

SOUTH

DAKOTA

A large, stylized graphic of a fish, where the body of the fish is formed by the word "FISHERIES" in a bold, blocky, sans-serif font. The fish is oriented horizontally, facing right. To the right of the fish's tail, there are several small, empty circles of varying sizes, arranged in a descending line, suggesting bubbles or a trail.

FISHERIES

**Angler Use and Harvest Surveys on Lake
Thompson, Kingsbury County,
South Dakota May 1997 – August 2008**

**South Dakota
Department of
Game, Fish and Parks**
Wildlife Division
Joe Foss Building
Pierre, South Dakota 57501-3182

**Annual Report
No. 09-16**

Angler Use and Harvest Surveys on Lake Thompson,
Kingsbury County, South Dakota
May 1997 – August 2008

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Preface

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Executive Summary

Lake Thompson has been the largest natural lake and the best walleye fishery in southeastern South Dakota since filling in the 1980s. From 1992 through 2003, the walleye fishery was maintained entirely by strong and consistent natural reproduction. Since 2003, periodic stocking has been needed to maintain the fishery due to declining water levels. This fishery generates annual visitor expenditures estimated at over 1.5 million dollars, making it very important to the local economy. The objective of this 12-year creel survey was to document long-term trends in angling use, catch and harvest rates, and catch and harvest of walleyes and other species on this important fishery. By conducting both summer and winter creel surveys, angler use and walleye harvest during these two periods could be compared. Finally, we were able to document changes in the fishery with the steady decrease in water levels over the last 7 years. (2001-2008).

Walleyes were the primary species sought by summer anglers (78% to 96% annually) throughout the survey period. Walleyes were also the primary target of winter anglers, however, the percentage of anglers targeting northern pike, yellow perch and black crappies was higher in winter than during the summer.

Summer fishing pressure declined steadily during the 12-year survey period. This was likely related to decreasing water levels which reduced the lake surface area by about 30% from 2001 through 2008. Annual summer fishing pressure ranged from nearly 183,000 hours (28 hours/hectare) in 1999 to just under 70,000 hours (15 hours/hectare) in 2008. Fishing pressure was typically highest in June and July when mean walleye catch rates were highest. Anglers fishing from boats accounted for about 90% of the summer fishing pressure. Summer fishing pressure on Lake Thompson was comparable to other large natural-lake walleye fisheries in South Dakota (e.g., Waubay Lake and Lake Poinsett).

While summer fishing pressure showed a steady decline over the survey period, winter fishing pressure declined initially, bottomed during the winter of 2001-02, and then increased through the final survey in the winter of 2007-08. Surprisingly, fishing

pressure increased during the second half of the survey period in spite of decreasing angler catch rates for walleye, northern pike and yellow perch. A substantial increase in trip length during the second half of the survey period (3.9 hours/trip to 6.3 hours/trip) with more anglers spending one or more nights on the lake in commercially-produced fishing shacks may explain the increase in fishing pressure. Peak fishing pressure occurred in January, and most of the fishing (77%) was done in an ice shack.

On average, winter fishing comprised about 19% of the total annual fishing pressure, but varied annually from 9% in 2002 to nearly 40% in 2008. The contribution of the winter fishery to total fishing pressure was smaller on Lake Thompson than on several comparable waters with good winter fishing for panfish.

The majority of anglers fishing Lake Thompson in the summer or winter (> 80%) were South Dakota residents. Residents of Minnehaha County comprised the largest percentage of resident anglers followed by anglers from Beadle, Brookings, Kingsbury and Lake Counties. During the survey period, the summer fishery on Lake Thompson had an estimated annual economic impact of 800,000 to 2.5 million dollars while the winter fishery had an annual impact of 167,000 to 720,000 dollars.

Summer catch and harvest rates for walleyes averaged 0.65 walleyes/hour and 0.27 walleyes/hour, respectively, over the 12-year period. These harvest rates exceeded the South Dakota Game, Fish and Parks (SDGFP) objective of 0.15 walleyes/hour in all years except 2001. Mean winter catch and harvest rates (0.20 walleyes/hour and 0.08 walleyes/hour) were substantially lower than summer rates, and none exceeded the SDGFP objective. Mean summer and winter harvest rates on many eastern South Dakota walleye waters were below the SDGFP objective suggesting that a harvest of 0.15 walleyes/hour may often be unachievable, especially over long periods of time.

Over the 12-year survey period, summer anglers caught an estimated 1 million walleyes, harvested 385,000 and about 68% of the walleyes harvested were 356 mm (14 in) or longer. The winter fishery accounted for only 6% of the total walleye harvest and

only about 49% of the fish harvested were 356 mm (14 in) or longer. However, few fish less than 305 mm (12 in) long were harvested during either fishery.

The 12-year mean summer, winter and total walleye angling yields were estimated at 2.84, 0.20 and 3.04 kg/ha, respectively. These are similar to yields for other popular eastern South Dakota walleye lakes and for the Missouri River Reservoirs. Yields for most popular South Dakota walleye fisheries fell above the 50% quartile when compared to yields for other North American walleye fisheries.

Summer and winter catch rates for northern pike showed a steady decline throughout the survey period due to decreasing water levels and the annual harvest rate was low (< 0.04 fish/hour). Northern pike recruit to the fishery at about 500 mm (20 in) long and the majority of fish harvested measured from 500 mm (20 in) to 600 mm (24 in). The average length of northern pike harvested increased over time due to reduced recruitment and a subsequent increase in the age of fish harvested. Winter anglers harvested a substantially higher percentage (50%) of their catch than summer anglers (25%).

The highest catch rates for the summer yellow perch fishery occurred in 2000 (0.15 fish/hour) and 2002 (0.11 fish/h) but, in general, catch rates declined throughout the survey period. The highest winter catch rates were recorded during the first two years of the survey and they remained relatively constant over the rest of the survey period. Mean monthly catch and harvest rates were highest in August for the summer fishery and in December for the winter fishery. When compared to the reasonably high summer survey gill net catches on Lake Thompson, angler catch rates were lower than expected. For example, Waubay Lake and Lake Thompson had similar summer gill net catches from 1997 through 2002, and yet, mean summer harvest rate and yield (number/ha) of yellow perch during that period were about four times higher on Waubay Lake. This difference was even greater for the winter fishery.

The yellow perch harvested by anglers were large with most measuring 250 mm (10 in) to 300 mm (12 in) long. Anglers harvested 76% of the yellow perch caught in the summer and 90% of those caught in the winter.

In contrast to the fisheries for other species, black crappie catch and harvest rates increased over the survey period. While overall catch rates were low (< 0.10 fish/h) because of the small percentage of anglers primarily targeting them, summer anglers targeting black crappies, at times, had an average catch rate of over 1.0 fish/h in May and June and a catch rate of 2.5 fish/hour was documented in March of 2005. Surprisingly, monthly catch and harvest rates were relatively uniform throughout the summer, while the highest mean catch rate during the winter occurred in March. Most black crappies harvested were large (> 300 mm or 12 in) and anglers kept about 73% of their catch during the summer fishery and nearly 100% of their catch during the winter fishery.

Summer smallmouth bass catch rate and harvest rate increased from 1997 through 2003, and then declined. Catch rates were extremely low, in part, because only one percent of parties interviewed were primarily targeting smallmouth bass. A majority of smallmouth bass were released with summer anglers only harvesting about one in every four fish caught. Few smallmouth bass were caught during the winter fishery.

Catch rates for black bullhead peaked in 2002 and declined rapidly after 2003 similar to the pattern observed for trap-net catches during the summer survey. Few black bullheads were harvested which reflects on the small percentage of shore fishermen and generalist anglers participating in the fishery. A few common carp and white suckers were caught during the survey period, and a white bass was first reported in the catch during the summer 2007 survey. A few white bass have been reported in the angler catch each summer since then.

Angler satisfaction varied annually (38%-95% satisfied) and surprisingly, was not closely related to catch and harvest rates. Top reasons given by anglers for choosing to

fish Lake Thompson included hearing that the targeted fish species were biting, familiarity with the lake, and closeness to home.

Opinions about walleye regulations and harvest varied throughout the survey period. Early in the survey period, over 70% of angling parties interviewed stated they would favor implementing a 14-inch minimum length limit on the Lake Thompson walleye fishery. Later in the survey period, about 60% of angling parties indicated they would rather harvest three 14-inch walleyes over one 17-inch walleye (14-20%) or four 13-inch walleyes (19-28%). Winter anglers slightly favored higher numbers of smaller fish over summer anglers. Although a majority of angling parties preferred three 14-inch walleyes over the other options, angling parties opposed (about 65%) a reduction in walleye limits from four to three.

Response to questions concerning panfish harvest and panfish regulations was also variable. Over 70% of parties interviewed during the winter 2001-02 and winter 2002-03 said a harvest of 10 or fewer yellow perch per angler would make a good day of fishing. A lower percentage (about 40%) of parties interviewed during summer 2005 and winter 2005-06 favored a reduction in daily panfish limits from 25 to 10. An even more liberal response was given during winter 2007-08 when 60% of anglers indicated that they would prefer a daily limit of 15 or more panfish over a limit of 10 fish or less (40%).

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Introduction

Lake Thompson has been the largest natural lake and the best walleye fishery in southeastern South Dakota since filling in the 1980s. The fishery is extremely important to the local economy, generating estimated annual visitor expenditures over 1.5 million dollars annually (1998 Planning Document for Lake Thompson Recreation Area).

The Lake Thompson walleye fishery is unique in that there was no walleye stocking completed for 12 years (1992-2003). The excellent walleye fishery was maintained solely by consistent, strong natural reproduction. A minimum size limit was never placed upon the walleye fishery because of the consistently high abundance and modest growth rates of walleyes in the lake. A one walleye over 58.8 cm (20-in) daily limit restriction was implemented in 2000 to provide a more equitable distribution in the harvest of large fish. This regulation is now the statewide regulation for South Dakota.

The objective of this 12-year creel survey was to document long-term trends in angling use, catch and harvest rates, and catch and harvest of walleyes and other species on this important fishery. By conducting both summer and winter creel surveys, angler use and walleye harvest during these two periods could be compared. Finally, we were able to document changes in the fishery with the steady decrease in water levels over the last 7 years (2001-2008).

Study Site

Lake Thompson is located in south-central Kingsbury County, South Dakota. It was a 3,238 ha (8,000 acre), cattail-filled slough until it began to fill in 1983. Heavy precipitation filled the lake to a level not seen in many years. By August 1989, the lake had filled to just over 6,477 ha (16,000 acres) with an average depth of over 4.5 m (15 ft). Water levels receded from 1989-1992, then began to rise again from 1993 through 2001 increasing the surface area to nearly 7,300 ha (18,000 acres). Dry conditions since 2001 have gradually decreased water levels reducing the lake size to an estimated 4,858 ha (12,000 acres) by August 2008. The Lake Thompson watershed is approximately 121,000 ha (300,000 acres) in size and the natural outlet on the south end of the lake drains into the East Vermillion River.

The Lake Thompson Recreation Area was developed in 1998 in response to the rapidly increasing use of the lake by anglers. It provides camping and lodging facilities, a boat ramp, swimming beach, hiking trails, playgrounds and picnicking areas. The South Dakota Game, Fish and Parks (SDGFP) also provides boating and shoreline fishing access at three other locations around the lake.

Methods

A stratified, roving angler use and harvest survey was conducted during May through August and December through March from 1997-2008. The monthly creel survey schedule was divided evenly between Lake Thompson and another large lake (Lake Poinsett, Sinai, or Madison/Brant). Lake Thompson was surveyed on at least 10 days each month. The survey was stratified by weekend and weekdays because the highest pressure typically occurs on weekend days. At least one weekend day was assigned each week. Eight-hour shifts were divided between morning and evening periods so that all daylight hours were surveyed.

The summer and winter surveys utilized instantaneous angler counts combined with angler interviews. Within each 8-h shift during the summer, two instantaneous counts of boat trailers and shore anglers were made from various access points around the lake. Boat trailers, rather than boats, were counted because the entire surface area could not be viewed from the various access points. Because there is little recreational boating activity on Lake Thompson, boat trailer counts provided a reliable surrogate for counts of boat actively engaged in fishing. Active ice shacks and open-ice anglers were counted in the winter.

In summer, angling parties were interviewed at access points around the lake. Interviews were conducted on the ice and at access points during the winter creel survey. Interviews provided information necessary for estimating fish species catch and harvest rates, mean angler trip length, mean party size, percent of anglers targeting various species, residency, and angler opinions. Total length (TL; mm) measurements from angler-caught fish were recorded during the interview process. Angler use, catch and

harvest estimates, and other statistics were computed using the Creel Application Software (CAS) designed by Craig Soupir (Soupir and Brown 2002).

Results and Discussion

Summer

Fishing Pressure

Lake Thompson anglers primarily targeted walleyes during the summer fishery throughout the 12-year period (Table 1). The percentage of anglers targeting walleyes ranged from 78% (1997 and 2000) to 96% (2003 and 2008). Anglers not specifically targeting one or two species (generalist anglers) were the second largest group comprising 9% of the parties interviewed.

Summer fishing pressure generally declined during the 12-year survey period (Table 2 and Figure 1). From 2001 to 2008, dropping water levels reduced the lake surface area by about 30% and declining gill-net CPUEs for walleyes, yellow perch

Table 1. Percent of angling parties interviewed primarily targeting a species (or any species) during the summer fishery on Lake Thompson, 1997-2008.

<i>Year</i>	<i>Percent of anglers targeting</i>					
	<i>Walleye</i>	<i>Yellow perch</i>	<i>Black crappie</i>	<i>Northern pike</i>	<i>Smallmouth bass</i>	<i>Any species</i>
1997	78	1	0	7	0	10
1998	83	5	1	3	0	8
1999	81	4	0	3	0	12
2000	78	6	< 1	1	< 1	14
2001	79	3	< 1	3	< 1	14
2002	83	3	1	2	1	10
2003	96	0	1	1	1	1
2004	92	< 1	< 1	1	< 1	6
2005	84	2	2	< 1	0	12
2006	88	1	2	0	0	9
2007	92	1	1	1	0	5
2008	96	0	2	0	0	2

Table 2. Summer totals for the number of interviews and estimates for fishing pressure (h) and fishing pressure per surface hectare of water, angler days and economic value from creel surveys conducted on Lake Thompson, May through August, 1997-2008 (80% confidence interval).

<i>Year</i>	<i>Number of interviews</i>	<i>Angler hours</i>	<i>Angler hours/ hectare</i>	<i>Angler days</i>	<i>Economic value</i>
1997	531	178,061 (19,703)	27.1 (3.0)	33,916	\$2,068,876
1998	854	162,913 (21,849)	24.8 (3.2)	33,887	\$2,067,107
1999	435	182,813 (22,419)	27.8 (3.5)	40,535	\$2,472,635
2000	279	130,175 (16,328)	19.8 (3.2)	24,842	\$1,515,362
2001	566	124,233 (21,212)	18.9 (3.2)	24,747	\$1,509,567
2002	551	117,502 (17,577)	20.5 (3.5)	23,980	\$1,462,780
2003	431	135,334 (17,612)	27.7 (3.5)	27,789	\$1,695,129
2004	599	114,142 (15,968)	23.4 (3.2)	20,382	\$1,243,302
2005	310	79,613 (16,813)	16.3 (3.5)	18,011	\$1,098,671
2006	233	71,517 (15,190)	14.6 (3.0)	16,254	\$991,494
2007	322	78,520 (17,821)	16.1 (3.5)	17,645	\$1,076,345
2008	155	69,634 (17,825)	15.3 (4.0)	13,188	\$804,468

and northern pike (Figure 2) during this period indicated that lower water levels as well as the aging of the lake negatively impacted fish production. Subsequently, the number of angler trips has declined by over 50% and hours fished per surface hectare of water declined by almost 45% (Figure 1).

Summer fishing pressure was typically highest in June and July (Figure 3), the months with the highest mean walleye catch rates (Appendix 4). On average, 90% of summer fishing pressure was from boat anglers, and only in May did shore anglers comprise more than 15% of the monthly fishing pressure. Shore fishing was more common early in the survey period. Decreasing water levels may have limited good shore fishing opportunities helping to produce the decline in shore fishing pressure.

Summer fishing pressure on Lake Thompson was comparable to other large natural-lake walleye fisheries in eastern South Dakota. From 1997-2008, summer fishing pressure on Thompson averaged 21 hours per hectare (Table 3) compared to 11.7, 17.3 and 18.1 h/ha on Bitter, Waubay and Poinsett, respectively (Table 3). Higher summer

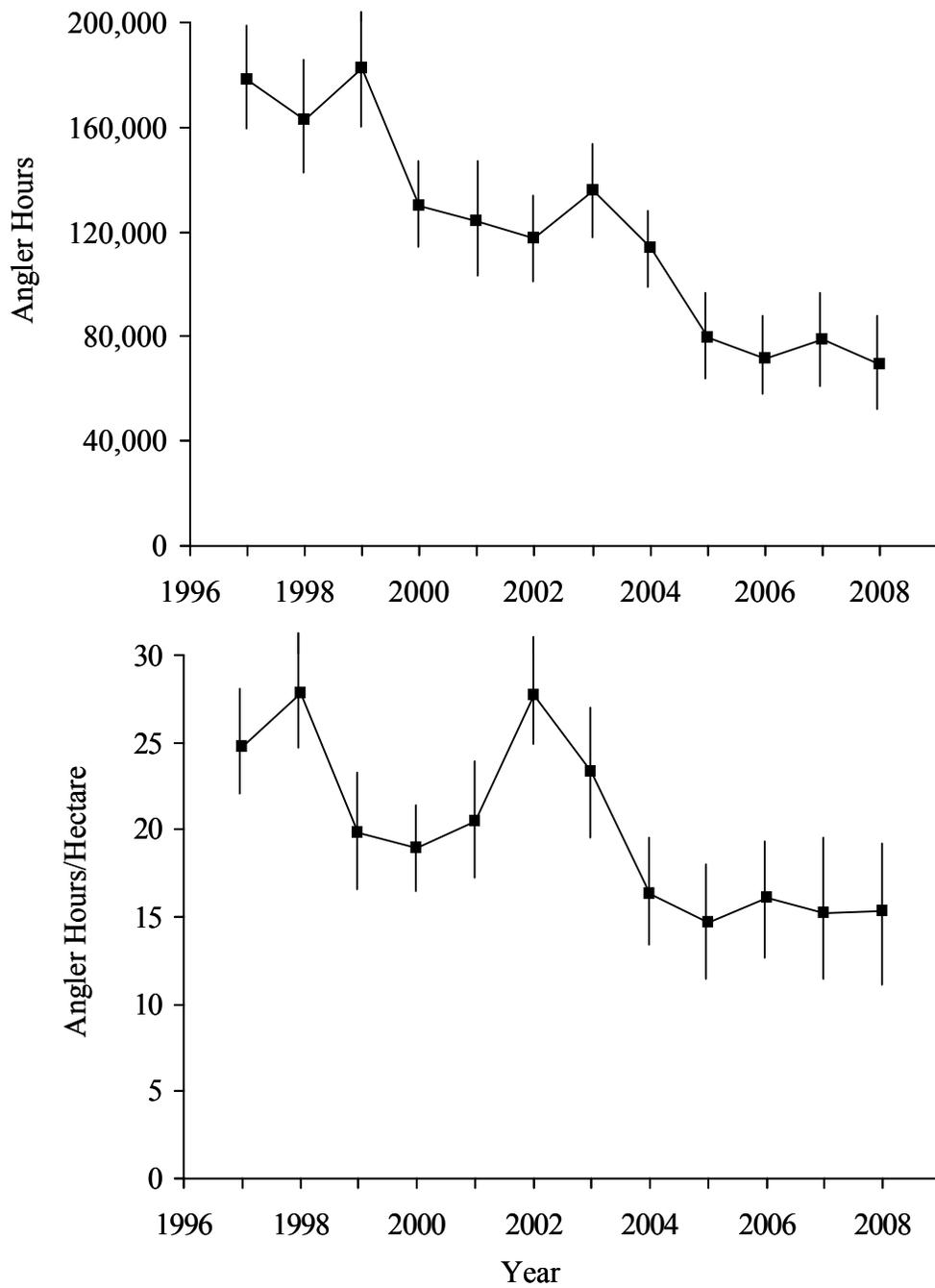


Figure 1. Estimated summer fishing pressure measured in angler hours (top) and angler hours/hectare (bottom) on Lake Thompson, 1997-2008 (bars represent an 80% confidence interval).

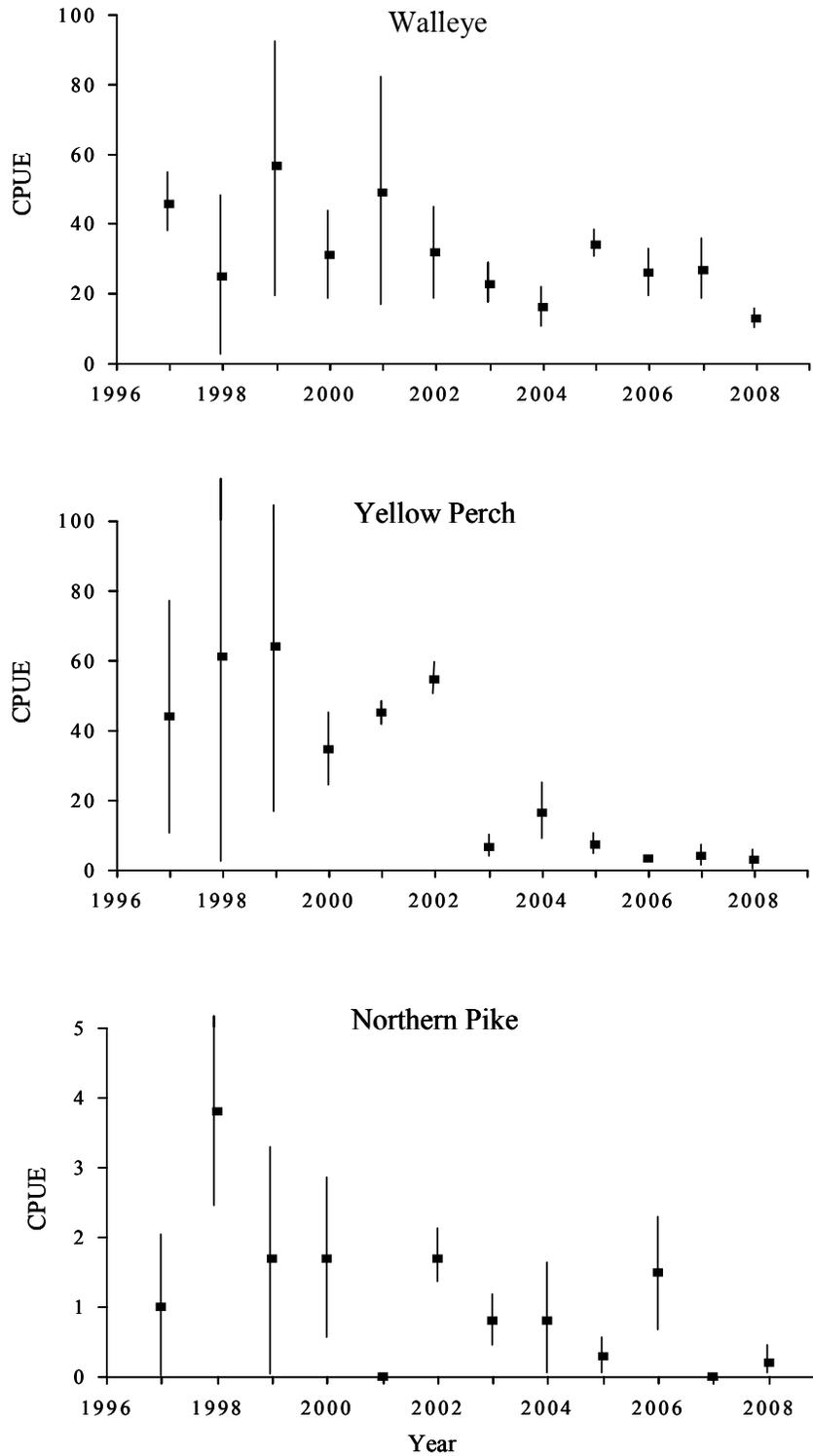


Figure 2. Catch per unit effort (CPUE) of walleye, yellow perch and northern pike in 45.7 m (150 ft) experimental-mesh gill nets set during summer fisheries surveys on Lake Thompson, 1997-2008 (bars represent an 80% confidence interval).

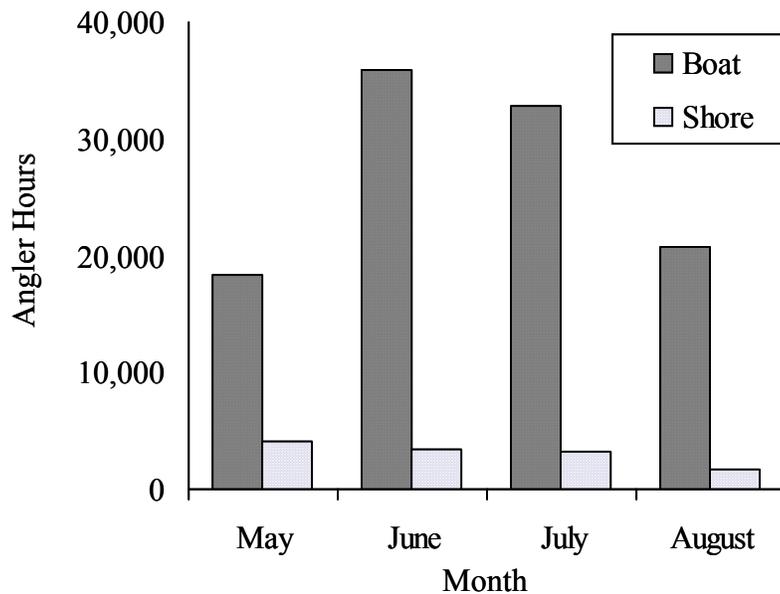


Figure 3. Mean monthly summer fishing pressure by boat and shore anglers on Lake Thompson, 1997-2008.

fishing pressure was recorded with several popular fisheries on smaller waters (< 500 ha) like Brant Lake (60 h/ha) and Pickerel Lake (56.5 h/ha). Heavier angler use (per hectare of water) has often occurred on smaller waters with the highest (> 200 h/ha) use having been documented on small impoundments (Neumann et al. 1993; Lucchesi et al. 2004).

Angler Demographics

The composition of resident to non-resident anglers using the fishery remained relatively constant ranging from 80% to 90% resident anglers over the 12-year period (Appendix 2). There were also no obvious monthly patterns in non-resident participation in the fishery. Non-resident participation in other southeastern South Dakota walleye fisheries is typically lower. For example, non-resident use on Herman, Madison and Brant lakes is less than 10% (unpublished data). The only exception has been the fall yellow perch fishery on Lake Madison where non-residents have comprised 10% to 20% of the parties interviewed.

Table 3. Mean fishing pressure (h and h/ha) and mean catch and harvest statistics for walleyes, yellow perch and northern pike on primary walleye waters in eastern South Dakota creel surveyed between 1996 and 2008.

<i>Lake/season</i>	<i>County</i>	<i>Period</i>	<i>Surface area (ha)</i>	<i>Fishing pressure</i>		<i>Walleye</i>			<i>Yellow perch</i>			<i>Northern pike</i>		
				<i>(h)</i>	<i>(h/ha)</i>	<i>Catch rate</i>	<i>Harvest rate</i>	<i>per ha</i>	<i>Catch rate</i>	<i>Catch rate</i>	<i>per ha</i>	<i>Catch rate</i>	<i>Catch rate</i>	<i>per ha</i>
Summer														
Bitter	Day	2000-2008	4,010	46,950	11.7	0.84	0.28	3.24	0.01	0.01	0.07	0.21	0.04	0.48
Brant	Lake	1998-2008	420	25,293	60.2	0.43	0.11	6.84	0.18	0.13	8.36			
Enemy Swim	Day	a	870	35,910	41.3	0.26	0.07	2.72	0.18	0.04	1.53	0.04	0.01	0.29
Herman	Lake	1998-2008	521	9,420	18.1	0.41	0.11	1.93	0.07	0.06	1.00	0.02	0.01	0.17
Madison	Lake	1998-2008	1,070	20,595	19.2	0.29	0.07	1.44	0.54	0.30	5.85			
Pickrel	Day	b	377	21,285	56.5	0.34	0.09	5.14	0.14	0.04	2.28	0.17	0.03	1.73
Poinsett	Hamlin	1997-2004	3,200	57,786	18.1	0.41	0.13	2.27	0.03	0.02	0.42	0.07	0.01	0.20
Sinai	Brookings	2005-2008	696	19,902	28.6	0.52	0.11	3.31	0.32	0.21	5.97	0.00	0.00	0.02
Thompson	Kingsbury	1997-2008	e	120,383	21.0	0.65	0.27	5.56	0.06	0.04	0.81	0.10	0.02	0.31
Waubay	Day	1997-2008	6,289	108,841	17.3	0.98	0.21	3.60	0.52	0.20	3.53	0.14	0.03	0.48
Fall														
Madison	Lake	2005-2008	1,070	12,717	11.9	0.47	0.03	0.39	0.92	0.69	8.24			
Winter														
Bitter	Day	1999-2008	4,010	17,657	4.4	0.29	0.10	0.93	0.18	0.14	0.64	0.20	0.12	0.52
Brant	Lake	2002-2008	420	5,060	12.0	0.31	0.07	0.80	0.07	0.06	0.30	0.00	0.00	0.02
Enemy Swim	Day	c	870	13,781	15.8	0.12	0.04	0.65	0.40	0.11	1.82	0.07	0.04	0.66
Madison	Lake	2002-2008	1,070	10,229	9.6	0.07	0.02	0.02	3.85	1.32	12.58	0.02	0.00	0.09
Pickrel	Day	d	377	7,235	19.2	0.06	0.02	0.59	0.71	0.32	8.73	0.02	0.001	0.17
Poinsett	Hamlin	1997-2002	3,200	20,771	6.5	0.55	0.11	0.89	0.23	0.21	1.63	0.03	0.02	0.12
Thompson	Kingsbury	1997-2008	e	26,255	4.8	0.20	0.08	0.38	0.07	0.06	0.30	0.03	0.01	0.07
Waubay	Day	1997-2008	6,289	105,473	16.8	0.34	0.07	1.14	1.24	0.86	14.50	0.06	0.04	0.60

a. 1997-1998, 2000-2008

b. 1997-1998, 2000-2001, 2006-2008

c. 1997-1998, 2000-2008

d. 1997-1998, 2000-2001, 2006-2008

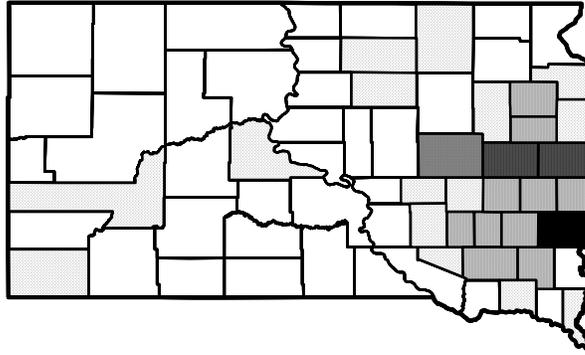
e. Surface area decreased from about 6,576 ha to 4,559 ha from 1997 to 2000

Comparable walleye fisheries in northeastern South Dakota have higher non-resident use. The percentage of open-water, non-resident parties on Waubay Lake increased from 10% in 1997 to over 45% in 2004 as the fishery gained notoriety (Blackwell and Hubers 2003; Blackwell 2005a). Likewise, the percentage of non-residents fishing Bitter Lake reached 45% during the summer of 2003 (Blackwell 2005b) and exceeded 35% since summer 2000 on Enemy Swim Lake (Blackwell 2005c). Non-resident anglers fishing Missouri River Reservoirs have ranged from 20% to 40% annually since 2000 (Lott et al. 2003; Adams et al. 2007; Sorenson and Knecht 2006). Non-resident participation on the Missouri River reservoirs was greater than on Lake Thompson, but less than on popular “high-water” walleye fisheries in northeastern South Dakota.

