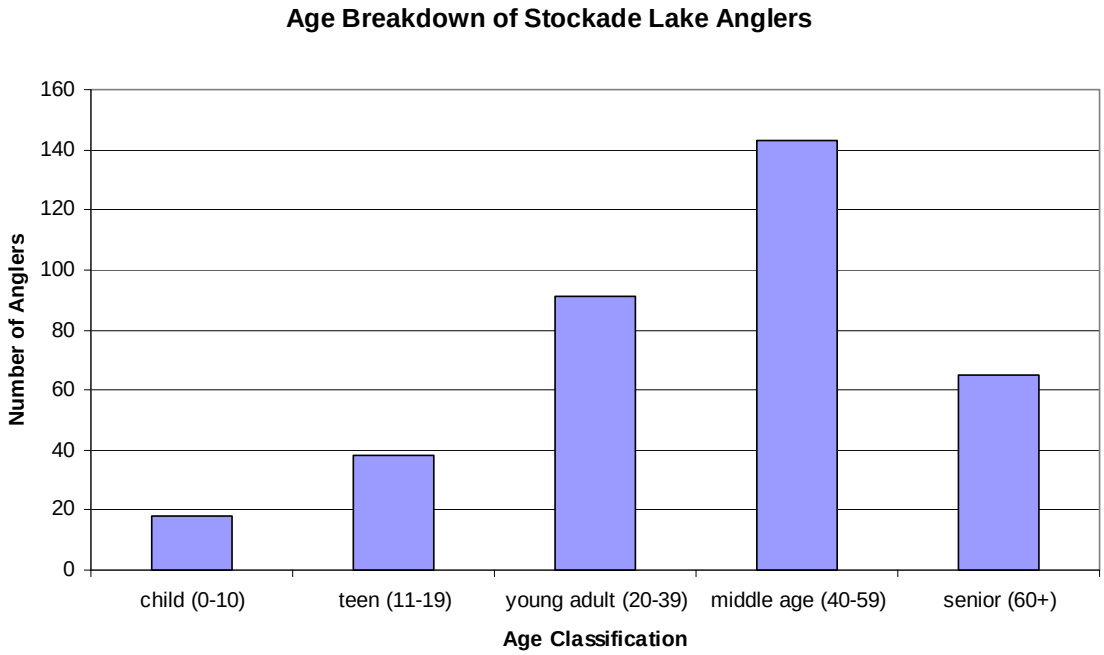

Figure 16. Age classification of anglers fishing at Stockade Lake in 2011.

A new statewide panfish harvest regulation took effect beginning January 1, 2011. The daily limit went from twenty-five to fifteen daily with the possession limit decreasing from 50 to 30. Data from the Stockade Lake winter creel survey was analyzed in this regard to see how many people this new regulation might affect. Most anglers harvested no panfish (black crappie, yellow perch and bluegill) during their day of fishing (Figure 17). There was a steady catch of panfish until the new daily limit was reached. At the daily limit (15 fish of a species) a slight increase was noted. This shows that there are anglers that are fishing until their limit is reached and might indicate that these anglers were striving to attain their daily limit as a "goal."