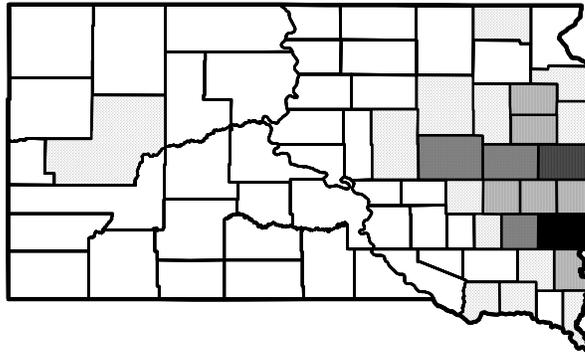
Residents of Minnehaha County annually comprised over 30% of angling parties interviewed on Lake Thompson during the summers of 2002 through 2008 (Figure 4). Not surprisingly, most of Minnehaha County residents were from the city of Sioux Falls, South Dakota. Other South Dakota counties contributing a large percentage of anglers were Beadle, Brookings, Kingsbury and Lake. Annual variation in percentage of anglers by county was relatively small (Figure 4). The creel clerk interviewed a lower percentage of anglers from counties to the north of Lake Thompson. The percentage of anglers from counties such as Clark, Codington and Hamlin was undoubtedly higher before the high water and excellent walleye fishing in the northeast.

The Lake Thompson fishery is an important source of revenue for east-central South Dakota. The summer fishery has an estimated annual economic impact of 800,000 to 2.5 million dollars based on an estimated 13,000 to 40,000 trips each year at a value of \$61 per trip (U.S. Department of the Interior, Fish and Wildlife Service, U.S. Bureau of Commerce Bureau of Census 2007).

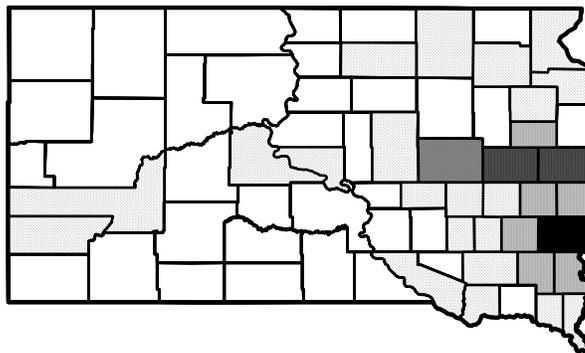
Summer 2002



Summer 2003



Summer 2004



Summer 2005

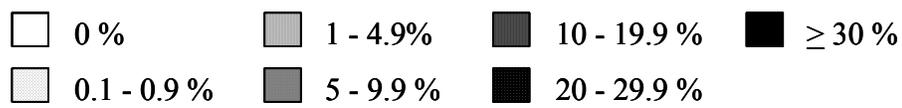
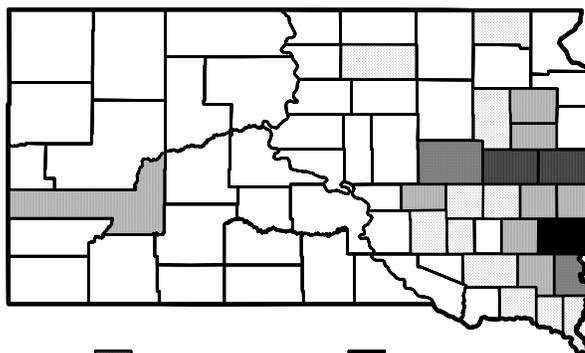
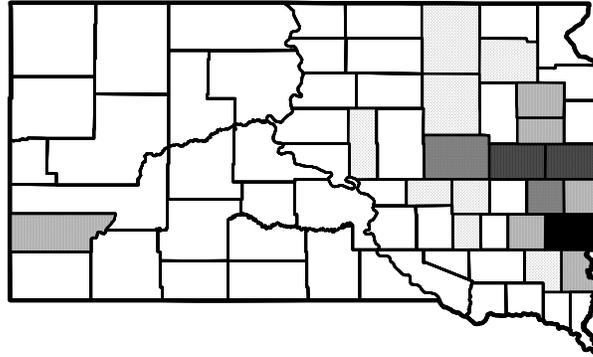
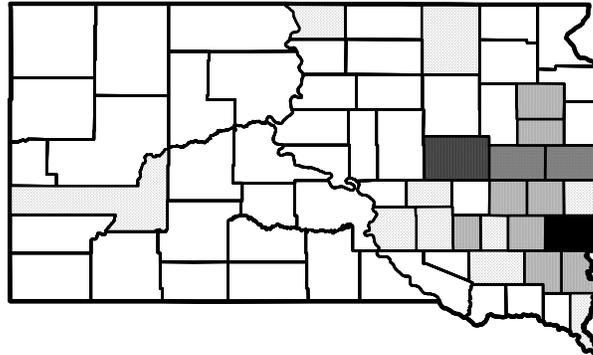


Figure 4. South Dakota county of residence for summer (May-August) resident anglers fishing Lake Thompson, South Dakota from 2002 through 2008.

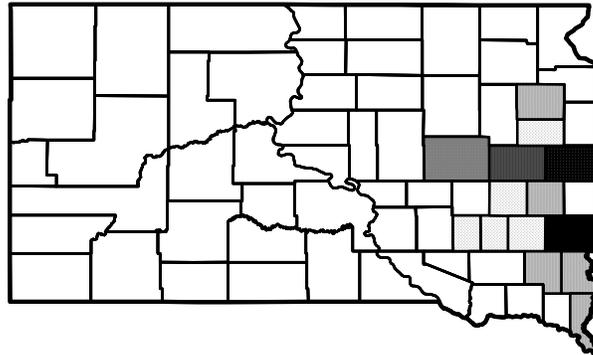
Summer 2006



Summer 2007



Summer 2008



Summers 2002-08
pooled

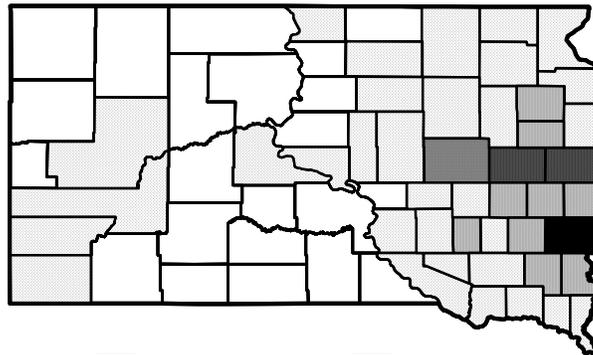


Figure 4. Continued

Angler Catch and Harvest

Walleye

The angler catch and harvest rates for walleyes averaged 0.65 walleyes/hour and 0.27 walleyes/hour, respectively, for the summer fishery on Lake Thompson, 1997-2008 (Table 4 and Appendix 4). The mean harvest rate exceeded the SDGFP objective of 0.15 walleyes/hour (SDGFP 1994). Higher catch and harvest rates were recorded early in the survey period (1997-2000), but the third highest catch rate occurred during summer 2008 (Table 4). All annual summer harvest rates for walleyes, except in 2001, exceeded the objective.

Mean walleye catch and harvest rates on Lake Thompson are similar to rates for other popular walleye fisheries in eastern South Dakota (Table 3). High mean summer catch and harvest rates were documented on Waubay Lake (1997-2008, 0.98/h and 0.21/h) and Bitter Lake (2000-2008, 0.84/h and 0.28/h). Catch and harvest rates for these premier walleye fisheries were substantially higher than for others in eastern South Dakota (Table 3). Mean summer catch rates for seven other waters recently surveyed ranged from 0.29/h on Lake Madison to 0.52/h on Lake Sinai (Table 3). Mean summer harvest rates on all of these lakes were less than the SDGFP objective of 0.15/h suggesting that this objective rate may be unachievable on most waters, especially over longer periods of time.

Over the 12-year survey period, summer anglers caught and harvested an estimated 1 million and 385,000 walleyes, respectively (Appendix 3). Annual catch and harvest declined substantially over time with a steady decrease in both fishing pressure and catch and harvest rates (Table 4) from 1997 to 2008. About 68% of the walleyes harvested by anglers were 356 mm (14-in) or longer. Annual percentages of walleyes 356 mm (14-in) and longer in the summer fishery varied between 51% in 1998 and 83% in 1999 (Figure 5). Only a very small percentage of the walleyes harvested were less than 305 mm (12 in) long (Figure 5). The 12-year mean length of harvested walleyes was 384 mm or just over 15-inches long (Table 5). Annual mean lengths of harvested walleyes varied from 355 mm (14 in) in 1998 to 398 mm (15.7 in) in 2008 (Table 5).

Table 4. Estimated number and rate (number per hour) of walleyes caught and harvested by anglers during the summer fishery on Lake Thompson, South Dakota, 1997-2008. (80% confidence interval).

<i>Year</i>	<i>Catch</i>	<i>Harvest</i>	<i>Catch rate</i>	<i>Harvest rate</i>
1997	179,211 (26,385)	55,175 (9,977)	1.01 (0.27)	0.31 (0.09)
1998	148,355 (27,772)	51,403 (8,960)	0.91 (0.27)	0.32 (0.09)
1999	136,228 (27,470)	68,151 (12,521)	0.75 (0.24)	0.37 (0.12)
2000	95,143 (18,472)	33,520 (8,219)	0.73 (0.27)	0.26 (0.10)
2001	55,119 (15,511)	16,912 (4,617)	0.44 (0.20)	0.13 (0.06)
2002	75,683 (13,830)	30,130 (5,442)	0.65 (0.21)	0.26 (0.08)
2003	83,761 (16,012)	34,697 (5,538)	0.62 (0.18)	0.26 (0.07)
2004	64,571 (13,348)	26,077 (5,241)	0.56 (0.19)	0.23 (0.07)
2005	22,052 (9,038)	13,191 (6,062)	0.28 (0.18)	0.17 (0.12)
2006	44,115 (23,447)	17,381 (7,560)	0.62 (0.54)	0.24 (0.19)
2007	33,697 (9,322)	19,646 (5,847)	0.43 (0.21)	0.25 (0.12)
2008	60,720 (25,692)	19,206 (6,915)	0.87 (0.10)	0.28 (0.46)

Mean lengths of walleyes harvested from Lake Thompson were similar to mean lengths documented on Brant and Madison (Table 5). These lakes are also managed under statewide regulations. On average, anglers harvested substantially smaller walleyes on two other southeastern South Dakota lakes, Sinai and Herman, also managed under statewide regulations. Greater mean lengths for harvested walleyes were documented for northeastern South Dakota waters managed under 356-mm (14 in, Enemy Swim, Pickerel, Poinsett and Waubay (2004-present)) and 406-mm (16 in, Bitter and Waubay 1997-2003)) minimum length limits (MLL).

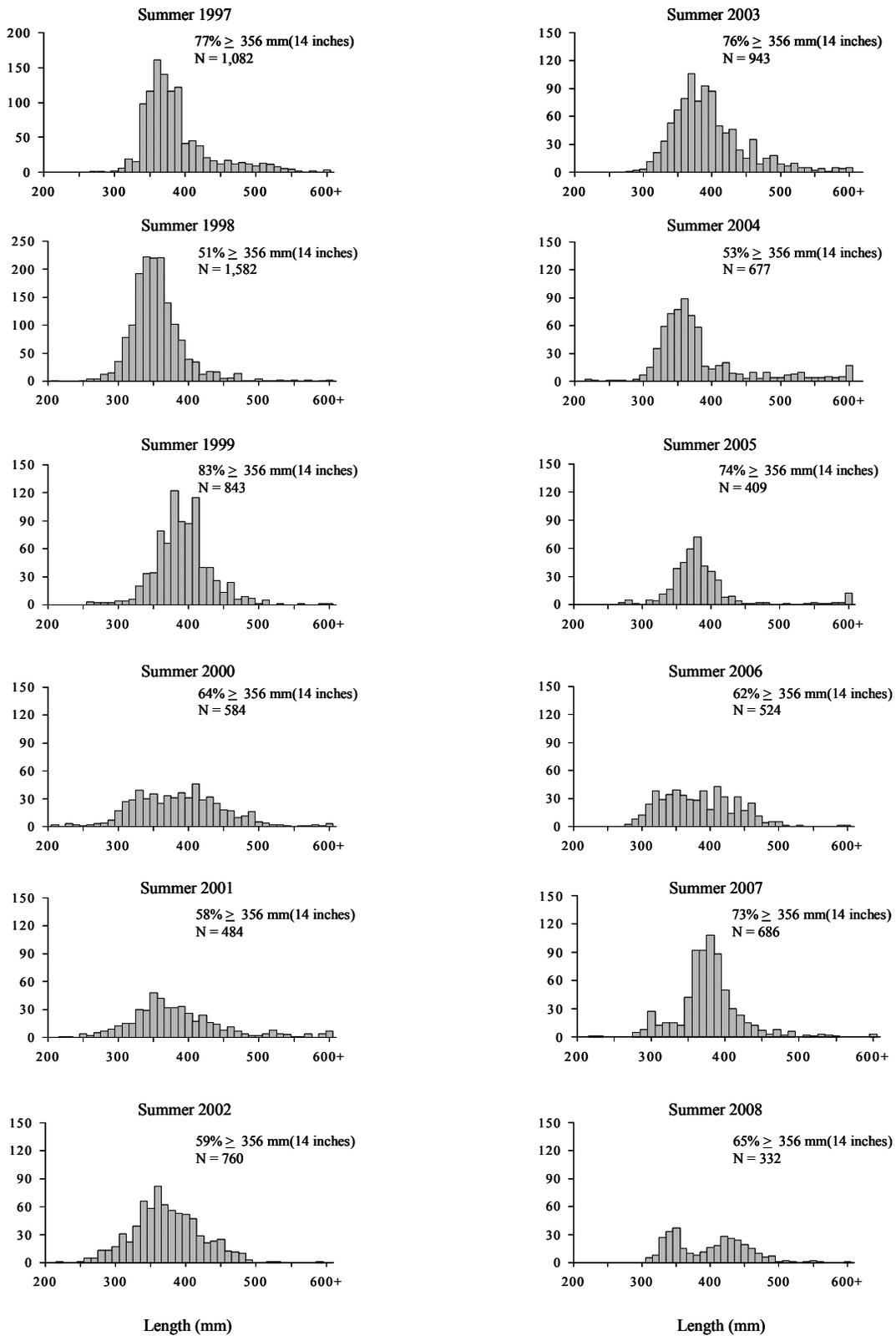


Figure 5. Length frequency of angler-harvested walleyes measured by the creel clerk during summer creel surveys on Lake Thompson, 1997-2008.

Table 5. Mean total lengths (mm) of walleyes harvested by summer anglers on eastern South Dakota lakes, 1997-2008.

Year	<i>Enemy</i>									
	<i>Bitter</i>	<i>Brant</i>	<i>Swim</i>	<i>Herman</i>	<i>Madison</i>	<i>Pickerel</i>	<i>Poinsett</i>	<i>Sinai</i>	<i>Thompson</i>	<i>Waubay</i>
1997			403			398	403		386	414
1998		374	399	355	376	383	392		355	406
1999		393		407	386		387		392	455
2000	424	339	379	344	326	431	414		386	478
2001	434	386	388	324	333	375	455		384	489
2002	429	396	399	369	355		383		373	473
2003	437	301	403	395	439		424		397	446
2004	438	338	406	403	419		480		384	384
2005	438	388	418	320	330			375	387	387
2006	458	413	401	314	387	400		338	383	385
2007	465	405	428	380	413	402		375	378	401
2008	448	343	446	376	423	402		348	398	414
Mean	441	371	406	362	381	399	417	359	384	428

The mean summer, winter and total walleye angling yields over the 12-year period on Lake Thompson were estimated at 2.84, 0.20 and 3.04 kg/ha, respectively, (Table 6). The mean total yield for the Lake Thompson walleye fishery was similar to yields for the fisheries on Bitter Lake (3.06 kg/ha) and Waubay Lake (2.90 kg/ha). Highest walleye angling yields were produced on two smaller walleye waters, Pickerel Lake (377 ha, 3.33 kg/ha) and Brant Lake (420 ha, 3.24 kg/ha). Mean walleye yield has also been estimated for two of the Missouri River Reservoirs, Lake Oahe (110,660 ha or 273,330 acres) and Lake Sharpe (25,000 ha or 61,750 acres). Mean open-water (April – September) walleye angling yields for the period of 1991 through 2000 were 2.12 kg/ha for Lake Oahe and 2.66 kg/ha for Lake Sharpe. In all cases where summer and winter yield was estimated, the summer fishery comprised a much larger proportion of the total yield than the winter fishery (Table 6).

Baccante and Colby (1996) described walleye yield in terms of quartiles based on data from 168 North American walleye populations. The 25% quartile corresponded to a 0.50 kg/ha yield, 50% to a 1.24 kg/ha yield and 75% to a 2.95 kg/ha yield. Except for Lake Madison, walleye yields for South Dakota populations were above the 50% quartile, and yields for the five best fisheries were at or above the 75% quartile. Yields for Missouri River Reservoirs were also above the 50% quartile.

Table 6. Mean number and weight of walleyes harvested per surface hectare (ha) of water for the summer, winter and combined fisheries on eastern South Dakota lakes. Means were calculated over the time periods presented in Table 3.

<i>Lake</i>	<i>County</i>	<i>Mean summer yield</i>		<i>Mean winter yield</i>		<i>Mean total yield</i>	
		<i>Number per ha</i>	<i>Weight per ha (kg)</i>	<i>Number per ha</i>	<i>Weight per ha (kg)</i>	<i>Number per ha</i>	<i>Weight per ha (kg)</i>
Bitter	Day	3.24	2.65	0.93	0.41	4.17	3.06
Brant	Lake	6.84	2.90	0.80	0.34	7.64	3.24
Enemy Swim	Day	2.72	1.54	0.65	0.39	3.37	1.93
Herman	Lake	1.93	0.89				
Madison	Lake	1.44	0.80	0.20	0.11	1.64	0.91
Pickereel	Day	5.14	3.03	0.59	0.30	5.73	3.33
Poinsett	Hamlin	2.27	1.50	0.89	0.49	3.16	1.99
Sinai	Brookings	3.31	1.32				
Thompson	Kingsbury	5.56	2.84	0.38	0.20	5.76	3.04
Waubay	Day	3.60	2.66	1.14	0.24	4.74	2.90

Walleye angling yields for waters managed with statewide and MLL regulations were similar (Table 6). Differences between yields on large lakes Bitter (406-mm MLL), Waubay (406-mm (16-in) and 356-mm (14-in) MLLs) and Thompson (no MLL) were minimal. Likewise, heavily-fished lakes, Pickereel (356-mm or 14-in MLL) and Brant (no MLL) produced similar mean yields. These results suggest a redistribution of the harvest in MLL waters to fewer, but larger fish.

Northern Pike

Summer angler catch and harvest rates showed a steady decline (Table 7) as northern pike abundance decreased with lower water levels (Figure 2). Soon after the lake filled in the mid-1980s, northern pike became the primary fishery until walleye abundance increased in the early 1990s. The harvest rate of northern pike during the summer of 1994 (May through October) was 0.16/h (SDGFP, unpublished data), substantially higher than any annual harvest rate from this survey period. Blackwell (2005a) noted a similar decline in northern pike catch and catch rates on Waubay Lake as that fishery evolved after filling in the mid-1990s.

Table 7. Estimated number and rate (number per hour) of northern pike caught and harvested by anglers during the summer fishery on Lake Thompson, South Dakota, 1997-2008. (80% confidence interval).

<i>Year</i>	<i>Catch</i>	<i>Harvest</i>	<i>Catch rate</i>	<i>Harvest rate</i>
1997	41,019 (6,325)	6,913 (1,403)	0.23 (0.06)	0.04 (0.01)
1998	22,635 (4,335)	3,758 (793)	0.14 (0.04)	0.02 (0.007)
1999	18,237 (3,462)	5,215 (1,571)	0.10 (0.03)	0.03 (0.01)
2000	12,821 (2,965)	1,914 (1,490)	0.10 (0.04)	0.01 (0.01)
2001	5,884 (1,343)	1,791 (453)	0.05 (0.03)	0.01 (0.007)
2002	6,982 (1,510)	1,531 (615)	0.06 (0.03)	0.01 (0.006)
2003	10,989 (2,821)	1,905 (418)	0.08 (0.03)	0.01 (0.005)
2004	8,074 (1,931)	1,489 (571)	0.07 (0.03)	0.01 (0.006)
2005	1,627 (523)	558 (170)	0.02 (0.01)	0.007 (0.004)
2006	491 (189)	68 (56)	0.007 (0.004)	0.001 (0.0007)
2007	804 (432)	211 (80)	0.01 (0.009)	0.003 (0.002)
2008	844 (458)	66 (67)	0.01 (0.007)	0.001 (0.001)

The mean summer catch and harvest rates for northern pike on Lake Thompson were 0.10/h and 0.02/h, respectively. The mean summer catch rate for northern pike was substantially higher (0.21/h) on newly-filled Bitter Lake and Pickerel Lake (0.17/h) in Day County (Table 3). On creel-surveyed lakes with popular walleye fisheries, northern pike were most likely caught incidentally while fishing for walleyes as few anglers indicated that they were primarily targeting northern pike, and typically, less than 25% of the pike caught were harvested (Table 3).

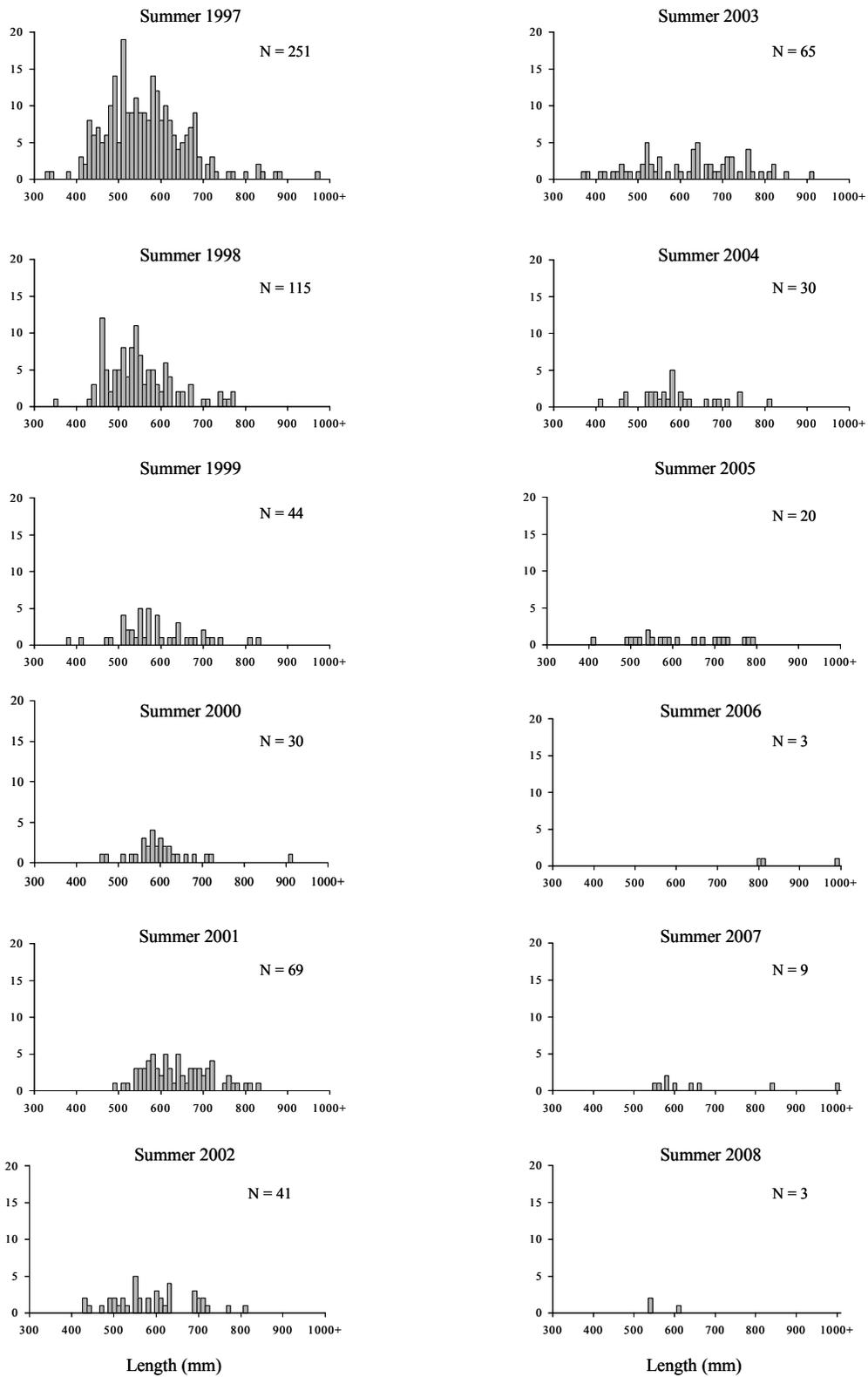


Figure 6. Length frequency of angler-harvested northern pike measured by the creel clerk during summer creel surveys on Lake Thompson, 1997-2008.

Angler-harvested northern pike ranged in length from approximately 400 mm (15.7 in) to 1,000 mm (39.3 in) (Figure 6). The length frequency suggested that northern pike were fully recruited to the fishery at about 500 mm (19.7 in). The majority of fish harvested measured 500 mm (19.7 in) to 600 mm (23.6 in) early in the survey period; however, average size of fish harvested increased over time (Figure 6). A similar pattern was documented on Waubay Lake (Blackwell and Hubers 2003; Blackwell 2005a). Increasing fish size was likely due to poor natural recruitment which resulted in a harvest of increasingly older, larger fish.

Yellow Perch

As with northern pike, summer angler catch rates for yellow perch showed a steady decline (Table 8) with decreasing water levels. The decline in catch and harvest coincided with a decrease in summer survey gill-net CPUE after 2002 (Figure 2). Catch and harvest rates were relatively low throughout the 12-year survey period (Table 8) with the peaks occurring during the summers of 2000 and 2002 (Table 8). Monthly catch and harvest rates were nearly always highest in August (Appendix 4).

From 1997 through 2002, yellow perch gill net CPUE was similar on Lake Thompson and Waubay Lake (Blackwell and Hubers 2003), yet mean harvest rates and yield (number/ha) over that period were about four times higher on Waubay Lake (Appendix 5). This discrepancy between gill-net and angler-harvest rates was even more pronounced for the winter fishery. Summer fishing pressure (h/ha) was similar and the percentage of summer anglers primarily targeting yellow perch was less than 10% on both lakes with the exception of Waubay Lake in 2001 (17.8%) and 2002 (17.0%). Thus, based on these parameters, susceptibility of yellow perch to angling (catchability) must have been substantially higher on Waubay Lake than Lake Thompson.

The yearly size distribution of yellow perch harvested by anglers varied throughout the survey period (Figure 7). The majority of yellow perch harvested in 1997 and 1998 were 250 to 350 mm (10 to 14 in) long. After 1998, most angler-harvested yellow perch measured between 200 and 300 mm (8 and 12 in) long. (Figure 7).

Table 8. Estimated number and rate (number per hour) of yellow perch caught and harvested by anglers during the summer fishery on Lake Thompson, South Dakota, 1997-2008. (80% confidence interval).

<i>Year</i>	<i>Catch</i>	<i>Harvest</i>	<i>Catch rate</i>	<i>Harvest rate</i>
1997	11,273 (2,469)	8,220 (2,002)	0.06 (0.02)	0.05 (0.01)
1998	11,615 (2,110)	9,778 (2,129)	0.07 (0.03)	0.06 (0.02)
1999	11,318 (3,535)	9,116 (2,580)	0.06 (0.03)	0.05 (0.02)
2000	19,016 (5,046)	14,726 (4,541)	0.15 (0.05)	0.11 (0.04)
2001	3,417 (577)	3,022 (706)	0.03 (0.01)	0.02 (0.01)
2002	12,422 (3,017)	7,209 (1,393)	0.11 (0.04)	0.06 (0.02)
2003	5,191 (2,402)	4,283 (2,288)	0.04 (0.02)	0.03 (0.02)
2004	936 (359)	735 (392)	0.008 (0.004)	0.006 (0.003)
2005	2,388 (1,401)	2,205 (1,357)	0.03 (0.02)	0.03 (0.02)
2006	649 (338)	412 (202)	0.009 (0.005)	0.006 (0.003)
2007	809 (283)	661 (284)	0.01 (0.008)	0.008 (0.007)
2008	271 (209)	202 (152)	0.004 (0.003)	0.003 (0.002)

Black Crappie

Black crappie summer catch and harvest increased during the survey period (Table 9). Overall catch rates were low (< 0.10 fish/h) because few anglers were specifically targeting crappies. However, anglers primarily targeting black crappies in May and June experienced catch rates of over 1.0 fish/h. Although late-May is often associated with the highest summer catch rate of crappies in eastern South Dakota lakes, monthly catch and harvest rates on Lake Thompson were relatively uniform from May through July. Anglers harvested about 73% of their catch which was similar to the percentage of the catch harvested on Waubay Lake (Blackwell and Hubers 2003).

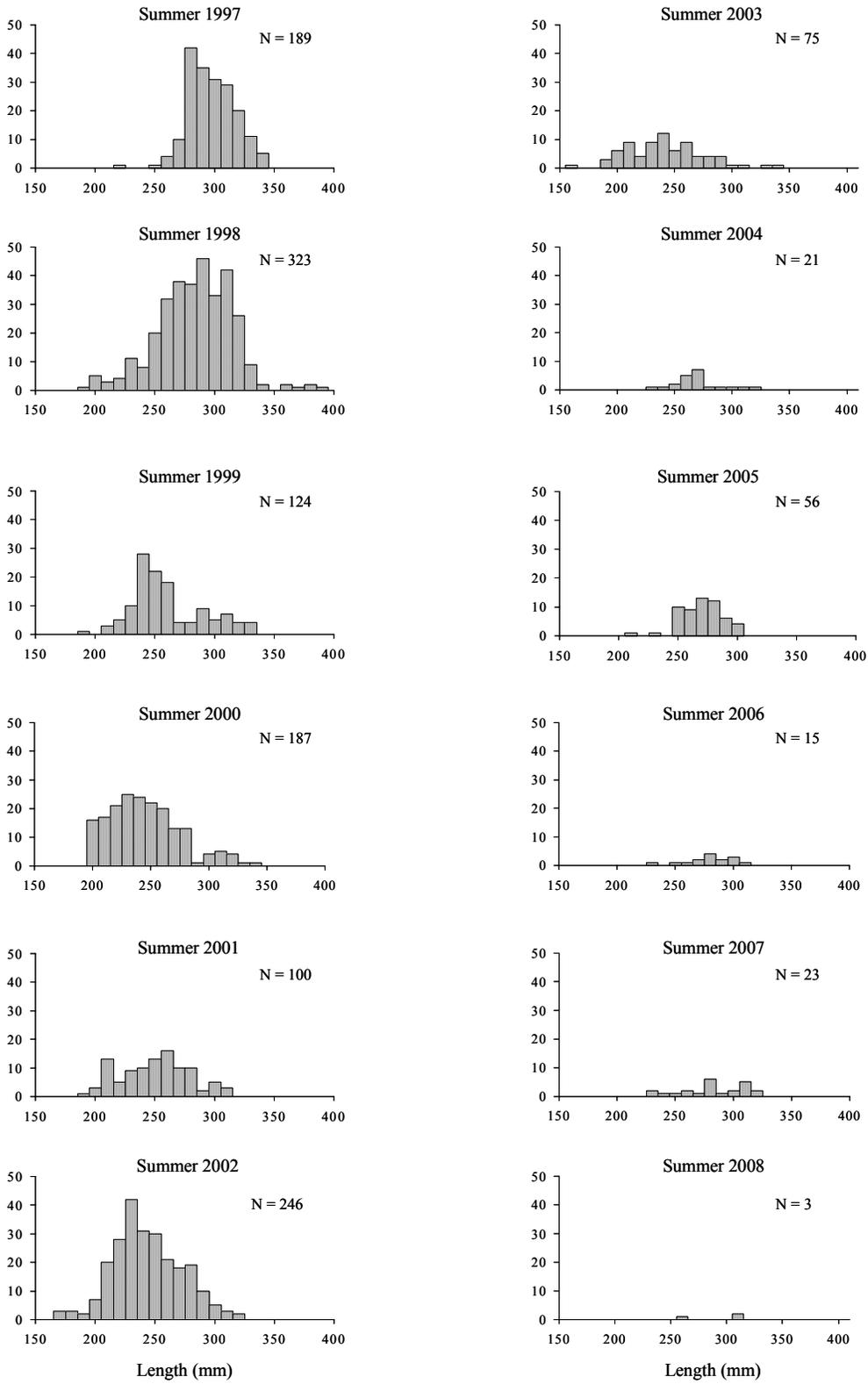


Figure 7. Length frequency of angler-harvested yellow perch measured by the creel clerk during summer creel surveys on Lake Thompson, 1997-2008.

Table 9. Estimated number and rate (number per hour) of black crappie caught and harvested by anglers during the summer fishery on Lake Thompson, South Dakota, 1997-2008. (80% confidence interval).

<i>Year</i>	<i>Catch</i>	<i>Harvest</i>	<i>Catch rate</i>	<i>Harvest rate</i>
1997	898 (483)	735 (470)	0.005 (0.003)	0.004 (0.003)
1998	2,014 (1,090)	1,945 (1,086)	0.01 (0.01)	0.01 (0.01)
1999	334 (241)	310 (187)	0.002 (0.001)	0.002 (0.001)
2000	336 (114)	336 (114)	0.003 (0.001)	0.003 (0.001)
2001	637 (439)	526 (436)	0.005 (0.004)	0.005 (0.004)
2002	2,347 (1,097)	1,863 (962)	0.02 (0.01)	0.02 (0.009)
2003	2,172 (1,042)	1,714 (856)	0.02 (0.008)	0.01 (0.007)
2004	1,750 (472)	1,304 (441)	0.02 (0.006)	0.01 (0.005)
2005	4,122 (2,784)	2,432 (1,179)	0.05 (0.04)	0.03 (0.02)
2006	1,684 (710)	1,530 (687)	0.02 (0.01)	0.02 (0.01)
2007	1,483 (1,028)	1,266 (982)	0.02 (0.02)	0.02 (0.01)
2008	6,289 (1,820)	3,682 (1,246)	0.09 (0.05)	0.05 (0.03)

Black crappie populations on large eastern South Dakota natural lakes are cyclical and tend to provide “boom and bust” fisheries. For example, lakes Brant (unpublished data) and Waubay (Blackwell 2005a) have only provided one or two good summers of fishing for black crappie (0.15-0.35 fish/h) over the past 10-years. Catch rates on Lake Madison were very low for 10 consecutive years until the fishery rebounded in 2004. Since 2004, summer catch rates have ranged from 0.20/h to 0.34/h, much higher than Lake Thompson.

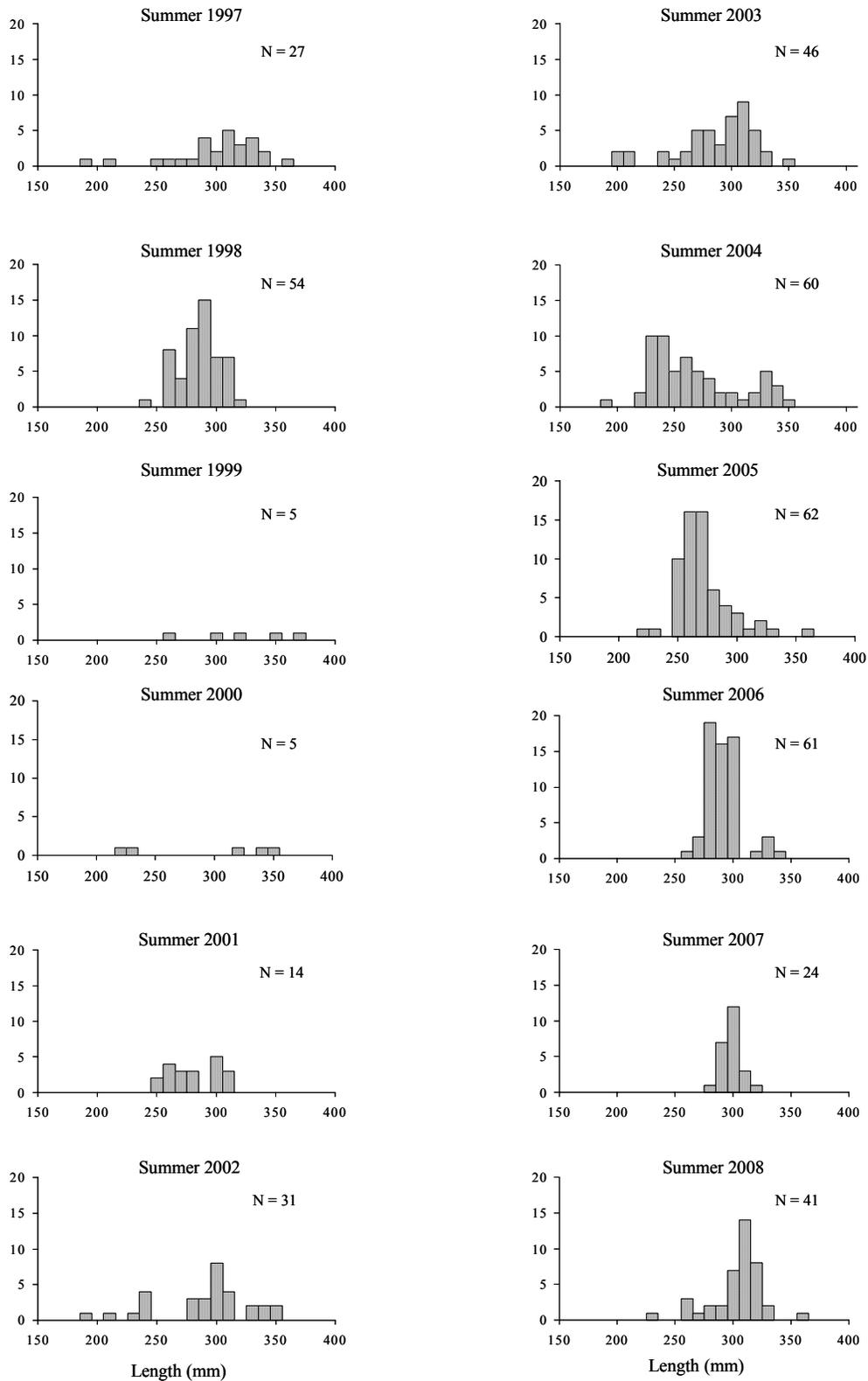


Figure 8. Length frequency of angler-harvested black crappie measured by the creel clerk during summer creel surveys on Lake Thompson, 1997-2008.

Angler-harvested black crappies on Lake Thompson commonly averaged about 300 mm (11.8 in; Figure 8). Size distribution of harvested crappies was similar to that for Waubay Lake (Blackwell and Hubers 2003; Blackwell 2005a) and Enemy Swim Lake (Blackwell 2005c) and larger than the more consistent fisheries on Richmond Lake (Hubers 2000) and Lake Madison (unpublished data).

Smallmouth Bass

Smallmouth bass catch and catch rates increased from 1997 through 2003 and then declined (Appendices 3 and 4) probably due to declining water levels (Table 10). Catch rates were extremely low because only one percent of parties interviewed indicated they were primarily targeting smallmouth bass (Table 1). Anglers only harvested about one in every four smallmouth bass caught (Appendix 3).

Many large eastern South Dakota natural lakes support excellent smallmouth bass fisheries. Summer catch rates of 0.49 fish/h and 0.71 fish/h were recorded on Enemy Swim Lake (Blackwell 2005c) and Pickerel Lake (Blackwell et al. 2007), respectively. Brant Lake had a catch rate of 0.44 fish/h in 2007, and anglers caught 0.26 fish/h from the newly-introduced Lake Sinai population in 2008 (unpublished data). The percentage of angling parties targeting smallmouth bass is beginning to increase on some lakes (Blackwell 2005c).

Black Bullhead

Catch rates for black bullhead peaked in 2002 then declined rapidly (Table 11). This coincided with a steep decline in trap-net CPUE during summer lake surveys (unpublished data). Anglers harvested very few black bullheads (Table 11). The low harvest rate was undoubtedly related to the small percentage of shore fishermen (Appendix 2) and generalist anglers (Table 1) participating in the fishery. Much higher harvest rates occur in waters like Lake Herman and Wall Lake that are closer to Sioux Falls and have higher percentages of shore and generalist anglers (unpublished data).

Table 10. Estimated number and rate (number per hour) of smallmouth bass caught and harvested by anglers during the summer fishery on Lake Thompson, South Dakota, 1997-2008. (80% confidence interval).

<i>Year</i>	<i>Catch</i>	<i>Harvest</i>	<i>Catch rate</i>	<i>Harvest rate</i>
1997	0	0	0.0003 (0.0003)	0
1998	890 (641)	235 (274)	0.005 (0.003)	0.0006 (0.0004)
1999	41,310 (14,012)	2,961 (2,082)	0.003 (0.002)	0.002 (0.001)
2000	36,778 (5,806)	1,399 (821)	0.02 (0.009)	0.002 (0.001)
2001	6,010 (1,468)	681 (329)	0.01 (0.003)	0.003 (--)
2002	40,486 (10,784)	756 (327)	0.01 (0.005)	0.005 (0.004)
2003	35,041 (11,155)	2,204 (1,227)	0.02 (0.007)	0.004 (0.002)
2004	5,386 (1,288)	430 (89)	0.02 (0.008)	0.006 (0.003)
2005	73 (65)	0	0.01 (0.01)	0.004 (0.005)
2006	0	0	0.01 (0.008)	0.002 (0.001)
2007	74 (71)	33 (40)	0.006 (0.003)	0.001 (0.0005)
2008	0	0	0.008 (0.004)	0.002 (0.001)

Other

A few common carp and white suckers were caught during the summer fishery (Appendix 3) and a white bass was first reported in the catch during the summer of 2007.

Winter

Fishing Pressure

Walleyes were the primary target for anglers during the winter fishery throughout the 12-year period (Table 12). However, the percentage of angling parties primarily targeting walleyes was substantially higher during the summer fishery (Table 1), while

Table 11. Estimated number and rate (number per hour) of black bullhead caught and harvested by anglers during the summer fishery on Lake Thompson, South Dakota, 1997-2008. (80% confidence interval).

<i>Year</i>	<i>Catch</i>	<i>Harvest</i>	<i>Catch rate</i>	<i>Harvest rate</i>
1997	55 (52)	0	0	0
1998	738 (519)	99 (52)	0.006 (0.004)	0.001 (0.001)
1999	603 (269)	294 (173)	0.23 (0.10)	0.02 (0.01)
2000	2,154 (787)	300 (136)	0.28 (0.09)	0.01 (0.006)
2001	1,390 (421)	345 (202)	0.05 (0.03)	0.005 (0.003)
2002	1,571 (468)	609 (266)	0.35 (0.14)	0.007 (0.004)
2003	2,247 (579)	514 (235)	0.26 (0.11)	0.02 (0.009)
2004	1,774 (516)	664 (223)	0.05 (0.02)	0.004 (0.0009)
2005	824 (1,069)	295 (359)	0.0009 (0.0009)	0
2006	759 (555)	130 (88)	0	0
2007	453 (183)	88 (38)	0.0009 (0.0009)	0.0004 (0.0005)
2008	171 (99)	40 (50)	0	0

percentages of parties targeting yellow perch, black crappie and northern pike were higher during the winter (Table 12).

Unlike summer fishing pressure, which showed a steady decline over the survey period, winter fishing pressure declined initially, bottomed during the winter of 2001-02, and then increased through 2007-08 (Table 13 and Figure 9). Surprisingly, the increase in fishing pressure coincided with a decrease in walleye catch and harvest rates, and constant rates of catch and harvest for yellow perch and black crappies (Appendix 8). An increase in mean trip length with a greater number of anglers spending one or more

Table 12. Percent of angling parties interviewed primarily targeting a species (or any species) during the winter fishery on Lake Thompson, 1997-2008.

<i>Year</i>	<i>Percent of anglers targeting</i>					
	<i>Walleye</i>	<i>Yellow perch</i>	<i>Black crappie</i>	<i>Northern pike</i>	<i>Smallmouth bass</i>	<i>Any species</i>
1997-98	46	33	2	3	0	16
1998-99	52	31	1	1	0	15
1999-00	69	14	1	4	0	12
2000-01	74	10	0	5	0	11
2001-02	67	22	0	2	0	9
2002-03	76	10	1	4	0	9
2003-04	85	2	1	2	0	10
2004-05	60	11	10	3	0	16
2005-06	67	17	2	1	1	12
2006-07	61	23	7	1	0	8
2007-08	45	14	5	1	0	35

nights on the lake may explain the increase in fishing pressure. The mean trip length was 3.92 hours for winters surveyed during 1997-98 through 2002-03, but the mean trip length increased to 6.27 hours for the winters of 2003-04 through 2007-08. Lake Thompson has become a popular destination for anglers fishing out of commercially-produced ice shacks with cooking and sleeping accommodations as well as satellite television. Creel clerks commonly reported trip lengths of over 24 hours in the last half of the survey period.

Although mean monthly catch and harvest rates of walleye and yellow perch were highest in December (Appendix 8), peak winter fishing pressure occurred in January (Figure 10). Thicker ice in January and February made for safer vehicle travel and allowed the use of permanent shacks. On average, 77% of the winter fishing pressure was done by anglers fishing in ice shacks. The highest percentage of anglers fishing in ice shacks occurred in January (85%) followed by December (82%, Figure 10). Only in March, after permanent shacks must be removed from the lake and weather had moderated did hours fishing on the open-ice exceed hours fished in ice shacks (Figure 10).

Table 13. Winter totals for the number of interviews and estimates for fishing pressure (h) and fishing pressure per surface acre of water, angler days and economic value from creel surveys conducted on Lake Thompson, December through March, 1997-2008.

<i>Year</i>	<i>Number of interviews</i>	<i>Angler hours</i>	<i>Angler hours/ hectare</i>	<i>Angler days</i>	<i>Economic value</i>
1997-98	565	44,477 (7,621)	6.8 (1.2)	11,797	\$719,617
1998-99	353	20,801 (7,245)	3.2 (1.1)	5,592	\$341,112
1999-00	395	15,066 (3,120)	2.3 (0.5)	3,893	\$237,473
2000-01	377	17,690 (3,400)	2.7 (0.5)	3,510	\$214,110
2001-02	194	12,011 (3,376)	1.8 (0.5)	3,742	\$228,262
2002-03	391	29,021 (4,903)	5.1 (1.0)	5,874	\$358,314
2003-04	327	27,401 (4,103)	5.6 (0.8)	6,927	\$422,547
2004-05	492	28,202 (5,953)	5.8 (1.2)	3,978	\$242,658
2005-06	420	18,588 (4,350)	3.8 (0.9)	2,750	\$167,750
2006-07	499	30,139 (6,522)	6.2 (1.3)	4,901	\$298,961
2007-08	623	45,406 (10,041)	10.0 (2.2)	5,195	\$316,895

Winter fishing pressure (4.8 h/ha) comprised about 19% of the total annual fishing pressure during the survey period. The contribution of the winter fishery to total fishing pressure varied annually from 9% in 2002 to nearly 40% in 2008 and nearly doubled in the second half of the survey period. The contribution of the winter fishery to total fishing pressure was smaller than on several comparable waters (Table 3). Winter fisheries on Bitter, Enemy Swim, Pickerel and Poinsett generated 20% to 30% of the annual fishing pressure and the winter fishery for yellow perch on Waubay Lake was nearly 50%. Lakes with good winter fisheries for panfish generally supported higher winter fishing pressure (Table 3).

Angler Demographics

Throughout the survey period, over 80% of winter anglers on Lake Thompson were South Dakota residents. The percentage of non-resident anglers using the fishery decreased from 17% in 1997-98 to 5% in 2007-08 (Appendix 6). Winter participation by non-residents on other southeastern lakes, like Madison and Brant, has typically been less than 5 % with the exception of the yellow perch fishery (harvest rate of 2.72 fish/h) on Lake Madison during winter 2002-03 (unpublished data).

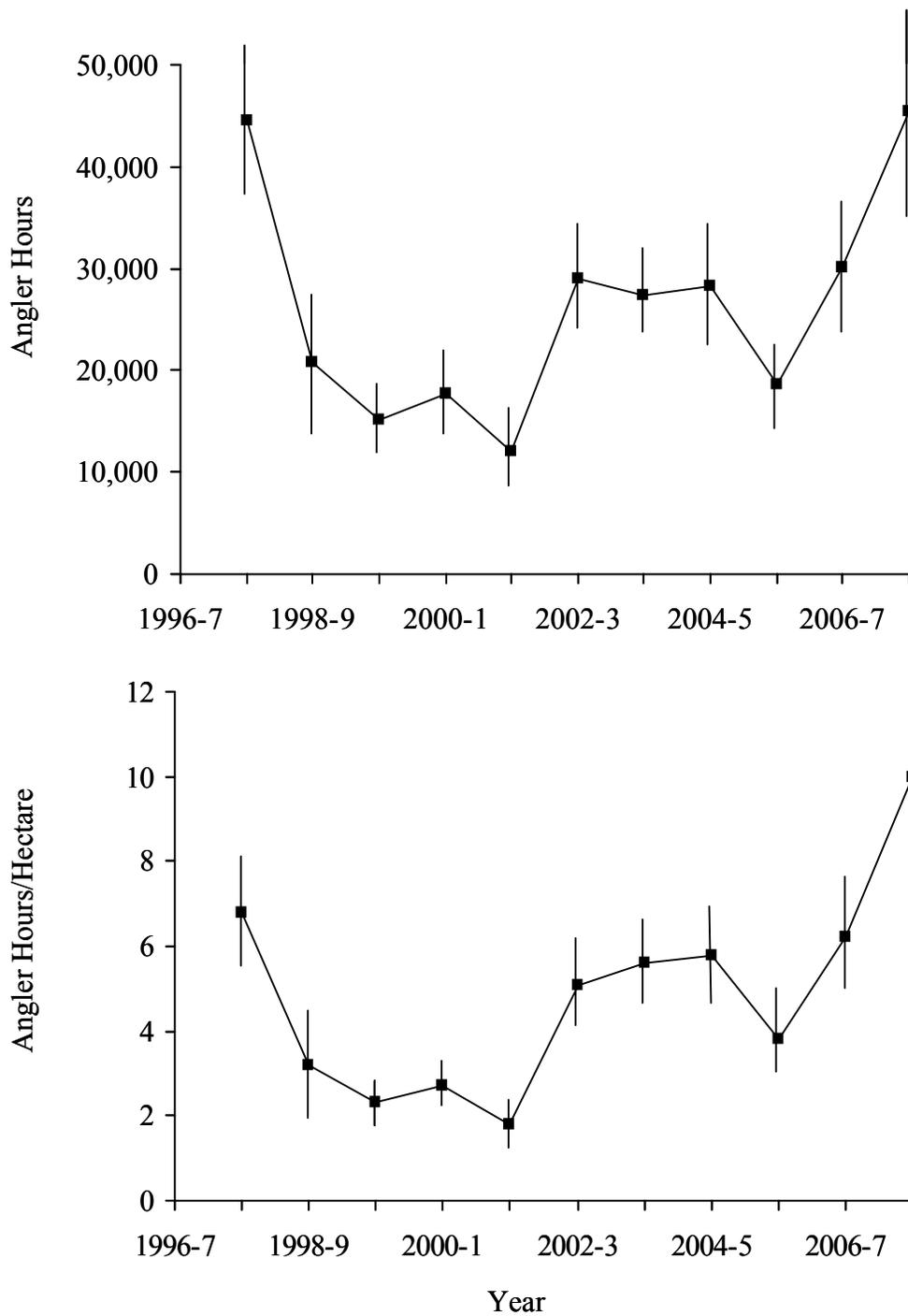


Figure 9. Estimated winter fishing pressure measured in angler hours (top) and angler hours/hectare (bottom) on Lake Thompson, 1997-2008 (bars represent an 80% confidence interval).

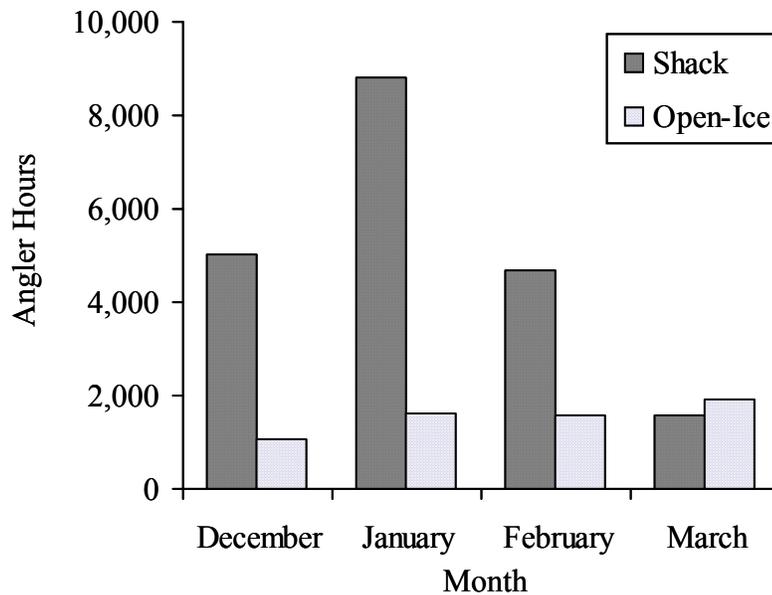


Figure 10. Mean monthly winter fishing pressure for shack and open-ice anglers on Lake Thompson, 1997-2008.

Non-resident participation in winter fisheries has been higher on some northeastern South Dakota lakes. Non-resident participation on Enemy Swim Lake reached 42% during the winter of 2003-04 with a majority of anglers targeting bluegill (Blackwell 2005c). Non-resident participation in the popular winter fishery on Waubay Lake varied between 20% and 40% from 1999 through 2004 (Blackwell and Hubers 2003; Blackwell 2005a). Non-residents comprised more than half (55%) of the anglers in the winter 2005-06 bluegill and black crappie fishery on Pickerel Lake and about 40% of these were from Minnesota (Blackwell et al. 2007). Nearly all winter fisheries with high non-resident participation provided exceptional panfishing.

As with the summer fishery, residents of Minnehaha County comprised over 30% of the parties interviewed on Lake Thompson over the survey period (Figure 11). Other counties contributing higher percentages of anglers were Beadle, Brookings, Kingsbury and Lake. Northeastern South Dakota contributed fewer parties to the winter fishery than the summer fishery but patterns of participation by county were very similar for both (Figures 4 and 11).