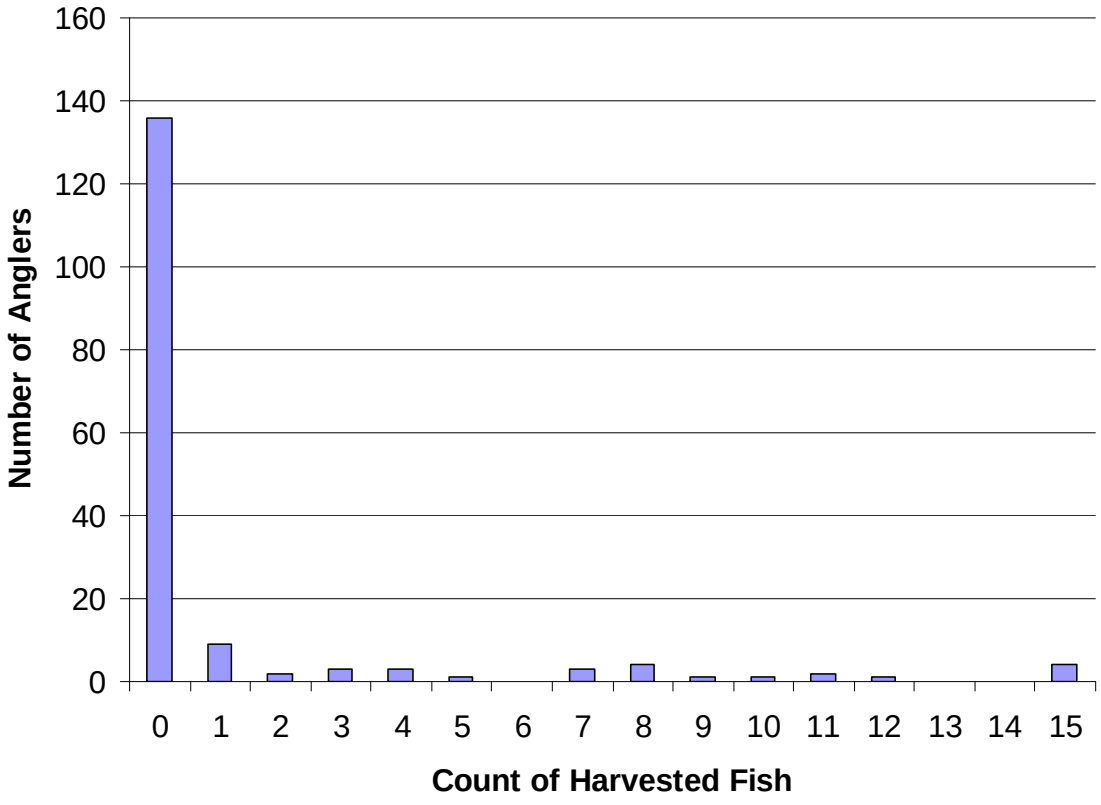

Figure 17. Count of the number of harvested black crappie during the summer of 2011.

RECOMMENDATIONS

1. Continue to monitor the fish populations at Stockade Lake. Specifically follow the largemouth bass, smallmouth bass, bluegill, yellow perch, and black crappie to determine their relative population size and structure and possible contribution to the Stockade Lake fishery.

2. Angler attitudes towards fishing regulations should be monitored when changes are made. This study suggests that there is good compliance to the new harvest regulations and anglers feel regulations are easy to understand in South Dakota.

3. Continue to manage the Stockade Lake fishery in a manner that keeps angler satisfaction at a high level. Current levels of satisfaction exceed that of the statewide average.

4. Angler attitudes that were examined during this study should be documented, when appropriate, in future creel surveys in the Black Hills. Black crappie, yellow perch and bluegill were highly sought after in this survey at Stockade Lake and management of size and numbers should remain at a level where angler satisfaction does not drop below the statewide average. Continue to monitor the angler harvest verses release attitudes and observe impacts that this may have on the long-term fishery of Stockade Lake.

5. Future creel surveys should be scheduled to address particular issues at Stockade Lake. Impacts of the 15-inch regulation on largemouth bass and its impacts on the panfish could be investigated further. Possible future questions should also strive to understand the impact of the yellow grub in game fish (specifically yellow perch) and to what extent this affects angler harvest.

6. Continue to monitor the Stockade Lake aeration system. Several items were needed for repairs the year of this survey. This system has been identified as a success in regards to water quality improvement and should be adequately maintained.

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APPENDIX

Appendix 1. 2011 Stockade Lake Creel Survey Interview form.