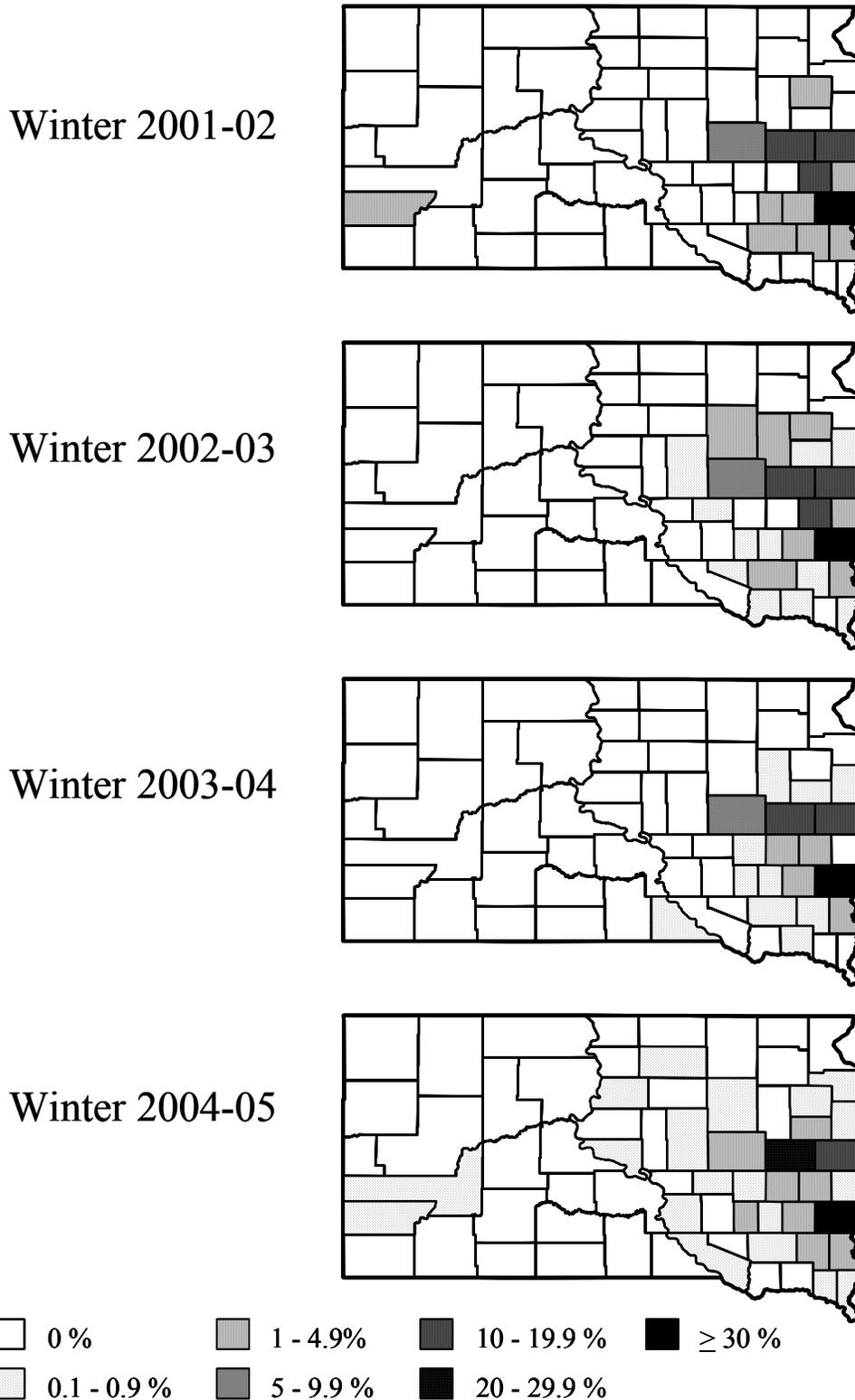
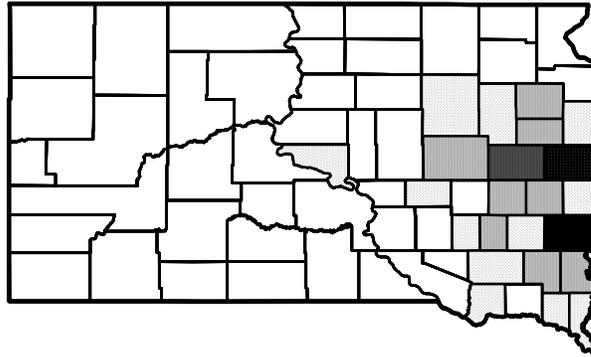
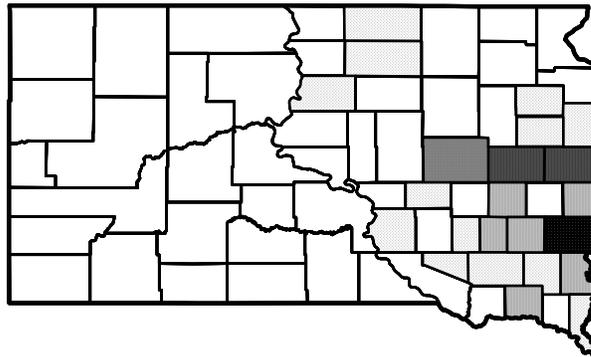


Figure 11. South Dakota county of residence for winter (December-March) resident anglers fishing Lake Thompson, South Dakota from 2001 through 2008.

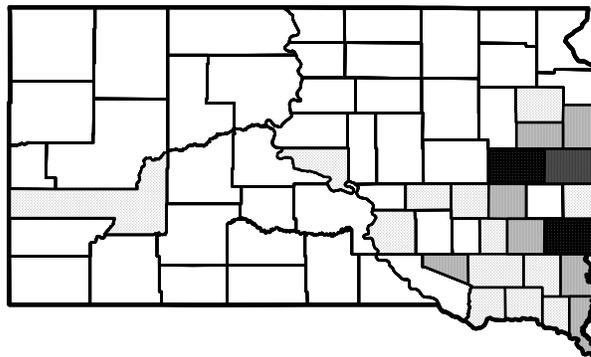
Winter 2005-06



Winter 2006-07



Winter 2007-08



Winters 2001-08

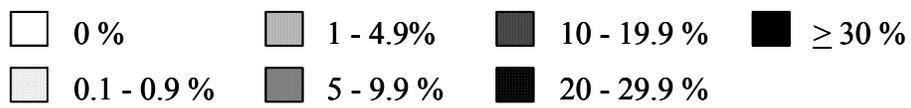
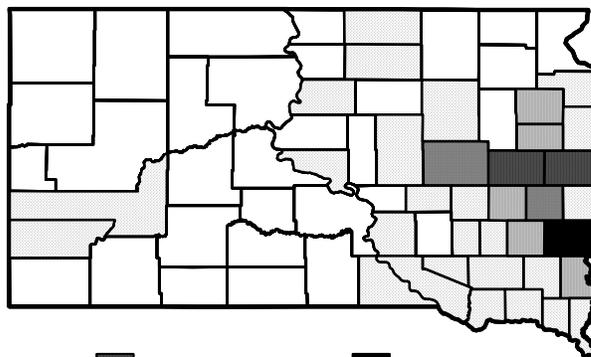


Figure 11. Continued

The Lake Thompson winter fishery has an annual economic impact of 167,000 to 720,000 dollars based on an estimated 1,600 to 11,000 trips each year at a value of \$61 per trip (U.S. Department of the Interior, Fish and Wildlife Service, U.S. Bureau of Commerce Bureau of Census 2007).

Angler Catch and Harvest

Walleye

Walleye catch and harvest rates on Lake Thompson averaged 0.20 walleyes/hour and 0.08 walleyes/hour, respectively, for the 1997-2008 winter fisheries (Table 14). The mean harvest rate was well below the SDGFP objective harvest rate of 0.15 walleyes/h, and none of the annual winter harvest rates exceeded that objective. Higher catch rates were recorded early in the survey period (1997-2004, Table 14).

Mean winter catch and harvest rates for walleyes on Lake Thompson were similar to other popular walleye fisheries in large eastern South Dakota lakes (Table 3). The highest mean winter catch rates were found on Poinsett (0.55/h), Waubay (0.34/h), Brant (0.31/h) and Bitter (0.29/h). Minimum length limits on three of these four waters helped to increase catch rates and depress harvest rates. Winter catch rates on all other waters surveyed were less than the 0.20 walleyes/hour recorded for Lake Thompson (Table 3). Mean harvest rates were all well below the SDGFP objective of 0.15 walleyes/h suggesting that this objective may be unachievable over multiple years on a winter fishery in eastern South Dakota.

The winter fishery accounted for only 6% of the annual walleye harvest on Lake Thompson. Over the survey period, the mean annual harvest was 32,124 walleyes (5.56 walleyes/ha) for the summer fishery and 2,129 walleyes (0.38 walleyes/ha) for the winter fishery. Winter fishery contribution to total walleye harvest was greater on other walleye fisheries than Thompson (Table 6). The winter fisheries on Bitter, Poinsett and Waubay contributed 22%, 28% and 24% to the mean annual walleye harvest, respectively (Table 6) while smaller average contributions were documented on Enemy Swim (19%) and Pickerel (10%).

Table 14. Estimated number and rate (number per hour) of walleyes caught and harvested by anglers during the winter fishery on Lake Thompson, South Dakota, 1997-2008. (80% confidence interval).

<i>Year</i>	<i>Catch</i>	<i>Harvest</i>	<i>Catch rate</i>	<i>Harvest rate</i>
1997-98	15,698 (4,060)	5,339 (1,103)	0.35 (0.15)	0.12 (0.04)
1998-99	4,366 (1,961)	1,554 (800)	0.21 (0.18)	0.07 (0.07)
1999-00	4,008 (1,282)	1,341 (560)	0.27 (0.12)	0.09 (0.05)
2000-01	6,724 (2,140)	2,178 (750)	0.38 (0.18)	0.12 (0.06)
2001-02	1,647 (534)	466 (224)	0.13 (0.07)	0.04 (0.03)
2002-03	8,138 (1,714)	3,384 (689)	0.28 (0.10)	0.12 (0.05)
2003-04	6,929 (1,513)	2,503 (618)	0.25 (0.09)	0.09 (0.05)
2004-05	2,601 (820)	1,873 (564)	0.09 (0.04)	0.07 (0.03)
2005-06	1,524 (548)	912 (407)	0.08 (0.05)	0.05 (0.04)
2006-07	1,895 (587)	1,120 (345)	0.06 (0.03)	0.04 (0.02)
2007-08	5,795 (1,798)	2,755 (810)	0.13 (0.06)	0.06 (0.03)

Just under 50% of the walleyes harvested during the winter over the 12-year survey period on Thompson were 356-mm (14-in) or longer. Annual percentages of walleyes measuring 356 mm (14-in) or longer in the winter fishery varied between 35% in 2003-04 and 88% in 2006-07 (Figure 12). Smaller fish (< 356 mm or 14 inches long) comprised a greater percentage of the winter harvest (51%) than summer walleye harvest (33%). However, during both the summer and winter fisheries, only a small percentage of the walleyes harvested were less than 305 mm (12 in) long (Figure 12). The 12-year mean length of winter-harvested walleyes was estimated at 377 mm or just under 15-inches long (Table 15) which was similar to the mean of 384 mm (15.1 in) for the summer fishery. Annual mean lengths varied from 354 mm (13.9 in) in 1997-98 to 400

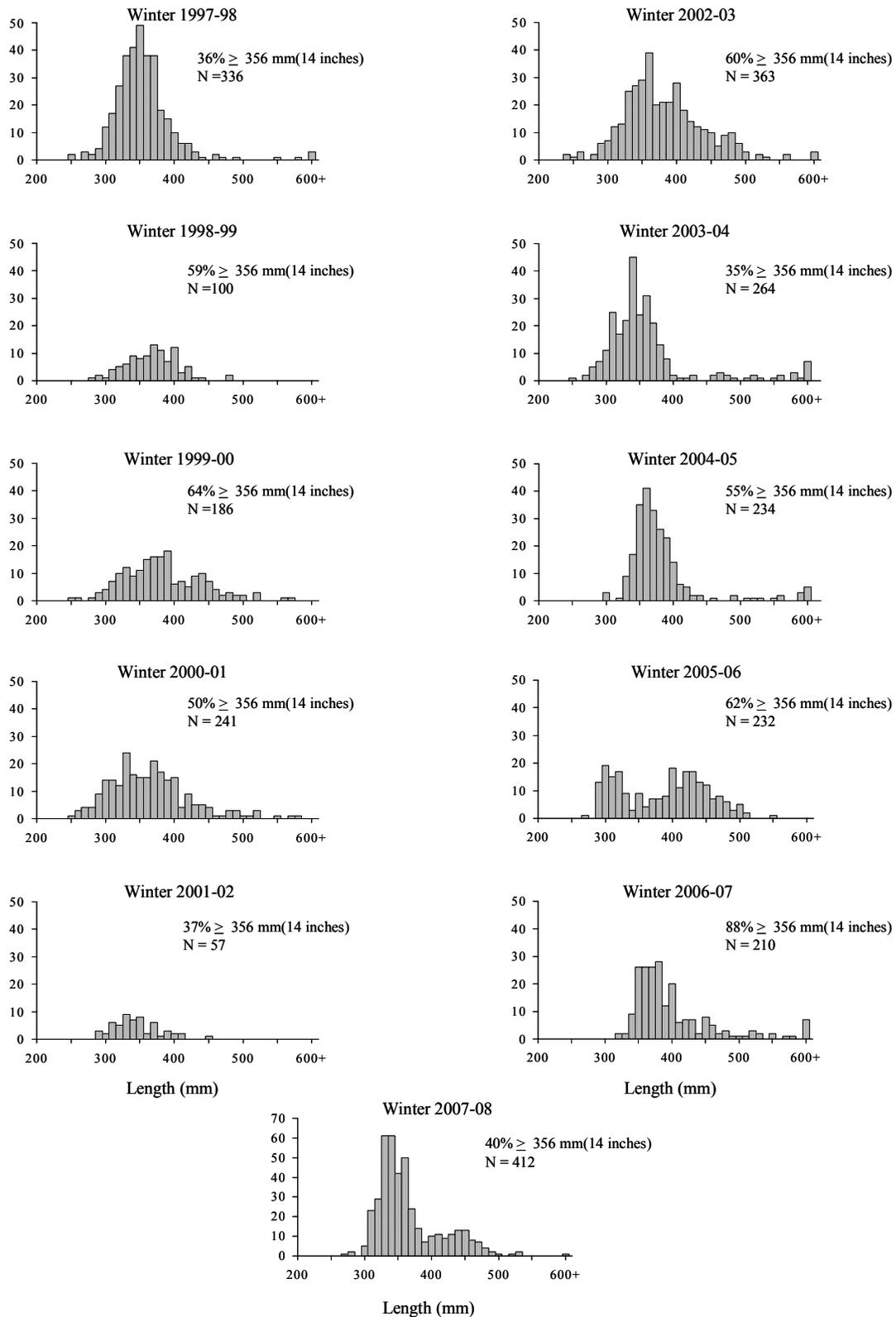


Figure 12. Length frequency of angler-harvested walleyes measured by the creel clerk during winter creel surveys on Lake Thompson, 1997-2008.

Table 15. Mean total lengths (mm) of walleyes harvested by winter anglers on eastern South Dakota lakes, 1996-2008.

Year	<i>Enemy</i>						
	<i>Bitter</i>	<i>Brant</i>	<i>Swim</i>	<i>Pickerel</i>	<i>Poinsett</i>	<i>Thompson</i>	<i>Waubay</i>
1996-97							473
1997-98			404		382	354	378
1998-99					384	368	447
1999-00	420				389	383	480
2000-01	430		378		411	363	493
2001-02	511		438		376	384	472
2002-03	449	333	409			381	477
2003-04	439	350	414	381		361	394
2004-05	457		427	428		382	384
2005-06	442		397	407		386	384
2006-07	419	329	428	393		400	392
2007-08	454	345	414	408		365	392
Mean	447	339	412	403	388	375	431

mm (15.7 in) in 2006-07 (Table 15). Mean lengths of harvested walleyes were substantially higher on lakes with 356 mm (14 in) and 406 mm (16 in) MLLs (Table 15).

Northern Pike

Winter catch and harvest rates for northern pike were low and declined near the end of the survey period (Table 16). The highest mean monthly catch rate was in March followed by February (Appendix 8). Anglers harvested about 50% of the northern pike caught during the winter fishery, substantially greater than the 20% harvested during the summer fishery (Appendix 4). Blackwell and Hubers (2003) also noted that winter anglers were more willing to harvest northern pike than summer anglers on Waubay Lake.

Angler-harvested northern pike ranged in length from 400 mm (15.7 in) to 1,000 mm (39.3 in) (Figure 13) which was similar to the summer fishery (Figure 6). Also, as with the summer fishery, the mean size of fish harvested increased over time due to poor natural recruitment resulting in a harvest of increasingly older, larger fish.

Table 16. Estimated number and rate (number per hour) of northern pike caught and harvested by anglers during the winter fishery on Lake Thompson, South Dakota, 1997-2008. (80% confidence interval).

<i>Year</i>	<i>Catch</i>	<i>Harvest</i>	<i>Catch rate</i>	<i>Harvest rate</i>
1997-98	1,927 (373)	915 (136)	0.04 (0.02)	0.02 (0.01)
1998-99	662 (262)	224 (131)	0.03 (0.02)	0.01 (0.009)
1999-00	717 (226)	306 (126)	0.05 (0.03)	0.02 (0.02)
2000-01	978 (340)	755 (292)	0.06 (0.03)	0.04 (0.02)
2001-02	63 (32)	30 (21)	0.005 (0.003)	0.002 (0.002)
2002-03	892 (212)	597 (215)	0.03 (0.009)	0.02 (0.009)
2003-04	1,082 (252)	647 (171)	0.04 (0.01)	0.02 (0.01)
2004-05	782 (545)	557 (452)	0.03 (0.02)	0.02 (0.02)
2005-06	125 (76)	81 (41)	0.007 (0.005)	0.004 (0.003)
2006-07	212 (78)	174 (69)	0.007 (0.003)	0.006 (0.003)
2007-08	92 (35)	80 (31)	0.002 (0.001)	0.002 (0.001)

Yellow Perch

Yellow perch catch and harvest rates remained relatively constant throughout the survey period (Table 17). The highest catch and harvest rates were recorded early and late in the survey period (Table 17). Curiously, the improvement in catch rates near the end of the creel survey coincided with low gill net catches during summer lake surveys (Figure 2). Mean monthly catch and harvest rate was highest in December followed by January (Appendix 8). Yellow perch caught during the winter fishery were large with many fish measuring between 300 mm (12 in) and 360 mm (14 in) (Figure 14).

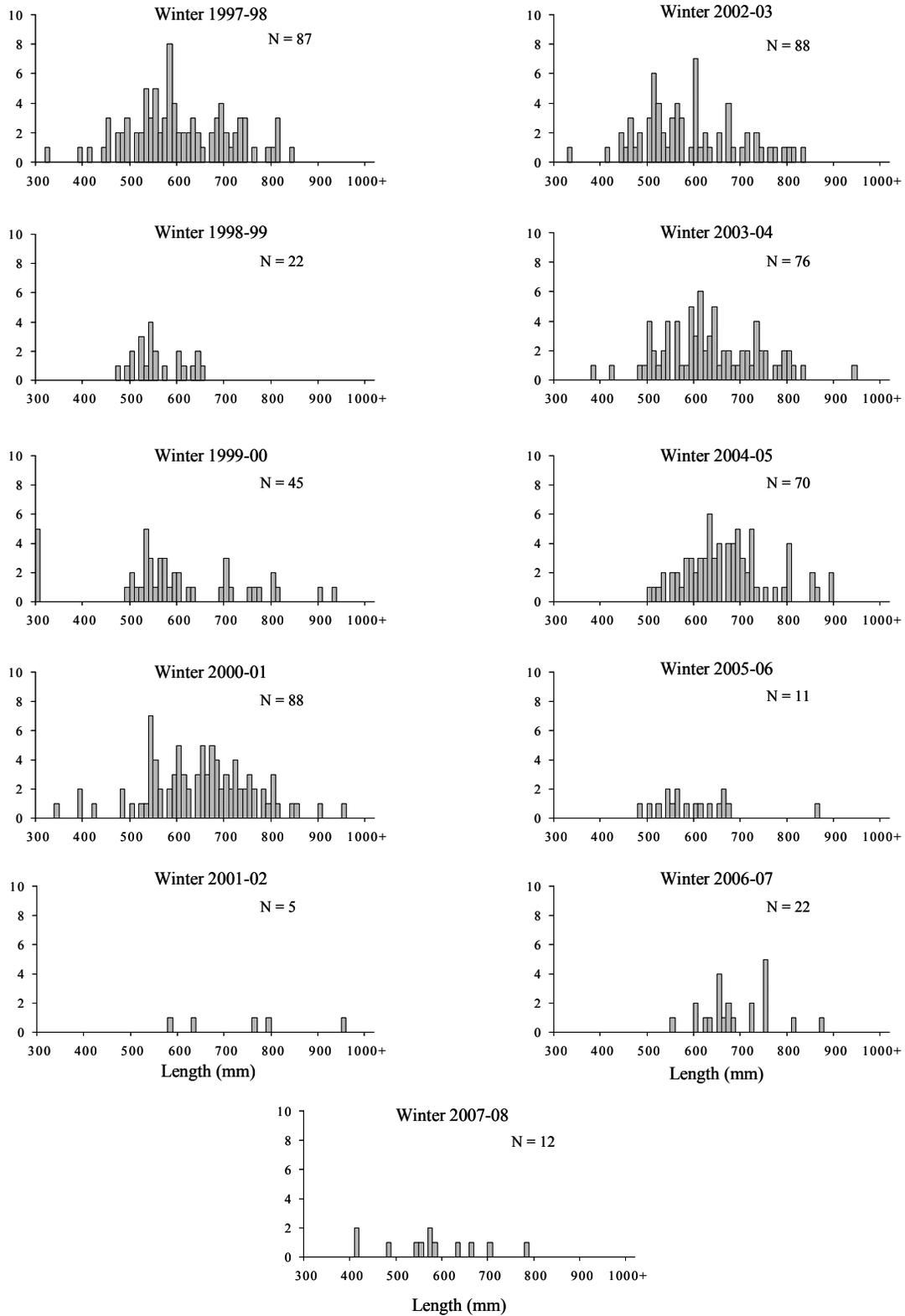


Figure 13. Length frequency of angler-harvested northern pike measured by the creel clerk during winter creel surveys on Lake Thompson, 1997-2008.

Table 17. Estimated number and rate (number per hour) of yellow perch caught and harvested by anglers during the winter fishery on Lake Thompson, South Dakota, 1997-2008. (80% confidence interval).

<i>Year</i>	<i>Catch</i>	<i>Harvest</i>	<i>Catch rate</i>	<i>Harvest rate</i>
1997-98	5,081 (1,672)	4,970 (1,650)	0.11 (0.05)	0.11 (0.05)
1998-99	4,828 (2,875)	3,802 (2,026)	0.23 (0.23)	0.18 (0.17)
1999-00	878 (428)	471 (205)	0.06 (0.03)	0.03 (0.02)
2000-01	661 (215)	602 (185)	0.04 (0.02)	0.03 (0.02)
2001-02	856 (271)	843 (264)	0.07 (0.03)	0.07 (0.03)
2002-03	769 (338)	643 (296)	0.03 (0.02)	0.02 (0.01)
2003-04	274 (110)	259 (109)	0.01 (0.004)	0.01 (0.005)
2004-05	1,555 (1,573)	1,439 (1,488)	0.06 (0.05)	0.05 (0.05)
2005-06	611 (200)	535 (191)	0.03 (0.02)	0.03 (0.02)
2006-07	3,035 (910)	2,935 (906)	0.10 (0.04)	0.10 (0.04)
2007-08	2,376 (1,154)	2,358 (1,129)	0.05 (0.03)	0.05 (0.03)

Winter harvest rate of yellow perch relative to survey gill net abundance is highly variable among lakes. From 1997-2002, a mean gill-net CPUE of about 60 yellow perch per 45.7 m (150 ft) experimental-mesh gill net coincided with winter catch rates ranging from 0.07 to 0.23 yellow perch/h on Lake Thompson, while for the same period, a mean CPUE of 62 coincided with catch rates ranging from 0.42 to 2.44 fish/h on Waubay Lake (Blackwell and Hubers 2003). From 1999-2003, Bitter Lake had gill-net CPUEs under 15 and still had higher winter catch rates (0.07-0.39 fish/h; Blackwell 2005b) than Lake Thompson. Aside from the high catch rates during the winter of 2002-2003 (Isermann et al. 2005), low winter “catchability” has been especially evident on Lake Madison which

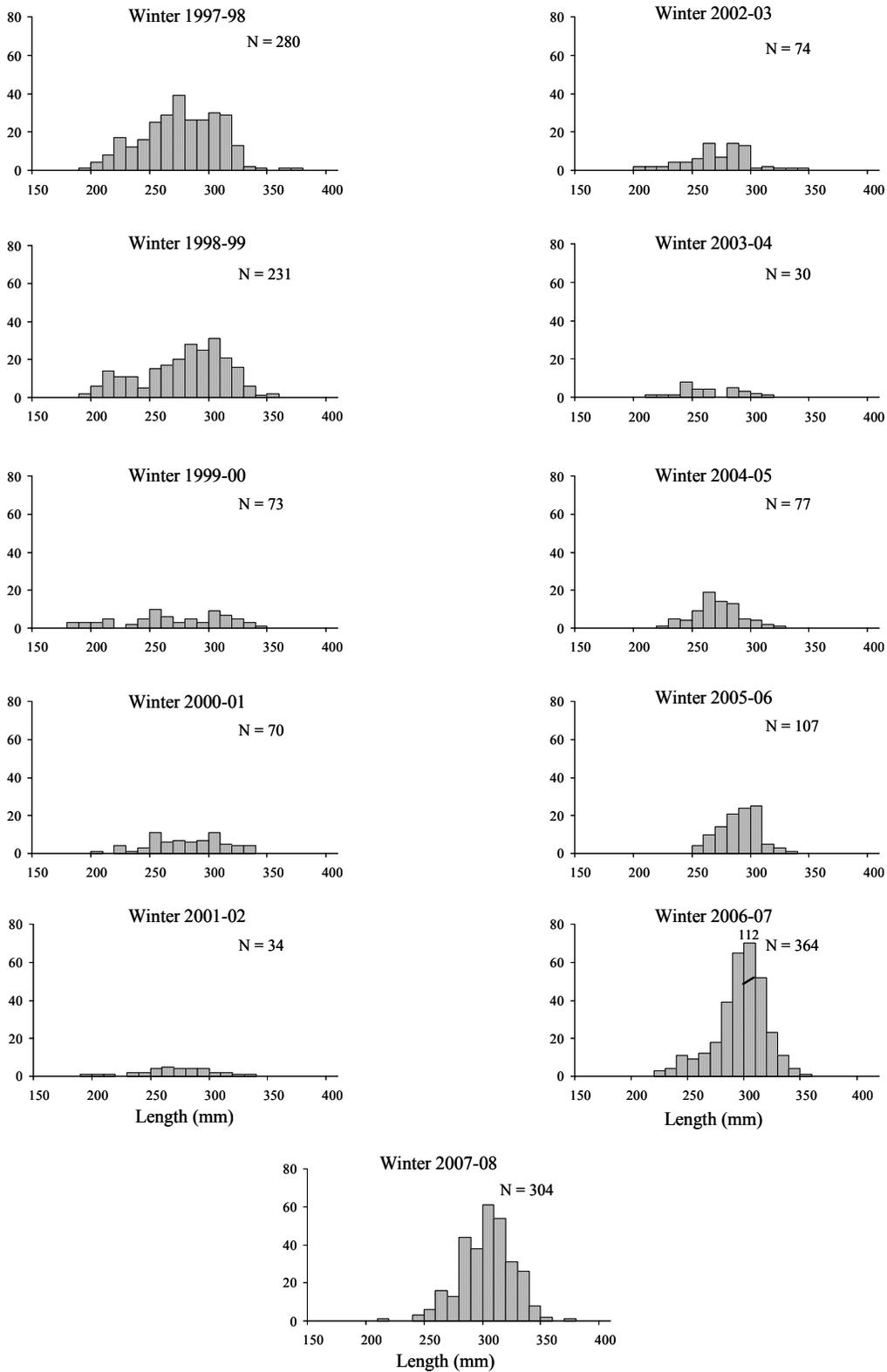


Figure 14. Length frequency of angler-harvested yellow perch measured by the creel clerk during winter creel surveys on Lake Thompson, 1997-2008.

supported a mean gill-net CPUE of 120 over the past 10 years and has provided a minimal winter yellow perch fishery (Schoenebeck 2009).

Black Crappie

In contrast to the winter fisheries for other Lake Thompson species, anglers had the best winter fishing for black crappie towards the end of the survey period (Table 18). A similar increasing pattern in catch and harvest rates was documented for the summer fishery (Table 9). March had the highest mean catch rate for black crappie followed by February (Appendix 8). In March 2005, anglers targeting black crappies harvested just over 2.5 fish/h. The fish were large, measuring over 300 mm (12 in) (Figure 15) and nearly 100% of them were harvested (Appendix 7).

Angler Opinions

Anglers were asked a variety of questions about angler satisfaction and preference with respect to regulations and harvest options during the survey period (Appendix 9). Angler satisfaction with their fishing trip varied, and surprisingly, was not related to walleye catch or harvest rates (Appendix 9, Questions 2, 3, 5 and 6). In the summer of 1997, 91% of angling parties indicated they were satisfied with their fishing trip, but only 43% rated the number and size of fish caught as good to excellent, in spite of catch rates that were the highest of the survey period (Table 4). Only 38% of angling parties were satisfied with their trip in the summer of 2002, while 85% were satisfied in the summer of 2003. Mean catch and harvest rates were nearly identical in those two years suggesting that other factors, or possibly, bias in how the question was asked, influenced angler response.

The top reasons for choosing to fish Lake Thompson over other waters included hearing that the targeted fish species were biting (17-35%), familiarity with the lake (17-35%) and closeness to home (19-21%) (Appendix 9, Question 9). The most common response among winter angling parties was hearing about a bite, while familiarity with the lake was most commonly given as a reason by summer angling parties. A majority of parties interviewed (83%) during summer 2003 indicated that current fishing regulations were easy to understand (Appendix 9, Question 7).

Table 18. Estimated number and rate (number per hour) of black crappie caught and harvested by anglers during the winter fishery at Lake Thompson, South Dakota, 1997-2008. (80% confidence interval).

<i>Year</i>	<i>Catch</i>	<i>Harvest</i>	<i>Catch rate</i>	<i>Harvest rate</i>
1997-98	560 (422)	560 (422)	0.01 (0.01)	0.01 (0.01)
1998-99	33 (31)	33 (31)	0.002 (0.002)	0.002 (0.002)
1999-00	0	0	0	0
2000-01	0	0	0	0
2001-02	8 (24)	8 (24)	0.001 (0.002)	0.001 (0.002)
2002-03	87 (31)	87 (31)	0.003 (0.002)	0.003 (0.002)
2003-04	754 (796)	731 (794)	0.03 (0.03)	0.03 (0.03)
2004-05	1,643 (751)	1,637 (747)	0.06 (0.04)	0.06 (0.04)
2005-06	148 (58)	142 (55)	0.008 (0.004)	0.008 (0.004)
2006-07	1,182 (587)	1,182 (1,592)	0.04 (0.06)	0.04 (0.06)
2007-08	1,297 (804)	1,297 (804)	0.03 (0.02)	0.03 (0.02)

Several questions about walleye harvest and regulations were asked during the survey period (Appendix 9, Questions 1, 8, 10, 11 and 12). Early in the period, better than 70% of parties interviewed stated they would favor implementing a 14-inch minimum length limit on the Lake Thompson fishery. About 60% of parties indicated that they would rather harvest three 14-inch walleyes over one 17-inch walleye (14-20%) or four 13-inch walleyes (19-28%). Winter anglers slightly favored harvesting higher numbers of smaller fish over summer anglers. Although a majority of anglers preferred three 14-inch walleyes over the other options, they opposed (about 65%) a reduction in walleye limits from four to three. Response to a reduction in the northern pike daily limit was more positive with many parties being neutral to that change.

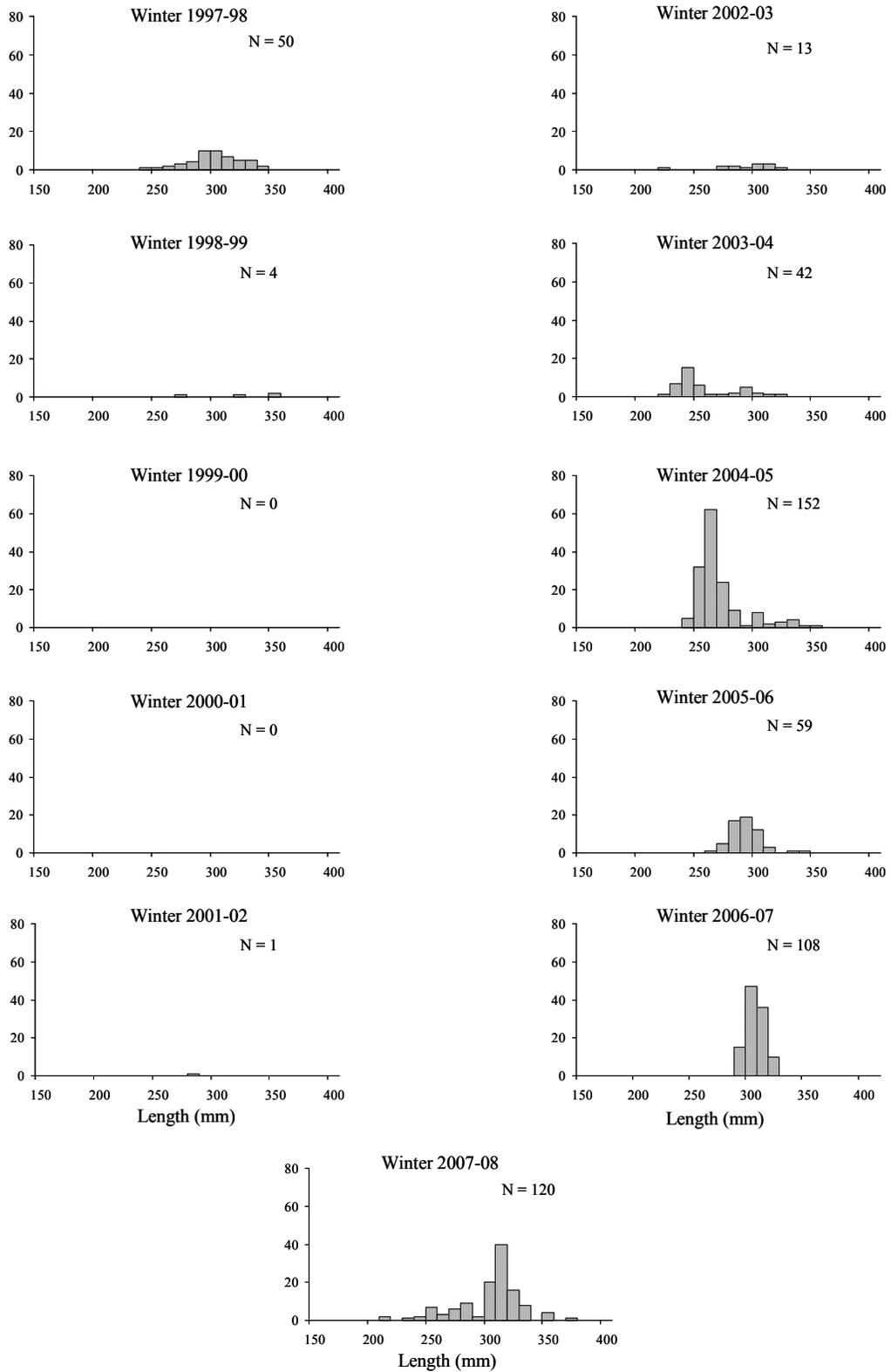


Figure 15. Length frequency of angler-harvested black crappie measured by the creel clerk during winter creel surveys on Lake Thompson, 1997-2008.

Responses concerning satisfaction with panfish harvest and regulations were variable (Appendix 9, Questions 4, 11-13). Over 70% of parties interviewed during the winter 2001-02 and winter 2002-03 creel surveys indicated that a harvest of 10 or fewer yellow perch per angler would constitute a good day of fishing. A lower percentage (about 40%) of parties interviewed during summer 2005 and winter 2005-06 favored a reduction in daily panfish limits from 25 to 10. Opposition to this change was 25% and 38% for the summer and winter fisheries, respectively, with the remainder of parties being neutral. A more liberal response was given during winter 2007-08 when anglers indicated that they would prefer a daily limit of 15 or more panfish (60%; yellow perch, bluegills or crappies) over a limit of 10 fish or less (40%).

Literature Cited

- Adams, G., K. Edwards, R. Hanten, and K Potter. 2007. Annual fish population and angler use, harvest and preference surveys on Lake Oahe, South Dakota, 2007. South Dakota Department of Game, Fish and Parks, Annual Report 08-07, Pierre.
- Baccante, D. A., and P. J. Colby. 1996. Harvest, density and reproductive characteristics of North American walleye populations. *Ann. Zool. Fennici* 33:601-615
- Blackwell, B. G., and M. J. Hubers. 2003. Angler use, sport fish harvest, and fish community surveys for Waubay Lake, Day County, SD December 1996 – August 2002. South Dakota Department of Game, Fish and Parks, Progress Report 03-06, Pierre.
- Blackwell, B. G. 2005a. Waubay Lake, South Dakota, angler use and harvest surveys, December 2002 – August 2004. South Dakota Department of Game, Fish and Parks, Progress Report 05-10, Pierre.
- Blackwell, B. G. 2005b. Bitter Lake, South Dakota, angler use and harvest surveys, December 1999 – August 2004. South Dakota Department of Game, Fish and Parks, Progress Report 05-17, Pierre.
- Blackwell, B. G. 2005c. Enemy Swim Lake, South Dakota, angler use and harvest surveys, December 1997 – August 2004. South Dakota Department of Game, Fish and Parks, Progress Report 05-12, Pierre.
- Blackwell, B. G., R. J. Braun, S. J. Kennedy, T. M. Kaufman, and M. J. Ermer. 2007. Pickerel Lake, South Dakota, angler use and harvest surveys, May 1997 – August 2006. South Dakota Department of Game, Fish and Parks, Progress Report 07-17, Pierre.
- Hubers, M. J. 2000. 1997, 1998 and 1998/99 sportfish catch and harvest, and 1998 fish population surveys for Richmond Lake, Brown County, South Dakota. South Dakota Department of Game, Fish and Parks, Completion Report 00-09, Pierre.
- Isermann, D. A., D. W. Willis, D. O. Lucchesi, and B. G. Blackwell. 2005. Seasonal harvest, exploitation, size selectivity, and catch preferences associated with winter yellow perch anglers on South Dakota lakes. *North American Journal of Fisheries Management* 25:827-840.
- Lott, J., B. Johnson, and K. Potter. 2003. Annual fish population and angler use, harvest and preference surveys on Lake Sharpe, South Dakota, 2002. South Dakota Department of Game, Fish and Parks, Annual Report 06-17, Pierre.

- Lucchesi, D. O., T. R. St. Sauver, B. A. Johnson, and K. A. Hoffmann. 2004. Region III small impoundment strategic plan, 2004-2009. South Dakota Department of Game, Fish and Parks, Special Report 04-13, Pierre.
- Neumann, R. M., D. W. Willis, and D. D. Mann. 1993. Evaluation of largemouth bass slot limits in South Dakota waters. South Dakota Department of Game, Fish and Parks, Completion Report 93-13, Pierre.
- Schoenebeck, C. W. 2009. An evaluation of yellow perch *Perca flavescens* mortality in South Dakota. Doctoral dissertation. South Dakota State University, Brookings.
- Sorensen, J., and G. Knecht. 2006. Annual fish population and angler use, harvest and preference surveys on Lake Francis Case, South Dakota, 2004. South Dakota Department of Game, Fish and Parks, Annual Report 06-20, Pierre.
- Soupir, C. A., and M. L. Brown. 2002. Comprehensive evaluation and modification of the South Dakota angler creel program. South Dakota Department of Game, Fish and Parks, Completion Report 02-10, Pierre.
- South Dakota Department of Game, Fish and Parks (SDGFP), Wildlife Division. 1994. Systematic approach to management – fisheries. South Dakota Department of Game, Fish and Parks, Pierre.
- United States Department of the Interior, Fish and Wildlife Service and United States Department of Commerce, Bureau of the Census. 2007. 2006 National survey of fishing, hunting, and wildlife-associated recreation. U.S. Government Printing Office, Washington, DC.

Appendix 1. Summer angler target species frequency totaled by month and over the summer for parties interviewed by the creel clerk during summer creel surveys on Lake Thompson, 1997-2008.

<i>Year</i>	<i>Month</i>	<i>Percent of anglers targeting</i>					<i>Any species</i>
		<i>Walleye</i>	<i>Yellow perch</i>	<i>Black crappie</i>	<i>Northern pike</i>	<i>Smallmouth bass</i>	
1997	May	82	1	0	7	0	10
	June	81	0	1	11	0	6
	July	70	1	1	14	0	14
	August	80	1	0	9	0	10
	Total	78	1	1	10	0	10
1998	May	85	1	1	5	0	8
	June	90	0	1	3	0	6
	July	86	2	2	2	0	7
	August	70	18	1	1	0	10
	Total	83	5	1	3	0	8
1999	May	71	0	0	7	0	21
	June	93	0	0	2	0	5
	July	86	0	0	3	0	11
	August	75	15	0	1	0	9
	Total	81	4	0	3	0	12
2000	May	79	0	1	3	0	17
	June	90	0	0	0	0	10
	July	80	5	0	1	0	14
	August	69	15	0	1	1	14
	Total	78	6	< 1	1	< 1	14
2001	May	64	0	1	9	2	24
	June	83	0	0	3	0	14
	July	86	1	0	1	0	12
	August	77	15	0	0	0	8
	Total	79	3	< 1	3	< 1	14
2002	May	72	0	0	4	1	22
	June	83	0	2	3	0	12
	July	88	3	0	0	0	9
	August	87	7	0	0	0	6
	Total	83	3	1	2	1	10
2003	May	93	0	2	3	1	1
	June	96	0	3	0	0	1
	July	100	0	0	0	0	0
	August	96	0	0	0	1	3
	Total	96	0	1	1	1	1
2004	May	86	0	0	3	1	10
	June	94	0	1	0	0	5
	July	88	1	0	0	0	11
	August	96	0	0	0	0	4
	Total	92	< 1	< 1	1	< 1	6

Appendix 1. Continued

<i>Year</i>	<i>Month</i>	<i>Percent of anglers targeting</i>					<i>Any species</i>
		<i>Walleye</i>	<i>Yellow perch</i>	<i>Black crappie</i>	<i>Northern pike</i>	<i>Smallmouth bass</i>	
2005	May	80	0	5	0	0	15
	June	81	1	4	0	0	14
	July	93	0	0	1	0	6
	August	72	10	0	0	0	18
	Total	84	2	2	< 1	0	12
2006	May	89	0	3	0	0	8
	June	90	0	2	0	0	8
	July	87	3	0	0	0	10
	August	83	0	4	0	0	13
	Total	88	1	2	0	0	9
2007	May	91	3	0	2	0	4
	June	93	1	0	0	0	6
	July	92	3	2	0	0	3
	August	92	1	0	0	0	7
	Total	92	1	1	1	0	5
2008	May	96	0	4	0	0	0
	June	96	0	4	0	0	0
	July	93	0	7	0	0	0
	August	100	0	0	0	0	0
	Total	96	0	2	0	0	2

Appendix 2. Monthly and total (May through August) number of angler interviews (# Int), estimated fishing pressure (angler hours), estimated angler days, estimated economic value, estimated trip length (hours), average party size, percent of interviewed parties that were South Dakota (SD) residents, percent of angling activity done by boat and percent of angling activity that occurred during weekends/holidays on Lake Thompson, South Dakota (80% confidence interval).

<i>Year</i>	<i>Month</i>	<i># Int</i>	<i>Angler hours</i>	<i>Angler days</i>	<i>Economic value</i>	<i>Trip length (h)</i>	<i>Party size</i>	<i>% SD residents</i>	<i>% boat anglers</i>	<i>% weekends or holidays</i>
1997	May	73	44,108 (13,543)	9,002	\$549,122	4.90 (1.43)	2.02 (1.34)	92	85	84
	June	140	57,115 (11,263)	10,127	\$617,747	5.64 (2.76)	2.22 (3.49)	93	85	55
	July	140	36,952 (5,560)	7,161	\$436,821	5.16 (4.02)	2.22 (2.63)	87	83	50
	August	178	39,886 (6,857)	7,626	\$465,186	5.23 (1.32)	2.21 (3.46)	84	87	65
	Total	531	178,061 (19,703)	33,916	\$2,068,876	5.23 (1.31)	2.17 (1.56)	88	85	64
1998	May	202	50,547 (18,795)	11,978	\$730,658	4.22 (2.73)	2.23 (2.88)	82	75	35
	June	198	35,879 (6,265)	6,860	\$418,460	5.23 (3.35)	2.33 (3.02)	78	80	58
	July	246	44,758 (8,392)	9,838	\$600,118	4.77 (0.61)	2.27 (2.72)	79	79	46
	August	207	31,729 (3,801)	6,409	\$390,949	4.95 (1.68)	2.35 (2.67)	80	88	57
	Total	853	162,913 (21,849)	33,887	\$2,067,107	4.79 (1.16)	2.30 (1.41)	80	82	47
1999	May	112	31,239 (8,659)	6,260	\$381,860	4.99 (0.71)	2.13 (1.91)	91	79	67
	June	95	59,802 (8,093)	14,204	\$866,444	4.21 (1.00)	2.32 (1.32)	79	91	54
	July	113	60,478 (16,870)	13,440	\$819,840	4.50 (1.53)	2.25 (1.77)	79	94	57
	August	113	31,294 (8,805)	7,211	\$439,871	4.34 (0.86)	2.35 (1.87)	82	94	51
	Total	433	182,813 (22,419)	40,535	\$2,472,635	4.51 (0.54)	2.26 (0.87)	83	90	57
2000	May	71	16,937 (6,390)	4,924	\$300,364	3.44 (0.93)	2.25 (1.90)	86	85	68
	June	51	38,951 (11,142)	6,242	\$380,762	6.24 (0.82)	2.08 (2.14)	80	91	54
	July	74	46,246 (9,202)	7,960	\$485,560	5.81 (2.13)	2.22 (1.58)	81	92	70
	August	83	28,072 (4,117)	5,357	\$326,777	5.52 (--)	2.49 (2.54)	86	91	44
	Total	279	130,175 (16,328)	24,842	\$1,515,362	5.24 (0.76)	2.26 (1.04)	84	91	60
2001	May	91	26,604 (14,146)	5,733	\$349,713	4.64 (3.79)	2.47 (2.51)	91	80	38
	June	196	38,535 (12,878)	7,801	\$475,861	4.94 (2.93)	2.35 (3.81)	77	92	57
	July	169	40,570 (8,422)	7,802	\$475,922	5.20 (0.69)	2.45 (2.37)	90	91	67
	August	110	18,534 (3,611)	3,504	\$213,744	5.29 (1.47)	2.15 (2.41)	78	91	47
	Total	566	124,233 (21,212)	24,747	\$1,509,567	5.02 (1.06)	2.36 (1.41)	83	89	55
2002	May	94	13,880 (6,958)	3,147	\$191,967	4.41 (0.99)	2.05 (2.31)	84	81	53
	June	174	35,396 (9,816)	7,037	\$429,257	5.03 (0.90)	2.25 (3.60)	78	92	64
	July	147	46,321 (11,485)	8,891	\$542,351	5.21 (0.64)	2.33 (2.58)	90	89	51
	August	136	21,904 (5,682)	4,434	\$270,474	4.94 (--)	2.34 (2.22)	81	92	49
	Total	551	117,502 (17,577)	23,980	\$1,462,780	4.90 (0.37)	2.24 (1.36)	83	90	55

Appendix 2. Continued

<i>Year</i>	<i>Month</i>	<i># Int</i>	<i>Angler hours</i>	<i>Angler days</i>	<i>Economic value</i>	<i>Trip length (h)</i>	<i>Party size</i>	<i>% SD residents</i>	<i>% boat anglers</i>	<i>% weekends or holidays</i>
2003	May	101	11,358 (4,378)	2,448	\$149,328	4.64 (1.52)	2.18 (2.54)	90	78	62
	June	116	50,923 (11,601)	9,536	\$581,696	5.34 (1.92)	2.37 (2.67)	87	97	80
	July	143	37,687 (8,143)	7,917	\$482,937	4.76 (0.73)	2.35 (2.38)	83	97	48
	August	71	35,508 (10,041)	7,491	\$456,951	4.74 (1.09)	2.26 (1.16)	92	96	53
	Total	431	135,476 (17,913)	27,818	\$1,696,898	4.87 (0.67)	2.29 (1.14)	87	95	63
2004	May	100	11,495 (4,106)	1,981	\$120,841	5.80 (3.03)	2.39 (1.83)	72	87	43
	June	201	47,063 (8,896)	7,690	\$469,090	6.12 (4.42)	2.43 (2.78)	80	95	52
	July	158	36,911 (11,392)	7,353	\$448,533	5.02 (1.62)	2.34 (2.23)	89	94	73
	August	140	18,673 (5,404)	3,420	\$208,620	5.46 (2.16)	2.33 (2.42)	84	93	40
	Total	599	114,142 (15,968)	20,382	\$1,243,302	5.60 (1.49)	2.37 (1.17)	82	93	56
2005	May	60	7,639 (3,571)	1,831	\$111,691	4.17 (1.82)	2.07 (1.48)	82	83	67
	June	81	23,709 (8,698)	5,645	\$344,345	4.20 (2.86)	2.27 (1.82)	75	96	50
	July	118	34,885 (13,587)	7,391	\$450,851	4.72 (0.58)	2.33 (1.03)	83	97	46
	August	51	13,380 (3,108)	2,902	\$177,022	4.61 (--)	2.69 (0.30)	92	99	55
	Total	310	79,613 (16,813)	18,011	\$1,098,671	4.42 (0.85)	2.34 (0.65)	82	96	51
2006	May	79	18,480 (9,151)	4,410	\$269,010	4.19 (0.45)	2.06 (0.32)	90	94	55
	June	63	24,228 (9,650)	5,608	\$342,088	4.32 (--)	2.30 (1.23)	92	89	67
	July	42	17,186 (6,215)	4,212	\$256,932	4.08 (1.10)	2.16 (0.59)	82	93	51
	August	49	11,623 (3,904)	2,315	\$141,215	5.02 (0.62)	2.10 (0.38)	90	95	61
	Total	233	71,517 (15,190)	16,254	\$991,494	4.40 (0.35)	2.15 (0.55)	89	92	59
2007	May	111	23,026 (13,548)	5,106	\$311,466	4.51 (2.72)	2.04 (1.85)	92	88	59
	June	73	24,592 (9,587)	5,705	\$348,005	4.31 (0.83)	2.21 (0.99)	86	92	60
	July	66	19,749 (5,184)	4,614	\$281,454	4.28 (1.49)	2.47 (2.15)	93	93	62
	August	72	11,153 (3,905)	2,383	\$145,363	4.68 (1.05)	2.28 (0.31)	85	96	60
	Total	322	78,520 (17,821)	17,645	\$1,076,345	4.45 (0.85)	2.25 (0.76)	89	92	60
2008	May	80	12,701 (5,740)	3,334	\$203,374	3.81 (0.98)	2.10 (2.05)	95	79	64
	June	55	35,392 (16,226)	8,366	\$510,326	4.23 (1.49)	2.30 (1.09)	82	97	71
	July	14	12,529 (4,345)	2,753	\$167,933	4.55 (--)	1.61 (--)	93	97	78
	August	6	9,011 (1,628)	1,061	\$64,721	8.49 (--)	2.19 (--)	100	98	55
	Total	155	69,634 (17,825)	13,188	\$804,468	5.28 (0.44)	2.05 (0.58)	90	94	69

Appendix 3. Estimated number of walleye, northern pike, yellow perch, black crappie, smallmouth bass, black bullhead and other species (white sucker and common carp) caught and harvested by month and year during the summer fishery at Lake Thompson, South Dakota. (80% confidence interval).

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>
Walleye	1997	35,429 (15,371)	14,175 (7,569)	62,717 (17,083)	12,772 (3,845)	36,322 (8,089)	11,340 (2,903)	44,743 (10,132)	16,888 (4,364)	179,211 (26,385)	55,175 (9,977)
	1998	58,537 (24,235)	18,053 (7,400)	40,796 (10,607)	12,205 (3,612)	34,513 (8,024)	14,633 (3,270)	14,509 (2,655)	6,512 (1,336)	148,355 (27,772)	51,403 (8,960)
	1999	14,091 (4,772)	8,570 (2,720)	64,673 (21,818)	31,096 (9,361)	49,203 (15,784)	25,644 (7,776)	8,260 (2,586)	2,841 (1,127)	136,228 (27,470)	68,151 (12,521)
	2000	7,547 (4,749)	3,295 (2,308)	40,045 (14,985)	14,844 (6,417)	33,708 (8,798)	12,261 (4,340)	13,843 (4,094)	3,120 (1,483)	95,143 (18,472)	33,520 (8,219)
	2001	6,639 (5,172)	3,787 (2,860)	21,392 (7,328)	5,158 (2,096)	23,339 (12,619)	6,686 (2,933)	3,749 (946)	1,281 (380)	55,119 (15,511)	16,912 (4,617)
	2002	570 (513)	529 (508)	29,122 (10,605)	10,381 (3,843)	36,619 (8,234)	15,031 (3,522)	9,372 (3,277)	4,189 (1,478)	75,683 (13,830)	30,130 (5,442)
	2003	2,210 (1,374)	1,520 (894)	39,410 (12,804)	17,331 (4,030)	22,353 (6,108)	8,494 (2,520)	19,788 (7,298)	7,352 (2,698)	83,761 (16,012)	34,697 (5,538)
	2004	2,264 (1,166)	1,513 (821)	34,019 (10,022)	11,018 (3,059)	20,895 (8,318)	9,011 (3,794)	7,393 (2,680)	4,535 (1,744)	64,571 (13,348)	26,077 (5,241)
	2005	565 (513)	381 (356)	5,875 (3,373)	3,856 (2,193)	13,654 (8,328)	8,598 (5,639)	1,958 (821)	356 (125)	22,052 (9,038)	13,191 (6,062)
	2006	17,815 (20,942)	5,737 (5,898)	13,703 (9,287)	6,504 (4,130)	8,213 (4,502)	2,419 (1,781)	4,384 (2,162)	2,721 (1,461)	44,115 (23,447)	17,381 (7,560)
	2007	9,837 (6,587)	7,264 (4,759)	11,422 (5,544)	5,994 (2,870)	6,720 (2,521)	3,585 (1,425)	5,718 (2,534)	2,803 (1,130)	33,697 (9,322)	19,646 (5,847)
	2008	3,911 (1,966)	2,432 (1,115)	43,769 (25,221)	13,593 (6,742)	4,650 (2,167)	1,330 (951)	8,390 (3,924)	1,851 (468)	60,720 (25,692)	19,206 (6,915)
Total		172,782	74,570	432,330	153,877	304,912	124,664	151,545	57,818	998,654	385,489

Appendix 3. Continued

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>
Northern Pike	1997	3,077 (1,786)	517 (210)	19,034 (5,144)	2,822 (1,058)	8,362 (2,050)	1,144 (581)	10,546 (2,479)	2,430 (684)	41,019 (6,325)	6,913 (1,403)
	1998	12,669 (3,976)	1,904 (727)	5,167 (1,578)	735 (212)	3,123 (594)	609 (117)	1,676 (377)	510 (209)	22,635 (4,335)	3,758 (793)
	1999	5,909 (1,355)	1,078 (512)	7,608 (2,553)	2,077 (727)	4,002 (1,885)	1,902 (1,291)	718 (291)	158 (100)	18,237 (3,462)	5,215 (1,571)
	2000	1,318 (1,495)	688 (1,429)	5,603 (1,867)	538 (320)	5,092 (1,723)	509 (207)	808 (321)	179 (87)	12,821 (2,965)	1,914 (1,490)
	2001	1,716 (763)	505 (258)	1,998 (640)	578 (253)	2,019 (895)	641 (271)	151 (113)	67 (37)	5,884 (1,343)	1,791 (453)
	2002	1,083 (945)	536 (562)	2,331 (840)	365 (113)	2,057 (545)	385 (120)	1,511 (562)	245 (188)	6,982 (1,510)	1,531 (615)
	2003	1,132 (554)	285 (50)	5,753 (2,552)	466 (265)	1,671 (622)	502 (187)	2,433 (866)	652 (258)	10,989 (2,821)	1,905 (418)
	2004	739 (448)	109 (49)	3,401 (1,298)	540 (200)	2,816 (1,260)	637 (525)	1,118 (507)	203 (92)	8,074 (1,931)	1,489 (571)
	2005	344 (266)	27 (19)	419 (166)	277 (106)	754 (417)	235 (129)	110 (38)	19 (28)	1,627 (523)	558 (170)
	2006	133 (105)	12 (16)	108 (92)	0	0	0	250 (127)	57 (53)	491 (189)	68 (56)
	2007	462 (406)	137 (10)	136 (99)	41 (59)	196 (110)	33 (53)	10 (8)	0	804 (432)	211 (80)
	2008	132 (78)	66 (67)	294 (114)	0	418 (436)	0	0	0	844 (458)	66 (67)
Total		38,229	9,098	59,641	10,789	34,994	7,823	22,490	5,461	130,407	25,438

Appendix 3. Continued

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>
Yellow Perch	1997	0	0	2,275 (609)	1,350 (662)	3,122 (1,653)	2,668 (1,463)	5,876 (1,729)	4,202 (1,196)	11,273 (2,469)	8,220 (2,002)
	1998	1,975 (1,639)	1,921 (1,640)	795 (256)	566 (167)	3,138 (1,070)	2,973 (1,232)	5,707 (746)	4,318 (545)	11,615 (2,110)	9,778 (2,129)
	1999	48 (45)	0	1,353 (520)	1,175 (547)	2,868 (1,203)	2,553 (966)	7,049 (3,283)	5,388 (2,329)	11,318 (3,535)	9,116 (2,580)
	2000	172 (167)	113 (92)	1,500 (831)	1,015 (611)	9,660 (3,610)	7,355 (3,271)	7,684 (3,838)	6,243 (3,089)	19,016 (5,046)	14,726 (4,541)
	2001	0	0	307 (301)	250 (286)	578 (306)	553 (302)	2,532 (386)	2,219 (571)	3,417 (577)	3,022 (706)
	2002	0	0	856 (410)	566 (270)	6,896 (2,564)	4,043 (1,084)	4,670 (1,538)	2,600 (832)	12,422 (3,017)	7,209 (1,393)
	2003	0	0	324 (156)	324 (156)	3,079 (2,244)	2,685 (2,214)	1,788 (843)	1,274 (556)	5,191 (2,402)	4,283 (2,288)
	2004	14 (14)	14 (14)	99 (82)	74 (66)	502 (316)	401 (369)	321 (149)	245 (111)	936 (359)	735 (392)
	2005	0	0	36 (42)	36 (42)	404 (241)	259 (145)	1,948 (1,380)	1,910 (1,349)	2,388 (1,401)	2,205 (1,357)
	2006	23 (30)	23 (30)	147 (111)	147 (111)	52 (62)	52 (62)	427 (312)	190 (154)	649 (338)	412 (202)
	2007	0	0	349 (231)	272 (232)	261 (139)	229 (153)	199 (85)	160 (63)	809 (283)	661 (284)
	2008	0	0	187 (190)	118 (124)	84 (87)	84 (87)	0	0	271 (209)	202 (152)
Total		2,232	2,071	8,228	5,893	30,644	23,855	38,201	28,749	79,305	60,568