South Dakota Department of Game, Fish and Parks

2011 Stockade Lake Creel Survey Interview Report

Page _____ of _____

Form Interview- 01	
Interview ID	

Data Entry Into Creel Database	
Date Entered/Initials	Office Space Only

Clerk Info

Water Body	Date: Month	Date: Day	Date: 2011	Time (Military): Arrival	Time (Military): Departure	Access Area	Creel Clerk

Angler Info

Refused Interview (X)	Time (Military): Interview Time	Time (Military): Started Fishing	Time (Military): Stopped Fishing	Time Not Fished (Minutes)	Completed (X)	Type Of Fishing	Fish Species Sought 1	Fish Species Sought 2	Party Size

Angler	Gender	Age	Distance Traveled	Zip Code	Question Series 01	Question Series 02
1						
2						
3						
4						
5						

Series 01 Preference Questions:

1) Considering all factors, how satisfied are you with your fishing trip today?
01=Very satisfied **02**=Moderately satisfied **03**=Slightly satisfied
04=Neutral or No Opinion **05**= Slightly Dissatisfied **06**=Moderately Dissatisfied
07=Very Dissatisfied

Series 02 Preference Questions:

2) What are your feelings on South Dakota fishing regulations?
08=Too Complex **09** = Moderately Complex **10**=Somewhat Complex **11**=Neutral **12**= Somewhat easy to understand **13**=Moderately Easy to Understand **14**=Easy to Understand

Series 03 Preference Questions:

Species	Number: Kept	Number: Release	Number: Illegal
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Species	Length (mm)	Species	Length (mm)	Species	Length (mm)	Species	Length (mm)
1		11		21		31	
2		12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Interview Continued (✓)

Comments: _____

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Appendix 2. 2011 Stockade Lake Creel Survey Pressure form.

South Dakota Department of Game, Fish and Parks
Stockade Lake Survey Fishing Pressure Report

Form Pressure/Aerial or Roving or Fixed	
Pressure ID	

Data Entry into Creel Database	
Date Entered/Initials	Office Space Only

Pressure Count #1

Water Body	Date			Survey Time (Military)		Access Area	Creel Clerk	Air Temp	Cloud Cover	Wind Speed	Wind Dir	Precip	Water Temp		Op Water (x)	Starting Location	Travel Direction
	Month	Day	2011	Arrival	Departure												

Type Of Fishing	Total	Running Tally
Open Ice		
Ice Shacks		

Form Pressure/Aerial or Roving or Fixed	
Pressure ID	

Pressure Count #2

Water Body	Date			Survey Time (Military)		Access Area	Creel Clerk	Air Temp	Cloud Cover	Wind Speed	Wind Dir	Precip	Water Temp		Op Water (x)	Starting Location	Travel Direction
	Month	Day	2011	Arrival	Departure												

Type Of Fishing	Total	Running Tally
Open Ice		
Ice Shacks		

Form Pressure/Aerial or Roving or Fixed	
Pressure ID	

Pressure Count #3

Water Body	Date			Survey Time (Military)		Access Area	Creel Clerk	Air Temp	Cloud Cover	Wind Speed	Wind Dir	Precip	Water Temp		Op Water (x)	Starting Location	Travel Direction
	Month	Day	2011	Arrival	Departure												

Type Of Fishing	Total	Running Tally
Open Ice		
Ice Shacks		

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Appendix 3. Stocking history of fish into Stockade Lake, 1999 to 2011.

Year	Number	Species	Size
1999	77580	Rainbow trout	Fingerling
2000	10	Rainbow trout	Adult
2001	69844	Rainbow trout	Fingerling
2002	30000	Rainbow trout	Fingerling
	1,194	Rainbow trout	Catchable
	20	Rainbow trout	Adult
2003	409	Largemouth bass	Adult
	50	Rainbow trout	Adult
2004	3,250	Brown trout	Catchable
2005	3,250	Brown trout	Catchable
2009	1,500	Rainbow trout	Fingerling
2010	None stocked		
2011	None stocked		