Appendix 3. Continued

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>
Black Crappie	1997	15 (25)	15 (25)	341 (435)	309 (434)	77 (74)	77 (74)	465 (194)	334 (165)	898 (483)	735 (470)
	1998	537 (436)	526 (437)	17 (22)	0	1,219 (987)	1,219 (987)	241 (151)	200 (120)	2,014 (1,090)	1,945 (1,086)
	1999	24 (29)	0	113 (160)	113 (160)	79 (99)	79 (99)	118 (148)	118 (148)	334 (241)	310 (187)
	2000	98 (98)	98 (97)	61 (34)	61 (34)	87 (30)	87 (30)	90 (38)	90 (38)	336 (114)	336 (114)
	2001	0	0	339 (418)	319 (417)	102 (40)	51 (26)	196 (129)	156 (123)	637 (439)	526 (436)
	2002	148 (105)	148 (105)	1,614 (1,072)	1,344 (944)	343 (190)	300 (151)	242 (89)	71 (34)	2,347 (1,097)	1,863 (962)
	2003	228 (197)	228 (189)	1,333 (923)	1,194 (818)	248 (119)	213 (125)	363 (426)	79 (97)	2,172 (1,042)	1,714 (856)
	2004	720 (387)	694 (387)	315 (86)	103 (56)	390 (194)	207 (127)	325 (166)	300 (157)	1,750 (472)	1,304 (441)
	2005	1,914 (2,670)	719 (895)	932 (470)	638 (481)	1,159 (632)	1,003 (597)	117 (45)	72 (40)	4,122 (2,784)	2,432 (1,179)
	2006	387 (216)	387 (216)	1,011 (646)	1,011 (646)	163 (182)	59 (70)	123 (83)	73 (59)	1,684 (710)	1,530 (687)
	2007	1,252 (1,025)	1,107 (978)	41 (39)	41 (40)	131 (61)	98 (76)	59 (39)	20 (15)	1,483 (1,028)	1,266 (982)
	2008	227 (141)	134 (87)	2,813 (1,587)	1,836 (879)	3,249 (879)	1,712 (879)	0	0	6,289 (1,820)	3,682 (1,246)
Total	5,550	4,056	8,930	6,969	7,247	5,105	2,339	1,513	24,066	17,643	

Appendix 3. Continued

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>
Smallmouth Bass	1997	0	0	49 (52)	0	0	0	6 -	0	55 (52)	0
	1998	460 (509)	0	51 (29)	17 (18)	62 (34)	23 (25)	165 (91)	59 (42)	738 (519)	99 (52)
	1999	0	0	322 (178)	129 (71)	158 (158)	158 (158)	123 (127)	7 (11)	603 (269)	294 (173)
	2000	74 (78)	0	746 (360)	114 (66)	205 (155)	141 (104)	1,129 (678)	45 (57)	2,154 (787)	300 (136)
	2001	416 (264)	100 (115)	250 (106)	4 (2)	524 (296)	143 (155)	200 (92)	98 (60)	1,390 (421)	345 (202)
	2002	275 (219)	112 (83)	171 (85)	9 (14)	568 (283)	364 (244)	557 (290)	124 (66)	1,571 (468)	609 (266)
	2003	610 (230)	42 (28)	633 (341)	111 (69)	362 (143)	88 (79)	642 (382)	273 (208)	2,247 (579)	514 (235)
	2004	159 (106)	17 (15)	776 (440)	302 (203)	421 (158)	209 (93)	418 (190)	136 (66)	1,774 (516)	664 (223)
	2005	722 (1,067)	237 (256)	26 (23)	0	50 (36)	32 (28)	26 (36)	26 (36)	824 (1,069)	295 (359)
	2006	35 (31)	23 (20)	183 (146)	0	0	0	541 (534)	107 (85)	759 (555)	130 (88)
	2007	180 (136)	7 (8)	60 (70)	0	138 (99)	36 (36)	75 (25)	45 (8)	453 (183)	88 (38)
	2008	53 (51)	40 (50)	118 (85)	0	0	0	0	0	171 (99)	40 (50)
Total	2,984	578	3,385	686	2,488	1,194	3,882	920	12,739	3,378	

Appendix 3. Continued

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>
Black Bullhead	1997	0	0	0	0	0	0	0	0	0	0
	1998	0	0	0	0	70 (91)	70 (91)	820 (635)	165 (258)	890 (641)	235 (274)
	1999	383 (162)	41 (61)	5,000 (3,373)	177 (146)	23,466 (12,749)	2,295 (2,047)	12,461 (4,735)	448 (344)	41,310 (14,012)	2,961 (2,082)
	2000	3,158 (1,582)	31 (37)	13,763 (1,249)	1,103 (787)	10,960 (4,662)	0	8,897 (2,813)	265 (231)	36,778 (5,806)	1,399 (821)
	2001	624 (422)	121 (123)	1,239 (503)	288 (240)	1,967 (914)	92 (54)	2,180 (942)	180 (180)	6,010 (1,468)	681 (329)
	2002	48 (36)	48 (36)	3,509 (1,410)	185 (242)	26,917 (9,934)	418 (211)	10,012 (3,954)	105 (51)	40,486 (10,784)	756 (327)
	2003	271 (137)	0	11,980 (8,963)	1,173 (1,118)	13,137 (6,006)	718 (445)	9,653 (2,382)	313 (240)	35,041 (11,155)	2,204 (1,227)
	2004	99 (62)	42 (43)	3,438 (495)	202 (55)	1,793 (1,187)	186 (54)	56 (41)	0	5,386 (1,288)	430 (89)
	2005	0	0	36 (59)	0	37 (28)	0	0	0	73 (65)	0
	2006	0	0	0	0	0	0	0	0	0	0
	2007	33 (40)	33 (40)	41 (59)	0	0	0	0	0	74 (71)	33 (40)
	2008	0	0	0	0	0	0	0	0	0	0
Total		4,616	316	39,006	3,128	78,347	3,779	44,079	1,476	166,048	8,699

Appendix 3. Continued

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>
Other	1997	34 (49)	0	0	0	0	0	0	0	34 (49)	0
	1998	0	0	0	0	0	0	0	0	0	0
	1999	0	0	0	0	0	0	21 (19)	0	21 (19)	0
	2000	0	0	0	0	0	0	18 (25)	0	18 (25)	0
	2001	0	0	62 (38)	10 (14)	153 (89)	25 (36)	0	0	215 (97)	35 (38)
	2002	0	0	0	0	0	0	0	0	0	0
	2003	0	0	0	0	0	0	29 (41)	0	29 (41)	0
	2004	30 (37)	0	0	0	14 (18)	0	0	0	44 (41)	0
	2005	51 (43)	0	101 (72)	0	54 (48)	0	19 (16)	0	225 (98)	0
	2006	12 (19)	0	0	0	52 (55)	0	0	0	64 (58)	0
	2007	83 (61)	0	159 (105)	41 (32)	179 (97)	0	17 (16)	0	438 (156)	41 (32)
	2008	95 (96)	24 (41)	49 (38)	0	0	0	0	0	143 (103)	24 (41)
	Total	305	24	371	51	452	25	104	0	1,231	100

Appendix 4. Estimated angler catch rate (C/h) and harvest rate (H/h) of walleye, northern pike, yellow perch, black crappie, smallmouth bass, black bullhead and other species (white sucker and common carp) by month and year during the summer fishery at Lake Thompson, South Dakota. (80% confidence interval).

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>C/h</u>	<u>H/h</u>								
Walleye	1997	0.80 (0.61)	0.32 (0.25)	1.10 (0.53)	0.22 (0.11)	0.98 (0.35)	0.31 (0.12)	1.12 (0.46)	0.42 (0.19)	1.01 (0.27)	0.31 (0.09)
	1998	1.16 (0.84)	0.36 (0.27)	1.14 (0.42)	0.34 (0.14)	0.77 (0.32)	0.33 (0.14)	0.46 (0.15)	0.20 (0.06)	0.91 (0.27)	0.32 (0.09)
	1999	0.45 (0.16)	0.27 (0.11)	1.08 (0.53)	0.52 (0.23)	0.81 (0.54)	0.42 (0.29)	0.26 (0.13)	0.09 (0.06)	0.75 (0.24)	0.37 (0.12)
	2000	0.45 (0.53)	0.19 (0.24)	1.03 (0.91)	0.38 (0.33)	0.73 (0.24)	0.27 (0.12)	0.49 (0.26)	0.11 (0.06)	0.73 (0.27)	0.26 (0.10)
	2001	0.23 (0.34)	0.13 (0.19)	0.57 (0.38)	0.14 (0.09)	0.55 (0.42)	0.16 (0.11)	0.21 (0.09)	0.07 (0.03)	0.44 (0.20)	0.13 (0.06)
	2002	0.05 (0.09)	0.04 (0.08)	0.82 (0.54)	0.29 (0.19)	0.78 (0.34)	0.32 (0.13)	0.43 (0.29)	0.19 (0.14)	0.65 (0.21)	0.26 (0.08)
	2003	0.19 (0.19)	0.13 (0.12)	0.77 (0.40)	0.34 (0.15)	0.59 (0.28)	0.23 (0.10)	0.56 (0.31)	0.21 (0.11)	0.62 (0.18)	0.26 (0.07)
	2004	0.20 (0.22)	0.13 (0.15)	0.72 (0.39)	0.23 (0.12)	0.55 (0.35)	0.24 (0.15)	0.40 (0.22)	0.24 (0.14)	0.56 (0.19)	0.23 (0.07)
	2005	0.07 (0.11)	0.05 (0.07)	0.25 (0.17)	0.16 (0.11)	0.39 (0.45)	0.25 (0.29)	0.15 (0.07)	0.03 (0.01)	0.28 (0.18)	0.17 (0.12)
	2006	0.96 (2.11)	0.31 (0.61)	0.57 (0.63)	0.27 (0.34)	0.48 (0.54)	0.14 (0.12)	0.38 (0.31)	0.23 (0.19)	0.62 (0.54)	0.24 (0.19)
	2007	0.43 (0.51)	0.32 (0.36)	0.46 (0.38)	0.24 (0.20)	0.34 (0.23)	0.18 (0.13)	0.51 (0.41)	0.25 (0.18)	0.43 (0.21)	0.25 (0.12)
	2008	0.31	0.19 (0.19)	1.24 (0.12)	0.38 (0.98)	0.37 (0.25)	0.11 (0.31)	0.93 (0.16)	0.21 (0.66)	0.87 (0.10)	0.28 (0.46)
Mean		0.44	0.20	0.81	0.29	0.61	0.25	0.49	0.19	0.65	0.27

Appendix 4. Continued

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>
Northern Pike	1997	0.07 (0.04)	0.01 (0.006)	0.33 (0.17)	0.05 (0.03)	0.23 (0.08)	0.03 (0.02)	0.26 (0.09)	0.06 (0.02)	0.23 (0.06)	0.04 (0.01)
	1998	0.25 (0.17)	0.04 (0.03)	0.14 (0.06)	0.02 (0.006)	0.07 (0.03)	0.01 (0.005)	0.05 (0.02)	0.02 (0.007)	0.14 (0.04)	0.02 (0.007)
	1999	0.19 (0.09)	0.03 (0.02)	0.13 (0.05)	0.03 (0.02)	0.07 (0.04)	0.03 (0.02)	0.02 (0.02)	0.005 (0.004)	0.10 (0.03)	0.03 (0.01)
	2000	0.08 (0.10)	0.04 (0.09)	0.14 (0.09)	0.01 (0.01)	0.11 (0.06)	0.01 (0.004)	0.03 (0.03)	0.006 (0.003)	0.10 (0.04)	0.01 (0.01)
	2001	0.06 (0.10)	0.02 (0.03)	0.05 (0.04)	0.02 (0.01)	0.05 (0.03)	0.02 (0.009)	0.009 (0.009)	0.04 (0.03)	0.05 (0.03)	0.01 (0.007)
	2002	0.09 (0.25)	0.04 (0.04)	0.07 (0.04)	0.01 (0.006)	0.04 (0.02)	0.008 (0.003)	0.07 (0.05)	0.01 (0.01)	0.06 (0.03)	0.01 (0.006)
	2003	0.10 (0.07)	0.03 (0.01)	0.11 (0.07)	0.009 (0.006)	0.04 (0.02)	0.01 (0.009)	0.07 (0.05)	0.02 (0.01)	0.08 (0.03)	0.01 (0.005)
	2004	0.06 (0.11)	0.01 (0.007)	0.07 (0.05)	0.01 (0.009)	0.07 (0.06)	0.02 (0.02)	0.06 (0.04)	0.01 (0.007)	0.07 (0.03)	0.01 (0.006)
	2005	0.05 (0.05)	0.004 (0.003)	0.02 (0.01)	0.01 (0.008)	0.02 (0.02)	0.007 (0.007)	0.008 (0.003)	0.001 (0.002)	0.02 (0.01)	0.007 (0.004)
	2006	0.007 (0.009)	0.0006 (0.0005)	0.005 (0.004)	0	0	0	0.02 (0.02)	0.005 (0.004)	0.007 (0.004)	0.001 (0.0007)
	2007	0.02 (0.04)	0.006 (0.007)	0.006 (0.004)	0.002 (0.003)	0.01 (0.01)	0.002 (0.006)	0.0009 (0.0008)	0	0.01 (0.009)	0.003 (0.002)
	2008	0.01 (0.008)	0.005 (0.006)	0.008 (0.005)	0	0.03 (0.04)	0	0	0	0.01 (0.007)	0.001 (0.001)
Mean		0.08	0.02	0.09	0.01	0.06	0.01	0.05	0.01	0.07	0.01

Appendix 4. Continued

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>
Yellow Perch	1997	0	0	0.04 (0.02)	0.02 (0.02)	0.08 (0.05)	0.07 (0.05)	0.15 (0.06)	0.11 (0.05)	0.06 (0.02)	0.05 (0.01)
	1998	0.04 (0.06)	0.04 (0.06)	0.02 (0.01)	0.02 (0.007)	0.07 (0.04)	0.07 (0.04)	0.18 (0.05)	0.14 (0.03)	0.07 (0.03)	0.06 (0.02)
	1999	0.002 (--)	0	0.02 (0.009)	0.02 (0.01)	0.05 (0.05)	0.04 (0.04)	0.23 (0.14)	0.17 (0.10)	0.06 (0.03)	0.05 (0.02)
	2000	0.01 (0.009)	0.007 (0.005)	0.04 (0.02)	0.03 (0.02)	0.21 (0.07)	0.16 (0.07)	0.27 (0.20)	0.22 (0.16)	0.15 (0.05)	0.11 (0.04)
	2001	0	0	0.008 (0.02)	0.007 (0.02)	0.01 (0.01)	0.01 (0.001)	0.14 (0.05)	0.13 (0.05)	0.03 (0.01)	0.02 (0.01)
	2002	0	0	0.02 (0.02)	0.02 (0.01)	0.15 (0.08)	0.09 (0.04)	2.35 (2.56)	1.24 (0.93)	0.11 (0.04)	0.06 (0.02)
	2003	0	0	0.006 (0.005)	0.006 (0.005)	0.08 (0.06)	0.07 (0.06)	0.05 (0.04)	0.04 (0.03)	0.04 (0.02)	0.03 (0.02)
	2004	0.001 (0.001)	0.001 (0.001)	0.002 (0.003)	0.002 (0.001)	0.01 (0.008)	0.01 (0.009)	0.02 (0.01)	0.01 (0.007)	0.008 (0.004)	0.006 (0.003)
	2005	0	0	0.002 (0.002)	0.002 (0.002)	0.01 (0.02)	0.007 (0.006)	0.15 (0.07)	0.14 (0.09)	0.03 (0.02)	0.03 (0.02)
	2006	0.001 (0.001)	0.001 (0.001)	0.006 (0.005)	0.006 (0.005)	0.003 (0.004)	0.003 (0.004)	0.04 (0.03)	0.02 (0.02)	0.009 (0.005)	0.006 (0.003)
	2007	0	0	0.01 (0.02)	0.01 (0.02)	0.01 (0.01)	0.01 (0.009)	0.02 (0.02)	0.01 (0.01)	0.01 (0.008)	0.008 (0.007)
	2008	0	0	0.005 (0.006)	0.003 (0.004)	0.007 (0.007)	0.007 (0.007)	0	0	0.004 (0.003)	0.003 (0.002)
Mean		0.005	0.004	0.02	0.01	0.06	0.05	0.3	0.18	0.05	0.04

Appendix 4. Continued

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>
Black Crappie	1997	0.0004 (0.0006)	0.0004 (0.0006)	0.006 (0.008)	0.005 (0.008)	0.002 (0.002)	0.002 (0.002)	0.01 (0.006)	0.008 (0.004)	0.005 (0.003)	0.004 (0.003)
	1998	0.01 (0.02)	0.01 (0.02)	0.0005 (0.0006)	0 (0.0006)	0.03 (0.03)	0.03 (0.03)	0.008 (0.02)	0.006 (0.02)	0.01 (0.01)	0.01 (0.01)
	1999	0.0008 (0.001)	0 (0.001)	0.002 (0.003)	0.002 (0.003)	0.001 (0.002)	0.001 (0.002)	0.004 (0.005)	0.004 (0.005)	0.002 (0.001)	0.002 (0.001)
	2000	0.006 (0.006)	0.006 (0.006)	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)	0.003 (0.002)	0.003 (0.002)	0.003 (0.001)	0.003 (0.001)
	2001	0 (0.001)	0 (0.001)	0.009 (0.01)	0.009 (0.01)	0.002 (0.002)	0.001 (0.0004)	0.01 (0.01)	0.009 (0.005)	0.005 (0.004)	0.005 (0.004)
	2002	0.01 (0.01)	0.01 (0.01)	0.05 (0.04)	0.04 (0.03)	0.007 (0.005)	0.006 (0.004)	0.01 (0.01)	0.003 (0.003)	0.02 (0.01)	0.02 (0.009)
	2003	0.02 (0.007)	0.02 (0.007)	0.03 (0.02)	0.02 (0.02)	0.007 (0.004)	0.006 (0.004)	0.01 (0.01)	0.002 (0.004)	0.02 (0.008)	0.01 (0.007)
	2004	0.06 (0.07)	0.06 (0.07)	0.007 (0.003)	0.002 (0.0009)	0.01 (0.008)	0.006 (0.004)	0.02 (0.01)	0.02 (0.009)	0.02 (0.006)	0.01 (0.005)
	2005	0.25 (0.40)	0.09 (0.16)	0.04 (0.03)	0.03 (0.02)	0.03 (0.05)	0.03 (0.04)	0.009 (0.006)	0.005 (0.002)	0.05 (0.04)	0.03 (0.02)
	2006	0.02 (0.02)	0.02 (0.02)	0.04 (0.03)	0.04 (0.03)	0.01 (0.01)	0.004 (0.004)	0.04 (0.03)	0.02 (0.02)	0.02 (0.01)	0.02 (0.01)
	2007	0.05 (0.07)	0.05 (0.06)	0.002 (0.001)	0.002 (0.001)	0.007 (0.008)	0.005 (0.008)	0.005 (0.007)	0.002 (0.0005)	0.02 (0.02)	0.02 (0.01)
	2008	0.02 (--)	0.01 (--)	0.08 (0.08)	0.05 (0.05)	0.26 (0.29)	0.14 (0.21)	0 (0.007)	0 (0.0005)	0.09 (0.05)	0.05 (0.03)
Mean		0.04	0.02	0.02	0.02	0.03	0.02	0.01	0.007	0.02	0.02

Appendix 4. Continued

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>
Smallmouth Bass	1997	0	0	0.0009 (0.0009)	0	0	0	0.0001 --	0	0.0003 (0.0003)	0
	1998	0.009 (0.01)	0 (0)	0.001 (0.0008)	0.0005 (0.0005)	0.001 (0.001)	0.0005 (0.001)	0.005 (0.004)	0.002 (0.001)	0.005 (0.003)	0.0006 (0.0004)
	1999	0	0	0.005 (0.003)	0.002 (0.001)	0.003 (0.003)	0.003 (0.003)	0.004 (0.004)	0.0002 (0.0004)	0.003 (0.002)	0.002 (0.001)
	2000	0.004 (0.005)	0	0.02 (0.02)	0.003 (0.002)	0.004 (0.004)	0.003 (0.003)	0.04 (0.04)	0.002 (0.002)	0.02 (0.009)	0.002 (0.001)
	2001	0.01 (--)	0.004 (--)	0.007 (0.004)	0.0001 (0.0001)	0.01 (0.01)	0.003 (0.003)	0.01 (0.009)	0.006 (0.006)	0.01 (0.003)	0.003 (--)
	2002	0.02 (0.02)	0.009 (0.008)	0.005 (0.003)	0.0003 (0.0009)	0.01 (0.008)	0.008 (0.009)	0.03 (0.02)	0.006 (0.006)	0.01 (0.005)	0.005 (0.004)
	2003	0.05 (0.04)	0.004 (0.003)	0.01 (0.007)	0.002 (0.001)	0.01 (0.005)	0.002 (0.002)	0.02 (0.02)	0.008 (0.005)	0.02 (0.007)	0.004 (0.002)
	2004	0.01 (0.02)	0.002 (0.003)	0.02 (0.02)	0.006 (0.007)	0.01 (0.008)	0.006 (0.007)	0.02 (0.02)	0.007 (0.004)	0.02 (0.008)	0.006 (0.003)
	2005	0.09 (0.15)	0.03 (0.05)	0.001 (0.001)	0	0.001 (0.001)	0.0009 (0.0008)	0.002 (0.003)	0.002 (0.003)	0.01 (0.01)	0.004 (0.005)
	2006	0.02 (0.02)	0.02 (0.02)	0.008 (0.007)	0	0	0	0.05 (0.05)	0.009 (0.008)	0.01 (0.008)	0.002 (0.001)
	2007	0.008 (0.008)	0.0003 (0.0004)	0.002 (0.003)	0	0.007 (0.005)	0.002 (0.002)	0.007 (0.003)	0.004 (0.002)	0.006 (0.003)	0.001 (0.0005)
	2008	0.009 (0.008)	0.0005 (0.0008)	0.004 (0.004)	0	0.01 (0.009)	0.004 (0.004)	0.01 (0.004)	0.007 (0.003)	0.008 (0.004)	0.002 (0.001)
	Mean	0.02	0.006	0.007	0.001	0.006	0.003	0.02	0.004	0.01	0.003

Appendix 4. Continued

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>
Black Bullhead	1997	0	0	0	0	0	0	0	0	0	0
	1998	0	0	0	0	0.002 (0.002)	0.002 (0.002)	0.03 (0.03)	0.005 (0.009)	0.006 (0.004)	0.001 (0.001)
	1999	0.01 (0.006)	0.001 (0.001)	0.08 (0.09)	0.003 (0.004)	0.39 (0.26)	0.04 (0.03)	0.40 (0.25)	0.01 (0.01)	0.23 (0.10)	0.02 (0.01)
	2000	0.19 (0.04)	0.002 (0.002)	0.35 (0.16)	0.03 (0.02)	0.24 (0.21)	0	0.32 (0.11)	0.009 (0.008)	0.28 (0.09)	0.01 (0.006)
	2001	0.02 (0.04)	0.004 (0.005)	0.03 (0.05)	0.008 (0.006)	0.05 (0.05)	0.002 (0.001)	0.12 (0.07)	0.01 (0.01)	0.05 (0.03)	0.005 (0.003)
	2002	0.004 (0.003)	0.004 (0.003)	0.10 (0.07)	0.005 (0.008)	0.57 (0.39)	0.009 (0.007)	0.47 (0.20)	0.005 (0.004)	0.35 (0.14)	0.007 (0.004)
	2003	0.02 (0.02)	0	0.24 (0.21)	0.02 (0.02)	0.35 (0.25)	0.02 (0.01)	0.27 (0.16)	0.009 (0.007)	0.26 (0.11)	0.02 (0.009)
	2004	0.009 (0.006)	0.004 (0.004)	0.07 (0.02)	0.004 (0.001)	0.05 (0.05)	0.005 (0.002)	0.003 (0.004)	0	0.05 (0.02)	0.004 (0.0009)
	2005	0	0	0.001 (0.001)	0	0.001 (0.001)	0	0	0	0.0009 (0.0009)	0
	2006	0	0	0	0	0	0	0	0	0	0
	2007	0.001 (0.002)	0.001 (0.002)	0.002 (0.003)	0	0	0	0	0	0.0009 (0.0009)	0.0004 (0.0005)
	2008	0	0	0	0	0	0	0	0	0	0
	Mean	0.02	0.001	0.07	0.006	0.14	0.007	0.1	0.004	0.10	0.006

Appendix 4. Continued

<i>Species</i>	<i>Year</i>	<i>May</i>		<i>June</i>		<i>July</i>		<i>August</i>		<i>Total</i>	
		<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>
Other	1997	0.0008 (0.001)	0	0	0	0	0	0	0	0.0002 (0.0003)	0
	1998	0	0	0	0	0	0	0	0	0	0
	1999	0	0	0	0	0	0	0.0007 (0.0006)	0	0.0001 (0.0001)	0
	2000	0	0	0	0	0	0	0.0006 (0.0009)	0	0.0001 (0.0001)	0
	2001	0	0	0.002 (0.009)	0.0003 (0.0002)	0.004 (0.0007)	0.0006 (0.0009)	0	0	0.002 (0.0006)	0.0003 (0.0003)
	2002	0	0	0	0	0	0	0	0	0	0
	2003	0	0	0	0	0	0	0.0008 (0.001)	0	0.0002 (0.0003)	0
	2004	0.003 (0.003)	0	0	0	0.0004 (0.0005)	0	0	0	0.0004 (0.0004)	0
	2005	0.007 (0.007)	0	0.004 (0.004)	0	0.002 (0.002)	0	0.001 (0.001)	0	0.003 (0.001)	0
	2006	0.0006 (0.001)	0	0	0	0.003 (0.003)	0	0	0	0.0009 (0.0009)	0
	2007	0.004 (0.003)	0	0.007 (0.005)	0.002 (0.001)	0.009 (0.002)	0	0.002 (0.002)	0	0.006 (0.002)	0.0005 (0.0004)
	2008	0.007 (0.008)	0.002 (0.003)	0.001 (0.001)	0	0	0	0	0	0.002 (0.002)	0.0003 (0.0006)
	Mean	0.002	0.0002	0.001	0.0002	0.002	0.0001	0.0004	0	0.001	0.0001

Appendix 5. Winter angler target species frequency total by month and over the winter for parties interviewed by the creel clerk during winter creel surveys on Lake Thompson, 1997-2008.

<i>Year</i>	<i>Month</i>	<i>Percent of anglers targeting</i>					<i>Any species</i>
		<i>Walleye</i>	<i>Yellow perch</i>	<i>Black crappie</i>	<i>Northern pike</i>	<i>Smallmouth bass</i>	
1997-98	December	62	30	0	1	0	7
	January	43	39	0	1	0	17
	February	36	32	5	4	0	23
	March	48	22	0	16	0	14
	Total	46	33	2	3	0	16
1998-99	December	53	47	0	0	0	0
	January	49	33	1	1	0	16
	February	66	24	0	0	0	10
	March	38	9	0	15	0	38
	Total	52	31	1	1	0	15
1999-00	December	73	16	2	0	0	9
	January	66	21	1	2	0	10
	February	69	15	0	1	0	15
	March	71	0	0	15	0	14
	Total	69	14	1	4	0	12
2000-01	December	79	12	0	0	0	9
	January	81	7	0	2	0	10
	February	62	11	0	11	0	16
	March	57	12	0	15	0	16
	Total	74	10	0	5	0	11
2001-02	December	50	43	0	0	0	7
	January	67	19	0	2	0	12
	February	73	19	0	2	0	6
	March	62	38	0	0	0	0
	Total	67	22	0	2	0	9
2002-03	December	79	9	0	2	0	10
	January	85	6	0	2	0	7
	February	71	17	0	4	0	8
	March	62	9	5	11	0	13
	Total	76	10	1	4	0	9
2003-04	December	70	0	7	11	0	11
	January	85	5	1	1	0	8
	February	88	0	0	3	0	9
	March	85	2	0	0	0	13
	Total	85	2	1	2	0	10
2004-05	December	58	14	1	3	0	24
	January	70	12	1	4	0	14
	February	44	13	20	3	0	20
	March	64	2	22	3	0	9
	Total	60	11	10	3		16

Appendix 5. Continued

<i>Year</i>	<i>Month</i>	<i>Percent of anglers targeting</i>					<i>Any species</i>
		<i>Walleye</i>	<i>Yellow perch</i>	<i>Black crappie</i>	<i>Northern pike</i>	<i>Smallmouth bass</i>	
2005-06	December	57	23	1	1	0	18
	January	64	20	1	2	0	12
	February	76	11	3	1	1	9
	March	78	7	7	0	0	9
	Total	67	17	2	1	1	12
2006-07	December	66	26	1	2	0	5
	January	75	17	0	0	0	7
	February	45	25	18	0	0	12
	March	63	33	2	0	0	2
	Total	61	23	7	1	0	8
2007-08	December	70	7	0	2	0	22
	January	64	28	1	0	0	7
	February	34	9	16	1	0	41
	March	17	7	5	1	0	70
	Total	45	14	5	1	0	35

Appendix 6. Monthly and total (December through March) number of angler interviews (# Int), estimated fishing pressure (angler hours), estimated angler days, estimated economic value, estimated trip length (hours), average party size, percent of interviewed parties that were South Dakota (SD) residents, percent of angling activity done by boat and percent of angling activity that occurred during weekends/holidays at Lake Thompson, South Dakota (80% confidence interval).

<i>Year</i>	<i>Month</i>	<i># Int</i>	<i>Angler hours</i>	<i>Angler days</i>	<i>Economic value</i>	<i>Trip length (h)</i>	<i>Party size</i>	<i>% SD residents</i>	<i>% boat anglers</i>	<i>% weekends or holidays</i>
1997	December	119	9,795 (2,968)	2,564	\$156,404	3.82 (4.23)	1.97 (2.86)	89	67	60
1998	January	223	23,568 (6,590)	5,679	\$346,419	4.15 (4.42)	1.86 (1.79)	80	70	59
1998	February	173	9,763 (2,378)	2,503	\$152,683	3.90 (1.20)	1.78 (0.62)	82	51	65
1998	March	50	1,350 (440)	421	\$25,681	3.21 (0.71)	1.92 (2.39)	80	18	65
	Total	565	44,477 (7,621)	11,797	\$719,617	3.77 (1.60)	1.88 (1.05)	83	64	61
1998	December	19	4,069 (4,698)	853	\$52,033	4.77 (4.91)	1.96 (2.37)	63	92	2
1999	January	251	13,454 (5,434)	3,769	\$229,909	3.57 (2.70)	1.98 (1.32)	87	73	64
1999	February	70	2,805 (887)	678	\$41,358	4.14 (1.85)	2.32 (--)	94	62	72
1999	March	13	473 (325)	173	\$10,553	2.74 (--)	2.16 (1.89)	92	0	76
	Total	353	20,801 (7,245)	5,592	\$341,112	3.72 (1.31)	2.10 (0.82)	87	74	53
1999	December	44	2,476 (1,585)	477	\$29,097	5.19 (2.77)	1.90 (1.20)	84	56	28
2000	January	143	5,010 (1,865)	1,160	\$70,760	4.32 (0.73)	1.87 (2.40)	93	74	64
2000	February	123	4,260 (1,275)	1,170	\$71,370	3.64 (1.30)	1.77 (2.37)	95	67	59
2000	March	85	3,319 (1,455)	1,449	\$88,389	2.29 (1.98)	2.03 (1.60)	96	25	56
	Total	395	15,066 (3,120)	3,893	\$237,473	3.87 (0.94)	1.89 (0.97)	93	58	55
2000	December	128	4,882 (2,658)	835	\$50,935	5.85 (1.27)	1.91 (0.79)	94	95	64
2001	January	137	6,026 (646)	967	\$58,987	6.23 (1.98)	1.95 (1.90)	94	81	63
2001	February	38	1,908 (775)	468	\$28,548	4.08 (1.92)	2.05 (0.96)	84	79	39
2001	March	74	4,874 (1,865)	1,240	\$75,640	3.93 (1.03)	1.98 (1.22)	95	48	79
	Total	377	17,690 (3,400)	3,510	\$214,110	5.04 (0.80)	1.97 (0.65)	93	76	65
2001	December	33	4,091 (2,147)	1,690	\$103,090	2.42 (--)	1.83 (0.22)	79	89	34
2002	January	92	3,899 (929)	687	\$41,907	5.67 (3.45)	1.91 (1.46)	93	86	70
2002	February	53	3,168 (2,369)	1,092	\$66,612	2.90 (0.12)	1.82 (0.66)	94	79	81
2002	March	16	852 (556)	319	\$19,459	2.67 (--)	1.77 (0.56)	100	62	34
	Total	194	12,011 (3,376)	3,742	\$228,262	3.21 (0.70)	1.83 (0.35)	93	83	58
2002	December	93	7,954 (2,343)	1,858	\$113,338	4.28 (1.00)	2.07 (1.64)	89	76	49
2003	January	148	11,293 (3,087)	2,258	\$137,738	5.00 (1.97)	2.03 (1.25)	91	96	49
2003	February	95	5,841 (1,737)	897	\$54,717	6.51 (--)	1.84 (1.06)	94	95	66
2003	March	55	3,933 (2,450)	1,967	\$119,987	2.00 (--)	1.85 (1.72)	85	72	63
	Total	391	29,021 (4,903)	5,874	\$358,314	4.94 (0.70)	1.95 (0.72)	90	87	54

Appendix 6. Continued

<i>Year</i>	<i>Month</i>	<i># Int</i>	<i>Angler hours</i>	<i>Angler days</i>	<i>Economic value</i>	<i>Trip length (h)</i>	<i>Party size</i>	<i>% SD residents</i>	<i>% boat anglers</i>	<i>% weekends or holidays</i>
2003	December	93	12,921 (3,007)	4,857	\$296,277	2.66 (--)	1.91 (1.74)	92	94	65
2004	January	92	8,386 (2,284)	1,950	\$118,950	4.30 (--)	2.11 (1.90)	93	94	64
2004	February	115	5,117 (1,542)	971	\$59,231	5.27 (--)	1.87 (1.01)	96	88	61
2004	March	27	976 (443)	273	\$16,653	3.57 (2.62)	1.98 (0.62)	93	24	33
	Total	327	27,401 (4,103)	6,927	\$422,547	3.93 (0.67)	1.97 (0.27)	94	90	64
2004	December	59	2,808 (2,312)	566	\$34,526	4.96 (2.57)	1.90 (0.91)	93	97	96
2005	January	222	11,973 (2,588)	2,197	\$134,017	5.45 (1.33)	1.90 (2.00)	95	93	51
2005	February	152	10,197 (4,301)	778	\$47,458	13.1 (9.4)	1.93 (2.53)	95	64	70
2005	March	59	3,224 (2,212)	592	\$36,112	5.45 (0.12)	1.91 (1.54)	97	36	73
	Total	492	28,202 (5,953)	3,978	\$242,658	7.09 (2.35)	1.91 (0.90)	95	76	56
2005	December	107	6,510 (3,697)	1,019	\$62,159	6.39 (2.34)	1.92 (1.64)	93	79	40
2006	January	138	5,891 (1,552)	791	\$48,251	7.45 (2.21)	1.86 (2.47)	93	89	62
2006	February	119	4,169 (1,094)	552	\$33,672	7.55 (1.29)	1.63 (0.26)	94	84	62
2006	March	56	2,017 (1,286)	353	\$21,533	5.72 (6.81)	1.55 (0.65)	91	60	41
	Total	420	18,588 (4,350)	2,750	\$167,750	6.76 (1.95)	1.74 (0.78)	93	81	52
2006	December	105	5,322 (2,008)	1,311	\$79,971	4.06 (1.79)	1.90 (1.82)	95	79	55
2007	January	168	9,344 (2,879)	1,032	\$62,952	9.05 (--)	1.76 (0.89)	95	94	64
2007	February	181	12,968 (5,347)	1,832	\$111,752	7.08 (3.49)	1.59 (1.23)	95	83	66
2007	March	45	2,505 (1,272)	558	\$34,038	4.49 (3.56)	1.62 (0.78)	89	46	34
	Total	499	30,139 (6,522)	4,901	\$298,961	6.15 (1.30)	1.72 (0.62)	95	83	61
2007	December	198	6,210 (2,836)	910	\$55,510	6.82 (3.40)	1.82 (0.97)	97	88	65
2008	January	142	15,830 (7,353)	1,244	\$75,844	12.72 (3.56)	1.97 (1.77)	93	90	70
2008	February	176	8,777 (2,426)	956	\$58,316	9.18 (--)	1.98 (1.07)	94	90	65
2008	March	107	14,588 (5,729)	2,319	\$141,459	6.29 (3.24)	1.93 (2.83)	95	59	69
	Total	623	45,405 (6,522)	5,429	\$331,129	8.74 (1.50)	1.92 (0.91)	95	80	67

Appendix 7. Estimated number of walleye, northern pike, yellow perch and black crappie caught and harvested by month and year during the winter fishery at Lake Thompson, South Dakota. (80% confidence interval).

<i>Species</i>	<i>Year</i>	<i>December</i>		<i>January</i>		<i>February</i>		<i>March</i>		<i>Total</i>	
		<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>
Walleye	1997-98	6,738 (2,123)	2,271 (673)	7,125 (3,274)	2,351 (811)	1,720 (1,115)	681 (325)	115 (139)	36 (25)	15,698 (4,060)	5,339 (1,103)
	1998-99	1,427 (1,583)	557 (716)	2,664 (1,147)	847 (349)	275 (154)	150 (71)	0 (0)	0 (0)	4,366 (1,961)	1,554 (800)
	1999-00	649 (350)	141 (201)	1,998 (1,091)	547 (232)	958 (297)	281 (137)	403 (491)	372 (448)	4,008 (1,282)	1,341 (560)
	2000-01	2,755 (2,879)	789 (562)	1,890 (577)	564 (270)	325 (254)	191 (164)	1,754 (806)	634 (383)	6,724 (2,140)	2,178 (750)
	2001-02	394 (252)	75 (102)	797 (253)	155 (58)	393 (365)	203 (191)	63 (52)	33 (0)	1,647 (534)	466 (224)
	2002-03	2,836 (993)	1,548 (497)	3,764 (1,199)	1,184 (366)	998 (576)	326 (154)	540 (428)	326 (266)	8,138 (1,714)	3,384 (689)
	2003-04	4,124 (1,162)	1,584 (572)	1,691 (860)	477 (199)	1,089 (446)	417 (121)	25 (15)	25 (15)	6,929 (1,513)	2,503 (618)
	2004-05	502 (458)	387 (345)	1,186 (472)	743 (213)	534 (287)	408 (210)	379 (397)	335 (331)	2,601 (820)	1,873 (564)
	2005-06	566 (492)	295 (354)	315 (104)	182 (59)	416 (214)	271 (188)	227 (38)	164 (36)	1,524 (548)	912 (407)
	2006-07	451 (284)	269 (154)	724 (266)	465 (172)	585 (285)	284 (133)	135 (334)	102 (219)	1,895 (587)	1,120 (345)
	2007-08	1,032 (544)	469 (261)	1,777 (769)	885 (396)	690 (355)	302 (149)	2,295 (1,490)	1,098 (640)	5,795 (1,798)	2,755 (810)
Total		21,474	8,385	23,931	8,400	7,983	3,514	5,936	3,125	59,324	23,424

Appendix 7. Continued

<i>Species</i>	<i>Year</i>	<i>December</i>		<i>January</i>		<i>February</i>		<i>March</i>		<i>Total</i>	
		<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>
Northern Pike	1997-98	441 (162)	247 (80)	828 (294)	372 (74)	512 (146)	230 (73)	146 (75)	66 (37)	1,927 (373)	915 (136)
	1998-99	184 (205)	0 (0)	387 (159)	196 (127)	61 (37)	28 (32)	30 (--)	0 (0)	662 (262)	224 (131)
	1999-00	97 (100)	55 (64)	179 (87)	76 (82)	101 (41)	59 (29)	340 (179)	116 (65)	717 (226)	306 (126)
	2000-01	137 (91)	80 (75)	213 (139)	143 (61)	155 (97)	130 (95)	473 (281)	402 (459)	978 (340)	755 (292)
	2001-02	12 (17)	0	20 (12)	12 (9)	31 (24)	18 (19)	0	0	63 (32)	30 (21)
	2002-03	272 (161)	186 (108)	272 (100)	121 (73)	208 (68)	175 (61)	140 (65)	115 (160)	892 (212)	597 (215)
	2003-04	548 (204)	242 (112)	195 (90)	145 (98)	236 (101)	182 (73)	103 (61)	78 (46)	1,082 (252)	647 (171)
	2004-05	22 (39)	11 (19)	293 (143)	246 (138)	411 (524)	261 (429)	56 (34)	39 (30)	782 (545)	557 (452)
	2005-06	5 (7)	5 (7)	14 (9)	8 (4)	81 (75)	44 (39)	25 (4)	24 (11)	125 (76)	81 (41)
	2006-07	55 (39)	34 (18)	95 (45)	78 (44)	62 (50)	62 (50)	0	0	212 (78)	174 (69)
	2007-08	17 (14)	17 (14)	29 (21)	29 (21)	6 (5)	6 (5)	40 (24)	27 (17)	92 (35)	80 (31)
Total		1,790	877	2,525	1,426	1,864	1,195	1,353	867	7,532	4,365

Appendix 7. Continued

<i>Species</i>	<i>Year</i>	<i>December</i>		<i>January</i>		<i>February</i>		<i>March</i>		<i>Total</i>	
		<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>
Yellow Perch	1997-98	959 (666)	959 (666)	3,234 (1,442)	3,133 (1,415)	823 (513)	813 (517)	65 (90)	65 (90)	5,081 (1,672)	4,970 (1,650)
	1998-99	2,012 (2,518)	1,357 (1,674)	2,764 (1,386)	2,393 (1,141)	52 (42)	52 (42)	0	0	4,828 (2,875)	3,802 (2,026)
	1999-00	155 (54)	95 (54)	242 (158)	226 (157)	451 (392)	150 (121)	30 (36)	0	878 (428)	471 (205)
	2000-01	142 (86)	133 (77)	30 (19)	30 (19)	102 (95)	102 (95)	387 (171)	337 (138)	661 (215)	602 (185)
	2001-02	647 (240)	634 (232)	122 (95)	122 (95)	47 (60)	47 (60)	40 (57)	40 (57)	856 (271)	843 (264)
	2002-03	133 (113)	60 (35)	294 (111)	266 (100)	139 (164)	124 (146)	203 (249)	193 (235)	769 (338)	643 (296)
	2003-04	189 (95)	174 (94)	55 (48)	55 (48)	30 (26)	30 (26)	0	0	274 (110)	259 (109)
	2004-05	1,239 (1,552)	1,128 (1,465)	87 (52)	82 (48)	229 (251)	229 (251)	0	0	1,555 (1,573)	1,439 (1,488)
	2005-06	417 (192)	350 (182)	147 (50)	138 (49)	42 (29)	42 (29)	5 (4)	5 (4)	611 (200)	535 (191)
	2006-07	490 (249)	429 (240)	567 (189)	567 (189)	1,677 (855)	1,638 (853)	301 (0)	301 (0)	3,035 (910)	2,935 (906)
	2007-08	256 (212)	247 (212)	675 (560)	675 (560)	264 (124)	264 (124)	1,181 (978)	1,172 (949)	2,376 (1,154)	2,358 (1,129)
	Total	6,639	5,566	8,217	7,687	3,856	3,491	2,212	2,113	20,924	18,857

Appendix 7. Continued

<i>Species</i>	<i>Year</i>	<i>December</i>		<i>January</i>		<i>February</i>		<i>March</i>		<i>Total</i>	
		<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>	<u>catch</u>	<u>harvest</u>
Black Crappie	1997-98	0	0	0	0	560 (422)	560 (422)	0	0	560 (422)	560 (422)
	1998-99	0	0	33 (31)	33 (31)	0	0	0	0	33 (31)	33 (31)
	1999-00	0	0	0	0	0	0	0	0	0	0
	2000-01	0	0	0	0	0	0	0	0	0	0
	2001-02	0	0	0	0	0	0	8 (24)	8 (24)	8 (24)	8 (24)
	2002-03	0	0	0	0	29 (31)	29 (31)	58 (0)	58 (0)	87 (31)	87 (31)
	2003-04	85 (43)	70 (39)	178 (171)	170 (162)	15 (19)	15 (19)	476 (776)	476 (776)	754 (796)	731 (794)
	2004-05	22 (35)	22 (35)	26 (20)	26 (20)	857 (536)	857 (536)	738 (524)	732 (518)	1,643 (751)	1,637 (747)
	2005-06	47 (37)	43 (32)	13 (17)	13 (17)	50 (33)	50 (33)	38 (26)	36 (25)	148 (58)	142 (55)
	2006-07	157 (119)	157 (119)	27 (17)	27 (17)	976 (1,588)	976 (1,588)	22 (0)	22 (0)	1,182 (587)	1,182 (1,592)
	2007-08	52 (38)	52 (38)	33 (23)	33 (23)	166 (93)	166 (93)	1,045 (798)	1,045 (798)	1,297 (804)	1,297 (804)
	Total		363	344	310	302	2,653	2,653	2,385	2,377	5,711

Appendix 8. Estimated angler catch rate (C/h) and harvest rate (H/h) of walleye, northern pike, yellow perch and black crappie by month and year during the winter fishery at Lake Thompson, South Dakota. (80% confidence interval).

<i>Species</i>	<i>Year</i>	<i>December</i>		<i>January</i>		<i>February</i>		<i>March</i>		<i>Total</i>	
		<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>
Walleye	1997-98	0.69 (0.44)	0.23 (0.14)	0.30 (0.21)	0.10 (0.06)	0.18 (0.15)	0.07 (0.05)	0.08 (0.11)	0.03 (0.03)	0.35 (0.15)	0.12 (0.04)
	1998-99	0.35 (0.97)	0.14 (0.42)	0.20 (0.16)	0.06 (0.05)	0.10 (0.05)	0.07 (--)	0	0	0.21 (0.18)	0.07 (0.07)
	1999-00	0.26 (0.36)	0.06 (0.12)	0.40 (0.28)	0.11 (0.07)	0.22 (0.11)	0.07 (0.04)	0.12 (0.17)	0.11 (0.15)	0.27 (0.12)	0.09 (0.05)
	2000-01	0.56 (0.68)	0.16 (0.19)	0.31 (0.11)	0.09 (0.05)	0.17 (0.22)	0.10 (0.14)	0.36 (0.24)	0.13 (0.11)	0.38 (0.18)	0.12 (0.06)
	2001-02	0.12 (0.09)	0.02 (0.03)	0.20 (0.10)	0.04 (0.02)	0.12 (0.20)	0.06 (0.12)	0.07 (0.25)	0.04 (0.12)	0.13 (0.07)	0.04 (0.03)
	2002-03	0.36 (0.23)	0.19 (0.11)	0.33 (0.16)	0.10 (0.06)	0.17 (0.12)	0.06 (0.04)	0.14 (0.23)	0.08 (0.17)	0.28 (0.10)	0.12 (0.05)
	2003-04	0.32 (0.16)	0.12 (0.07)	0.20 (0.15)	0.06 (0.05)	0.21 (0.15)	0.08 (0.05)	0.03 (--)	0.03 (--)	0.25 (0.09)	0.09 (0.05)
	2004-05	0.18 (0.16)	0.14 (0.15)	0.10 (0.05)	0.06 (0.03)	0.05 (0.04)	0.04 (0.03)	0.12 (0.20)	0.10 (0.18)	0.09 (0.04)	0.07 (0.03)
	2005-06	0.09 (0.14)	0.05 (0.10)	0.05 (0.03)	0.03 (0.02)	0.10 (0.08)	0.07 (0.06)	0.11 (0.13)	0.08 (0.11)	0.08 (0.05)	0.05 (0.04)
	2006-07	0.08 (0.07)	0.05 (0.05)	0.08 (0.05)	0.05 (0.03)	0.05 (0.04)	0.02 (0.02)	0.05 (0.15)	0.04 (0.11)	0.06 (0.03)	0.04 (0.02)
	2007-08	0.17 (0.13)	0.08 (0.07)	0.11 (0.08)	0.06 (0.04)	0.08 (0.06)	0.03 (0.02)	0.16 (0.15)	0.08 (0.07)	0.13 (0.06)	0.06 (0.03)
Mean		0.29	0.11	0.21	0.07	0.13	0.06	0.11	0.07	0.20	0.08

Appendix 8. Continued

<i>Species</i>	<i>Year</i>	<i>December</i>		<i>January</i>		<i>February</i>		<i>March</i>		<i>Total</i>	
		<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>
Northern Pike	1997-98	0.05 (0.02)	0.03 (0.02)	0.04 (0.02)	0.02 (0.01)	0.05 (0.02)	0.02 (0.01)	0.11 (0.10)	0.05 (0.05)	0.04 (0.02)	0.02 (0.01)
	1998-99	0.05 (0.07)	0	0.03 (0.02)	0.01 (0.01)	0.02 (0.02)	0.01 (0.01)	0.06 (--)	0	0.03 (0.02)	0.01 (0.009)
	1999-00	0.04 (0.09)	0.02 (0.06)	0.04 (0.04)	0.02 (0.02)	0	0	0.10 (0.10)	0.03 (0.03)	0.05 (0.03)	0.02 (0.02)
	2000-01	0.03 (0.03)	0.02 (0.02)	0.04 (0.03)	0.02 (0.02)	0.08 (0.08)	0.07 (0.07)	0.10 (0.10)	0.08 (0.09)	0.06 (0.03)	0.04 (0.02)
	2001-02	0.003 (0.004)	0	0.005 (0.003)	0.003 (0.003)	0.01 (0.01)	0.006 (0.009)	0	0	0.005 (0.003)	0.002 (0.002)
	2002-03	0.03 (0.02)	0.02 (0.02)	0.02 (0.01)	0.01 (0.004)	0.04 (0.02)	0.03 (0.02)	0.04 (0.03)	0.03 (0.06)	0.03 (0.009)	0.02 (0.009)
	2003-04	0.04 (0.02)	0.02 (0.01)	0.02 (0.02)	0.02 (0.01)	0.05 (0.02)	0.04 (0.02)	0.11 (0.08)	0.08 (0.06)	0.04 (0.01)	0.02 (0.01)
	2004-05	0.008 (--)	0.004 (--)	0.02 (0.01)	0.03 (0.01)	0.04 (0.07)	0.03 (0.06)	0.02 (0.02)	0.01 (0.02)	0.03 (0.02)	0.02 (0.02)
	2005-06	0.0007 (0.001)	0.0007 (0.001)	0.002 (0.002)	0.001 (0.0008)	0.02 (0.03)	0.01 (0.01)	0.01 (0.007)	0.01 (0.008)	0.007 (0.005)	0.004 (0.003)
	2006-07	0.01 (0.005)	0.006 (0.007)	0.01 (0.009)	0.008 (0.007)	0.005 (0.003)	0.005 (0.003)	0	0	0.007 (0.003)	0.006 (0.003)
	2007-08	0.003 (0.001)	0.003 (0.001)	0.002 (0.002)	0.002 (0.002)	0.0007 (0.0008)	0.0007 (0.0008)	0.003 (0.003)	0.002 (0.003)	0.002 (0.001)	0.002 (0.001)
Mean		0.02	0.01	0.02	0.01	0.03	0.02	0.05	0.03	0.03	0.01

Appendix 8. Continued

<i>Species</i>	<i>Year</i>	<i>December</i>		<i>January</i>		<i>February</i>		<i>March</i>		<i>Total</i>	
		<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>
Yellow Perch	1997-98	0.10 (0.08)	0.10 (0.08)	0.14 (0.08)	0.13 (0.08)	0.08 (0.07)	0.08 (0.07)	0.05 (0.05)	0.05 (0.05)	0.11 (0.05)	0.11 (0.05)
	1998-99	0.50 (1.48)	0.33 (0.99)	0.21 (0.14)	0.18 (0.12)	0.02 (0.01)	0.02 (0.01)	0	0	0.23 (0.23)	0.18 (0.17)
	1999-00	0.06 (0.07)	0.03 (0.05)	0.05 (0.05)	0.04 (0.05)	0.11 (0.08)	0.03 (0.02)	0.01 (0.01)	0	0.06 (0.03)	0.03 (0.02)
	2000-01	0.03 (0.03)	0.03 (0.03)	0.005 (0.003)	0.005 (0.003)	0.05 (0.11)	0.05 (0.11)	0.08 (0.05)	0.07 (0.05)	0.04 (0.02)	0.03 (0.02)
	2001-02	0.16 (0.10)	0.16 (0.10)	0.03 (0.03)	0.03 (0.03)	0.01 (0.02)	0.01 (0.02)	0.05 (0.14)	0.05 (0.14)	0.07 (0.03)	0.07 (0.03)
	2002-03	0.02 (0.01)	0.008 (0.004)	0.03 (0.01)	0.02 (0.01)	0.02 (0.03)	0.02 (0.03)	0.05 (0.16)	0.05 (0.15)	0.03 (0.02)	0.02 (0.01)
	2003-04	0.01 (0.008)	0.01 (0.008)	0.007 (0.008)	0.007 (0.008)	0.006 (0.006)	0.006 (0.006)	0	0	0.01 (0.004)	0.01 (0.005)
	2004-05	0.44 (--)	0.40 (--)	0.007 (0.004)	0.007 (0.004)	0.02 (0.03)	0.02 (0.03)	0	0	0.06 (0.05)	0.05 (0.05)
	2005-06	0.06 (0.05)	0.05 (0.05)	0.02 (0.01)	0.02 (0.01)	0.01 (0.01)	0.01 (0.01)	0.003 (0.004)	0.003 (0.004)	0.03 (0.02)	0.03 (0.02)
	2006-07	0.09 (0.07)	0.08 (0.07)	0.06 (0.04)	0.06 (0.04)	0.13 (0.09)	0.13 (0.09)	0.12 (0.08)	0.12 (0.08)	0.10 (0.04)	0.10 (0.04)
	2007-08	0.04 (0.04)	0.04 (0.04)	0.04 (0.03)	0.04 (0.03)	0.03 (0.02)	0.03 (0.02)	0.08 (0.09)	0.08 (0.09)	0.05 (0.03)	0.05 (0.03)
Mean		0.14	0.11	0.05	0.05	0.04	0.04	0.04	0.04	0.07	0.06

Appendix 8. Continued

<i>Species</i>	<i>Year</i>	<i>December</i>		<i>January</i>		<i>February</i>		<i>March</i>		<i>Total</i>	
		<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>	<u>C/h</u>	<u>H/h</u>
Black Crappie	1997-98	0	0	0	0	0.06 (0.07)	0.06 (0.07)	0	0	0.01 (0.01)	0.01 (0.01)
	1998-99	0	0	0.002 (0.002)	0.002 (0.002)	0	0	0	0	0.002 (0.002)	0.002 (0.002)
	1999-00	0	0	0	0	0	0	0	0	0	0
	2000-01	0	0	0	0	0	0	0	0	0	0
	2001-02	0	0	0	0	0	0	0.01 (0.03)	0.01 (0.03)	0.001 (0.002)	0.001 (0.002)
	2002-03	0	0	0	0	0.005 (0.006)	0.005 (0.006)	0.01 (0.02)	0.01 (0.02)	0.003 (0.002)	0.003 (0.002)
	2003-04	0.007 (0.006)	0.007 (0.003)	0.02 (0.02)	0.02 (0.02)	0.003 (0.004)	0.003 (0.004)	0.49 (1.33)	0.49 (1.33)	0.03 (0.03)	0.03 (0.03)
	2004-05	0.008 (0.01)	0.008 (0.01)	0.002 (0.001)	0.002 (0.001)	0.08 (0.09)	0.08 (0.09)	0.23 (0.41)	0.23 (0.41)	0.06 (0.04)	0.06 (0.04)
	2005-06	0.007 (0.007)	0.007 (0.006)	0.002 (0.003)	0.002 (0.003)	0.01 (0.01)	0.01 (0.01)	0.02 (0.02)	0.02 (0.02)	0.008 (0.004)	0.008 (0.004)
	2006-07	0.03 (0.03)	0.03 (0.03)	0.003 (0.003)	0.003 (0.003)	0.08 (0.16)	0.07 (0.16)	0.009 (0.01)	0.009 (0.01)	0.04 (0.06)	0.04 (0.06)
	2007-08	0.008 (0.007)	0.008 (0.007)	0.002 (0.002)	0.002 (0.002)	0.02 (0.01)	0.02 (0.01)	0.07 (0.08)	0.07 (0.08)	0.03 (0.02)	0.03 (0.02)
	Mean	0.006	0.006	0.003	0.003	0.02	0.02	0.08	0.08	0.03	0.03

Appendix 9. Questions asked during interviews to obtain angler opinions on regulations and trip satisfaction.

Question 1. Response of Lake Thompson, South Dakota angling parties interviewed during the winter 1997-98, summer 1998, and winter 1998-99 creel surveys to the question: “Do you favor or oppose a 14-inch minimum size limit for walleyes on Lake Thompson?” (n is the number of responses)

<i>Response</i>	<i>Percent (%) by survey period</i>		
	<i>Winter 1997-98 (n = 394)</i>	<i>Summer 1998 (n = 854)</i>	<i>Winter 1998-99 (n = 353)</i>
Favor	76	84	72
Oppose	17	14	15
No opinion	7	2	13

Question 2. Response of Lake Thompson, South Dakota angling parties interviewed during the summer 1997 creel survey to the question: “Considering all factors, how satisfied are you with your fishing trip today?” (n is the number of responses)

<i>Response</i>	<i>Percent (%) (n = 531)</i>
Very satisfied	38
Moderately satisfied	40
Slightly satisfied	13
Neutral	4
Slightly dissatisfied	2
Moderately dissatisfied	1
Very dissatisfied	1
No opinion	1

Question 3. Response of Lake Thompson, South Dakota angling parties interviewed during the summer 1999 creel survey to the question: How would you rate your fishing trip today in terms of catching the sizes of fish you were expecting?” (n is the number of responses)

<i>Response</i>	<i>Percent (%) (n = 335)</i>
Excellent	16
Good	27
Fair	25
Poor	22
Very Poor	6
No Opinion	4

Question 4. Response of Lake Thompson, South Dakota angling parties interviewed during the winter 2001-02 and winter 2002-03 creel surveys to the question: “How many yellow perch would it take for you to consider it a good fishing day?” (n is the number of responses)

<i>Response</i>	<i>Percent (%)</i>	
	<i>Winter 2001-02</i> <i>(n = 165)</i>	<i>Winter 2002-03</i> <i>(n = 391)</i>
1-5	23	21
6-10	53	51
11-15	15	18
16-20	3	5
21-25	6	5

Question 5. Response of Lake Thompson, South Dakota angling parties interviewed during the summer 2002 creel survey to the question: “How satisfied are you with your fishing trip today considering all factors?” (n is the number of responses)

<i>Response</i>	<i>Percent (%)</i> <i>(n = 551)</i>
Very satisfied	18
Satisfied	20
Neutral	22
Dissatisfied	11
Very dissatisfied	12
No opinion	17

Question 6. Response of Lake Thompson, South Dakota angling parties interviewed during the summer 2003 creel survey to the question: “How satisfied are you with your fishing trip today?” (n is the number of responses)

<i>Response</i>	<i>Percent (%)</i> <i>(n = 431)</i>
Satisfied	49
Somewhat satisfied	36
Neutral	11
Somewhat dissatisfied	2
Dissatisfied	1
No opinion	1

Question 7. Response of Lake Thompson, South Dakota angling parties interviewed during the summer 2003 creel survey to the question: “In your opinion, would you say that the current South Dakota fishing regulations are...” (n is the number of responses)

<i>Response</i>	<i>Percent (%)</i> <i>(n = 431)</i>
Very easy to understand	43
Somewhat easy to understand	40
Somewhat difficult to understand	11
Very difficult to understand	3
No opinion	3

Question 8. Response of Lake Thompson, South Dakota angling parties interviewed during the winter 2003-04 and summer 2004 creel surveys to the question: “On a typical fishing trip, would you rather catch and keep four 13-inch; three 14-inch or 1 17-inch walleye?” (n is the number of responses)

<i>Response</i>	<i>Percent (%)</i>	
	<i>Winter 2003-04</i> <i>(n = 327)</i>	<i>Summer 2004</i> <i>(n = 264)</i>
Four 13-inch walleyes	28	19
Three 14-inch walleyes	58	61
One 17-inch walleye	14	20

Question 9. Response of Lake Thompson, South Dakota angling parties interviewed during the winter 2003-04, summer 2004 and winter 2004-05 creel surveys to the question: “Why did you choose this lake over other lakes?” (n is the number of responses)

<i>Response</i>	<i>Percent (%)</i>		
	<i>Winter 2003-04</i> <i>(n = 327)</i>	<i>Summer 2004</i> <i>(n = 599)</i>	<i>Winter 2004-05</i> <i>(n = 491)</i>
Closeness to home	21	19	20
Heard targeted fish were biting	35	17	35
Chance to catch bigger fish	9	3	1
Chance to catch a lot of fish	10	2	1
Familiarity with the lake	17	35	30
Other	8	24	13

Question 10. Response of Lake Thompson, South Dakota angling parties interviewed during the winter 2004-05 creel survey to the question: “How many walleyes over 20 inches were released?” (n is the number of responses)

<i>Number released</i>	<i>Number</i>	<i>Percent (%)</i>
0	484	98
1	5	1
2	2	1

Question 11. Response of Lake Thompson, South Dakota angling parties interviewed during the summer 2005 creel survey to four questions concerning potential regulation changes (n is the number of responses)

<i>Question</i>	<i>n</i>	<i>Percent (%)</i>		
		<i>Favor</i>	<i>Neutral</i>	<i>Oppose</i>
What is your opinion on making the one walleye over 20 inches restriction statewide regulation?	159	79	12	9
What is your opinion on reducing the statewide daily walleye limit from four to three?	159	29	7	64
What is your opinion on reducing the daily panfish limit from 25 to 10?	137	43	32	25
What is your opinion on reducing the statewide daily northern pike limit from six to three?	137	24	34	42

Question 12. Response of Lake Thompson, South Dakota angling parties interviewed during the winter 2005-06 creel survey to three questions concerning potential regulation changes (n is the number of responses)

<i>Question</i>	<i>n</i>	<i>Percent (%)</i>		
		<i>Favor</i>	<i>Neutral</i>	<i>Oppose</i>
What is your opinion on reducing the statewide daily walleye limit from four to three?	213	19	16	65
What is your opinion on reducing the daily panfish limit from 25 to 10?	207	42	20	38
What is your opinion on reducing the statewide daily northern pike limit from six to three?	207	21	41	38

Question 13. Response of Lake Thompson, South Dakota angling parties interviewed during the winter 2007-08 and summer 2008 creel surveys to the question, "What would you consider to be the best daily limit for panfish (perch, crappies and bluegills)." The number of responses is in parentheses.

<i>Response</i>	<i>Percent (%)</i>	
	<i>Winter 2007-08</i> <i>(n = 296)</i>	<i>Summer 2008</i> <i>(n = 91)</i>
5	1	0
10	39	7
15	20	16
20	7	19
25	31	52
25+	2	6

Appendix 10. Yearly fishing pressure (h and h/ha) and catch and harvest statistics for walleyes, yellow perch and northern pike on primary walleye waters in eastern South Dakota creel surveyed between 1996 and 2008.

Lake	County	Season	Year	Surface			Walleye			Yellow perch			Northern pike		
				area (ha)	Fishing pressure (h)	(h/ha)	Catch rate	Harvest rate	per ha	Catch rate	Catch rate	per ha	Catch rate	Catch rate	per ha
Bitter	Day	Summer	2000	4,010	48,062	12.0	1.2	0.32	3.84	0.01	0.01	0.12	0.44	0.09	1.08
Bitter	Day	Summer	2001	4,010	42,775	10.7	1.1	0.27	2.88	0.01	0.01	0.11	0.38	0.05	0.53
Bitter	Day	Summer	2002	4,010	56,655	14.1	0.94	0.25	3.53	0.01	0.01	0.14	0.36	0.05	0.71
Bitter	Day	Summer	2003	4,010	50,510	12.6	0.95	0.23	2.90	0.01	0.01	0.13	0.22	0.04	0.50
Bitter	Day	Summer	2004	4,010	41,665	10.4	0.79	0.31	3.22	0.01	0.01	0.10	0.24	0.05	0.52
Bitter	Day	Summer	2005	4,010	65,927	16.4	0.58	0.27	4.44	0.001	0.001	0.02	0.07	0.02	0.33
Bitter	Day	Summer	2006	4,010	31,115	7.8	0.32	0.2	1.55	0.001	0.001	0.01	0.15	0.06	0.47
Bitter	Day	Summer	2007	4,010	33,369	8.3	0.94	0.19	1.58	0.001	0.001	0.01	0.03	0.01	0.08
Bitter	Day	Summer	2008	4,010	52,469	13.1	0.66	0.4	5.23	0.001	0.001	0.01	0.03	0.01	0.13
Brant	Lake	Summer	1998	420	14,257	33.9	0.79	0.04	1.36	0.09	0.04	1.36			
Brant	Lake	Summer	1999	420	13,634	32.5	0.7	0.08	2.60	0.09	0.04	1.30			
Brant	Lake	Summer	2000	420	17,966	42.8	0.62	0.16	6.84	0.18	0.14	5.99			
Brant	Lake	Summer	2001	420	29,843	71.1	0.23	0.13	9.24	0.02	0.01	0.71			
Brant	Lake	Summer	2002	420	44,346	105.6	0.27	0.08	8.45	0.63	0.48	50.68			
Brant	Lake	Summer	2003	420	28,220	67.2	1.23	0.15	10.08	0.4	0.29	19.49			
Brant	Lake	Summer	2004	420	30,658	73.0	0.28	0.16	11.68	0.09	0.08	5.84			
Brant	Lake	Summer	2005	420	31,760	75.6	0.16	0.13	9.83	0.06	0.05	3.78			
Brant	Lake	Summer	2006	420	22,053	52.5	0.29	0.07	3.68	0.05	0.02	1.05			
Brant	Lake	Summer	2007	420	14,857	35.4	0.22	0.14	4.95	0.04	0.03	1.06			
Brant	Lake	Summer	2008	420	30,627	72.9	0.31	0.09	6.56	0.01	0.01	0.73			
Enemy Swim	Day	Summer	1997	870	16,518	19.0	0.99	0.06	1.14	0.44	0.02	0.38	0.26	0.03	0.57
Enemy Swim	Day	Summer	1998	870	21,232	24.4	0.36	0.11	2.68	0.19	0.06	1.46	0.07	0.01	0.24
Enemy Swim	Day	Summer	1999	870	53,004	60.9	0.41	0.1	6.09	0.29	0.09	5.48	0.05	0.01	0.61
Enemy Swim	Day	Summer	2000	870	56,553	65.0	0.17	0.05	3.25	0.22	0.07	4.55	0.03	0.01	0.65
Enemy Swim	Day	Summer	2001	870	36,350	41.8	0.13	0.04	1.67	0.2	0.01	0.42	0.03	0.01	0.42
Enemy Swim	Day	Summer	2002	870	41,369	47.6	0.37	0.09	4.28	0.13	0.04	1.90	0.03	0.01	0.48
Enemy Swim	Day	Summer	2003	870	45,705	52.5	0.22	0.06	3.15	0.16	0.02	1.05	0.03	0	0.00
Enemy Swim	Day	Summer	2004	870	38,274	44.0	0.14	0.02	0.88	0.1	0.02	0.88	0.02	0.001	0.04
Enemy Swim	Day	Summer	2005	870	38,253	44.0	0.17	0.09	3.96	0.09	0.01	0.44	0.01	0.001	0.04
Enemy Swim	Day	Summer	2006	870	26,757	30.8	0.17	0.06	1.85	0.18	0.007	0.22	0.02	0.004	0.12
Enemy Swim	Day	Summer	2007	870	20,993	24.1	0.05	0.04	0.97	0.05	0.001	0.02	0.01	0.001	0.02
Enemy Swim	Day	Summer	2008	870	16,518	19.0	0.99	0.06	1.14	0.44	0.02	0.38	0.26	0.03	0.57
Herman	Lake	Summer	1998	521	17,128	32.9	0.89	0.06	1.97	0.1	0.07	2.30	0.02	0.02	0.66
Herman	Lake	Summer	1999	521	5,038	9.7	0.98	0.04	0.39	0.15	0.1	0.97	0	0	0.00
Herman	Lake	Summer	2000	521	11,483	22.0	0.27	0.12	2.64	0.16	0.13	2.87	0.003	0	0.00

Appendix 10 Continued.

Lake	County	Season	Year	Surface			Walleye			Yellow perch			Northern pike		
				area (ha)	Fishing pressure (h)	(h/ha)	Catch rate	Harvest rate	per ha	Catch rate	Catch rate	per ha	Catch rate	Catch rate	per ha
Herman	Lake	Summer	2001	521	14,265	27.4	0.18	0.08	2.19	0.02	0.01	0.27	0.01	0.002	0.05
Herman	Lake	Summer	2002	521	11,837	22.7	0.21	0.1	2.27	0.1	0.07	1.59	0.02	0.001	0.02
Herman	Lake	Summer	2003	521	11,189	21.5	0.34	0.25	5.37	0.02	0.02	0.43	0.02	0.02	0.43
Herman	Lake	Summer	2004	521	8,259	15.9	0.34	0.1	1.59	0.11	0.11	1.74	0.01	0.004	0.06
Herman	Lake	Summer	2005	521	6,074	11.7	0.39	0.02	0.23	0.006	0.006	0.07	0.003	0	0.00
Herman	Lake	Summer	2006	521	5,114	9.8	0.19	0.07	0.69	0.02	0.02	0.20	0.007	0	0.00
Herman	Lake	Summer	2007	521	4,229	8.1	0.34	0.14	1.14	0.08	0.07	0.57	0.07	0.07	0.57
Herman	Lake	Summer	2008	521	9,009	17.3	0.27	0.16	2.77	0.009	0.002	0.03	0.03	0.002	0.03
Madison	Lake	Summer	1998	1,070	18,374	17.2	0.4	0.06	1.03	0.26	0.2	3.43			
Madison	Lake	Summer	1999	1,070	12,141	11.3	0.8	0.04	0.45	0.22	0.15	1.70			
Madison	Lake	Summer	2000	1,070	18,660	17.4	0.59	0.15	2.62	0.04	0.04	0.70			
Madison	Lake	Summer	2001	1,070	11,477	10.7	0.05	0.01	0.11	0.65	0.36	3.86			
Madison	Lake	Summer	2002	1,070	14,632	13.7	0.05	0.02	0.27	2.01	0.87	11.90			
Madison	Lake	Summer	2003	1,070	32,116	30.0	0.14	0.09	2.70	1.42	0.88	26.41			
Madison	Lake	Summer	2004	1,070	36,903	34.5	0.27	0.07	2.41	0.28	0.2	6.90			
Madison	Lake	Summer	2005	1,070	28,694	26.8	0.3	0.04	1.07	0.15	0.13	3.49			
Madison	Lake	Summer	2006	1,070	21,792	20.4	0.15	0.1	2.04	0.03	0.02	0.41			
Madison	Lake	Summer	2007	1,070	13,231	12.4	0.42	0.2	2.47	0.51	0.2	2.47			
Madison	Lake	Summer	2008	1,070	18,521	17.3	0.28	0.04	0.69	0.55	0.18	3.12			
Pickerel	Day	Summer	1997	377	11,733	31.1	0.5	0.05	1.56	0.15	0.12	3.73	0.49	0.13	4.05
Pickerel	Day	Summer	1998	377	17,076	45.3	0.34	0.15	6.79	0.12	0.01	0.45	0.36	0.08	3.62
Pickerel	Day	Summer	2000	377	22,461	59.6	0.73	0.14	8.34	0.14	0.05	2.98	0.27	0.02	1.19
Pickerel	Day	Summer	2001	377	10,315	27.4	0.15	0.03	0.82	0.18	0.07	1.92	0.09	0.003	0.08
Pickerel	Day	Summer	2006	377	31,409	83.3	0.23	0.08	6.67	0.21	0.06	5.00	0.05	0.01	0.83
Pickerel	Day	Summer	2007	377	31,713	84.1	0.24	0.11	9.25	0.16	0.02	1.68	0.08	0.02	1.68
Pickerel	Day	Summer	2008	377	24,285	64.4	0.28	0.04	2.58	0.04	0.003	0.19	0.11	0.01	0.64
Poinsett	Hamlin	Summer	1997	3,200	62,987	19.7	0.68	0.14	2.76	0.06	0.04	0.79	0.08	0.02	0.39
Poinsett	Hamlin	Summer	1998	3,200	69,844	21.8	0.67	0.08	1.75	0.03	0.03	0.65	0.07	0.01	0.22
Poinsett	Hamlin	Summer	1999	3,200	47,733	14.9	0.46	0.12	1.79	0.02	0.005	0.07	0.05	0.006	0.09
Poinsett	Hamlin	Summer	2000	3,200	98,907	30.9	0.49	0.25	7.73	0.07	0.05	1.55	0.02	0.001	0.02
Poinsett	Hamlin	Summer	2001	3,200	47,583	14.9	0.15	0.04	0.59	0.01	0.005	0.07	0.04	0.01	0.15
Poinsett	Hamlin	Summer	2002	3,200	48,398	15.1	0.2	0.08	1.21	0.02	0.01	0.15	0.15	0.02	0.30
Poinsett	Hamlin	Summer	2003	3,200	56,888	17.8	0.17	0.1	1.78	0.01	0.004	0.07	0.09	0.02	0.36
Poinsett	Hamlin	Summer	2004	3,200	29,951	9.4	0.09	0.06	0.56	0.004	0.002	0.02	0.06	0.01	0.09
Sinai	Brookings	Summer	2005	696	20,541	29.5	0.27	0.06	1.77	0.53	0.42	12.40	0.006	0.001	0.03
Sinai	Brookings	Summer	2006	696	20,947	30.1	0.8	0.1	3.01	0.4	0.28	8.43	0.001	0	0.00
Sinai	Brookings	Summer	2007	696	18,031	25.9	0.48	0.16	4.15	0.06	0.04	1.04	0.004	0.001	0.03

Appendix 10 Continued.

Lake	County	Season	Year	Surface			Walleye			Yellow perch			Northern pike		
				area (ha)	Fishing pressure (h)	(h/ha)	Catch rate	Harvest rate	per ha	Catch rate	Catch rate	per ha	Catch rate	Catch rate	per ha
Sinai	Brookings	Summer	2008	696	20,090	28.9	0.5	0.15	4.33	0.26	0.07	2.02	0.0003	0.001	0.01
Thompson	Kingsbury	Summer	1997	6,576	178,061	27.1	1.01	0.31	8.39	0.06	0.05	1.35	0.23	0.04	1.08
Thompson	Kingsbury	Summer	1998	6,576	162,913	24.8	0.91	0.32	7.93	0.07	0.06	1.49	0.14	0.02	0.50
Thompson	Kingsbury	Summer	1999	6,576	182,813	27.8	0.75	0.37	10.29	0.06	0.05	1.39	0.1	0.03	0.83
Thompson	Kingsbury	Summer	2000	6,576	130,175	19.8	0.73	0.26	5.15	0.15	0.11	2.18	0.1	0.01	0.20
Thompson	Kingsbury	Summer	2001	6,576	124,233	18.9	0.44	0.13	2.46	0.03	0.02	0.38	0.05	0.01	0.19
Thompson	Kingsbury	Summer	2002	5,731	117,502	20.5	0.65	0.26	5.33	0.11	0.06	1.23	0.06	0.01	0.21
Thompson	Kingsbury	Summer	2003	4,886	135,476	27.7	0.62	0.26	7.21	0.04	0.03	0.83	0.08	0.01	0.28
Thompson	Kingsbury	Summer	2004	4,886	114,142	23.4	0.56	0.23	5.37	0.008	0.006	0.14	0.07	0.01	0.23
Thompson	Kingsbury	Summer	2005	4,886	79,613	16.3	0.28	0.17	2.77	0.03	0.03	0.49	0.02	0.007	0.11
Thompson	Kingsbury	Summer	2006	4,886	71,517	14.6	0.62	0.24	3.51	0.009	0.006	0.09	0.007	0.001	0.01
Thompson	Kingsbury	Summer	2007	4,886	78,520	16.1	0.43	0.25	4.02	0.01	0.008	0.13	0.01	0.003	0.05
Thompson	Kingsbury	Summer	2008	4,559	69,634	15.3	0.87	0.28	4.28	0.004	0.003	0.05	0.01	0.001	0.02
Waubay	Day	Summer	1997	6,289	26,959	4.3	0.31	0.14	0.60	0	0	0.00	0.44	0.12	0.51
Waubay	Day	Summer	1998	6,289	117,764	18.7	0.52	0.35	6.55	0.44	0.17	3.18	0.24	0.04	0.75
Waubay	Day	Summer	1999	6,289	260,228	41.4	0.48	0.31	12.83	1.25	0.28	11.59	0.29	0.05	2.07
Waubay	Day	Summer	2000	6,289	174,526	27.8	0.43	0.11	3.05	0.86	0.39	10.82	0.22	0.04	1.11
Waubay	Day	Summer	2001	6,289	111,723	17.8	0.62	0.07	1.24	0.69	0.43	7.64	0.1	0.03	0.53
Waubay	Day	Summer	2002	6,289	139,769	22.2	1.22	0.06	1.33	0.34	0.25	5.56	0.05	0.01	0.22
Waubay	Day	Summer	2003	6,289	143,826	22.9	2.18	0.05	1.14	0.13	0.1	2.29	0.02	0.01	0.23
Waubay	Day	Summer	2004	6,289	121,922	19.4	2.3	0.38	7.37	0.07	0.06	1.16	0.01	0.01	0.19
Waubay	Day	Summer	2005	6,289	70,398	11.2	0.9	0.4	4.48	0.003	0.002	0.02	0.01	0.008	0.09
Waubay	Day	Summer	2006	6,289	65,029	10.3	0.84	0.24	2.48	0.01	0.01	0.10	0.003	0.002	0.02
Waubay	Day	Summer	2007	6,289	28,047	4.5	0.82	0.16	0.71	0.04	0.003	0.01	0.007	0.001	0.00
Waubay	Day	Summer	2008	6,289	45,909	7.3	0.8	0.2	1.46	0.002	0.001	0.01	0.003	0.001	0.00
Madison	Lake	Fall	2005	1,070	21,231	19.8	0.26	0.04	0.79	0.64	0.54	10.71			
Madison	Lake	Fall	2006	1,070	11,041	10.3	0.04	0.02	0.21	0.17	0.15	1.55			
Madison	Lake	Fall	2007	1,070	8,194	7.7	1.94	0.05	0.38	2.65	1.74	13.32			
Madison	Lake	Fall	2008	1,070	10,402	9.7	0.23	0.02	0.19	0.9	0.76	7.39			
Bitter	Day	Winter	1999-00	4,010	14,719	3.7	0.43	0.11	0.40	0.39	0.33	1.21	0.58	0.27	0.99
Bitter	Day	Winter	2000-01	4,010	2,355	0.6	0.12	0.02	0.01	0.07	0.03	0.02	0.35	0.26	0.15
Bitter	Day	Winter	2001-02	4,010	26,684	6.7	0.34	0.1	0.67	0.17	0.15	1.00	0.19	0.08	0.53
Bitter	Day	Winter	2002-03	4,010	23,241	5.8	0.34	0.1	0.58	0.15	0.08	0.46	0.26	0.14	0.81
Bitter	Day	Winter	2003-04	4,010	31,386	7.8	0.46	0.17	1.33	0.19	0.17	1.33	0.18	0.12	0.94
Bitter	Day	Winter	2004-05	4,010	25,146	6.3	0.21	0.11	0.69	0.1	0.09	0.56	0.06	0.05	0.31

Appendix 10 Continued.

Lake	County	Season	Year	Surface			Walleye			Yellow perch			Northern pike		
				area (ha)	Fishing pressure (h)	(h/ha)	Catch rate	rate	Harvest per ha	Catch rate	rate	Catch per ha	Catch rate	rate	Catch per ha
Bitter	Day	Winter	2005-06	4,010	14,238	3.6	0.07	0.03	0.11	0.19	0.17	0.60	0.19	0.19	0.67
Bitter	Day	Winter	2006-07	4,010	8,932	2.2	0.04	0.01	0.02	0.23	0.18	0.40	0.09	0.09	0.20
Bitter	Day	Winter	2007-08	4,010	12,212	3.0	0.11	0.07	0.21	0.06	0.05	0.15	0.03	0.03	0.09
Brant	Lake	Winter	2002-03	420	8,098	19.3	0.62	0.08	1.54	0.06	0.06	1.16	0.0005	0	0.00
Brant	Lake	Winter	2003-04	420	7,651	18.2	0.18	0.1	1.82	0	0	0.00	0.006	0.005	0.09
Brant	Lake	Winter	2004-05	420	1,561	3.7	0	0	0.00	0	0	0.00	0.003	0.002	0.01
Brant	Lake	Winter	2005-06	420	1,606	3.8	0	0	0.00	0.006	0.006	0.02	0	0	0.00
Brant	Lake	Winter	2006-07	420	6,642	15.8	0.37	0.07	1.11	0.005	0.005	0.08	0.001	0	0.00
Brant	Lake	Winter	2007-08	420	4,799	11.4	0.09	0.03	0.34	0.01	0.01	0.11	0.002	0	0.00
Enemy Swim	Day	Winter	1997-98	870	5,251	6.0	0.22	0.07	0.42	0.5	0.15	0.91	0.05	0.04	0.24
Enemy Swim	Day	Winter	2000-01	870	18,904	21.7	0.2	0.06	1.30	0.9	0.32	6.95	0.04	0.02	0.43
Enemy Swim	Day	Winter	2001-02	870	9,519	10.9	0.09	0.05	0.55	0.66	0.3	3.28	0.05	0.01	0.11
Enemy Swim	Day	Winter	2002-03	870	13,453	15.5	0.15	0.05	0.77	0.36	0.16	2.47	0.11	0.05	0.77
Enemy Swim	Day	Winter	2003-04	870	21,974	25.3	0.17	0.06	1.52	0.19	0.05	1.26	0.13	0.06	1.52
Enemy Swim	Day	Winter	2004-05	870	25,361	29.2	0.04	0.01	0.29	0.11	0.03	0.87	0.07	0.06	1.75
Enemy Swim	Day	Winter	2005-06	870	8,737	10.0	0.08	0.05	0.50	0.21	0.01	0.10	0.08	0.06	0.60
Enemy Swim	Day	Winter	2006-07	870	12,035	13.8	0.05	0.03	0.42	0.73	0.03	0.42	0.03	0.03	0.42
Enemy Swim	Day	Winter	2007-08	870	8,792	10.1	0.08	0.006	0.06	0.18	0.008	0.08	0.02	0.01	0.10
Madison	Lake	Winter	2002-03	1,070	28,759	26.9	0.02	0.004	0.11	8.14	2.72	73.11	0.02	0.01	0.27
Madison	Lake	Winter	2003-04	1,070	4,614	4.3	0.06	0.05	0.22	0.52	0.47	2.03	0	0	0.00
Madison	Lake	Winter	2004-05	1,070	14,923	13.9	0.16	0.03	0.42	0.02	0.02	0.28	0.02	0.02	0.28
Madison	Lake	Winter	2005-06	1,070	8,307	7.8	0.08	0.02	0.16	0.008	0.008	0.06	0.001	0.001	0.01
Madison	Lake	Winter	2006-07	1,070	2,810	2.6	0.08	0.06	0.16	0.004	0	0.00	0.004	0	0.00
Madison	Lake	Winter	2007-08	1,070	1,962	1.8	0.02	0	0.00	0.007	0	0.00	0	0	0.00
Pickrel	Day	Winter	1997-98	377	2,610	6.9	0.39	0.1	0.69	0.19	0.12	0.83	0.07	0.04	0.28
Pickrel	Day	Winter	2000-01	377	1,400	3.7	0.71	0.02	0.07	0.18	0.15	0.56	0.16	0.02	0.07
Pickrel	Day	Winter	2005-06	377	22,137	58.7	0.02	0.01	0.59	0.86	0.37	21.73	0.01	0.001	0.06
Pickrel	Day	Winter	2006-07	377	12,024	31.9	0.05	0.03	0.96	0.62	0.27	8.61	0.02	0.004	0.13
Pickrel	Day	Winter	2007-08	377	12,472	33.1	0.01	0.02	0.66	0.71	0.36	11.91	0.02	0.01	0.33
Poinsett	Hamlin	Winter	1997-98	3,200	24,747	7.7	1.22	0.11	0.85	0.2	0.19	1.47	0.02	0.008	0.06
Poinsett	Hamlin	Winter	1998-99	3,200	28,664	9.0	0.71	0.12	1.07	0.48	0.43	3.85	0.08	0.04	0.36
Poinsett	Hamlin	Winter	1999-00	3,200	40,218	12.6	0.26	0.15	1.89	0.16	0.15	1.89	0.01	0.007	0.09
Poinsett	Hamlin	Winter	2000-01	3,200	18,802	5.9	0.33	0.07	0.41	0.05	0.04	0.24	0.02	0.01	0.06
Poinsett	Hamlin	Winter	2001-02	3,200	12,192	3.8	0.14	0.06	0.23	0.22	0.18	0.69	0.02	0.01	0.04
Thompson	Kingsbury	Winter	1997-98	6,576	44,477	6.8	0.35	0.12	0.81	0.04	0.02	0.14	0.11	0.11	0.74
Thompson	Kingsbury	Winter	1998-99	6,576	20,801	3.2	0.21	0.07	0.22	0.03	0.01	0.03	0.23	0.18	0.57
Thompson	Kingsbury	Winter	1999-00	6,576	15,066	2.3	0.27	0.09	0.21	0.05	0.02	0.05	0.06	0.03	0.07

Appendix 10 Continued.

<i>Lake</i>	<i>County</i>	<i>Season</i>	<i>Year</i>	<i>Surface area (ha)</i>	<i>Fishing pressure</i>			<i>Walleye Harvest</i>			<i>Yellow perch Catch</i>			<i>Northern pike Catch</i>		
					<i>(h)</i>	<i>(h/ha)</i>	<i>rate</i>	<i>rate</i>	<i>per ha</i>	<i>rate</i>	<i>rate</i>	<i>per ha</i>	<i>rate</i>	<i>rate</i>	<i>per ha</i>	
Thompson	Kingsbury	Winter	2000-01	4,010	14,238	3.6	0.07	0.03	0.11	0.19	0.17	0.60	0.19	0.19	0.67	
Thompson	Kingsbury	Winter	2001-02	4,010	8,932	2.2	0.04	0.01	0.02	0.23	0.18	0.40	0.09	0.09	0.20	
Thompson	Kingsbury	Winter	2002-03	4,010	12,212	3.0	0.11	0.07	0.21	0.06	0.05	0.15	0.03	0.03	0.09	
Thompson	Kingsbury	Winter	2003-04	4,010	17,690	2.7	0.38	0.12	0.32	0.06	0.04	0.11	0.04	0.03	0.08	
Thompson	Kingsbury	Winter	2004-05	4,010	12,011	1.8	0.13	0.04	0.07	0.005	0.002	0.00	0.07	0.07	0.13	
Thompson	Kingsbury	Winter	2005-06	4,010	29,021	5.1	0.28	0.12	0.61	0.03	0.02	0.10	0.03	0.02	0.10	
Thompson	Kingsbury	Winter	2006-07	4,010	27,401	5.6	0.25	0.09	0.50	0.04	0.02	0.11	0.01	0.01	0.06	
Thompson	Kingsbury	Winter	2007-08	4,010	28,202	5.8	0.09	0.07	0.40	0.03	0.02	0.12	0.06	0.05	0.29	
Waubay	Day	Winter	1996-97	6,289	5,890	0.9	0.02	0.01	0.01	0	0	0.00	0.33	0.33	0.31	
Waubay	Day	Winter	1997-98	6,289	19,935	3.2	0.17	0.11	0.35	0.42	0.39	1.24	0.17	0.15	0.48	
Waubay	Day	Winter	1998-99	6,289	91,058	14.5	0.09	0.06	0.87	2.44	0.94	13.61	0.11	0.07	1.01	
Waubay	Day	Winter	1999-00	6,289	82,172	13.1	0.12	0.04	0.52	2.43	1.47	19.21	0.26	0.15	1.96	
Waubay	Day	Winter	2000-01	6,289	81,169	12.9	0.33	0.01	0.13	1.35	1.06	13.68	0.2	0.12	1.55	
Waubay	Day	Winter	2001-02	6,289	115,486	18.4	0.42	0.02	0.37	1.76	1.28	23.50	0.06	0.05	0.92	
Waubay	Day	Winter	2002-03	6,289	158,167	25.1	0.32	0.02	0.50	1.86	1.36	34.20	0.04	0.02	0.50	
Waubay	Day	Winter	2003-04	6,289	245,088	39.0	0.7	0.2	7.79	1.18	0.91	35.46	0.01	0.01	0.39	
Waubay	Day	Winter	2004-05	6,289	184,594	29.4	0.17	0.05	1.47	0.47	0.41	12.03	0.003	0.002	0.06	
Waubay	Day	Winter	2005-06	6,289	144,061	22.9	0.25	0.05	1.15	0.6	0.52	11.91	0.002	0.002	0.05	
Waubay	Day	Winter	2006-07	6,289	88,321	14.0	0.27	0.02	0.28	0.54	0.43	6.04	0.002	0.001	0.01	
Waubay	Day	Winter	2007-08	6,289	49,731	7.9	0.29	0.03	0.24	0.48	0.39	3.08	0.0009	0.001	0.00	